



Assessing the Role of Non-Timber Forest Products in the Livelihoods of Communities Living Inside and Outside of Lawachara National Park

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Abstract

Protected area managers find linking the livelihoods of local populations living near natural resources to the conservation of those resources to be the biggest challenge for effective co-management of protected areas. Many scholars and managers believed that non-timber forest products (NTFPs) can play important roles in this regard, by contributing to people's livelihoods without placing major stress on forest resources. This paper examines and compares the roles of NTFPs in the livelihoods of communities living both within and outside the forest boundaries of Lawachara National Park. The study illustrates that local people meet their fuelwood demands from the forest either by collecting it themselves, or by purchasing it from the market. The Khasia communities in the interior village depend highly on the park, as their only source of cash is betel leaf cultivation on forest lands. All households - except a few wealthy homes in the village located outside the park - collect bamboo, cane, wild vegetables and medicinal plants for their domestic consumption. For Khasia households in the interior village (rich, medium-income and poor), the hunting of wild animals and birds is a part of their traditional culture. .

Introduction

Biological products from wild areas are commonly termed non-timber forest products or NTFPs (Shackleton and Shackleton, 2004). There is no unique definition of NTFPs; however, for the purpose of this paper NTFPs are identified as all plants and animal products of forests, except timber. Here NTFPs do not include economic and environmental services. (Ambrose-Oji, 2003).

Non-timber forest products have long been considered of minor or secondary importance in local economies and livelihoods. It is only from the 1980s onward



that there has been a surge of interest in the ways in which NTFPs are used by people living in and around forests. The contribution of NTFPs to the livelihoods and welfare of forest-dependent people has become increasingly recognized (Arnold and Perez 2001, Gram 2001, Belcher 2005). NTFPs play a role in the household economy of not only the poor, but also the rich (Nguyen 2006).

The collecting and processing of NTFPs provide major employment opportunities to the poorest rural populations worldwide. In Bangladesh, this amounts to a contribution of about Tk 1.3 billion annually to the economy (GOB 1993), and employment for nearly 300,000 people (Basit 1995). In India, NTFPs contribute from 10% to 40% of income for 50 million indigenous households (Shiva 1993, cited in Sekar et al., 1996); about 200 to 300 million villagers depend on NTFPs to varying degrees (Shiva 1995b); and 1.6 million person-years of employment are generated in the NTFP sector (Gupta 1994). In Indonesia, the rattan industry alone provides jobs for 200,000 people (Haury and Saragih 1995). In Vietnam, more than 320,000 people are involved in NTFP production (Tien 1994). These figures are impressive and, given the number of forest-dependent people involved, the implication is that forest management policies should properly address the dependence of local people on forests for their livelihood needs.

This paper attempts to compare the role of NTFPs in the livelihoods of communities living inside and outside of the boundaries of Lawachara National Park in Sylhet, Bangladesh. The paper seeks to give policy makers a better idea of the roles NTFPs can play in local livelihoods, so that they can design better policies for community based natural resource management (CBNRM).

Background

The study was conducted at Lawachara National Park (LNP), which forms part of the West Bhanugach Reserved Forest located in the division of Sylhet in northeastern Bangladesh (Fig. 1). Currently the park covers an area of 1,250 ha, and there is a plan to extend this area further to include 281 additional ha of the Reserve Forest. The topography is undulating, with slopes and hillocks (locally called *tila*) that range from 10 to 50 m in elevation. These *tilas* are scattered and interspersed with numerous streams that flow through the forest. The forest types of Lawachara are a combination of planted exotic species and mixed forest with a deciduous canopy and an evergreen understory (Ahsan 2000). The forest originally supported an indigenous vegetation cover of mixed tropical evergreen forest (Alam 1998). Approximately 167 plant species and 276 animal species are found within the park (NACOM 2004).

