



### MODEL FOREST LEVEL C & I WORKSHOP

A Workshop on Field/Model Forest Level Criteria and Indicators for Sustainable Forest Management was held from 10-15 June 2001 in Lin'an, Zhejiang Province, China. The workshop was organised and sponsored by the Regional Model Forest Project (RMFP, GCP/RAS/177/JPN) in collaboration with the Chinese Academy of Forestry (CAF), Lin'an Forestry Bureau (LFB), Zhejiang Forestry College (ZFC), USDA Forest Service and the International Model Forest Network Secretariat (IMFNS).

About 30 representatives from the four RMFP countries (China, Myanmar, Philippines and Thailand), and resource persons from Canada, China, Forestry Agency of Japan, USDA Forest Service, Regional Community Forestry Training Center (RECOFTC), CIFOR-Nepal, and Forestry Department of Peninsular Malaysia participated in the workshop. Mr. Jiang Chunqian of CAF was elected as the chairperson of the workshop.

Welcoming addresses were made by Mr. Tang Hon Tat, Chief Technical Advisor RMFP, Mr. Song Chuang, Vice President CAF, Mr. Wang Lianzhi of the State Forestry Administration, Mr. Xing Zuirong of the Forestry Department of Zhejiang Province, and Mr. Weng Dongcao, Mayor of Lin'an City who also opened the workshop.

The aim of the workshop was to share experiences in the development of criteria and indicators at the field level, and provide guidance and assistance for the development of criteria and indicators for the model forest projects in Lin'an (China), Paukhaung (Myanmar), Ulot Watershed (Philippines) and Ngao (Thailand). The main outputs of the workshop were a set of guidelines for C&I development and provisional 12-month work plans for the four model forests.

The following papers were presented.

- Introductory address on *Field level indicators of SFM in model forests – opportunities and challenges*, by Mr. Martin von Mirbach, IMFNS Consultant

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Participants at Model Forest Level C&I Workshop, Linan, China

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#### QUOTE

*"We shall never have any more time. We have, and we always had, all the time there is."*

(Arnold Bennett  
Novelist, 1867 - 1931)

## Ulot MF Stakeholders Identify Alternative Livelihood Activities

Consultative assemblies were recently held in two (2) barangays within the Ulot Watershed Model Forest Project area, mainly to identify feasible livelihood activities for the stakeholders of the Ulot MF Project in these barangays.

On May 25, 2001, the first consultative assembly was held at Brgy. Lokilokon, Paranas, Samar. This was attended by 34 participants representing the Lokilokon Union for Development Credit Cooperative Organization (LUDECCO) and the local government unit of nearby Brgy. Tabucan. A workshop was conducted to identify the resources available in the area and which among these could be viable for a livelihood project. The participants unanimously agreed that the abundance of coconut trees and its varied by-products would be the most ideal source of alternative livelihood. Other resources available in the area which were identified include *bariw* (*Pandanus copelandii* merr), rattan (*Calamus merrillii*), and *kawayan* or bamboo (*Bambusa vulgaris*). *Bariw* is a good source for making mats, bags and fans while the rattan and bamboo are used for furniture and souvenirs. At present, bamboo is used for *tahong* (shells) culture.

In order to firm up the plan for the livelihood project, committees were tasked to conduct further research on aspects such as marketing, technical, financial and social acceptability, and resource inventory. Results of their research will be used to prepare a more detailed action plan for the livelihood activities.

A second consultative assembly was held the next day at Brgy. Casandig in Paranas. Participants to this assembly included stakeholders from the barangays of Casandig, Lawaan, Concepcion and Cantaba. Unlike their counterparts at barangay Lokilokon, these stakeholders identified the *bariw* as the raw material for their alternative livelihood activity. The stakeholders agreed that mat weaving and other similar activities will be undertaken by the women, while men will be tasked to plant bamboo for future use.

The consultative assemblies were held in coordination with the DENR Regional office, and staff from the Central Office led by Assistant Director of the Forest Management Bureau, Arleigh Adorable. These were conducted in consonance with the bottoms-up principle of the Model Forest Project



Rattan in Ulot MF

## Almaciga Resin Tapping - a “Best Practice” in the Ulot MF

*Almaciga* resin tapping was recently identified as a “best practice” in the Ulot Watershed Model Forest. The Ulot Watershed MF Project Management Team headed by Forester M. Poculan conducted an initial documentation of the said activity through the conduct of interviews with *almaciga* resin tappers and buyers.

The interviews revealed that the resin is being tapped by more or less 200 *almaciga* tappers from ten barangays within the Ulot model forest. These tappers sell the resin to middlemen or *almaciga* resin concessionaires at a price ranging from P5.00 to P7.50 per kilo. These prices will increase further if the resin is upgraded and not adulterated or mixed with soil and sand. The four (4) concessionaires in the Ulot Model Forest sell the resin to Cebu City and Manila via Catbalogan or Tacloban City.

Mr. Mario Moscoso, an *almaciga* tapper revealed that he is maintaining 100 *almaciga* trees for tapping. These trees yield about 300 kilos of resin every two months. Mr. Tecson, a buyer concessionaire said that he used to deliver 20,000 to 40,000 kilos of resin every month to Cebu City. Mr. Pablo, another farmer tapper said that tapping should be made on *almaciga* trees with diameter of 50-60 cm and above.

*Almaciga* resin is an extract from the *Almaciga* tree (*Agathis damma* (Lambert Rech) or *Agathis philippinensis*), a conifer reaching up to 60 meters in height and that grows at high elevation.

It is an important forest resource and a top dollar earner for the country. *Almaciga* resin is in great demand in foreign markets for its wide range of commercial uses ranging from the production of varnish, turpentine, paint, perfume base, rugby, plywood glue and insecticide.

The report of Forester Poculan disclosed that because of its economic importance, *almaciga* trees should be protected. Proper tapping procedures should be adopted not only to save the tree from attack by termites, but also to improve the yield and quality of resin to increase the income to those engaged in the industry.

