

## **The Enterprise Model for Biodiversity Conservation: A Critique**

**Jack Croucher, Ph.D. Vice-Chairman, ANSAB**

Commercial use of nontimber forest products in a sustainable manner is becoming an increasingly popular mechanism for promoting the dual objectives of rural economic development coupled with environmental or biodiversity conservation. This approach was widely implemented throughout much of Asia by the Biodiversity Conservation Network (BCN) in approximately twenty projects that combined natural resource based enterprise development with biodiversity conservation. While a thorough evaluation of this innovative endeavor has yet to take place, certain findings have become apparent from the experiences of some BCN grantees. This paper will examine one aspect of the enterprise based participatory conservation methodology that links enterprise development to biodiversity conservation incentives. It will address the question: Can environmentally aware enterprises in and of themselves be expected to act in a conservationist manner? My answer is no, not always.

It should be recognized that enterprises, operating in present time contexts have pressures, constraints and requirements that differ significantly from conservation activities, the results of which will become apparent only after a much longer period of time. Among the pressures facing fledgling enterprises is the immense complexity of organizing and establishing successful business activities. Those experienced with enterprise development are amazed at how often the enterprise strategy is casually employed in development activities. Three year project cycles popular in development project circles are found wanting in meeting the requirements for successfully establishing enterprise activities; the capital requirements and particularly the “sunk-costs” of sustaining new businesses are

always much higher than planned for; and frequently the focus is misplaced on technologies and production activities, while the real challenge is found in marketing. The complexities of enterprise development are soon found to be much greater than anticipated and problems that demand immediate attention quickly arise.

On the other hand, conservation objectives are achieved mostly in the long-term. Sustainable harvesting practices and regeneration programs take years to materialize with observable outcomes. Since results are slow in coming there is sometimes a sense that conservation concerns can be addressed after the enterprise has tackled its more immediate problems and becomes well established. Thus, circumstances result in pressure to concentrate energies on the complexities of operating new businesses while relegating conservation concerns to “the back burner”, to be addressed at a later date.

This paper looks at the experiences of one project and related enterprise that are jointly tackling these challenges. It examines the issues that arise, how they are addressed and what lessons they hold for others who either are presently involved or contemplate becoming involved in this promising strategy.

## Section II

### The Garhwal setting

Commercial utilization of natural resources in the Garhwal Himalayas of India is being undertaken by a community owned and professionally managed private limited company, Chamoli Tasar Pvt. Ltd. (CTPL) which is working with the villagers in four watersheds of the Tungnath region in Rudraprayag and Chamoli Districts. These watersheds are composed of the hills and valleys of Akash Kamani, Nagnath Pokhari, Makkumath and Mansuna with altitudes ranging between 4000 ft to 14,000 ft and are

representative of what is known as the Himalayan "oak belt" which stretches eastward from Himachal Pradesh through Garhwal and Kumaon into northwestern Nepal. The oak belt in the Garhwal region has an estimated 230,000 hectares of land and includes over 350 villages and the forests, many of which remain in good condition, are considered to be the last remaining old stand forests in the central Himalayas. A significant characteristic of the project/enterprise area is that it consists of several large contiguous interconnected habitats of plants and animals dominated by old stand oak forests and alpine pastures with relatively little fragmentation and good corridor conditions. Environmental degradation is just beginning to become apparent. The extensive endowment of forests and pastures produces a variety of nontimber forest products that have been traditionally used by the people for food, fodder, medicines, and religious ceremonies.

The region is also favored with a number of village based institutions including *van panchyats* (village forest management committees), *mahila mangal dals* (village women's organizations) and *dekh rekh samitis* (village watch organizations), which have been long established and operate today with varying degrees of effectiveness.

The biodiversity conservation project was established to test the working hypothesis *that when local communities secure economic and managerial control over their natural resources and have access to necessary information and technical support, they will have the incentives to work actively toward the long-term conservation of these resources.* The project is implemented by Appropriate Technology India, a registered NGO, which aims to employ the sustainable harvesting and local processing of nontimber forest products as an entry strategy for promoting the broader goals of biodiversity conservation and at a later stage to insure that such conservation practices are sustained. The project strategy is to

work with the village organizations to protect the region's biodiversity, particularly its forests and adjoining pasture lands, by creating or enhancing the community's economic benefits derived from these forests and pastures through the development of natural resource based enterprises; to strengthen the capabilities of village organizations to manage their natural resources in a way that is both environmentally sound and economically beneficial; and to work toward promoting progressive policies that will vest greater control of natural resource use and management in the village organizations. Community based, managed and owned enterprises are the mechanism through which biodiversity conservation activities as well as economic benefits will continue to be sustained after project funded activities come to an end.