There are 14 villages in and around Lawachara National Park. Two are located within the park and the rest lie in the area surrounding the park (CNRS 2000). The settlement history dates back to the early 1940s, when people employed by the Forest Department to carry out logging and plantation operations in the forest were settled in the area. The largest interior village, Magurchara Punji, was established around 1950 and presently consists of 40 households inhabited by people from the Khasia ethnic community. The other interior village, Lawachara Punji, was established in the 1940s and currently consists of 23 households who are also from the Khasia community (FSP 2000; Chemonics 2000).

The remaining 12 villages are located along the northeastern boundary, inhabited by ethnic Bengali migrants and a few families from the Tripura ethnic community. The Bengali migrants came mainly from the districts of Noakhali, Comilla and also from neighboring India. The major influx of these people occurred about 50 years ago, and they converted the low-lying forest areas to paddy cultivation. The settlers in these outside villages are almost all Muslims, whereas Khasias are primarily Christians and Hindus. The total settler population is reported to be between 4,000 and 4,500 people (CNRS 2000).

The Forest Department allotted 1.2 ha of land to each registered villager living in the interior villages. The main income of the Khasia communities comes from betel leaf plantations. They also collect fuelwood to supplement their family income. Seventy percent of these people depend on the cultivation of lemons and pineapples on hill slopes, and the remaining 30% are day laborers. Khasia women mainly sort betel leaves while Tripura women weave cloth, conduct household work, and sometimes work in the lemon and pineapple orchards (CNRS 2000).

Subsistence and small-scale woodcutters and NTFP harvesters have used Lawachara intensively for many years. The households of the interior villages are completely dependent on forest resources for their entire fuelwood and house building material demands (FSP 2000, CNRS 2000). In addition to their subsistence needs they also collect fuelwood to supplement their income, but they primarily depend on the betel vines they grow in the forest (FSP 2000).

In addition to resident villagers, the park is also widely used by people from adjacent villages, residents of neighboring tea estates, and some poor people from urban areas. Subsistence harvesting of fuelwood appears to be the most common and widespread use of the park. Bamboo is also widely harvested within the park and its proposed extension area, presumably for both subsistence and small-scale



commercial use (FSP 2000). Local people collect 23 species of fruits, which are also eaten by non-human primates in the forest. Some people collect these fruits for home consumption as well as for sale. They also collect vines and climbers for making baskets and other household materials (CNRS 2000), as well as medicinal plants (FSP 2000, CNRS 2000, Chemonics 2000). No qualitative or quantitative information about medicinal plant collection is available at present. A small number of people also extract tree bark for medicinal uses from a number of trees and sell it to local agents. The presence of some NGOs, like BRAC, ASA, RUSA and Heed-Bangladesh in the area has been mentioned by CNRS (2000). These NGOs, however, concentrate primarily on micro-credit for the very poor, such as programs to support poor Khasia families during lean periods between betel leaf harvests. Some also provide micro-credit to these families for bamboo and cane weaving.

Methodology

I selected two villages in Lawachara National Park and its surrounding area, with the aim of investigating and comparing the role of NTFPs in the livelihoods of communities of two variously located villages: Magurchara Punji, within Lawachara National Park; and Baligaon which is adjacent to the park. These villages were chosen because they are both easily accessible and heavily depend on forest resources from the park. I began by constructing community maps. I then prepared a community profile through focus group discussions with villagers in each village. Finally I prepared household profiles by conducting household surveys. I visited the two villages once before the surveys were conducted, to inform villagers about the purpose of the research.

Based on the community profile and secondary sources that summarized households according to their monthly incomes, housing, and homestead and agricultural land holdings, I classified the households in each village as rich, middle and poor income. I randomly selected households and conducted surveys from February to May 2006, interviewing family members using a semi-structured questionnaire. In Magurchara Punji, I identified three income classes and surveyed one rich household, three middle-income households, and six poor households (24% of all households were sampled). In Baligaon, I surveyed three rich households, ten middle-income households, and eight poor households (7% overall sampling intensity) (Table 1). The questionnaire was in English. It was translated into the local language and administered orally by a hired interpreter. The questionnaire dealt with the respondents' background, household assets, and their

dependency on NTFPs. I collected information on household composition, age, education, land and livestock holdings, sources of family income, NTFPs, and monthly income.

