

News on the Model Forest Approach



to Sustainable Forest Management

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Chinese Forestry Vice-Minister Visits Lin'an MF

Mr. Lei Jiafu, Vice Minister of the State Forestry Administration (SFA), accompanied by Mr. Cheng Weishan, Director General of the Forestry Department of Zhejiang Province, visited Lin'an MF from 3 to 7 June 2002. Mr. Lei was given a briefing by the Lin'an Government and a representative of the Lin'an MF Secretariat on the Model Forest concept and the progress made in the development of the Lin'an MF. Mr. Lei then visited various MF partners, including Linlong Forestry Farm, West Tianmu National Reserve and Baisha village, and interviewed local farmers and village leaders.



Foreground, l-r: Mr. Zhou Yuxiang, Director LFB, Mr. Weng Dongchao, Vice Mayor Lin'an City, Mr. Pan Linrong, Party Secretary Qingyun Township, Mr. Lei Jiafu, Vice-Minister, SFA, and Mr. Wang Anguo, LFB. Background, extreme right: Mr. Cheng Weishan, Director-General, Zhejiang Forestry Department.

Mr. Lei expressed his interest in the eco-economic and participatory development approaches, which are key components of the Lin'an MF approach. He noted the achievements in forestry development that have been made and recognized that the MF Project has created an approach to sustainable development that can provide an example for the rest of China.

Mr. Lei said that, with the support of the CPC and

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QUOTE

*"In the beginner's mind,
there are many possibilities,
In the expert's mind there are few."*
Suzuki Roshi

Workshop to Develop MF Level Guidelines

A workshop to *Develop Guidelines for Measurement of Model Forest Level Indicators for SFM*, was jointly organised by the RMFP, RFD Thailand and IMFNS, in Lampang, Thailand from 22-27 April 2002. The workshop was attended by 32 representatives from the four RMFP countries, and resource persons from IMFNS (Dr. Pamela Wright), DENR (Mr. Noni Tamayo) and FORSPA (Dr. S Appanah). Welcoming addresses were made by Mr Direk Konkleeb, Vice Governor of Lampang Province, and Mr. Tang Hon Tat, CTA, RMFP.

The aim of the workshop was to develop guidelines for measurement of indicators common to the four Project countries, and to discuss processes involved in reviewing the appropriateness and effectiveness of indicators that have been developed for the four MFs. Indicators and associated measures were discussed during field visits. The main output of the workshop was a set of guidelines for the measurement of common indicators in the four Project countries.

Presentations were made by representatives of the four MF countries; resource persons (IMFNS, DENR, FORSPA), and others (ITTO funded THAIFORM Project). The presentations reviewed C&I progress in the Project countries

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Workshop on “Best Practices” for Bamboo, Hickory and Ecotourism Development in Lin’an MF

A workshop on “Best practices” for bamboo and hickory cultivation and management and ecotourism development was held in Lin’an, China, from 31 May - 12 June 2002. The workshop was organized and sponsored by the RMFP in collaboration with the Chinese Academy of Forestry, Lin’an Forestry Bureau, Zhejiang Forestry College, Lin’an Model Forest Secretariat and the International Network for Bamboo and Rattan (INBAR).

The RMFP sponsored three persons from each of the four MF countries to attend the workshop. Unfortunately, due to unforeseen circumstances, the delegation from Myanmar and the third participant from the Philippines were unable to attend.

Opening addresses were delivered by Mr. Weng Dongchao, Vice Mayor of Lin’an City; Professor Zhu Zhaohua, Professor-for-Life, INBAR; and Ms Dianne Gee on behalf of Mr Tang Hon Tat, CTA of RMFP. Presentations were made on:

- *Sustainable development of forestry in Lin’an*, by Mr. Tang Mingrong;
- *General introduction to the development of the bamboo sector in China*, by Prof. Zhu Zhaohua;
- *Primary experiences in developing a bamboo shoot industry in Lin’an*, by Mr. Wang Anguo;
- *Prospects for the effective utilization of bamboo in China* by Prof. Zhu Zhaohua
- *Selection of fine species for bamboo silviculture and fast propagation*, by Prof. Zhu Zhaohua;
- *Processes and equipment for bamboo daily products*, by Mr. Liu Zhikun;
- *Ecotourism development in Lin’an City*, by Mr. Wang Anguo;
- *Guidelines for sustainable development of ecotourism in*



Workshop participants visiting a *Moso* bamboo plantation

- Lin’an*, by Mr. Wei Xinliang;
- *Processing of hickory (Carya cathayensis. Sary)*, by Mr. Liu Wei; and
- *Cultivation and management of hickory (Carya cathayensis)* by Mr. Li Zhangju.

The workshop emphasised field work, including visits to:

- **High-yield Moso bamboo plantation:** The plantation was established from low productivity, degraded forest and managed by a farmer under contract from the village. The bamboo was grown for culms and shoots, and had resulted in a 167% increase in the farmer’s income over 3 years.
- **Hangzhou Qing Feng Bamboo Products Pty Ltd:** The company produces bamboo flooring products, with 90% of its products exported to Japan and North America. The factory employs 200 local people and is a partner of Lin’an Model Forest.
- **Taihu Lake Source:** A well-known ecotourism site, attracting 250,000 visitors per year. The site is managed by a private company, which pays a proportion of park fees to the local village under contract. 50% of employees at the site are from the local village.
- **Hickory factory:** The factory occupies 1,000 m² and was established with an investment of 1.2 million yuan. Hickory is considered a ‘green food’, not involving fertilisers or chemicals. The raw material is valued at 15 yuan/kg.

Participants discussed the bamboo industry in Lin’an, including its future development, problems and opportunities for cooperation between MFs, with representatives from industry, local government, bamboo processing associations and villages.