The long-term intention is to sufficiently strengthen the organizational, managerial and monitoring capabilities of the local institutions, the *van panchayats* and *mahila mangal dals*, to enable them to convincingly argue for a greater role in managing their natural resources.

Chamoli Tasar Pvt. Ltd. (CTPL) has been set up as a private limited company for a number of reasons, first and foremost of which is to insure the long-term sustainability of economic benefits deriving from income generating activities. Given the difficulties NGOs have in successfully operating enterprises, AT India chose an institutional arrangement that has a proven track record in running enterprises – the private limited company. The private limited company has other characteristics to warrant serious consideration of this approach to organizing enterprise activities. It allows for community ownership through shareholding in the company and for community control over company policies through the board of directors that is elected from among the shareholders. It brings a sense of business discipline

to the activity that is often lacking in other organizational structures. It is required by company law to maintain proper records both financial and transactional, to hold meetings of the board and shareholders and to keep them fully informed and involved in major decisions. It also allows for the board to appoint professional management to conduct the daily operations of the company without interference. Finally, it must be profit making if it is to survive.

CTPL has introduced an innovative shareholding arrangement in which the participating village institutions, the *mahila mangal dals* and *van panchayats*, are the shareholders. This was made possible through a producer expansion fund granted by The Ford Foundation in order to facilitate divesting of ownership of the company in favor of the producers (the rearers, reeler and spinners). Initial shares and equal amounts are given to each participating *mahila mangal dal* and *van panchayat*. These initial shares are non-fungible (cannot be sold) because they were granted, but are eligible for dividends distribution. Furthermore, the participating *mahila mangal dals* and *van panchayats* are able to earn additional shares through undertaking biodiversity conservation works that contribute to the overall conservation plans and objectives of the project operated by AT India. For example, if a *mahila mangal dal* undertakes a rotational grazing plan, the board of CTPL attaches a value to that activity and shares equivalent to that value are issued to that *mahila mangal dals*. These shares are fungible. The awarding of such shares can continue until the producer expansion fund is fully divested. In addition, the participating institutions can purchase shares. Purchased shares are also fungible.

CTPL is in the business of sustainable harvesting of oak leaves to feed to silkworms for the production of cocoons that are then reeled or spun into yarn. The yarn is then either sold on the silk market or is woven into fabric. The villagers undertake rearing of the silkworms in the forests where leaves are readily available. The Company has met with a fair degree of success and has mastered the complexities of silkworm rearing even though it has been in operation for only three years. During this period it has become the most efficient producer of temperate tasar silkworm seed in all of India. It is not only self-sufficient in meeting its own seed requirement, but has started selling dfls (disease free layings, as the seed is called) to other rearers. The Company's progress since its inception is charted in the following table.

| Year   | No of rearers | Seed Production (DFLs) | Cocoon Production | Effective rate of rearing (%) | Cocoon/DFL ratio | Cost of seed (IRs) | Average earning per Producer (IRs) ** |
|--------|---------------|------------------------|-------------------|-------------------------------|------------------|--------------------|---------------------------------------|
| 1996   | 25            | 10,000                 | 66,000            | -                             | 6.6 : 1          | free               | 1000                                  |
| 1997   | 15            | 14,000                 | 200,000           | 45                            | 19 : 1           | 1.00               | 2911                                  |
| 1998   | 49            | 30,365                 | 700,000           | 51                            | 22 : 1           | 2.00               | 3281                                  |
| 1999   | 59            | 46,445                 | 935,740           | 45.5                          | 21 : 1           | 2.50               | 3564                                  |
| 2000 * | 148           | 73,000                 | 2,190,000         | 50                            | 30 : 1           | 3.00               | 4375                                  |
| 2004 * | 500           | 250,000                | 10,000,000        | N/a                           | N/a              | N/a                |                                       |

\*projections

\*\* earnings represent approximately 8 weeks of mass rearing activity

#### The dichotomy between enterprise realities and environmental conservation requirements.

It is clear that CTPL is well on its way towards becoming a successful enterprise, although it has not reached that stage yet. The Company staff and the rearers both have made remarkable strides in mastering a fairly complex set technologies and their success is seen in their productivity increases.