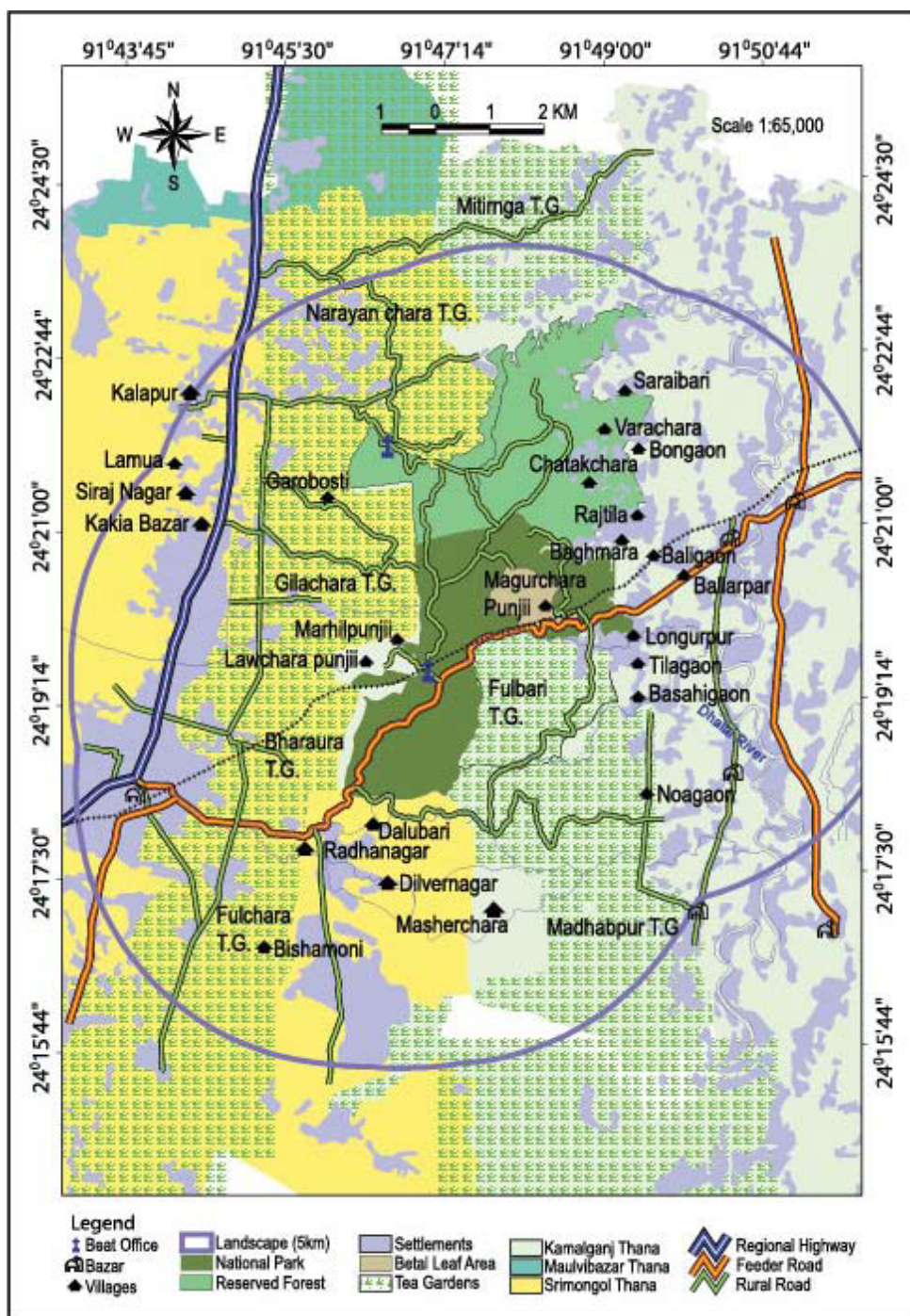


Figure 1: Map of Lawachara National Park. (Source: Nishorgo Support Project, 2007)



Results

Households with monthly income more than Tk 8,000 and with paka (brick or concrete buildings) or semi-paka housing (with corrugated iron roof) were classified as rich. Households with monthly incomes from Tk 5,000 to Tk 8,000, with semi-paka housing were classified as middle-income. Households with monthly incomes less than Tk 5,000 and kacha housing (constructed with bamboo and roof with straw or corrugated iron) were classified as poor.