One of the objectives of the Ulot Watershed MF is to provide livelihood alternatives to the people living within the wa-

## Activities in Paukkhaung MF

Following are some activities being undertaken in the Paukkhaung Model Forest area in Myanmar.

### *Bamboo Cultivation Trial*

More than 80% of the total population living in the Paukkhaung MF Project area are farmers and they are dependent on forests for their livelihood. Promotion of income generation activities is a crucial aspect of the poverty alleviation process, and to reduce undue burden upon the forests. Bamboo plays a crucial role in the social and economic aspects of the rural communities in the Project area. However, the natural bamboo resource may not be enough to fulfill the increasing demands for bamboo and bamboo products in the long run.

Training and demonstration activities can help in educating the farmers in bamboo related enterprises. During 2001, training in bamboo processing and bamboo cultivation are among the activities to be implemented. A trial bamboo plantation has been established with three bamboo species, namely *Wanet-wa* (*Dendrocalamus longispatus*), *Wabo-wa* (*Dendrocalamus bambusoides*) and *Kayin-wa* (*Melocanna bambusoides*), on a 2 ha plot near Nyaungwin village. The purpose of the demonstration plot is to show the rural communities that bamboo can be cultivated, and properly nurtured bamboo plantations can fully meet their needs for bamboo without disturbing the natural forests.

### *15-acre Village Agroforestry Demonstration Plot*

The primary objective of this activity is to demonstrate the potential of agro-forestry in enhancing income generation and productivity of the villages. Four villagers from Nyaungwin village who attended the agro-forestry training workshop conducted in January 2001 are now involved in developing the agro-forestry demonstration plot. The trainees will have the opportunity to apply what they learnt at the workshop. The demonstration will serve as an example for the other trainees and villagers to follow.

### *Rehabilitation and Reforestation in Taungzinwa Protected Public Forest*

*Taungzinwa*, a degraded area in the Model Forest Project area, will be rehabilitated and reforested with commercially important tree species and multipurpose tree species to



Bamboo trial planting (2 ha)

upgrade the area and restore its soil fertility. *Taungzinwa*, which has been proposed as a Protected Public Forest, was once deprived of forest values such as aesthetic value, soil and water conservation, favorable microclimate, socioeconomic benefits, and other ecological functions. These values will be restored in the area within the framework of the model forest project. The initiative has been started on an area of 42.61 ha and the area will be protected from encroachment.

Enrichment planting and gap planting are the principal silvicultural techniques to be applied in restoring the degraded area, and appropriate species such as teak, *pyinkado*, *padauk*, *thitphyu*, *thitsein*, *sha*, *pyinma* etc. will be planted.

The following operations will be carried out,

- (a) boundary demarcation, setting up boundary pillars and making blazes for resource security;
- (b) putting up signboards and posters for public notification;
- (c) tree planting;
- (d) fire protection; and
- (e) trial planting of some tree species on 50 acres (20 ha) to investigate their contributions to soil conservation and control erosion.

## Facilitation Skills for Community Forestry Training Course

The RMFP and the IMFNS sponsored seven participants from China (2), Myanmar (2), Philippines (2) and Thailand (1) to the training course on *Facilitation skills for Community Forestry* organized by RECOFTC from 21 May - 01 June 2001, in Bangkok, Thailand.

The following are the impressions of some of these participants of the training course.

*Mr. Sumai Maiman, Forest Technician, Lampang Regional Forest Office, Ngao Model Forest Project area wrote:*

The course curriculum provided a detailed description of participation in community forestry development, facilitation

of group process, role of facilitator and meetings in community forestry, facilitating participatory decision making etc, and provided for exchange of ideas amongst a diverse group of participants from different countries. A variety of activities, namely brain-storming, drama, role playing, group meetings and feedback, were covered in the course.

Facilitation is very important in a MF project which involves a variety of stakeholders, and their partnership is to be founded on mutual understanding and trust. In this respect, the course was very useful. It is recommended that all the participants who successfully completed the course should not only apply what they learnt from the course, but also keep exchanging any

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# Continuous Monitoring System for SFM Tested in Ngao MF

A 3-year, ITTO (International Tropical Timber Organisation) supported project (PD 2/99 Rev. 2 (F)) is being carried out in the Ngao Model Forest to conduct preparatory studies, including an operational pilot, for installing a national forest resources monitoring system (THAIFORM). The change and trend (monitoring) data from THAIFORM would contribute to the reporting of Criteria and Indicators (C&I) of sustainable forest management at the national level.

## Methodology

The proposed THAIFORM system that is being pilot tested in the Ngao Model Forest consists of three phases:

1. Establish a fixed uniform 1.5 km x 1.5 km grid over the entire Model Forest, as a basis for sampling and monitoring. The grid intersections form the *monitoring points* for establishing the baseline data and detecting changes over time. Each monitoring point represents 225 ha.
2. Use a GIS system to describe the past and present conditions, e.g. land use type at all the monitoring points.
3. Install permanent plots at all the monitoring points to provide information on current status and changes over time in vegetation biodiversity, tree growing stock, coarse woody debris (CWD), soil, impact of human activities and natural causes on site and vegetation, and wildlife habitat use. A total of 903 plots are to be installed in the pilot project area: 780 plots inside the Model Forest, and an additional 123 plots outside and along the Model Forest boundary. The permanent plots consist of a cluster of fixed-area plots of different radii and line intercepts all anchored at the grid intersection (plot cluster center).

Phases 1 and 2 of the pilot project have been completed, and Phase 3 was initiated in May 2001. To date, approximately 40% of the ground plots have been installed using eight 6-person crews.



Training inventory crew in field procedures

## Next steps

The next steps are to:

1. Complete the Phase 3 ground sampling fieldwork during October 2001 – January 2002.
2. Enter the data into the computer, produce summary monitoring statistics for each grid intersection, and load the summary data into a permanent database.
3. Integrate results from Phases 1, 2 and 3 in a GIS environment. For example, we will produce sample thematic maps for some non-timber forest products (NTFPs) that cannot be easily detected on satellite data or traditional aerial photos, to show their approximate locations.
4. Prepare a work plan for installing the monitoring system over the entire country.