The issue of conservation also needs to be addressed. The initial assumption was that being a company launched as part of a biodiversity conservation project, this in itself would be both a necessary and sufficient condition for it to act in a conservationist manner. In addition, the Company's success depends on the continued availability of oak leaves, the basic raw material for silkworm rearing. Sustainable harvest norms of leaves were scientifically determined and clearly set both at the tree level and at the carrying capacity level of the forest. So, how did CTPL fare in its conservation mandate?

During the first and second years of silkworm rearing, which takes place from incubation and hatching of seed followed by *chowkie* rearing starting in mid-April through mass rearing ending in early August, the rearing staff of CTPL along with the rearers from participating villages were experiencing for the first time the rigors and demands of feeding the voracious appetites of silkworms under climatic conditions that were not all that pleasant due to heavy monsoons. Rearing went relatively well for the first four of the five stages of growth of the silkworms. The fifth stage, when the worms consume 60% of their total intake of leafs, was reached during the height of the rains. Work at the rearing centres increased significantly, with the need to maintain appropriate temperatures and humidity within the rearing huts, and for constant vigilance against pests and viral disease. On top of this, the daily leaf demand increased dramatically. Harvesting of leaves for the early stages of rearing had taken place from the most accessible branches of nearby trees. Now the rearers were required to harvest greater quantity of leaves in unfavorable weather conditions ideally from trees that were farther away from the rearing site.

In certain centres this ideal was not met. Instead, over harvesting in the forms of lopping smaller branches and exceeding the recommended 30% limit per tree began to occur. Environmental ideals were displaced by enterprise realities. It should be noted that in no case was over harvesting damaging to the carrying capacity of the forest as a whole or to any tree in particular. It should also be noted that every case of over harvesting was detected and was dealt with by fining the rearers and CTPL staff responsible for the offending rearing centres. All fines were paid to the responsible van panchayat. The important point to be made, however, is that despite of all good intentions and with sound harvesting information and methods at hand, unsustainable harvesting still occurred in a few instances. Furthermore, the environmentally aware management of CTPL at a later date even argued that it was necessary to allow more than 30% harvesting from some trees during the fifth stage of rearing in order rearing to remain economically viable. This argument was soundly refuted and it was determined that solutions that were in keeping with the overriding interest of conservation would need to be found.

### Section III Methods Employed for insuring that conservation objectives are met

To address the concerns of maintaining sustainable harvesting practices in light of climatic and economic pressures, AT India and CTPL have jointly devised a process for implementing the conservation protocols. This process is called the Joint Monitoring Team (JMT) structure. The JMT is composed of representatives of the van panchayat, mahila mangal dal, dekh rekh samiti, gram panchayat, yuvak mangal dal, relevant to the

area where harvesting of oak leaves is to take place, as well as the Forest Department (forest guard for the area), AT India biodiversity field staff member and a representative of Chamoli Tasar Pvt. Ltd., usually the rearing centre technical in-charge for that site.

The JMT makes a total of six visits to each rearing site during before and during the rearing period of approximately 50 days. The first visit occurs when the site selection is to take place. The rearing site is jointly chosen by Chamoli Tasar and the JMT based on the following criteria: i. that it has sufficient biomass to support harvesting of oak leaves for silkworm rearing; ii. it is not in an area previously harvested for rearing; iii. there are no other known reasons that would cause the site to be rejected. At this visit the AT India conservation specialists consider the “carrying capacity” of the site in terms of the environmentally sustainable quantity of dfls that can be reared (the term used for describing silk worm eggs is disease free layings, or dfls). The site is divided into 60 quadrants each of 5.65 meters over a radius of one kilometer. Resource mapping of oak and other species (like ringal bamboo) is carried out by the AT India biodiversity field staff and findings are discussed with the program’s botanical advisors from Kumaon University. After these discussions, the carrying capacity is determined. Chamoli Tasar is required to adhere to this determination.