Table1: Demographic Description of Respondents

	Magurchara Punji			Baligaon		
	Rich	Middle	Poor	Rich	Middle	Poor
No. of households sampled	1	3	6	3	10	8
No. of people per household	7	5.33	5.67	8.33	7	6.5
Age of respondents (years)	45	31	30	46	38	43
Male (%)	00	33	67	100	60	63
Female (%)	100	67	33	00	40	38
Illiterate (%)	-	-	17	-	10	63
Can only sign (%)	-	33	67	-	40	13
Primary school (%)	-	33	1	-	30	25
Secondary school (%)	100	33	17	100	20	

Betel leaf cultivation is the main NTFP-based activity in Lawachara National Park. It has a high cash-earning potential and is the main source of cash income for the Khasia communities who live in the park. All members of the Khasia community are engaged in betel leaf cultivation. The average monthly income from betel leaf cultivation for all households (rich, middle, and poor) is Tk 4,900. The average monthly income of rich households is Tk 9,000 a month, while the average monthly incomes of the poor and middle-income groups are Tk 1,833 and Tk 4,333, respectively. The sole rich household in Magurchara Punji has other additional sources of cash income (which were undisclosed). The middle and poor segments of the Khasia community do not have any other cash income sources, but they supplement their incomes by collecting fuelwood and wild vegetables for domestic consumption (Table 2).

Table 2: Average income of households sampled (in Taka)

Village	Rich	Middle	Poor
Interior village: Magurchara	9,000	4,333	1,833
Exterior village: Baligaon	12,500	5,727	3,143

In Baligaon, the village bordering the park, according to our classification about 70% of the population belonged to the rich and middle-income classes. The middle class and rich people earn their livelihoods mostly from business, agriculture, and services. The average income for middle-income and rich households is Tk 5, 727 and Tk 12, 500 per month respectively (Table 2). In the case of the poor households, 86% of the cash income is from wage labor, amounting to approximately Tk 3,000 per month. In all cases, the incomes are substantially higher than those of the communities living inside the park.

Patterns of NTFP Collection

Villagers from Magurchara Punji and Baligaon can identify thirteen categories of NTFPs, as shown in Fig. 2 and Fig. 3. The NTFPs available at Lawachara National Park are bamboo, cane, fuelwood, betel leaves, mushrooms, grasses, wild vegetables such as bamboo shoots, taro, banana, thankuni (*Centella asiatica*); wild fruits like chapalish (*Artocarpus chaplasha*), kau (*Garcinia cowa*), jackfruit, cane fruits, banana, dewa (*Artocarpus lacucha*); different kinds of medicinal plants; honey; birds such as horikol (orange-breasted green pigeon) and jungle fowl; animals, fish and shellfish including shrimp.

The households from the interior village of Magurchara Punji collect non-timber forest products in eleven of the thirteen categories (Fig.2). All of the households in the interior village collect bamboo, cane and fuelwood. In addition, ninety percent of households collect wild vegetables and mushrooms for their subsistence consumption. An average of 33% poor and middle-income households hunt wild birds such as orange-breasted green pigeon (*Treron bicincta*) and jungle fowl, and all rich households of the interior village hunt for animals like wild boar. Approximately 67% of middle-income households and 33% of poor households collect wild fruit from within the national park, while 50% fish there (Fig. 2).