## Relevance to the Model Forest project

The pilot project database and the network of plots themselves when re-measured, will provide measurement data of forest resources at regular intervals that are valid Model Forest-wide. These data can be used for the development and reporting of local Model Forest indicators of sustainable forest management, and for overall strategic planning and policy evaluation. The network of plots could also allow for rapid detection of changes in vegetation cover, especially in forest areas that may be considered at risk.

## For more information please contact:

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Measuring girth of a large *Pterocarpus macrocarpa* tree

# Edible Insects at Ngao Model Forest

By Kobask Wanthonchai  
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Royal Forest Department

## Overview

Insects have been consumed by the human race for a long time because of their availability and high nutritional value. It is estimated that at least 100 species of insects are eaten by people. The cooking method for insects varies from species to species and place to place. Some insects are fried in oil, others roasted directly, some are fermented with whisky, while many species are eaten raw. There are different stages in insect development, and each stage, namely egg, larva, pupa, and adult, has a different method of processing.

Most insect consumption seems to be limited to rural areas at the forest fringes, where it is easy to collect the insects. In Ngao Model Forest (NMF) area, however, it is not only the local people, but also people from downtown, who collect and consume insects. Sometimes, there are people from outside the NMF who come and collect insects, not only for their own consumption, but also for selling in the market.

The extent of insect consumption is rising sharply. Earlier, the insects used to be collected from the wild. It was not necessary to rear them, since consumption was on a small scale. Nowadays, some edible insects are being reared for mass production, and to reduce collection from their natural habitats. But most of the edible insects like giant cricket, cicada, bamboo worm, are still collected from the wild, and only a few species are reared (cricket and some red ants).

## Edible insects at NMF

In NMF area, local people collect and consume insects regularly. They have the local knowledge of where and when to find insects, and the techniques for searching and harvesting insects. They use the insects for household consumption, and the rest is sold in the market or on the roadside.

There are many edible insect species harvested in NMF area, including giant cricket, cicadas, ant, mole cricket, giant water bug, water scavenger beetle, grasshopper, scarab beetles etc. Most of them are harvested in the rainy season (early May to September). The *giant cricket* is usually found during



Adult Giant Crickets

June-August. Its collection is done by digging the gallery formed beneath the soil (one gallery for one individual). They are sold in the market at a price of about one baht per individual. There are many species of *cicadas* eaten (four to five species by estimation). They come out from the soil in late summer (March-April) in the evening. The collection method is to look around tree stems where cicadas live. Many people put sticky glue on the end of a bamboo pole, and then touch the pole to the wing of the cicada and they are caught easily. The market value of cicadas depends on the size (varies from 0.5 baht to 1 baht per individual). The *ants* (new queen ant) usually come out from their nest after the first rain of the year (March-April). The fresh queen and king ants, after developing wings on their body, come out in the evening. Only the fresh queen ants, with bigger abdomen, are good for consumption. The kings, with smaller abdomen, taste bitter. People usually sit at the nest hole and wait for the emergence of the ants. Sometimes, light traps are used, placing a lamp in front of the nest to attract the ants so that they can catch them easily. Ants are sold in the market in small heaps (40-50 individuals/heap), and the price is about 20 baht per heap.

For *red ants*, people usually harvest only the eggs and young nymphs for eating. The ants build their nest on evergreen trees like mango, wood apple etc. The peak season for egg production is around March-April. They are sold in the market for very high prices, about 10-20 baht for one small heap of eggs. The *mole cricket*, *giant water bug* and *water scavenger beetle* always come out during the rainy season. The majority of collectors usually use light traps, using black light fluorescence, and keep enameled bowls of water under the light traps. The light will attract the insects and draw them towards the trap, eventually they fall into the water below. The *mole cricket* and *water scavenger beetle* are also sold in small heaps (30-40 individuals) and priced at 15-20 baht per heap. For *giant water bugs*, the male has a higher value than the female, because the male has good odor while the female does not. The price for males and females in the market is about 2.5 and 1.5 baht per individual respectively.



Nymphs of wasp (*Vespa affinis* Linn.)

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## Conservation Summer Camp at Ngao Model Forest

The Royal Forest Department (RFD) in cooperation with the Tambol Administrative Organization, eight schools in the Ngao Model Forest and the Regional Model Forest Project (RMFP), organized a conservation summer camp for local students from June 29-July 1, 2001. The main purpose of the conservation camp was to provide the students with knowledge and experience in forest appreciation and conservation. The camp was held at the Tham Pha Tai National Park, a protected area within the Ngao Model Forest. Sixty (60) secondary and high school students from eight schools located in Ngao Model Forest participated in the camp.

Camp activities included indoor and outdoor exercises supervised by Mr. Poonsatit Wongsawat, Chief of the National Park. Foresters and conservation specialists gave lectures on forestry, ecosystems and conservation. In addition, two representatives of the Tambol Administrative Council, Mr. Tawee Srihthep and Mr. Chalermchai Soinak, gave talks on the roles of the Tambol Administrative Council in natural resource management and conservation. In the field, the students were accompanied by the park staff to carry out practical exercises including park visitation and nature studies. At night, slide shows concerning forest and wildlife were arranged, in addition to campfire activity.



Participants at Summer Camp

Mr. Tang Hon Tat, CTA of RMFP, and Mr. Jira Jintanugool, NPC of Thailand, visited the camp and gave short talks to the students on the RMFP and the importance of sustainable forest management.

## A Regional Model Forest Network for Latin America and the Caribbean

Since the decision was made late last year to further develop the IMFN on a regional basis, intensive work has been underway involving the IMFN Secretariat (IMFNS), national governments and international agencies to establish the IMFN's first regional network in Latin America and the Caribbean. Following numerous consultations and very productive meetings, in Santiago, Chile (April), and Mexico City, Mexico (June), the work of Regional Model Forest Network (RMFN) proponents has resulted in a number of concrete decisions that will make the regional network a reality. The participants-Argentina, Mexico, Chile, Canada, FAO, UNDP, IICA, and SICA – have agreed to participate and to provide specific resources for the regional secretariat. They have also agreed to a 90-day plan of action (July 1 to September 30). The objective is to finalize documentation for making the regional network a legal entity by October of this year. Importantly, UNDP Chile has offered to house the secretariat of the RMFN in its offices in Santiago.

