

Islands of the Commons
Community Forests and Ecological Security in Northeast Thai Villages

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Abstract: Debates on common property resource management related to sustainable natural resource management in developing countries have concentrated on land and resources with common or communal tenure. However, destructive use of state or private lands and resources may upset the balance of ecosystem and damage ecological services on which local people depend, even when common resources are well managed. It is necessary to consider the mechanisms by which collective action establishes and sustains local ecological security as a kind of common good. In this paper, I consider the meaning of local ecological security by examining the case of community forests and the expansion of cash crops, especially, rubber, in the research site in Northeast Thailand. The expansion of rubber cultivation at a rapid pace damaged local ecological security. Community forests, which are still well managed, are like islands in the sea of the global economy. With special focus on how the villagers have dealt with the changed in their living environment, I consider the collective actions that are necessary to enhance ecological security as a local common good.

Key words: Northeast Thailand, community forest, rubber, ecological security

Introduction

Common property resource management has been at the center of debates related to sustainable natural resource management in developing countries since reports of successful cases were offered to refute Hardin's argument regarding the "tragedy of commons" [McCay and Acheson eds 1987; Ostrom 1990]. As a result, common resource management by local people has been promoted by international organizations such as the Food and Agriculture Organization (FAO) and the United Nations Development Programme (UNDP), and has been incorporated into the forestry policies of various countries.

Thailand has also followed this path since the 1990s. Indeed, sociologists and anthropologists have "discovered" local customs related to communal forest management, so-called "community forests", in many countries [Sane and Yos eds. 1993]. The Royal Forest Department (RFD) has also conducted research on community forests and provided assistance to all but those in protected or important watershed areas [RFD n. d.]. However, the practices that have been officially recognized as governing community forests are not actually traditional local customs. Although local customs might include measures designed to protect watersheds and village guardian forests, those forests that provide

resources for everyday life have not been subject to traditional communal management. Indeed, in many cases, people have simply extracted necessary resources from the natural forests without clear rules or restrictions. When forests were depleted by commercial logging or conversion to farmland, local people began to enclose neighboring forest resources and thereby established institutionalized community forests with written rules, clearly demarcated boundaries, and organized management arrangements. Projects sponsored by the RFD and non-governmental organizations (NGOs) have also promoted such institutionalized community forests, and community forests are now widespread. Thus far, local people have generally managed the community forests well and have not faced serious challenges.¹ However, the overall domain of natural resources has not been utilized in a sustainable way. At my research site in Northeast Thailand, for example, forests privately owned by local people have been converted to rubber gardens at a rapid pace. In this context, community forests are like islands isolated within a sea of rubber gardens.

Thus far, discussions about sustainable natural resource management with regard to forests in developing countries have concentrated on land and resources with common or communal tenure. Much emphasis has been placed on the conditions and systems (i.e., collective action either by local people alone or in collaboration with other stakeholders) necessary for sustainably managing specific communally owned resources. However, the living environment in each region involves more than just the land or resources under common or communal tenure. The destructive use of state or private lands and resources may upset the balance of ecosystems and damage the ecological services on which local people depend, even when common resources are well managed. The ability to earn a secure livelihood and access the various resources necessary for everyday life, free from disease and disaster, rests on the maintenance of a balanced ecosystem, irrespective of the governance of its components. I refer to such a living environment as a whole in terms of its “ecological security”. It is necessary to consider the mechanisms by which collective action establishes and sustains ecological security as a kind of common good.

The term “ecological security” has been used to refer to a situation characterized by safe and sustainable development at the global level resulting from successfully meeting ecological challenges such as global warming, desertification, and catastrophic natural disasters. Indeed, debate about the appropriate international framework for maintaining a balance among demographic factors, economic activities, and natural environments in an interlocking global ecosystem continues [Pirages and DeGeest 2004; Pirages and Cousins eds. 2005]. Rather than dwell on these macro-level debates, I focus instead on micro-level ecological security. It is possible that ensuring micro-level ecological security at the local level is one way to achieve global ecological security.

¹ This does not imply an absence of problems. As shown later, rubber cultivators have invaded community forests in Northeast Thailand. However, a majority of the people still respect the community forests.