In evaluating the workshop, participants identified the following benefits and opportunities for applying skills and knowledge learned from the workshop:

- Improved understanding of bamboo and hickory plantation and management, including new technology and value-added products.
- Improved understanding of how NTFPs such as bamboo can

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Entrance to Baishujian ecotourism site

International Workshop on Model Forests and SFM, Lin'an

In conjunction with the 1st China Forest Scenery Resources Exposition (see page 4) an *International Workshop on Model Forest and Sustainable Forest Management* was held on 7 June 2002 at Zhejiang Forestry College (ZFC), Lin'an City. Approximately 70 participants, including the 8 participants from the RMFP "best practices" workshop (see previous article) from about 20 countries attended the workshop. Welcoming addresses were given by Mr. Cheng Weishan, Director General, Forestry Department, Zhejiang Province; Mr. Wang Jian, Mayor of Lin'an Municipality; Prof. Zhang Qisheng, President of ZFC and others.

Presentations were made on:

- *Selection of best forest type and design of forest management*, by Mr. Liu Anzing;
- *Eco-cash forest and sustainable development*, by Prof. Li Zhangju, ZFC;
- *Eco-economic systems engineering*, by Mr. Zhang Xiang-shu; People's University of China;
- *The establishment of Lin'an MF partnership and sustainable development*, by Mr. Wang Anguo, LFB;
- *Dev't of MFs in the Asia-Pacific Region*, by Mr. Tang Hon Tat;
- *Status of sustainable forestry development in Zhejiang Province*, by Prof. Duan Mubin, ZFC;
- *Development of MFs in China*, by Prof. Jiang Chunqian;
- *Overview of Japanese forestry, Japan's international forestry cooperation and expectations of the MF approach for SFM*, by Dr. Fusho Ozawa;
- *What is ecotourism? Concept and definitions*, by Mr. Stephen van der Mark, INBAR;
- *Ecotourism and sustainable development of a village*, by Mr. Wei Xinliang, ZFC;
- *Forest certification in China*, by Prof. Lu Wenming, CAF.
- *Community-based ecotourism: promoting economic development and resource protection*, by Ms. He Yeling, CAF.

Highlights of the presentations included:

- Lin'an is ahead of other cities/counties in Zhejiang Province in terms of forestry development, and NTFPs (including ecotourism) have become a major source of income.
- Eco-economic systems engineering can provide a logical and useful way to identify critical issues and problems in resource

development, and ways to address them.

- Mixed, multi-storied, multi-aged *Pinus masoniana* and broad-leaved forests are important to biodiversity and landscapes. Farmers have traditionally collected litter and pine needles from the forest floor for use as mulch/fertiliser, which helped to maintain mixed forests. However, economic returns are no longer attractive and the litter/needles left to accumulate on the forest floor are inhibiting regeneration of *P. masoniana*. New economically viable uses for the litter/needles must be developed if the mixed forests are to be maintained.
- Japan has seen a shift from traditional single to multi-layered forests. Revision of the *Forestry Fundamental Law* in 2001 set new guiding principles to, *inter alia*, promote the multi-functional role of forests and the classification of forests by function. Another forest management approach in Japan is profit-sharing to promote investment in afforestation by land-owners, tree-planting groups or investors.
- Past development of 'economic' forests in China has resulted in ecological degradation. This has led to development of 'eco-economic' forests where economic returns are realised from timber and NTFPs. The preference is to shift cultivation toward mixed planting, 3-dimensional, multi-layered management. It is essential to ensure farmers can earn a reasonable income before his/her commitment can be obtained.
- Forest certification is a new concept in China. Although about USD4 billion worth of furniture was exported (against about USD2.6 billion imported) in 2001, demand for certification is still relatively small and is largely driven by market pressure, mainly from the USA and Europe.
- The active involvement of local communities in the LMF partnership group has made government decisions more pragmatic and implementation smoother. LMF has promoted the participation of women, who account for 40% MF participants.
- Ecotourism projects should establish their own identity, and develop a strategy to attract visitors. Potential problems include marginalisation of local communities, and environmental degradation through the single-minded pursuit of profits.
- Community-based tourism differs from ecotourism in emphasising project management by the community.

The workshop gave participants the opportunity to learn about and discuss various aspects of MF development and SFM.

By Jiang Chunqian, CAF, Tang Hon Tat and Dianne Gee, RMFP



Participants at the International Workshop on Model Forests and SFM, Lin'an, China

First China Forest Scenery Resources Exposition, Lin'an

The first China Forest Scenery Resources Exposition was held from 8 to 12 June 2002 in Lin'an, China. Agencies involved with the development or promotion of forest-based tourism from all over China set up display booths and distributed posters, pamphlets, etc on their activities. A wide range of forest-based products were also displayed and sold.

In the evenings, concerts or cultural shows were performed at various venues in the city. A food fair, offering food from all over the country was also held in the evenings at the recently opened Friendship Park.

By Jiang Chunqian, CAF



Visitors at the opening day of the 1st China Forest Resources Scenery Exposition

New Partner for Lin'an MF

At the recent Lin'an MF Partners discussion held as part of the bamboo, hickory and ecotourism 'best practice' workshop (see previous article), the newest member of the Lin'an MF Partnership - Hangzhou Kangxin Foods Co. Ltd. - was formally welcomed. Mr Tang Hon Tat, CTA of the RMFP, presented a membership plaque to company chairperson, Ms. Wang Sulian.

Hangzhou Kangxin Foods was established in 1999 and has its headquarters in Lin'an. The company produces a variety of food products from bamboo shoots, over 90% of which are exported. Production rates since the company was established have increased, on average, by 50% per year. The company employs approximately 60 full-time employees, and 50% its employees are local people.