The background to the network taking this regional approach dates from consultations begun over two years ago with IMFN Task Force members, and includes a number of motivating factors, but two in particular stand out. First, the network has grown very quickly in a short time. From 13 model forests in 3 countries in 1994 (ten of which were in Canada), to 30 sites either established or in development in 12 countries around the world. This growth, while admittedly impressive, has stretched the ability of the Ottawa-based Secretariat to respond effectively to regional and site needs. Consolidating the gains of the network's growth around geographic areas and in areas where political and institutional support for the MF approach is strong therefore seemed a natural step. This certainly included Latin America, where 7 model forests are now operating or in advanced stages of development. In addition, interest is on the rise in the region as Peru and Costa Rica may be considering the development of model forests. As the Santiago meeting participants concluded, this regional network can provide effective support to the region's model forests through:

- Strong regional leadership and governance
- Self-directed and regionally relevant programming
- More responsive programming and support: quicker and well-targeted
- More cost effective: technically, professionally, and financially
- More attractive to donors, collaborators and other supporters
- Providing greater opportunity for regional network ties, collaboration, and know-how exchange.
- An opportunity to amplify the "voices" of sites and countries on the international stage, in areas such as reporting on progress on *inter alia* National Forest Programmes, and the IPF Proposals for Action

The second principal motivating factor for the regional approach has been a desire to ensure that, as the network grows and more countries participate, they are provided with every opportunity to participate in the design, governance, leadership and support of the network both at regional and global levels.

The work to develop the RMFN has been spearheaded by Mr. Juan Carlos Collarte, of Chile, Chair of the IMFN Task Force, together with Mr. Richard Ballhorn, Chair of the Steering Committee which guides the work of the IMFN Secretariat. It is planned that the RMFN for Latin America and the Caribbean will re-convene in a meeting in early October in Buenos Aires.

*From: Fred Johnson and Peter Besseau, IMFNS, Ottawa, Canada*

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# Population Pressure, Poverty and Deforestation - Philippines Case Study

By

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Paper presented at the *Asian Population Network Workshop on Population and Environment: Methods of Analysis* held at Penang, Malaysia, 10-11 April 2000.

*(In view of the relevance of the subject of this paper to the model forest process, excerpts from the paper are reproduced here. A copy of the paper can be obtained from Maria Concepcion J. Cruz at [mcruz3@worldbank.org](mailto:mcruz3@worldbank.org))*

**Abstract:** This paper focuses on one aspect of poverty and population, and one form of environmental degradation: the increasing number of poor rural migrants in search of alternative incomes and livelihood and the conversion of forest lands into unsustainable uses. Because employment opportunities are declining in urban centers of many developing countries, the expectation of pulling migrants into cities has given way to a pattern of rural-to-rural movements into unoccupied forest lands. While most of deforestation can be attributed to commercial logging, the activity by itself does not always lead to a permanent change in land use. It is the occupation of logged-over lands, and its use for agriculture by increasing numbers of rural migrants that, together with logging, has created in many developing countries a pattern of significant forest and biodiversity loss.

Using time series and cross-section information on the Philippines, this paper demonstrates how natural resource management policies, land tenure laws, rapid population increases, and economic policies have contributed to poverty-induced environmental stress. Part II describes deforestation trends. The growth of upland population and rural-to-rural migration is discussed in Part III, indicating the symmetry between destination regions and critical forest habitats. Part IV talks about some of the key factors influencing rural movements. Work done by Cruz, Francisco, and Amacher (1996), using an econometric model linking economic, environmental and demographic factors to migration-induced deforestation, is cited to demonstrate the inter-related effects of economywide and sectoral policies on the environment. Lastly, Part V summarizes the key findings.

## Population pressures

Rapid population growth, lack of access to lowland arable land, inequitable land distribution and landlessness, and worsening poverty create pressures for migration. Although urban migrants still comprise the majority of internal migration in the Philippines, the rate of growth of urban migration has decreased due to growing unemployment in industry and urban services and a general decline in the economy. In contrast, migration towards frontier forest sites which can be opened up for cultivation, has tripled in size since the 1960s. As a result, more than 17.4 million people, one third of total Philippine population, now live in the uplands, of which close to 12 million are farming in forest lands. If left unchecked at its current growth rate of over three percent per year, the upland population will double its current size by 2020.

The Philippines has one of the highest annual population growth rates in the region. Although the rate of growth has decreased in recent years, the population projections still reflect substantial increases in population due to a slower decline in fertility (UN 1991). At an estimated two percent per year increase between 1988 and 2000, another 28 million people may be added to the current population of 63 million before the demographic transition to low birth and death rates occurs

sometime in 2015 and 2020 (Bulatao et al. 1990).

There is a long history of high population growth rates. Between 1950 and 1985, population grew by 2.8 percent per year, and 1985 to 1990, it was still close to 2.5 percent (UN 1990). Considering its land base, the population density increased from about 190 persons per square kilometer during the latter 1980s to more than 210 in 1990 (NSO 1990). It is thus among the most densely populated countries in the world. In addition, because one-half of total land area is classified as forest, large numbers of people are already residing in forests. Further movements into the remaining five percent of land under primary forest are expected as the demand for cultivable land and fuelwood expand with the growing population.

Forest population has increased rapidly from 5.8 million in 1950 to almost 17.5 million by 1990. The annual growth rate, on the average, is close to 3.2 percent per year between 1950 and 1990, and 3.4 percent in the past decade alone (Cruz et al. 1992). If present trends continue, the upland population may increase by approximately one million persons each year in the next decade.

The forest population has grown much more rapidly than the national population because of increasing in-migration from rural areas as well as higher fertility rates. About 38 percent of all inter-regional migrants moved from over-crowded or low productivity agricultural regions to the less densely populated and more fertile irrigated areas throughout the 1960s. It was during the 1970s that urbanward movements intensified while frontierward migration decreased. However, by the 1980s, migrants accounted for 14.5 percent of total upland population.