In what follows, I examine a case involving the development of community forests and the subsequent expansion of rubber cultivation in Northeast Thailand, with a special focus on how the villagers have dealt with changes in their living environment. I then consider the collective actions that are necessary to enhance ecological security as a local common good.

1. Community Forests in the Area Surrounding Pha Taem National Park

1.1 Na Kho Village and Pha Taem National Park

The argument presented in this paper rests primarily on the field research I conducted in Na Kho and neighboring villages. Na Kho, an administrative village in the Nam Thaeng sub-district of the Si Mueang Mai district of Ubon Ratchathani province is located immediately west of Pha Taem National Park, which faces the Mekong river, the border with Laos. The national park is famous for ancient wall paintings, but it also contains rich natural forests in its northern, primarily hilly, portion. A part of the Nam Thaeng sub-district includes the park, which contains two villages. Outside the park, around Na Kho, the land forms gentle cascades. Paddy fields are located on relatively lower levels, whereas cassava fields and various gardens are on higher levels. Each village has its own “community forest”, *pa chumchon*, managed and utilized as a communal resource for residents. Privately owned patches of forests, most of which are old fallow swidden fields, are also found in this area. A small river, Huai Se, runs through Na Kho to the east and flows into the Mekong.

According to the database of the Public Healthcare Center, a total of 669 persons, comprising 137 households, reside in Na Kho. All 12 villages in the sub-district originated from the first village, Nam Thaeng. Kinship ties and mutual communication connect the villagers in the sub-district and other neighboring villages. In addition to Nam Thaeng, Na Kho and Chat are also relatively old villages in the sub-district. In particular, Na Kho, the home of the sub-district administrative structure, the sole high school in the sub-district, and the three newest sub-district headmen (*kamnan*), recently became the political center of the sub-district.²

1.2 History of Community Forests in the Pha Taem Area

Since the 1990s, villages in the area around Pha Taem National Park, hereafter “the Pha Taem area”, have established community forests with clear boundaries, written regulations, and management committees. Community forests were first established in present-day Na Pho Nuea³ and then spread to the other villages in the Pha Taem area. Na Pho Nuea’s

² *Kamnans* are elected by residents from among those village headmen in the sub-district who run for the office.

³ Na Pho Nuea is located in the Na Pho Klang sub-district of the Khong Chiam district, which is

community forest is an old 160-ha secondary forest known as “Nong Song Hong Forest”. Although commercial logging depleted this forest, various natural resources, which the people of Na Pho people have utilized without any regulatory restrictions, remain. In 1991, the RFD approved a plan proposed by the Forest Industry Organization (FIO)⁴ to replace this forest with a fast-growing tree plantation. The villagers demonstrated against this plan to protect their own resources. In 1992, the district head handed over the forest to the sub-district assembly. Discussion between the villagers and the RFD officers knowledgeable about community forestry led to the decision to establish the community forests of Na Pho Nuea and Na Pho Klang. Working with these officers and NGO staff members, villagers established regulations, organized a management committee, set up signboards, and collectively engaged in patrolling, rehabilitating, and creating fire breaks for the forest.

Other villages in the Na Pho Klang sub-district subsequently established their own community forests, which led to conflicts about the boundaries between villages. Then, in 1996, all the villages in the Na Pho Klang sub-district participated in the founding of the “Dong Na Tham Forest Network”, *Khrueakhai Pa Dong Na Tham*, to promote mutual cooperation and communication among the villages with regard to community forests. When the RFD launched projects to promote community forests in the Pha Taem area in 1997, key persons in the Network, together with field officers from RFD projects, visited the villages in neighboring sub-districts to explain the significance of community forests based on their own experience. These messages resonated with the people, who were anxious about the degradation of forests and wished to conserve the resources for the future generations. Additionally, the Network obtained funds from the government in 1998, which attracted the interest of many villages. As a result, many villages established their own new community forests and joined the Network. In 2003, the Network had 40 member villages across Nam Thaeng and Pho Sai as well as in the Na Pho Klang district.