Patterns of NTFP collection are very different in the exterior village. Households in Baligaon collect only five categories of NTFPs (Fig. 3), and rich households do not collect any NTFPs from the forests. Furthermore, none of the middle-income households, and only 38% of poor households, collect wild vegetables. No families in Baligaon collect mushrooms (Figure 3). Among poor households in Baligaon, approximately 50% collect bamboo, and about 38% collect both cane and wild vegetables for their own consumption. In addition, 40% of middle-income households and 25% of poor households collect medicinal plants. All the households collect fuelwood except the rich.

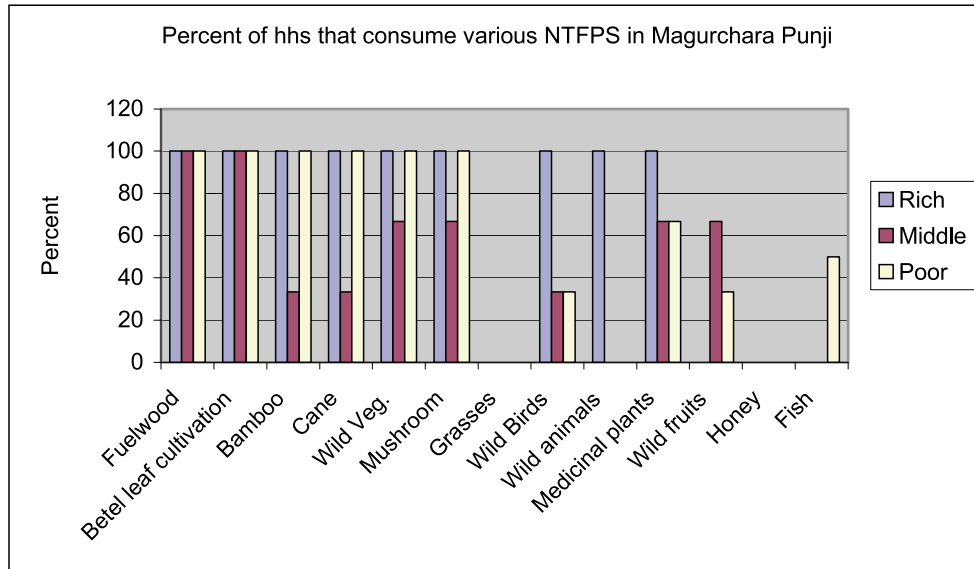


Figure 2: Percentage of Households that Consume Various NTFPs in Magurchara Punji