Forest population densities were relatively low during the early periods of in-migration throughout the 1960s. But with rapid population increases, many upland sites in the 1970s already registered densities of over 300 persons per square kilometer. The average density in lands with less steep slopes is higher, 260 persons per square kilometer, compared to the moderate and steep lands.

## Conclusions

The Philippines case study demonstrates the importance of establishing a long term and cross-sectional data base that provides the linkage between changes in population distribution and incidence of poverty with deforestation patterns. Population growth and migration can be evaluated in terms of economic and social policies within a particular time period and area. The insights gained from the historical descriptions will be valuable in setting up the parameters for more detailed quantitative analysis.

At the same time, because resources are limited, relevant interventions will have to be targeted to specific policy reforms which have the greatest impacts on reducing forest loss. Similarly, better designed programs and activities which address the immediate problems or threats to forests can be linked to population and poverty programs. The econometric model shows, for example, that roads and ill-defined property rights in forests contribute to larger in-migration at almost the

same scale in which logging opens up new areas for would-be migrants.

The evidence from case studies suggests that, at least for the Philippines, community-based programs will be important for the long-term sustainability of resource use. Population sizes are large, and growing rapidly, in many upland sites. Some of the newly opened forest farms are already in steeply sloping lands where soils are fragile, indicating a decline in availability of the more accessible uplands. At the same time, new forms of property management among upland residents, including various forms of common property regimes, have emerged in response to the need to enforce controls over future migrant encroachments. Unless the existing use-rights to the uplands are recognized, especially those belonging to indigenous groups in the remote forests, there will continue to be tensions in access to resources which will have the effect of discouraging adoption of longer term conservation practices. In addition, because degradations, in terms of biomass reduction and habitat fragmentation, are closely linked with activities of large numbers of people, solutions will have to come from policies which also deal with delivery of family planning, health, and social services as well as poverty alleviation programs.

The results of the migration analysis indicate the close interaction between economywide policies and environmental degradation. The linkages are many and complex but surely not intractable. For example, the price of kerosene and the high costs of electric, gas and kerosene-based cooking appliances have encouraged widespread use of charcoal and fuelwood. Agricultural policies that affect rural incomes and employment play important roles in establishing the correct incentives for people to stay while the domestic price of timber and cut wood motivates increased small-scale logging to meet local demand for housing and furniture. These observations support the need to look at both forest sector and economywide policies in designing programs for sustainable forest management as well as the need for innovative inter-ministerial cooperation.

#### *Translate Research Results into Policy-Relevant Options*

This research, which uses an intersectoral approach, contributes to the understanding of the linkages of population, poverty and environment, but it also needs to be translated into policies and activities. Specifically for the Philippines, the key policy implications are that alleviating poverty and reducing pressures from population growth will have tremendous effects on forests and biodiversity resources. As a general, long-term approach, the country is moving in the right direction when it launched its rural development and decentralization programs aimed at increasing rural incomes and employment. However, incentives for motivating industry and infrastructure development in the rural areas still need to be strengthened and followed-through with rational land classification policies.

Secondly, the research results support the government's land redistribution policies. Through land tenure reforms and expanded agricultural credit schemes, the root causes of out-migration can be addressed. To be more effective, the scope and the budgets for carrying out these programs, will have to be expanded to cover twice as many provinces and beneficiaries. There are also numerous advantages in coordinating implementation of these programs with non-governmental organizations (NGOs), the private sector, and other groups of civil society. Because fertility rates cannot be expected to fall unless social services are available to rural women, population programs need to be accorded the same kind of priority as agricultural and economic plans.

Lastly, as shown in the pattern of migration and based upon results of the econometric model, it is clear that on-site and forest sector policies are important, but only when these are combined with population and poverty alleviation schemes. These policies should, at least in the short term, reduce the attractiveness of forests by extending enforceable property rights to current forest occupants and indigenous communities, while at the same time controlling the factors which induce migration into forests.

#### *Continued from page 3 - Facilitation Skills for Community Forestry Training Course*

new ideas and experiences amongst themselves. It is recommended that more people participating in the model forest project be given the opportunity to attend similar courses.

*U Myint Thein Oo and U Ye Lwin, Forest Rangers, Paukhaung Model Project wrote:*

*We have been actively involved in community forestry development activities within the context of the model forest project, and thus expected to learn the approaches and methodology that would be instrumental in the establishment of community forests. We also expected that the facilitation skills learned from the training course would be useful in addressing the issues, and solving the problems often encountered in the field.*

*Due to the language barrier, we had a hard time in pursuing the lectures provided at the training course. Thanks to the facilitators' kind cooperation and assistance, we could do well throughout the course of the training.*

*The training period was rather short for the subjects covered at the training. It might be due to time and financial constraints of the organising agency. We would like to suggest that the period of training be at least 3 to 5 weeks long. The handouts distributed during the training contained only brief accounts of the subjects, and more detailed and elaborated manuals should be provided to the trainees. Plots and role-plays demonstrated during the training were useful and practical.*

*About 10 days after completing the course, we held a meeting with the villagers in the PK model forest area, who were interested in the establishment of community forest. During the meeting, we tested some of the facilitation skills such as listening, questioning and probing. It was found out that the skills we learnt at the training are effective in promoting the interest and willingness of the villagers within a relatively short period of time and promote consensus building among the partners. We are now determined to become skilled foresters through the exercise of facilitation skills as the circumstances permit.*

*In conclusion, we believe that the training provided by the RECOFTC was useful. We very much appreciated the facilitators: Ron, Lydia and Karen for their tireless endeavors and efforts that made the training course a successful one. Moreover, we would like to thank the National Project Counterpart (NPC) from Myanmar and the Chief Technical Advisor of the Regional Model Forest Project (GCP/RAS/177/JPN) for their kind support and efforts without which we would not have been able to attend the training. Thanks are also due to those who organized the Rest Tour.*