Moreover, the United Nations Development Programme (UNDP) granted the Network additional funding for 2003–2007. These funds were distributed to member villages to support management activities, such as serving food during various activities or purchasing bicycles for patrols. However, the Network’s activities quickly stagnated after the funds were exhausted. The community forest in each village is managed for as long as each sub-district administrative organization provides budgetary support. Now that the significance of community forests is well understood by the people, these forests are well maintained despite occasional intrusions by individuals who travel long distances to the Pha Taem area to try to extract bamboo shoots for sale or illegally cultivate rubber.

1.3 Community Forest Management Practices

adjacent to Nam Thaeng. At the time of the establishment of the community forest, Na Pho Nuea was still a part of Na Pho Klang Village.

⁴ FIO is a publicly held cooperative dealing with logging and forestry.

Community forests in the Pha Taem area are managed similarly because, despite some modifications, they were all modeled on the one in Na Pho Nuea, the first community forest in this area. The following regulations are common to all community forests in this area: In principle, permission is required for outsiders to enter community forests and extract resources of any kind. Villagers can extract non-timber forest products without permission, whereas timber extraction is allowed only for non-commercial use and requires permission from the management committee. Some villages also require that permission be granted for felling trees in privately owned forests or prohibit any extraction of timber from community forests for certain periods. The fines for breaking these rules differ across villages.

Villagers in each village elect the community forest management committee. Village headmen and sub-district assembly members usually do not serve as chairpersons or vice chairperson. Small signs are placed along the boundaries of community forests, and a large signboard displaying the regulations governing the forest is placed at the major entrance. The main management activities involve patrolling, creating firebreaks, and tree planting. Patrolling is carried out on a regular basis by male villagers, who follow a rotation schedule. However, as noted above, many villages offer patrol services only as long as the relevant funding is available because, as the villagers explained, breaches of regulation are rare. No patrol system has been introduced in Na Kho. Instead, villagers gathering forest products or grazing cattle in the community forest are supposed to report unusual encounters. Tree planting for purposes of forest rehabilitation is done several times a year, typically on Mother's Day and Father's Day,⁵ and as many villagers as possible participate. The seedlings, mainly practical domestic varieties, are provided by the RFD (The National Park and Wildlife Conservation Department since the organizational reforms implemented in 2001) free of charge.

When community forests were initially established, most villages experienced difficulties because of residents' misunderstandings. Some villagers wondered if the government would eventually assume control of the forests after they themselves had devoted so much effort to their conservation and rehabilitation. Some claimed customary ownership of the land that was incorporated into the community forests. Although all claimants agreed to give up their claims when the community forest was discussed in the village, some remain dissatisfied about no longer being able to extract timber without permission. Breaches of regulations were committed by these individuals and by those who simply did not know the regulations. In most cases, the breaches were rather slight, such as extracting a small amount of timber without permission for house repairs.

⁵ Mother's Day, August 12, is the Queen's birthday, whereas Father's Day, December 5, is the King's birthday. Organizing tree-planting activities on those days is a demonstration of loyalty to the monarchy.

Remarkably, penalties are seldom imposed according to the written regulations. I interviewed the leaders of 34 of the 38 member villages of the Network in 2003. Twenty-five villages reported breaches. However, only seven cases in five villages involved fines, and most cases ended with admonitions. In four of the seven cases, the offenders were fined because, despite receiving admonitions, they did not cease committing breaches. Three cases involving fines without admonitions were serious offences: the villagers burned and cleared a part of a community forest; a villager, in cooperation with an outside merchant, extracted a huge number of bamboo shoots for sale; and an outsider extracted timber. The fines paid by the villagers involved in these cases were much smaller than allowed by the regulations. The leaders stressed the importance of convincing the villagers by admonishing instead of punishing offenders. Indeed, it was thought that large fines could cause further breaches by creating economic difficulties for offenders. The strict regulations and high fines are actually directed at outsiders and are intended to demonstrate the villagers' attitudes toward sustainable management. The importance of convincing all the villagers about the wisdom of these policies reflects the fact that the leaders, including the village headmen, do not have sufficient power to strictly enforce the regulations. Thus, they need to convince individual villagers to support their authority in this regard.