By Jiang Chunqian, CAF



Ms Wang Sulian, Chairperson of Hangzhou Kangxin Foods, receives a Lin'an MF Partnership plaque from Tang Hon Tat, CTA of RMFP

Continued from page 2 - Workshop on "Best Practices" for Bamboo, Hickory and Ecotourism, Lin'an MF

be used to generate income, provide housing and support the daily needs of the community.

- Enhanced knowledge of SFM, including linking the benefits of forests with the livelihoods of local farmers, and ways to address the conflict between local development and SFM.
- Greater understanding of ecotourism, including promotion and development of ecotourism enterprises, and the importance of achieving an equitable balance between company profits and the needs of the local people.
- Promotion of larger scale bamboo plantations, including on private land and reserved forests.
- Improve use of materials in bamboo production to avoid wastage, e.g. to make charcoal and handicrafts.
- Apply knowledge and technologies on sustainable development to the local area and assist farmers to realise the significance and benefits of this knowledge/technology.

By Suraphong Chawapeek, Lourdes Wagan and Dianne Gee

Continued from page 1 - Chinese Forestry Vice-Minister Visits Lin'an MF

Lin'an Government, Lin'an has appropriately addressed the relationship between conservation and development, established a multiple funds-raising approach, and mobilized farmers' enthusiasm for afforestation and conservation through multi-stakeholder participation, including officers, forest technicians and farmers within the MF development. He added that Lin'an is leading forestry development nation-wide, based on the coordination of the economy and ecology, and is creating a sustainable model with the characteristics of green mountains, clean water, rich people and a beautiful environment. Finally Mr. Lei said he hoped that Lin'an would continue to develop the MF under the strategy of sustainable development; improve the forest resource management system and help farmers in terms of scale and share-holding; adjust the forest structure and upgrade the quality of the forest stand towards high-efficiency forestry; and promote wider international forestry cooperation and disseminate Lin'an's experiences to other parts of China and other countries.

By Jiang Chunqian, CAF

Forest Roding Workshop in Paukhaung MF

From 1 to 5 May 2002 a training workshop on road opening, maintenance and decommissioning was held in Paukhaung MF. The training was based on the National Code of Forest Harvesting Practice for Myanmar and the Field Guide For Elephant Extraction developed by consultant Clyton Wells. The workshop involved 15 officers from the Myanmar Forest Department (FD) and Myanmar Timber Enterprise (MTE). The workshop was opened by U Khin Zaw MTE Deputy General Manager (Planning) and closed by U Han Soe MTE Assistant General Manager. Associate Professor Kyaw Htun (FD), U Mya Win (FD), U Han Soe (MTE) and U Aung Than Win (FD) provided assistance in organising equipment and conducting the workshop.

The Workshop covered the following areas:

Introduction: Code requirements and importance of planned road opening, maintenance and decommissioning; road formation; watercourse crossings (design and buffer protection); drainage (type selection, design and placement); and field exercises - watercourse classification and buffer width calculation.

Road design and improvement options: Decommissioning; considering road survey and inspection data; design improvement options; drainage design principles and planning; and field exercise - road survey and assessment.

Planning road opening and maintenance programs - field exercise: Survey of feeder roads; identification of drainage and watercourse crossing requirements; marking of drainage locations; and planning for road opening, maintenance and decommissioning.

Road closure and decommissioning - field exercise: Decommissioning of temporary watercourses and road intrusions into watercourse buffers; inspection of feeder road decommissioned last year; assessment of drains and other decommissioning; and development of a budget plan for the decommissioning of feeder roads in Compartments 16 and 17 Middle Nawin.

On the final day of the workshop the trainees surveyed 2 km of feeder roads in compartment 16, Middle Nawin and assessed it for decommissioning requirements. They then recorded the road location and decommissioning requirements on a map and developed a budget estimate to complete the works.

Issues arising from the training

Decommissioning of feeder roads and drainage of seasonal roads in preparation for the rainy season is an important component of sustainable forest management. The extremely dry conditions that exist before the rainy season commences create difficulties for road maintenance.

The training identified a number of issues associated with road management and maintenance practices, including:

- **Road decommissioning.** The relevant Code sections are unclear as to whether feeder roads to be

used next season should have their temporary watercourse crossings removed.

- **Temporary watercourse crossings.** From observation it appeared common practice to fill temporary crossings with logs and cover with earth. Removal of soil from these crossings without the aid of a backhoe is difficult and a dozer would likely further destabilise the watercourse banks. One approach may be to place bamboo matting over the logs to prevent the soil falling between the logs. At the time of decommissioning, the soil can be bladed off and the logs lifted or pulled out.
- **Scheduling of road decommissioning.** It was unclear when seasonal roads became available for pre-rainy season drainage. Discussions with MTE staff indicated haul trucks use the roads until commencement of the rainy season, which may leave insufficient time for decommissioning. It is possible for seasonal and feeder roads still in use to be partly decommissioned while haul trucks continue to use the road.
- **Stabilisation of feeder roads.** Construction of out-sloping roads greatly decreases the decommissioning work required. In some situations it may be possible to sow grass or other ground cover along unstable road edges at the time of opening to allow establishment of the ground cover before the dry season. Care should be taken in choosing ground cover species to ensure weeds are not introduced into the forest.
- **Road opening.** Removal of mud from roads at opening to provide access to haul trucks has progressively lowered road surfaces below that of surrounding land. As a result, the roads are difficult to drain. One solution is to return most of the material (mud) to the road surface once it has partly dried and allow haul trucks to roll it in.
- **Decommissioning of feeder roads.** Depending on the availability of machinery it may be possible to decommission feeder roads progressively during the year as haulage ceases. This will help reduce the decommissioning work required prior to the rainy season.

By Jim Dickens, U Han Soe, U Mya Win and U Aung Than Win



Group discussions during roding workshop

Mushroom Cultivation: An Alternative to Shifting Cultivation

Rural communities constitute over 80% of the total population of PKMF and are dependent on forests for their livelihoods. Provision of training on income generation activities can reduce this dependence. A straw mushroom cultivation training workshop was conducted from 19-20 October 2001 in PKMF.