*Continued from page 1 - Model Forest Level C&I Workshop*

- *Development of criteria and indicators for SFM in China*, by Dr. Jiang Zeping, CAF
- *Development of criteria and indicators for SFM at forest management unit level – a case study of Toungoo Forest District in Myanmar*, by Associate Professor Kyaw Htun, Forest Department, Myanmar
- *Development and application of criteria and indicators for SFM – Philippine experience*, by Mr. Adriano Nava Jr and Mrs. Isabelita Austria, Department of Environment & Natural Resources, Philippines
- *Thailand's experiences on the development of criteria and indicators for SFM*, by Mr. Jira Jintanugool and Thannarin Na Nakorn, Royal Forest Department, Thailand
- *Developing and using local level indicators of sustainable forest management: experiences from the Canadian Model Forest Network (CMFN)*, by Mr. Martin von Mirbach
- *Developing local unit criteria and indicators – learning from failure, defining success. A management perspective*, by Ms. Phyllis Green, USDA Forest Service
- *Criteria and indicators application in Japan*, by Ms. Makiko Uemoto, Forestry Agency of Japan
- *Development and application of criteria and indicators for sustainable forest management in Malaysia*, by Mr. Chin Yue Mun, Forestry Department, Peninsular Malaysia
- *Developing and filtering village level criteria and indicators in Yunnan, South West China*, by Ms. Karen Edwards, RECOFTC
- *Criteria and indicators-based sustainable forest management – a field experience in Nepal*, by Mr. Mani Ram Banjade, CIFOR field researcher

Among the observations made by the workshop were:

- There are many possible approaches to developing C&I at the model forest level and no single “correct” way.
- There are considerable differences in the forest resource, management and use situations in the four MF Project countries.
- All four MF Project countries have developed (but not necessarily adopted) national level C&I. In China, the national level C&I are based on the Montreal Process C&I, in Myanmar and Philippines they are based on the ITTO C&I, and in Thailand they are based on the ITTO and ASEAN C&I.
- China has begun to develop and test C&I at the regional level, Myanmar at the model forest level (but not at the Pauk-khaung MF) and the Philippines at the community level. But none has begun such work at the respective



**C&I Workshop Plenary Session**

model forest areas associated with the regional model forest project.

- In China, owing to the vast extent of the country, sub-national C&I may be based on the Montreal Process or ITTO C&I, depending on the particular circumstances.
- In Myanmar,
  - an additional criterion and appropriate indicators for forest plantations were identified, mainly in anticipation of seeking certification for their plantation timbers;
  - a preliminary testing of FMU level C&I was conducted at the Toungoo forest district in February 2001, and two other forest districts have been designated for testing. Both the national and FMU C&I contain many indicators that need to be reviewed, screened and reduced; and
  - there has been little interest in community forestry processes in areas where forest resources are still abundant.
- The Philippines has developed their local level C&I for Community-Based Forest Management (CBFM), and produced a guidebook and manual for field testing of these CBFM-level indicators. These experiences should be useful and applicable in the development of C&I for the Ulot Watershed MF.
- Partnerships and local communities have important roles in the development of indicators.
- Although there may be common C&I among MFs, each set of C&I should be determined for a specific MF.
- Standards of Performance (SOP) can provide a benchmark against which a particular indicator is measured. If the SOP are assessed, and found to have been attained, it then means that the indicator has been satisfied.
- In Myanmar and Malaysia, SOP have been developed as useful verifiers of some indicators.
- The linkages among criteria, indicators and verifiers are not always clearly established, and can result in reduced appreciation of the purpose and need for the C&I processes.
- It is important to ensure that the common terms used in the development and application of C&I are understood in the same way by all concerned.
- There is much to be gained by sharing knowledge, information and experiences in C&I development, testing and application, among the four MF Project countries.
- Criteria at the model forest level usually tend to be consistent with national level criteria.
- The attributes considered in selecting indicators often include being relevant, reliable, meaningful and affordable. However, no indicator will have all these attributes and it would be necessary to decide on the relative priority of these attributes, or modify the indicators as necessary.
- No single indicator can reflect the status of the forest, and it is necessary to use a group of indicators for this purpose.
- Having too many indicators per criterion would make their measurement difficult or unrealistic, and having too few may render them ineffective in reflecting the status of the criterion concerned. A balance between some “core” indicators and other “non-core” indicators should be considered.
- The development of C&I can be a long and arduous process, requiring the involvement of all interested parties.
- Analytical tools to help track and organise data, and assess sustainability are available.
- In assessing sustainability, we need to recognise our starting point, changes that take place over time, and where we are heading.
- A systems approach is extremely beneficial in handling the complexity of economic, social and ecological relationships.
- Multi-stakeholder and multi-disciplinary approaches in developing partnerships and C&I for the model forest is essential.

- Participatory approaches are essential for effective C&I development
- The C&I process is an adaptive process.
- Assessment of C&I developed at various levels by independent third parties can provide useful suggestions for improvement.
- Although the C&I and forest certification processes may share some common features, they are different initiatives.
- Whilst recognising that there are many important stakeholders in each model forest, it is important to explicitly acknowledge the special role and contribution of local communities, and ensure their meaningful participation in the MF and C&I development processes.
- Building trust among all the stakeholders is critical to ensure the successful development of model forests, and of C&I for the MFs.
- It is important to acknowledge the potential contribution of community knowledge, use and management of the forest, and promote its inclusion in the C&I development process.
- Working and communicating effectively with communities require particular skills, which forest department staff often have not been trained in.
- Whilst indicators or measurements can change with time, their linkages with the appropriate criteria should always be clearly established.
- Conflicts of interest or priorities among partners are an important issue in the development of C&I.