1.4 The Community Forest in Na Kho Village

The community forest in Na Kho consists of three pieces of land situated in a relatively hilly area covering the northern 2500 ha of the village. It was provisionally established with the consent of approximately 80% of the villagers in 1997 in response to encouragement from the local RFD officers who were promoting and developing community forests. In 1999, all villagers consented to the establishment of the community forest. When the sub-district administrative organization began to financially support the forest management in 2002, the villagers agreed to formally establish the community forest. At this point, Na Kho also joined the Dong Na Tham Forest Network although, as a latecomer, Na Kho has not received funding from the Network.

The following regulations govern the Na Kho community forest: Villagers must seek permission from the management committee for extracting timber from either the community forest or privately owned forests for house construction or repair. Villagers can extract non-timber forest products without any restrictions, whereas outsiders are allowed to do so only with the permission of the management committee and only for their own use. Hunting in the community forest is prohibited and cultivating new farmland anywhere in the village is prohibited. According to interview data, no breaches of the regulations had occurred until 2003, whereas occasional breaches, such as firing shots in the forest while hunting, were reported between 2003 and 2010. Additionally, as will be reported in the next chapter, the cultivation of privately owned forests and the planting of rubber trees have been rapidly increasing since around 2003, and the regulation prohibiting the

cultivation of new farmlands is not enforced. Indeed, the logic underlying local customs probably makes it difficult to restrict the usage of privately owned lands. This issue is discussed in detail later.

Management activities include annual tree planting and annual firebreak maintenance. As discussed above, patrolling has never been among the organized activities related to this community forest. Instead, those villagers who graze cattle or gather forest products in the community forest are supposed to report unusual occurrences. However, according to a villager working for the National Park and Wildlife Conservation Department, annual tree planting was the sole remaining organized activity, and firebreaks not been constructed for the 5 years preceding 2010. Nevertheless, the community forest is currently well maintained in the absence of breaches of regulations or serious fires.

2. Expansion of Rubber Cultivation in Na Kho and the Neighboring Area

2.1 Expansion of Rubber Cultivation in Northeast Thailand

Unlike Southern Thailand, Northeast Thailand does not have a long history of rubber cultivation. Although the government had examined the possible expansion of rubber cultivation, substantial expansion did not begin until 1989, when the government enacted a policy, implemented intermittently since that time, promoting this industry [Wichit n. d.]. Government projects promoting rubber cultivation lend peasants money to cover the initial costs of rubber cultivation, such as land preparation, seedlings, and fertilizer. The loan is paid back after the rubber resin is harvested 7 years after planting. These projects have been implemented by the Department of Agricultural Extension, *Krom Songsoem Kan Kaset*, and the Office of the Rubber Replanting Aid Fund, *Samnak Ngan Kong Thun Songkhro Kan Tham Suan Yang*, usually called *So Ko Yo*. These projects were designed to restore the water catchment ability of lands by covering non-forested lands with rubber trees as well as to improve the living standards of peasants. Although only those with legal tenure over their land are eligible to participate in the projects, many others have used their own money to plant rubber on land over which they have no legal tenure, which has accelerated the expansion of areas used for cultivation.

However, promoting rubber cultivation in Northeast Thailand was initially a major challenge. Mr. Panya, the head of the branch office of *So Ko Yo* in Ubon Ratchathani⁶ has been promoting rubber cultivation in Northeast Thailand since he moved from Phuket to Nong Khai in 1987. Mr. Panya reports that it took 5 years, from 1987 to 1993, for the peasants to understand the uses of rubber. He suggested that because peasants in Northeast Thailand tend to favor projects with short-term benefits, they were initially reluctant to cultivate rubber, which requires a wait of 7 years before harvesting. One rumor circulating among the peasants claimed that when they planted rubber trees, tears, *nam ta* in Thai,

⁶ At the time of interview, in February 2012.

would flow instead of rubber resin, *nam yang* in Thai, although the fallacy of this rumor was made clear by the results of the experimental cultivation undertaken by the research center in Nong Khai. After tenacious efforts by the officers, the peasants accepted rubber cultivation.