Straw mushroom (*Volvariella volvacea*) is an edible mushroom which has been cultivated in Myanmar since the 1960s. Different techniques of cultivation for different types of mushroom, marketing and nutrient contents were discussed. The main aim of the workshop was to help alleviate poverty of rural communities through mushroom cultivation.

Cultivation Technique

Straw mushroom can be cultivated as indoor as well as outdoor stacks. The raw materials used for cultivation include rice straw with nutrient supplements such as bagasse, cotton seed shell, water hyacinth and banana leaf. Optimum temperature for mycelium growth ranges from 30-35°C and for fruit growth from 28-34°C. Suitable places for cultivation of straw mushroom include paddy fields in lowland areas.

The local price of 1 kilogram of fresh straw mushroom ranges from 0.25 USD to 1.0 USD, being cheaper in the rainy season.

Nutrient Contents

The food values of fresh straw mushroom are as follows:

Particular	Content	Particular	Content
Moisture	88.9%	Protein	3.4%
Fats	1.8%	Carbohydrate	3.9%
Fibre	1.4%	Energy	44 cal



Mushrooms packed for market

Particular	Content	Particular	Content
Ca	8 mg	Fe	1.1 mg
Vitamin B ₁	0.15 mg	Vitamin B ₂	0.25 mg
Vitamin C	1.00 mg	Niacine	13.7 mg

Future Activities

Three small-scale mushroom farms will be established in 3 villages in PKMF and 30 persons (10 from each village) will be provided with intensive mushroom training. The mushrooms will be sold at the local markets or to the villagers at an affordable price for their consumption.

By Kyaw Htun (NPC), C.D Thang (Mushroom Technician) and Win Myint (Staff Officer)

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and examined measurement of indicators common to the Project countries.

Field visits were made to: natural teak forest (in situ gene conservation); Tham Pha Tai National Park; Huay Tak Biosphere Reserve; Forest Pest Control and Research Center 1; and Pong Tao Sub-district Administration Organisation (SAO). Workshop participants worked through the process of developing guidelines for measurement of common indicators, which will be published as a RMFP Working Paper (in press).

Observations and recommendations included:

1. Indicators and measures should reflect local country and MF conditions. MFs should share indicator and measure descriptions and experiences in implementing and assessing these. If possible, an organisation (e.g RMFP) should facilitate this process by serving as a central repository for indicator and measure descriptions.
2. MFs should use a common approach to describe and define indicators and measurement procedures.
3. The process of developing measures is challenging and often teams select an approach too quickly. Steps and an evaluation approach to systematise the process of evaluating potential measures should be developed.
4. Approaches to C&I development are fairly well documented. However approaches and ideas for the development of measures and verifiers are uncommon. A set of general guidelines for the development of measures would assist MFs in their work.
5. The development of measures requires knowledge of the C&I process and indicators, but also of technical monitoring to ensure the optimum approach to indicator monitoring. MF C&I teams can cooperate with measurement specialists by first defining the indicator, indicator linkages, objectives for monitoring, and important indicator components to monitor. Specialists can then help to select and evaluate the best way to monitor indicators; and identify accurate and reliable measurement procedures, key sources of data and appropriate types of analysis.
6. Measures should be described so they answer questions such as *Why, Who, What, How, Where, and When*. Other questions include: *How do you know if the measure is performing poorly?* and *What will you do with the results?*
7. MFs should develop an action plan including targets, development timelines, review, pre-testing and measure revision. A timeframe for development of measures in RMFP countries was agreed upon.

By Isabelita Austria, Suraphong Chaweepak, Liu Dedi, Win Myint, Pamela Wright (USDA), Ravi Hegde and Dianne Gee

Collaborative Management of Wild Bamboo in Ngao MF

Hai Mae Hin Forest is located in Ban Phrao Hua Tung, Pong Tao Sub-district of Ngao MF, Lampang. The forest is a natural bamboo forest developed from degraded mixed deciduous forest once dominated by *Lagerstroemia sp.* and teak. Natural regeneration of trees in the area was unsuccessful due to dense bamboo cover on the forest floor and bamboo is now dominant. The forest serves as a watershed area for two main streams - Huai Mae Hin and Huai Pong Puea - which provide the water supply for local communities.

According to a recent pre-survey, the forest contains 4 important bamboo species, Pai Sang Nuan (*Dendrocalamus membranaceus Munro*), Pai Hok (*Dendrocalamus sp.*), Pai Bong (*Bambusa nutans Wall.*) and Pai Rai (*Gigantochloa albociliata (Munro) Kurz*). Of these species, Pai Sang Nuan is most dominant and the most important for the livelihoods of local people. The species is an important source of material for local bamboo product industries, such as sticks and charcoal, which are sold both domestically and internationally. Collection of wild bamboo to supply bamboo product factories has become an important source of income for villagers. However, expansion of the bamboo product industries in the past decade has led to over-cutting and subsequent degradation. The effects have included insufficient raw material supply for local subsistence and the bamboo factories, and water shortages during the dry season.

Local communities recognised the effects of forest degradation and called for sustainable management of forest resources in the area. In 1998 the village committee of Ban Phrao Hua Tung, led by the village leader (Mr. Boontun Ti into), proposed approx. 1,500 rai (240 ha.) of forest dominated by bamboo to be reserved as the 'Huai Mae Hin Forest.' Following establishment of the reserve, communal regulations were declared to regulate management of the area, including a ban on bamboo cutting, which has remained in force since 1998. Occasional forest patrols have been conducted by villagers. Violations of regulations are punished by a fine of 500-1,000 Baht/case, although such violations are rare. As a result, the forest condition has gradually improved through natural rehabilitation. Once the forest has fully recovered, bamboo harvesting will be resumed under the regulation of the village committee.