Among the recommendations made by the workshop were:

1. It is very important for model forests to be clear about why they are doing work on C&I, what are the desired outcomes and who are the intended audience/partners.
2. The development of partnerships among stakeholders, including local communities, must be an integral part of the development of criteria and indicators for model forests.
3. Consideration of C&I developed at the FMU level must take into account the scale of the FMUs concerned (as they can vary considerably).
4. Clear linkages should be established among criteria, indicators and verifiers so that the purpose of and need for the C&I processes can be better appreciated.
5. The common terms used in the development and application of C&I should be clearly and consistently defined, and disseminated.
6. Knowledge, information and experiences in C&I development, testing and application, should be actively shared among the four MF Project countries.
7. In Myanmar, there is a need to review, screen and reduce the national and FMU C&I to more realistic numbers; and build capacity and increase awareness of sustainable forest management and community forestry among local communities.
8. The experience of the Philippines in testing their local level C&I at the CBFM level should be used in the development of C&I for the Ulot Watershed MF.
9. The number of indicators per criterion should be kept to a realistic number, consisting of “core” and “non-core” indicators.
10. The use of existing data and related initiatives should be maximised in the development of C&I.
11. Forest departments should train their staff in the particular skills required for effective working and communicating with communities, and C&I development, and/or secure the services of specialists in these fields.
12. The special role and contribution of local communities in the sustainable management of model forest should be explicitly acknowledged, and their meaningful participation in the MF and C&I development processes actively solicited.
13. Special efforts should be taken to address conflicts of interest or priorities among stakeholders, and to build trust among all the stakeholders to ensure the successful

development of model forests, and of C&I for the MFs

Using the C&I on Soil and Water Conservation from the ITTO and Montreal Process C&I, the screening of indicators was attempted. The participants agreed that the screening matrix compiled from the Canadian Model Forest Network experiences was more suitable for their use than the CIFOR screening matrix. It was also decided that out of the 11 attributes/questions in the CMFN matrix, only four (namely relevant, responsive, measurable and cost-effective), and one from the CIFOR matrix (namely *important* and *selected as priority*) be used.



**Briefing at field visit to Linlong forest farm**

As part of field exercises, visits were made to a hickory forest at Tongshanxia village, Maxiao township; 18 *Longtan* (waterfalls) Natural Forest Protection and Utilisation Project, Mt. Qingliangfeng Nature Reserve; *Linlong* Forest Farm; and high yield *Lei* bamboo demonstration plantation at Qingyun Town (See next page)

A draft of the guidelines prepared by the lead facilitator, Mr. Martin von Mirbach, and the drafting committee was reviewed and finalised by the participants in a plenary session. The final guidelines were included as *Annex 5* of the workshop report.

Based on the *Guidelines for Field-level C&I for Model Forests*, each of the four RMFP countries prepared a proposed action plan for July 2001-May 2002. These action plans were presented and discussed, and suggestions made for consideration by the respective countries concerned.

The participants felt that the workshop had been very useful in increasing their understanding of the C&I processes, and of the action needed to develop C&I for model forests. Mr. Tang, on behalf of the RMFP and the participants, thanked all the resource persons and their sponsors for their invaluable contribution, and Mr. Martin von Mirbach in particular for being an excellent and dedicated lead facilitator. He also thanked the CAF, LFB, and ZFC for hosting and very efficiently organizing the workshop, and Mr. Jiang Chunqian and his colleagues who formed the workshop secretariat.

Mr. Jiang, Workshop Chairperson, thanked all the participants for their contributions to a successful workshop. He thanked the Government of Japan, FAO, RMFP and project countries, on behalf of the Chinese Government and the host organisations, for holding the workshop in Lin'an. He also thanked all the resource persons for their very effective and valuable contributions, and closed the workshop.

## C&I Workshop Field Visits

During the C&I workshop held from 10-15 June 2001 in Lin'an (see lead article in this newsletter) the participants visited the following model forest activities;

- **A hickory forest at Tongshanxia village, Maxiao township:** Individual trees in the 124 ha of hickory forest are allocated to individual households to manage. After 4-5 years of high-yield management, output of hickory nuts has increased from 300 kg/ha to 523 kg/ha in 2000. Hickory is the main source of income for the farmers, and in 2000 reached 1,650 yuan per capita, or 41.5% of the total per capita income of the village. The total hickory forest area in Lin'an county is about 20,000 ha (or 60% of the total hickory area in China), with a maximum output of 6,000 tons, or 70% of the national total production.
- **Eighteen Longtan (waterfalls) Natural Forest Protection and Utilisation Project, Mt. Qingliangfeng Nature Reserve:** This area lies at the eastern boundary of the Lin'an Model Forest, near Zhechuan village, Maxiao township. Until 1999, the natural forest at the foot of 18 Longtan belonged to Zhechuan village, and the villagers used to collect timber and other products from the forest. In 1999, in order to protect the plants and wildlife, the area of 1,400 ha was incorporated into the Nature Reserve. After three years of protection, the forest condition has improved and the number of plant and animal species has increased.

A businessman from Lin'an, after visiting the area in 1999, decided to invest in developing the area for eco-tourism. An agreement was signed between the investor, the township and the village administration for the development. So far, a paved footpath has been built from the base of the mountain to the first of the 18 waterfalls (about one hour walk). A hotel (80 person capacity) and four restaurants (1,000 person capacity) have been constructed at the base of the mountain, and the access road from the main road is improved and maintained by the investor.

The villagers are provided with an annual subsidy of 30 yuan per ha for not collecting any forest produce within 100 metres of the scenic spot. Each of the four villages has appointed one forest guard (each paid 2,400 yuan per year by the investor) to patrol the protected area. Development cost to-date is 6-7 million yuan, and total expected investment is 20 million yuan, within the next two years. 120,000 visitors (mainly from Hangzhou, Shanghai and other nearby cities) per year are expected, and since the end of February 2001 (3.5 months) about 40,000 tourists have visited the area. The entrance fee is 48 yuan per person per day (half rate for students), or 24 yuan per half day. 70% of the entrance fee goes to the investor, 10% to the township administration, 10% to the village administration, 7% for park administration, and 3% for development of the nature reserve. There are five similar eco-tourism projects developed or being developed in the county.