Figure 1 shows the increase in rubber cultivation since 1998 by region, and Figure 2 presents domestic rubber prices. In Northeast Thailand, the continuous increases in price have accelerated since 2003. This trend is in parallel with the rapid increase in the price of rubber. Although the price briefly decreased after the Lehman shock in 2008, it quickly recovered and set a new record, 170B/kg, in February 2011. During this period, the increase in cultivation was more pronounced in Northeast Thailand than in other regions. This increase in cultivation is attributable not only to the conversion of other crop fields to rubber gardens but also to the cultivation of privately owned, usually old and fallow, forests, called *hua rai plai na* forests. More extreme cases involved trespassing on protected forests, such as national parks. However, as far as I know, no international or domestic NGOs objected to such environmentally destructive rubber cultivation. Only a few peasants' groups encouraged peasants to conserve privately owned *hua rai plai na* forests. For example, the Isan Community Forest Association [n. d], *Samakhom Pa Chumchon Isan*, pointed out that expansion of rubber cultivation in the area surrounding the Dong Khum Kham and Dong Phu Kham forests in Ubon Ratchathani province destabilized the subsistence base and caused conflicts among villagers over natural resources. This group also supported the efforts of local community forest networks to promote more sustainable resource use. Similar actions also took place in the area surrounding Dong Saramoen forest, also in Ubon Ratchathani province, where rubber cultivators trespassed even into community forests. These cases actually occurred in neighboring districts of the Pha Taem area. Despite recognition of these problems, local residents still do not completely oppose rubber cultivation. Indeed, the economic benefits of such work probably preclude such total opposition.

2.2 Rubber Cultivation in Na Kho Village

In 2012, I conducted a questionnaire survey in Na Kho among 109 of the total 137 households in the village (the remaining 28 households were inaccessible). Fourteen households had no land,⁷ and the average land held by the 109 households, either by force of law or by customary occupancy, was 26.6 rai (1 rai = 1,600 m²). Most households did not have more than 50 rai. In terms of 10-rai sections, the largest 26 households had 21–30 rai, and 18 households had 31–40 rai. In terms of land use, the average paddy field was 12.2 rai, and the average size of other crop fields (cassava, 6.3 rai; rubber, 6.6 rai; cashew nuts, 0.7 rai) and forested lands was 0.8 rai. A plurality of households (86) used the land for paddy fields (86 households); this was followed by cassava fields (68 households),

⁷ This includes those cultivating their parents' farmlands and elders who had already passed all farmlands to their children.

rubber gardens (60 households), and other gardens (10 households).

All paddy fields were rainfed and spread out over the relatively lower lands, whereas cassava fields and rubber gardens were on the higher lands. However, this division was not always clear because the slope of the village land is gradual. The fields and gardens have recently expanded, replacing old fallow swidden fields.

It was not until 1990 that rubber trees began to be planted in Na Kho. An NGO, the “Innovative Farmers’ Association”, *Samakhom Kasetkon Kao Na*, conducted a training program focused on rubber-tree planting and provided loans to villagers who planted rubber trees. This plan was almost identical to the government’s project. Several villagers joined the project and planted rubber trees. One of these pioneers, Mr. Somthin, planted rubber trees with the support of the project on a 5-rai area in 1990 and added 5 rai in 1991. In addition to 23 rai of paddy fields, he had 100 rai of secondary forests that were old fallow swidden fields. He had not been planning to plant more than 10 rai of the forests until he witnessed the successful harvests of his pioneer trees in 1997. Since then, he has invested his own money to gradually expand the rubber gardens, in increments of 10 rai, in 1998, 1999, 2005, 2011, and 2012.

The majority of villagers began to cultivate rubber trees much later. According to the aforementioned survey of 109 households, 59 had rubber gardens. These occupied 713 rai, 45 rai of which were located outside Na Kho and four of which may or may not have been located in Na Kho. The years of cultivation of 417 rai of the remaining 664 rai, which were definitely in Na Kho, are clear. Figure 3 shows the distribution of the cultivation of the 417 rai along with the area in which rubber seedlings were planted by year and by household (59).⁸ The cultivation of land precedes the planting of seedlings. Cassavas are planted several years after new land is cultivated so that farmers can earn enough money to purchase rubber seedlings. Cassavas are also an important source of income and support residents until rubber seedlings become harvestable. However, both the cultivation of rubber gardens and the planting of seedlings occurred primarily after 2002. Various villagers reported that the privately owned *hua rai plai na* forests have almost disappeared, having been replaced by rubber and cassava fields. Of the 109 households surveyed, only 17 still maintained patches of *hua rai plai na* forests, and these totaled 88 rai. Of these 88 rai, 23.5 will be converted to rubber gardens. Only 52.5 rai will be conserved by the owners as sources of natural resources. Apart from the community forest, this 52.5 rai may be almost the last *hua rai plai na* forest in the village.