With support from the RMFP, Ngao MF launched a program of collaborative management of wild bamboo to support the village's initiative and encourage development of a sustainable management system for wild bamboo.

In early May 2002, Ngao MF organized a meeting in cooperation

Ngao MF Partners Visit Nan and Phrae Provinces

On 19-20 March 2002, 21 Ngao MF partners visited successful NGOs in Nan and Phrae Provinces, including the following:

Hak Muang Nan Foundation: The Foundation was formed by monk, villager, youth and NGO groups. Each group developed itself before forming the larger group in its present form.

The Foundation's objectives include to serving the Nan people, and promoting their livelihoods; conserving the environment;



Removing high bamboo stumps from previous cutting

tion with Pong Tao Sub-district Administrative Organization (SAO) to discuss the roles and responsibilities of persons involved in the management and utilization of the bamboo forest. Four main groups were identified: Pong Tao SAO; committees; villagers of Ban Phrao Hua Tung; and the RFD including Ngao MF. The committees and villagers of Ban Phrao Hua Tung will play a leading role in the management of the forest. The committees will be in charge of enforcing laws and regulations, forest patrols, statistical records of resource flows and promotion of conservation awareness. The villagers will share responsibility for maintenance of forest posts and signs, fire protection, enrichment planting, improved cutting and other activities to maintain the good condition of the forest. The Pong Tao SAO will provide administrative support to the Huai Mae Hin Forest organization. The RFD (Ngao MF) will provide technical support for the sustainable management of the forest, including monitoring the effects and trends in forest change over time.

Some important follow-up activities were taken on May 25, 2002, including erection of posts and signs within Huai Mae Hin Forest, declaring its boundaries and prohibited activities. High bamboo stumps left from previous cutting were removed to encourage development of new shoots. Better techniques of bamboo harvesting were introduced. Enrichment planting with economic tree species was carried out to meet future demand for timber. The success of the project will demonstrate a better management system, that includes local participation, for wild bamboo to nearby communities.

By Phusin Ketanond and Jira Jintanugool, RFD

promoting learning processes that bring about sustainable development by participation of the communities; and striving for public welfare in cooperation with other organisations.

The Foundation has a network of 293 organisations, including groups/networks concerned with community forestry, aquatic animal conservation, sustainable agriculture, savings (business group), monks, youth, and public participation.

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Utilization and Cultivation of Paper Mulberry in Ngao MF

Local people in Ngao MF have used paper mulberry (*Brousonetia papyrifera*) bark to make traditional paper for a long time. Increasing demand for mulberry paper has resulted in an insufficient supply of raw material. The mulberry paper factory in Ngao currently has to import dry bark from other provinces and neighboring countries.

At present, there are no paper mulberry plantations in Thailand. Paper mulberry can grow well along streams or in moist places, and there are many methods to propagate paper mulberry, including by seeds, cuttings, stolons, tissue culture, etc.

It is proposed to encourage the planting of paper mulberry trees in the MF area to create income for local people. This will involve a study on the distribution, natural regeneration, utilization and cultivation of paper mulberry in Ngao MF, and extension planting.

We are confident that we can conserve the paper mulberry for

sustainable utilization if local people become involved in this activity.

By Suraphong Chawapeek



Decorating paper made from the mulberry tree

Ulot MF Documents “Best Practices”

Ulot MF deployed 2 teams to document livelihood activities considered as *best practice*. Each team consisted of 5 members representing the national core group, field office and *almaciga* tappers/rattan splitters.

Selection of *best practices* was based on the following criteria:

- has been practiced for a long time;
- assessed to have less negative environmental impacts;
- contributes to economic well-being of the community;
- widely practised in the community; and
- contributes to SFM.

Based on the above criteria, 2 practices were identified – resin tapping and split rattan production. *Almaciga* (*Agathis dammara* (Lambert) Resh.) resin - or Manila copal - is an exudate used in the manufacture of turpentine, varnish, paint and as a base for perfume, and has been a consistent dollar earner. Split rattan is used as wrapping cord, tying material for rafting purposes, and for products such as baskets, mats, chairs, furniture binding. Like *almaciga* resin, it has found its way into foreign markets.

Prior to deployment of the teams into the field, a one-day orientation meeting was conducted to brief documenters on the documentation process; information to be gathered and the docu-

mentation techniques/strategies to be adopted. The teams agreed to gather the following information: historical background; methods and tools; economic benefits; marketing considerations; ecological implications/contribution to SFM; and laws and restrictions. The results of these exercises are reported below.

By Lina Manalaysay and Rosalie Imperial.



Documentation teams discuss procedures for the activity

Almaciga Resin Tapping in Ulot MF

Almaciga resin tapping has been identified as one of the livelihood activities for Ulot MF, and is considered to represent best practice as determined by the above criteria. Tapping *almaciga* trees for resin production is an environmentally and ecologically benign practice. Aside from the use of indigenous and locally available tools and materials for tapping and collecting resin, it prevents the cutting of *almaciga* trees for wood production.

Resins from Palawan are said to be of a better quality since it is

quick drying and easier to handle during processing, whilst resins from Samar are sticky and have a higher water content. The difference in resin quality lies in its solubility to ethyl alcohol. Resins from Palawan have high solubility in ethyl alcohol and have almost 100% recovery rate, whilst resins from Samar have only a 70% recovery rate when dissolved in ethanol. The Forest Products Research and Development Institute (FRDI) has developed, with financial support from ITTO, refining equipment that will improve the quality of resin. The Ulot MF Project should

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negotiate with the FPRDI for the possible awarding of the equipment to the Ulot MF Federation.