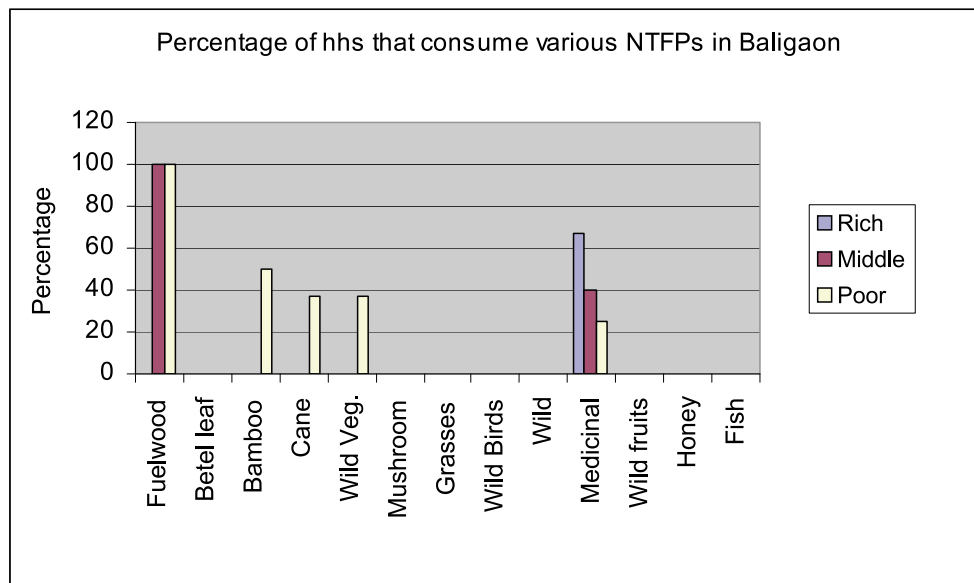


Figure 3: Percentage of Households that Consume Various NTFPs in Baligaon

Patterns of Fuelwood and Medicinal Plant Use

In Lawachara National Park, people depend most heavily on forests for fuelwood as their main source of domestic energy. Households from both the interior and exterior villages meet their fuelwood demand from Lawachara NP. In the interior village, Magurchara, all the households (rich, middle-income and poor) collect

fuelwood from the forest for their own consumption. I asked respondents to calculate the cash value of the fuelwood consumed on a monthly basis. Accordingly, the monthly average cash values of fuelwood reportedly used by rich, middle-income and poor households are Tk 800, Tk 338, and Tk 314, respectively (Table 3).

In the exterior village of Baligaon, rich households do not collect fuelwood from the forest, but they buy it from the neighboring market and pay an average of Tk 767 per month. Middle-income and poor households collect fuelwood both from the forest and from their homesteads for subsistence consumption, and the average values are Tk 410 and Tk 263 per month respectively (Table 3).

Table 3: Value of NTFPs Consumed per Month per Household (Taka per month)

	Magurchara Punji			Baligaon		
	Rich	Middle	Poor	Rich	Middle	Poor
Fuelwood	800	338	314	767 ^a	410 ^b	263 ^b
Medicinal plants	50	50	17	83 ^c	36	26
Other NTFPs	417	167	133	00	83	134
Total	1,267	555	464	850	529	423

NOTES: a=collected from homestead/market, b=collected from homestead/forest, c=collected from homestead only

In Magurchara Punji all rich households use medicinal plants, consuming an average value of Tk 600 per year, whereas only 67% of households from both the middle-income and poor groups use medicinal plants. The middle-income and poor households consume medicinal plants at an average value of Tk 600 and Tk 200 per household per year respectively .

In Baligaon, 67% of rich households collect medicinal plants from their homesteads. These plants have an average value of Tk 1,000 per household per year. Approximately 40% of households from the middle-income group and 25% of the poor households use medicinal plants, with an average value of Tk 435 and Tk 316 per year, respectively. Except for rich households in Baligaon, all households collect their medicinal plants from the forest.

Discussion

In this study, different income groups in the interior and exterior villages showed considerable differences in their patterns of collection of NTFPs. This study shows that households in the village inside the park collect more NTFPs than households in the exterior village, both in terms of number of NTFP types gathered and the



cash value of the products collected. The households of both villages are heavily dependent on the forest to meet their demand for fuelwood, bamboo and cane. The Forest Department allocated 1.2 ha of land from the forest for betel leaf cultivation to each household in Magurchara Punji. Therefore, regardless of income class, Magurchara residents are heavily dependent on the forest for betel leaf production, their main source of income. Despite the fact that all households in Magurchara Punji have the same amount of land, their incomes vary because of site factors and input supports. Site factors include variables such as land fertility, slopes, and aspect. Input support factors include variables such as labor, fertilizer and irrigation. Household heads or sometimes their spouse and children contribute labor. Rich households usually hire labor and can afford chemical fertilizers and irrigation during droughts. Poor households cannot afford these inputs, so most of the poor households in Magurchara Punji collect bamboo, cane, wild vegetables, mushrooms, wild animals, birds, wild fruits and fish from the forest for their subsistence consumption.

In Baligaon the rich households do not collect fuelwood from the forest; they buy it from the neighboring market. As the rich and middle-income households have large land holdings, and earn their living mainly from business enterprises, they do not depend on NTFPs to sustain their livelihoods. In contrast, most of the poor households have no agricultural land and wage labor is their main income source. They only collect bamboo, cane and wild vegetables for their subsistence consumption from the forests.