3. Changes in the Living Environment and Villagers’ Attitudes

3.1 Perceptions of Environmental Degradation and Changes in Subsistence Activities

⁸ The planting of rubber seedlings outside Na Kho is included.

When asked how the natural environments around the village had changed and how their lives had been affected by the expansion of rubber gardens, most villagers responded that the amount of wild-food materials had declined. Because *hua rai plai na* forests have almost disappeared, the villagers have had to depend on the community forest for wild bamboo shoots and mushrooms. Additionally, the herbicides villagers use in rubber gardens, particularly during the several years after planting the seedlings, have contaminated surrounding *hua rai plai na* forests and river streams. The population of wild fish in streams has rapidly declined and, since an elderly woman died from eating contaminated mushrooms that she gathered in her own *hua rai plai na* forest, the villagers have avoided the mushrooms growing in *hua rai plai na* forests. During wild-mushroom season, middlemen have traditionally come to the village to buy mushrooms gathered by villagers, which provides an alternative source of cash income. Recently, however, the middlemen accepted only those mushrooms obtained from that part of the community forest that is definitely free from contamination as the forest is situated in the highest area in the village.

In addition to this environmental degradation, villagers sometimes do not have enough time in their daily lives for fishing, hunting, or gathering as they work as wage laborers and in rubber gardens. Villagers now purchase more food than they did in the past. Indeed, the penetration of the cash economy has changed the villagers' lifestyle, and a certain level of cash income is now necessary.⁹

I also examined how villagers perceived these changes in their livelihoods. The survey of 109 households asked how much of the food, other than rice, that they consumed was wild, raised/cultivated, and purchased both now and 10 years ago. Figures 4, 5, 6, and 7 present the data obtained from the 101 households that responded to this question. Each vertical line represents a response provided by an individual household. These responses should be considered to reflect the impressions of participants rather than actual behaviors. In general, the data do not show a significant difference between purchases during the rainy and dry seasons, with 50–70% of all foodstuffs purchased throughout the year. However, many households reported that 10 years ago 20–40% of these products were purchased in the rainy season, whereas 30–40% were purchased in the dry season. This change reflects the villagers' perception that they now buy more food than they did in the past.

I also examined whether the rapid disappearance of *hua rai plai na* forests during these 10 years led to more pressure to use resources from the community forest. The questionnaire asked about the proportions of wild mushrooms and bamboo shoots extracted from their own *hua rai plai na* forest, others' *hua rai plai na* forests, and the community forest.

⁹ Mr. Pinyo, current head of the Na Pho Klang Sub-district Administrative Organization and a secretary of the Dong Na Tham Forest Network, attributed the decline in community forest activities to the broader socio-economic shift from self-sufficiency to a cash economy. He argued that the changes began around 2005 and suggested that the expansion in rubber gardens was also a result of this broader socio-economic change.

Comparisons between the data on current patterns with those on patterns 10 years ago are presented in Figures 8, 9, 10, and 11. Use of the community forest for these purposes did not significantly increase in the past 10 years. Strangely, the majority of informants reported that they continued to extract food material from either their own or others' *hua rai plai na* forests even though few people still actually have them. Some may gather bamboo shoots from the forests along the Huai Se River or gather mushrooms and bamboo shoots from the small groves near the fields and gardens if the land does not seem to be contaminated. Most importantly, however, the amount and frequency of gathering wild food material declined as the cash economy penetrated. Therefore, dependence on the community forest has not significantly increased, at least in terms of the villagers' perceptions.