The team to document *almaciga* resin tapping visited Samar from 23 January to 1 February, 2002, covering 4 barangays in the municipalities of Paranas, Hinabangan and Taft. The team also visited Palawan in February 2002. This team was composed of Mr. Abraham Abalos (President of the PO BOSIS); Forester Zenaida Baisa (CENRO Catbalogan); For. Leo Pocular (Ulot WMFP Focal Person); Ms. Rosalie Imperial (CBFM-DENR, Central Office) and Ms. Maita Raina G Sucgang.

Documentation involved interviews with three license holders, tappers within the concession area and tappers from the community-based forest management project. The team also conducted field observations in one concession area and visited a resin storage warehouse.

The horizontal cut is commonly practised in Samar and Palawan. Tappers in Palawan claim the inverted V-cut is the most convenient and practicable cut, facilitates the gathering of resin, and produces more and better quality resin.

Tappers identified the following limitations of *almaciga* resin tapping as a livelihood activity:

- *Low price of almaciga resin*
Based on cost return analysis, tappers as well as concession holders obtain an almost break-even income with an ROI of 0.29 and ROI of 0.10 respectively. Given the difficulty of hauling and transporting resin from the tapping area to the station or nearby road, tappers are under-compensated for their labor. Likewise, tappers cannot dictate the price of resin, and depend on prices dictated by buyers or license holders. Conversely, license holders incur a high production cost, yet earn only P0.10 for every peso invested.
- *Attack by termites*
Almaciga trees are prone to attack by termites, which is the main cause of death of *almaciga* trees.

Comparison of practices in Samar and Palawan

No major differences were observed in tapping practices at each site. Farmers in both Samar and Palawan selected trees with trunks approx. 4 arms-width in diameter to ensure the tree was mature enough to produce sufficient resin. Tapping procedures were also similar. Tapping begins approx. 8 inches from the tree's roots in order to provide more space for the resin to flow. The number of cuts per tree depends on the diameter of the trunk; larger trunks are cut more. Farmers are careful to provide sufficient space per cut so that no two cuts meet within a trunk.

Differences were noted in the *harvesting* and *marketing* practices of the two sites. Ideally, resin should be harvested at least 3 months after tapping to produce a better quality (whiter) and quantity of resin. However, because of financial need some farmers harvest the resin early. Others have developed a credit line with middlemen which means that instead of harvesting resin early, the farmers borrow from the middleman, repaying the loan after harvest. This system is practised by most farmers in Palawan.



Palawan farmer tapping an *almaciga* tree

In Palawan, the middlemen have identified and loosely organized their *almaciga* resin tappers and a relationship exists that is absent between middlemen and farmers in Samar. Because they are loosely organized, the middlemen are able to develop strategies to make harvesting, collecting and transporting of resin easier. For example, at the Iwahig site, there is an identified place where farmers can store resin, which are sorted according to quality.

A major problem for tappers in both Ulot MF and Palawan is their inability to dictate the price of their product. They are dependent on the prices dictated by the middlemen. Usually this ranges from only PhP5-10/kg depending on quality. On average, a farmer earns a minimum of only PhP3,000/month from the sale of resin, which is very small, especially if one has a family of even just four members, to support. This is why farmers remain dependent on middlemen for advance loans.

Another problem arises when the middlemen declare a 'stop buying' policy, which means that, for a certain period, they will not buy resin from the tappers. Hence, the tappers receive no income.

Following documentation of 'best practices' in *almaciga* resin tapping in Samar and Palawan, the authors recommend that farmers in Ulot MF be given training for a more scientific approach to tapping the *almaciga* tree. This will ensure the sustainability of *almaciga* resin tapping and production.

There is also a need to examine the trading practices of tappers, middlemen and manufacturers who process the resin into finished products because of the large disparity between the buying price of the middlemen and the selling price of finished products. There is also a need to compare soil composition in Samar and Palawan to verify whether these factors contribute to differences in quality of the resin gathered in the two areas.

Combined contributions from Maita Reina G Sucgang, Lina Manalaysay and Rosalie Imperial.

Split Rattan Production in Ulot MF

Rattan is one of the most valuable NTFPs in the Philippines, and is exported as furniture and handicrafts. It is renowned for its beauty, cheapness, versatility, strength, and malleability. The fruit and shoot of most rattan species are edible. The sap of the fruits of *Daemonops spp.* forms 'dragon's blood', a deep maroon resin used as dye and medicine.

Rattan, or rotan in Malaysia, is the collective name for the climbing members of a large group of palms with scaly fruits. It is thought that the word rotan or rattan comes from the word raut (to pare) and is connected with cleaning and splitting.

The practice of split rattan production in Ulot MF started as early as 1942 by Mr. Lorenzo Moscosa. Farmers now practising rattan production have learned techniques from their grandparents whose main livelihood was rattan gathering and splitting.

Rattan species in the MF include: *Bagacay, Malubagacay, Nukot, Maymukot, Tagsauan, Tipuno, Samulid, Parasan, Lukuan, Uwaybabae, Sungong pisik, Murunan, Alat, Bangkaw* and *Ilhian*. Owing to their pliability and convenience to split, *Samulid, Tipuno, Lukuan* and *Maymukot* are preferred by rattan splitters and buyers. However, *Ilhian* is generally unwanted because it is brittle, difficult to split and rejected in the market.

The split rattan team conducted its documentation from 23 January to 1 February, 2002, covering 5 barangays within the municipalities of Paranas, Taft and Hinabangan, Samar. Documentation included interviews, in the local dialect (*Waray*), with 55 split rattan producers (PO and non-PO members), and one rattan concessionaire/permittee, and field observation. The majority of respondents had rattan gathering and splitting as their main source of livelihood.

Methods for Split Rattan Production

Tools and materials: Sharp knife or bolo (*sundang*), small stool and wooden horizontal frame or clothes line.