Analysis of income composition revealed that in terms of contribution to income, betel leaf cultivation is important for Magurchara Punji, whereas wage labor is important for the poor households of Baligaon. The study also showed that all income groups collect fuelwood and medicinal plants from the forest for domestic consumption, except for rich households in Baligaon. In general, the contribution to total household economies from fuelwood was higher than that from medicinal plants. Therefore, we conclude that the forest plays a more important role in the supply of household energy than for medicine.

In both villages, the contribution of medicinal plants to the livelihood of poor households is not as high as expected. It is clear that comparatively richer households use more medicinal plants. I hypothesize that due to lack of information regarding the identification and use of medicinal plants, poor households lag behind richer households in using these plants. In addition, an NGO operates a hospital on the outskirts of Lawachara National Park, in the

proximity of both villages, where people can get medical services at nominal cost. The richer households usually do not go to such NGO operated hospitals as a matter of social prestige, since they do not wish to be perceived as needy.

The study also reveals that in Magurchara Punji the rich household is more involved than poor and middle-income households in collecting wild birds and animals for domestic consumption. This is because hunting is a traditional practice for the Khasia community, and richer Khasia households also have links with local elites and law enforcement agencies which allow them to continue this tradition. As Magurchara Punji is a Khasia community, all households are members of the Khasia Welfare Society (KSA). Through this common platform, Khasia communities can negotiate with government agencies, particularly the Forest Department and other local patronage groups, regarding their community interests.

Conversely, villagers from Baligaon do not have a tradition of hunting wild birds and animals. There is no common platform for discussion in Baligaon, as poor households are not involved with many social and political institutions. Among the rich and middle groups, 67% and 40% of heads of households respectively are involved with political parties or the union parishad. This means that in the exterior village richer people are more involved with outside political parties in order to maintain their power relations.

Conclusion and Recommendations

Non-timber forest products form an extremely heterogeneous group of materials. Typical NTFPs include various foods, fodder, fuel, medicines, and many other collectibles-literally every product derived from a forest besides timber (Wickens 1991:4). The variety can be staggering. Different people collect them for different reasons. Some products are consumed locally without any further processing and play no role in the marketplace. Some NTFPs have been domesticated by local communities for centuries, some are both cultivated and collected from the forest, and others still come exclusively from natural forests (Enters 1997).

Understanding the role of NTFPs in the livelihoods of people living inside and outside the forest is critically important for developing management strategies for protected areas. This study found that households in an exterior village with higher average incomes do not collect any NTFPs from the forest in Lawachara National Park. However, this does not mean that they do not rely on forest resources; they



could be buying them from those who do collect locally or even from a more distant regional market.

Study results also suggest that the main source of cash incomes for all households in an interior village comes from betel leaf cultivation in the forest; suggesting that they are highly dependent on the forest to sustain their livelihoods, especially because many do not have their own land to cultivate betel leaf.

Another important finding is that all households from both interior and exterior villages meet their fuelwood demands from the forest (rich households of the exterior village purchase their wood from local markets but it still comes from the forest). This means the dependency on forest for fuelwood is high in both interior and exterior forest villages. In order to meet the high fuelwood demand of people living both in and outside of forests, fast-growing tree plantations could be cultivated in the buffer zone area.

Policy design should ensure the participation of local users in the governance and management of buffer zone plantations. Local forestry personnel suggested that betel leaf cultivation is not good for biodiversity conservation. As betel leaf cultivation is the only cash income source for most of the Khasia households living in the forest, the boundaries around the betel vines should be clearly demarcated and self-governance of Khasia communities should be ensured in betel vine zones. Local people, both indigenous and Bengali, should be involved in the management of buffer zone bamboo groves and cane plantations through co-management programs. Households in both interior and exterior villages can benefit from horticultural and medicinal species cultivated in the national park. Development of human capacity can be another way to reduce pressures on natural resources and to ensure sustainable livelihoods. Co-management policies for protected areas should consider these possibilities. These findings suggest that an understanding of the role of NTFPs in the livelihoods of local communities should be incorporated into the formulation of co-management policies for all protected areas.

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