- **Linlong Forest Farm**  
This farm was established as a collective tree farm in 1978 (pre-Reform) with a total area of 318 ha. Since 1984, forest cover in the farm area has increased from 30% to 90%, and standing volume from 2,000 m<sup>3</sup> to 32,000 m<sup>3</sup>. The main activities of the forest farm have been to develop timber forests (200 ha from 1978-87, with 100 ha of Chinese fir). The forest farm serves as a demonstration unit for the farmers, and provides Chinese fir and bamboo seedlings, and technical advice free-of-charge to the farmers.

With declining timber prices and concern over the impacts of mono-culture plantations on bio-diversity and soil erosion, the farm (with supervision from the Chinese Academy of Forestry, Zhejiang Forestry College and Lin'an Forestry Bureau – all Lin'an model forest partners) started to test various agro-forestry practices (e.g. Chinese fir/mao bamboo/crop, Chinese fir/broadleaf species, *Paulownia*/tea/crop, *Magnolia amobna/Actinidia chinensis* (kiwi fruit)/crops). At present the first combination is deemed the most profitable by the farmers. According to Director of the Forest Farm (Mr. Qian Huachun), the forest farm is almost self-supporting, and only receives government funds for state-implemented projects. Since the forestry reform (1979), no new collective forest farms at the township level have been established, and the emphasis has been on encouraging forest farming at the village level using a variety of approaches (industry, collective farms, private farms). The farm is a MF partner and they hope that their involvement in the model forest project will enable them to identify new, appropriate and relevant technology or systems from elsewhere.

- **High yield Lei bamboo demonstration plantation at Qingyun Town**

In the past ten years, 10,000 ha of bamboo have been planted in Lin'an county, with 7,000 ha on barren hills, increasing the forest cover from 64% to 75%. Of the 46 bamboo species/varieties present, only six are commercially cultivated. Lei bamboo has become the main income source for farmers, with a per capita contribution of 2,488 yuan. 60,000 of the 100,000 households in the county are involved in bamboo cultivation.

Concerns over the success of the bamboo cultivation include impacts of the monoculture plantations on biodiversity, increased pests, soil degradation caused by fertiliser application and cultivation on steep land (>25 degrees slope) with the resulting soil erosion. The LFB is trying to persuade the farmers to plant commercial timber forests or the smaller diameter bamboo (used for producing dried bamboo shoots, which does not require frequent digging of the soil during harvesting) on land greater than 25 degrees slope. The RMFP is providing some funding support to the Lin'an MF (through the CAF, LFB, ZFC and Bamboo Association) to study some of these impacts and develop more sustainable practices.



Briefing at field visit to 18 Longtan Natural Forest Protection and Utilisation Project

# Project News

## *New APO joins RMFP*

Mr. Ravi Hegde joined FAO on 17 June 2001 to assume duties as Associate Professional Officer in the Regional Model Forest Project. Mr. Hegde is a national of India, and his APO services are funded by the Government of Japan.

He has a B.Sc. (Agriculture, 1991) and a M. Sc. (Agricultural Economics, 1994) from the University of Agricultural Sciences, Bangalore, India. Since 1994 (until recently) he was a Research Associate at the Tata Energy Research Institute (TERI) in New Delhi, India.

His main fields of expertise and interest are in economic, social, technical, policy and multidisciplinary aspects of agriculture, rural development and natural resource management. He has undertaken assignments for various national and international agencies including the Government of India and various State Government Departments in India, the World Bank, Asian Development Bank, Center for International Forestry Research, and other international organisations.

We welcome him to the regional model forest project, and look forward to providing stronger support to our four Project countries in the development of their model forests.

### ***RMFP 3<sup>rd</sup> Project Steering Committee Meeting and Regional Model Forest Workshop***

The 3<sup>rd</sup> PSC meeting will be held on 30 November 2001 in Yangon, Myanmar. This will be preceded by the 3<sup>rd</sup> RMFP workshop from 25-28 November 2001 in Pyay, Myanmar. The theme of the workshop will be “*C & I for Sustainable Model Forest Management*”. For more information, please contact the Chief Technical Advisor, RMFP at the address mentioned below.

### ***RECOFTC Training Course on Managing Conflicts in Forest Resource Management***

The Regional Community Forestry Training Center (RECOFTC) will offer an international training course on “*Managing conflicts in forest resource management*” from 05-20 November 2001 in Thailand. The training course will provide participants with an understanding of the basic principles, skills and techniques of conflict management so that they will learn to take a proactive role in anticipating and addressing conflict in its early phases.

The objectives of the course are to,

- increase participants’ understanding of the nature of conflicts and why they arise;
- provide skills and techniques for managing conflicts in forest management;
- provide opportunities for participants to share experiences and ideas in conflict management; and
- promote the concept of local people’s participation in collaborative forest resource management and conservation.

The RMFP will seek funds to sponsor one to two participants from each project country to the training course. *For more information on the training course, please contact Dr. Somsak Sukwong, Executive Director, RECOFTC, Kasetsart University PO Box 1111, Bangkok 10903, Thailand. Tel: (662) 940-5700, Fax: (662) 561-4880; Email: ftcsss@nontri.ku.ac.th*

#### *Continued from page 5 - Edible Insects at Ngao Model Forest*

Many kinds of *grasshoppers* are eaten by people. Like other edible insects, they usually come out during the rainy season. There are two methods for catching them, using light traps and sweeping nets. They are sold in the market at almost the same price as *mole cricket*. Many species of *scarab beetles* are consumed. They come out whenever plants produce new leaves in the early rainy season (late April to May). They are also collected by light traps. The price of these insects depends on their size. The bigger beetles (such as *two-horn scarab beetle*) are sold at about one baht per individual, while the smaller ones cost as much as *mole crickets*.

Traders preserve the edible insects by mixing them with salt, and roasting them before bringing them to the market (except for eggs and nymphs of red ants). Most of them are fried, and their wings must be taken off before being eaten. The *giant water bug* is cooked by roasting directly with fire, and then mixed with chili paste for better smell. Eggs and nymphs of red ants are usually cooked by mixing with chili paste, and then mixed with some fried vegetables, omelet or some kind of soup.

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*The views expressed in this newsletter are those of the respective authors, and do not necessarily reflect the views of the FAO, Government of Japan, RMFP or Project countries.*