1. *Rattan Pole Preparation:* After gathering, stack canes in a vertical position to remove the sap. Using *sundang* (bolo/knife), scrape a thin layer of the outer rind off the pole to remove blemishes/defects and nodes. This process also reduces the drying period. Cut the canes into poles of 5-10 feet depending on species, size of rattan and the intended/ use/ order of the buyer.
2. *Splitting:* Using *sundang* or knife, pare off 1-2mm of the outer skin of the pole. The width of the split depends on the intended use/order and must be uniform throughout the length. For weaving (pandahait), 3mm wide (pino) is produced; for baskets and a clothes box, *tringka* or 3/8" to 7/8" wide is produced. The width must be uniform throughout the length of the pole, which requires experience to avoid wastage. It is preferable to undertake splitting while the pole is fresh and not too dry, making it brittle and difficult to split.
3. *Sorting:* Gather the splits and sort according to width (*pino* or *tringka*). Only those with uniform width throughout the length are bundled. Each bundle contains 100 pieces of splits.
4. *Drying:* Air-dry the splits by hanging the bundle sideways or in a horizontal wooden frame, to prevent staining. This is the



Practice of rattan splitting

most common and cheapest way of drying splits, though it is longer, taking 3-4 days during sunny days and up to 7 days in shaded areas during the rainy season. No chemical treatment is applied. Sometimes, the splitters deliver the bundles to the buyers who undertake the drying themselves.

5. *Grading:* Grading is usually done by buyers, who determine price based on appearance. In 1989, the Bureau of Product Standards (Department of Trade and Industry) issued standard specifications for rattan poles and their by-products.

Observations/recommendations

- An experienced splitter can produce 300-500 splits/day; beginners produce 100-200 pieces/day. This translates to a daily income of Php30 to Php150. Splitters have indicated their interest to undergo training on the processing of rattan cores which are currently considered waste.
- Those engaged in split rattan production are mostly marginal farmers who need immediate cash from their products to meet their basic needs. Therefore, they often sell their split rattan to local buyers at prices as low as Php15-20/100 pieces. A better price of Php30-35/100 pieces, regardless of width, is obtained on local market days (*tabo*) or in nearby *barangays* (usually twice a week) Members of local organizations such as TAP (*Tenani Action for Progress*) and BOSIS (*Basaranan nga Organisasyon han San Isidro*) give priority in the sale of their split rattan at the same price to their federation, KAP-PAS, Inc. (*Katatapuran nga Pederasyon han Parag-uma ha Samar, Inc.*). The Federation started rattan furniture making in 2001.
- The Ulot MF Federation should handle the sale of the products for their members to increase bargaining power. Non-members should be encouraged to sell their products to the Federation and be members thereof in order to benefit from the MF project, including the privilege to harvest.
- Licensed rattan concessionaires buy their supply from the rattan splitters, via *kapatas* (foremen), for shipment to Cebu or Manila.
- Sources of rattan poles are located increasingly further away, reducing the daily output of gatherers and therefore incomes. Although the MF project has provided financial and technical support for rattan plantation development, farmers them-

Continued on page 11

Ulot MF Training on Resin Tapping

56 members of the Federation of the Ulot MF Stakeholders participated in the training on proper resin tapping at the MF Information Center, 29 - 30 May and 31 May - 1 June, 2002.

The two-day training course involved lectures, discussions, demonstrations and hands-on exercises conducted at the *Almaciga* tapping area in San Rafael, Taft, Eastern Samar. A scientific expert on resin tapping of *Almaciga* and *Pili* trees, and a chemist from the Philippine Forest Products Research and Development Institute (FPRDI) acted as resource persons. Members of the DENR Technical Assistance Teams facilitated the tapping activities. Staff of the Samar Island Biodiversity Project (SIBP) and DENR assisted in the overall management of the training.

General information was provided on *Almaciga* resin (Manila Copal), *Canarium* resin (Manila Elemi) and *Apitong* resin. Resins are produced in specialized cells within the leaves and found in resin ducts located in the branches, trunk and down to the roots. Manila Elemi commands a higher price than Manila Copal because it is used to manufacture essential oils and perfumes. The Philippine Law bans the collection of *Apitong* resin due to injuries caused to the sapwood when resins are collected.

Bark structure and stem, emphasizing the differences between bark, cambium, and wood, and the function of the xylem and phloem cells in the cambium layer, were discussed. The cambium should not be injured during tapping as this will delay healing of the bark and may lead to the eventual death of the tree. Diagrams were shown of *almaciga* stems with damaged and undamaged cambiums.

The factors affecting resin production, including vigor of the tree (size of crown and thickness of bark), location (200 - 2000 masl), genetic factors (inherent characteristics) and tapping technique were also discussed. The traditional way of tapping *almaciga* (deep tapping, over tapping and frequent rechipping) and pest

and disease of *almaciga* (men and termites) were discussed. Humans, due to an inappropriate system of tapping, are considered the number one enemy of *almaciga*.

The highlight of the training was a detailed discussion on the scientific method of tapping *almaciga* resin. This method is the result of experimentation and research conducted by FPRDI, and involves ten steps. The use of a horizontal cut as it allows the proper opening of resin ducts. The application of 50% sulfuric acid or 25% ethanol into the cut maintains the opening of the resin ducts, increasing the volume of resin collected by up to 25%. Participants were cautioned to apply the sulfuric acid swiftly and carefully in order to prevent damage (burning) to the bark. 50% sulfuric acid is recommended because it was found to provide the best yield of resin.

The standard grades of Manila Copal; the factors affecting resin quality (cleanliness and solubility of resin to solvent or ethanol) were also covered. The crude technique of cleaning resin was also demonstrated. Resin from Palawan is of a better quality because of its 95-100% solubility to ethanol while resin from Samar is gummy, with only a 70% solubility to ethanol.