Five visits to the site by the JMT take place during the rearing period which is divided into five stages: the first visit at the early stages of the crop; the second and third visits take place during the 2<sup>nd</sup> through the 4<sup>th</sup> stages and two visits during the 5<sup>th</sup> stage when 60% of the total leaf extracted is consumed. During the first visit the JMT explains the rules and regulations governing sustainable harvesting to the rearers and Chamoli Tasar rearing centre staff. The rationale behind these rules and regulations are explained and

discussed thoroughly. At the end of the discussion the rearers and centre staff are asked to make the following resolution:

- That rearers will use sustainable harvesting practices in oak leaf harvest
- That rearers shall harvest leaves only from matured or older trees. The average age of the tree should be 20 years or more
- That rearers shall cut only small “**finger size twigs**” during the 1st to the 4<sup>th</sup> rearing stages
- That the rearers shall cut only “**thumb size twigs**” in the fifth stage or rearing if finger size twigs are not available
- That the rearers shall harvest leaves from the lower branches only
- That not more than 30% of the total leaf mass will be harvested from any one tree
- That rearers shall not waste/leave leaves and twigs under the trees. Rearers shall preferably use “swalti” (a traditional ringal basket) and will avoid use of thread for carrying oak leaves
- That rearers will seek assistance from their families during the 5<sup>th</sup> stage of rearing, and finally
- That each rearer will undertake the protection of at least ten oak saplings in the rearing area.

Mature oak trees are defined as those more than 20 years old with roughly fifteen head loads of leaves. Within a one-kilometer radius there should be at least 80 to 100 mature

trees to support the rearing of 2000 dfls without overlopping. Botanical analysis has indicated that up to 30% of the leaves can be harvested without any adverse effect to the tree. There is also some evidence that indicates that harvesting 30% leaves in dense forests may promote regeneration of oak and dependent species due to two factors: opening up the canopy to allow more sunlight to reach the forest floor and reducing the leaf litter on the forest floor allowing for acorns and seeds to more effectively establish in the soil. Overly dense canopy along with a thick leaf litter are believed to be two major factors in the slowing of regeneration of semicarpifolia species in the Central Himalayas.

Monitoring of leaf harvest.

In addition to the periodic monitoring by the JMT as described above, daily monitoring of sustainable leaf harvest is the responsibility of the Group Leader elected by the rearers and the Rearing Centre Technical In-charge who is an employee of Chamoli Tasar Pvt. Ltd. Both are responsible for examining each head load of leaves to assure that proper twig size is being maintained. If minor improper harvesting is detected, it is called to the attention of all the rearers and a warning is issued. If inappropriate harvesting is determined to be significant the JMT will levy a fine on all of the rearers that will be deducted from their payment for cocoons. The JMT has the authority to shut down rearing operation at a centre if the need arises.

Conclusions:

Extraction and production models for biodiversity conservation are not effective when they promote more of the same activities and simply link producers to a market. Instead, enterprise options that add value to the resources and change destructive practices while allowing communities to earn a decent income from sustainably harvested materials must be established. Increasingly, this concept of market-based incentives is recognized as a necessary component of conservation and sustainable development.

The enterprise based biodiversity conservation strategy has significant potential both in terms of economic development as well as in terms of promoting conservation. But, the latter is true only if certain safeguards are in place. Lessons learned through this experience in India confirms that community enterprises are only effective at conserving biodiversity when they:

- are directly linked to the use of *in-situ* biodiversity,
- involve a community of stakeholders,
- generate short-term and long-term benefits,
- are related to an appropriate property rights system, and
- participate along with other stakeholders in the monitoring of enterprise sustainable harvesting activities.

Replicability:

As it currently operates the JMT system used in Garhwal needs to be streamlined before it can be considered to be efficient either in Garhwal or for adoption elsewhere. The main problem is the amount of time involved and the number of participants. As they gain experience in operating the system, AT India and CTPL should be able to reduce the number of visits needed to each rearing site and also reduce the number of persons involved

in each visit. The plan calls for CTPL to continue to cover the costs of this process as a business expense and it has been incorporated into its financial planning. This will add greater incentive to make the process cost efficient with out weakening its effectiveness.