The proposed project on refining *almaciga* resin through the use of a machine developed by FPRDI was also discussed. FPRDI is in the process of identifying a suitable site to establish the project, and is considering the MF Federation as a site for the resin refinery project. The ITTO will fund the project.

The knowledge and skills gained during the training course were highlighted when participants performed the tapping procedure. The training was a collaborative effort between Ulot MF, SIBP and counterparts from PO participants. PHABSAI provided catering services during the training.

By Rosalie Imperial

Continued from page 10 - Split Rattan Production in Ulot MF selves should also undertake such initiatives.

- The process followed is traditional. No significant changes to splitting procedures or techniques have been introduced. Ulot MF, in coordination with SIBP and FPRDI has conducted training on rattan processing, and provided necessary tools and equipment.
- Rattan core which are left after splitting are wasted. No further processing is undertaken to maximize utilization of the resource. Nevertheless, the above training has equipped splitters to process the core into beneficial uses.
- The practice is environmentally friendly and does not use chemicals or involve machinery. The practice provides an al-

ternative source of livelihood for farmers and lessens pressure on forest trees for timber/wood as it is diverted to rattan gathering and thus contributes to forest conservation.

- DENR Administrative Order No. 4, Series of 1989, or the Revised Regulations Governing Rattan, embodies the government policies on rattan.
- A large part of the community is dependent on *almaciga* resin collection and split rattan production. These practices, however, need further improvement to sustain the needs of the community. This can be achieved through the concerted and continuing efforts of the stakeholders.

By Lina Manalaysay, Rosalie Imperial.

Continued from page 7- Ngao MF Partners Visit Nan and Phrae Provinces

Among the observations from the visit were:

- the Nan and Phrae visits provided useful lessons on how people can protect the forests.
- factors for their success included: a good leader who is respected by the villagers, to guide and inspire the undertaking of good work; focusing on activities that can yield economic benefits for the people, and generate income; and using (in Nan) a problem-solving approach on the basis of local knowl-

edge and local resources.

- Ngao MF is in the early stages of development and more time is required to develop a leader who can guide the group.
- Ngao MF cannot copy the Nan model entirely but can try to use the aspects relevant to Ngao.

By Sumai Maiman and Suraphong Chawepak, RFD

Project News

Terminal Evaluation of RMFP

The terminal evaluation of the Regional Model Forest Project (GCP/RAS/177/JPN) was 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 team visited the model forests being established with RMFP support in China, Philippines, Thailand and Myanmar, and met with various MF stakeholders. The mission debriefed representatives of the four Project countries, donor (Forestry Agency of Japan) and executing (FAO) agencies; and one of the collaborating agencies (USDA Forest Service) on their findings at the FAO RAP office in Bangkok on 10 May 2002. A summary of their findings will be published in this newsletter in due course.

Regional Workshop on Forest Policy

A *Regional Workshop on Forestry and Related Policies, Legislation and Practices and their Impacts on Sustainable Forest Management, and on the Model Forest Approach*, will be organised by the RMFP, in collaboration with the Philippine Forest Management Bureau, Dept. of Environment and Natural Resources and the International Model Forest Network Secretariat (IMFNS), from 29 July to 02 August 2002, in Tacloban City, Philippines. The results of forest policy reviews carried out in the four Project countries under the RMFP, and related experiences elsewhere, will be discussed at the workshop.

The report of the terminal evaluation mission of the RMFP (see above) will be discussed on the last day of the workshop. *For more information, contact the CTA, RMFP at the address below.*

Extension of RMFP

The RMFP, which was scheduled to end on 15 August 2002, has been extended by six months to 15 February 2003. This extension will facilitate completion of the RMFP-supported activities approved for implementation in 2002 in the four Project countries, documentation and dissemination of MF activities and processes to-date, securing additional resources for MF activities in 2002, and identification and application for funding for follow-up MF activities after the termination of the RMFP in February 2003.

4th & Final RMFP PSC Meeting & Workshop

In view of the 6-month extension of the RMFP, the 4th & Final RMFP PSC Meeting & Workshop will be postponed to late-October/early-November 2002. The theme for the workshop will be "*What Next?*" (i.e. for the continued development of the Lin'an, Paukkhaung, Ulot and Ngao MFs), and the venue will be Tacloban City, Philippines, as decided by the 3rd PSC meeting in Yangon on 30 November 2001. The PSC meeting and RMFP workshop will be organised in collaboration with the Forest Management Bureau, Dept. of Environment and Natural Resources, Philippines. *For more information, contact the CTA, RMFP at the address below.*

Thank you Dianne

Dianne's four-month stint with us ends on 31 July 2002. On behalf of the RMFP, the four Project countries and all the MF partners, we would like to say a very big THANK YOU, HSIEH HSIEH, KYAE ZOO TIN PA TE, KHOP KHUN KHRAP and MARAMING SALAMAT to Dianne for her very hard work, dedication and fellowship. We hope she has benefited at least half as much as we have from our working together, and wish her all the very best in her future endeavours. We would also like to thank the Australian Youth Ambassadors for Development (AYAD) Programme for providing us with an excellent Youth Ambassador.

. . . and thank you from Dianne!

It is hard to believe my four months with the Project is now at an end and, despite my escalating workload (!), I am genuinely sorry to be leaving. It has been a valuable experience. If I could make only one comment it is how impressed I have been by the dedication and genuine commitment shown by all those involved - the NPCs, MF country staff, my colleagues at the FAO and of course, the communities themselves. I am sure the Project will continue to go from strength to strength, and I wish you all good luck in this. Thank you to everyone for your assistance, and for making the regional workshops such enjoyable and informative experiences. Lastly, thank you to my colleagues at the FAO - especially Mr Tang, Ravi, Sittichai and Suthep - for making me feel welcome and providing me with such a wonderful opportunity.

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