3.2 Actual Rules and Regulations

In the context of the aforementioned environmental damage caused by rubber gardens, localities have enacted measures to regulate expansion, including provisions regarding *hua rai plai na* forests. However, these measures have not, in practice, regulated rubber gardens.

During an interview in 2010, the chairperson of the community forest management committee of Na Kho seemed to forget about the relevant regulation, saying, "It is not necessary to get permission to cut trees in privately owned forests." On the other hand, the sub-district headman, *kamnan*,¹⁰ did acknowledge the regulation, reporting that villagers in the sub-district must consult with him when they plan to cultivate *hua rai plai na* forests. He investigates sites with large trees and "overlooks" cultivation in sites with only small trees that cannot be utilized as lumber.¹¹ He views fallow swidden fields that are covered with only small trees or bushes as not actually being "forests", allowing them to be cultivated without counting this as a breach of the regulations.

However, in addition to being illegal, according to the provisions of the community forest regulations, the cultivation of young secondary forests is also illegal according to national laws. Villagers have customarily occupied farm or residential lands without a legal basis. These lands were located within Dong Phu Long National Forest Reserve, an area in which the law prohibits any kind of private land holding as well as any natural resource usage without formal permission from the RDF. In 1993, the government decided to transfer degraded forestlands that had actually been cultivated to the Agricultural Land Reform Office to distribute usufructs, known as "SPK 4-01", to the peasants. According to the

¹⁰ The position of *kamnan* differs from that of head of the Sub-district Administrative Organization. The *kamnan* is directly elected by the residents of sub-districts from among those village headmen who run for the office. However, unlike the Sub-district Administrative Organization, which is formally an autonomous body, the *kamnan* operates under the bureaucratic control of the Department of Local Administration of the Ministry of the Interior.

¹¹ The *kamnan* used the term *anulom*, "overlook," instead of *anuyat*, which means "formal permission".

kamnan, SPK 4-01 certificates for land in Na Kho that is located as far as 1 km from the settlement have been awarded.

However, SPK 4-01 certificates can be awarded only for land that has already been cultivated. That is, *hua rai plai na* forests are not eligible for such certification. Thus, villagers' cultivation of *hua rai plai na* forests is illegal, according to the related forest laws, regardless of how long they have been occupied or whether they have ever been cultivated. A "forest protection unit", *nuai pongkan raksa pa*, whose staff regularly patrols the forests with the authority to arrest villagers cultivating *hua rai plai na* forests, is located near the village. However, if villagers consult with the *kamnan* about cultivation in advance, and if the *kamnan* approves, the *kamnan* communicates this to the staff of the forest protection unit, who overlook these cases in favor of supporting the villagers' ability to earn livelihood. The *kamnan* was consulted on more than 50 cases, including some that did not elicit his approval, between his election, in January 2011, and my interview with him, in February 2012.

In reality, however, villagers do not always consult with the *kamnan*. According to my survey of 109 households, there were 43 instances in which *hua rai plai na* forests were cleared for rubber gardens or cassava fields after 2002, when the community forest was formally established in Na Kho. Of these 43, only 27 involved consultation with the *kamnan*. In terms of the vegetation cultivated, 18 cases involved almost primary forests and six involved forests with relatively large trees, whereas only two involved forests without large trees. I received no response from those involved in the remaining cases. These data indicate that, in reality, the *kamnan* finally relented and provided approval for cultivation rather than risk that a ban on doing so would suggest he was powerless to stop the cultivation of the old secondary forests that were to be conserved, according to the community forest regulations. Thus, the *kamnan* was largely unable to prohibit cultivation.

3.3 The "Family Forest Project"

Another attempt to persuade villagers to balance cultivation with the conservation of forest resources was the "Family Forest Project," *Khrongkan Pa Khropkhruea*. This project, initiated under the leadership of Mr. Lom, the current head of the Nam Thaeng Sub-district Administrative Organization, and funded by the Global Environmental Facility of the UNDP, was implemented in 2008 and 2009. Mr. Lom grew up in Loei province in Northeast Thailand. After graduation from university, he joined Nature Care, an NGO based in the city of Ubon Ratchathani, as a volunteer and promoted community forests in the Pha Taem area. He also played an important role in the formation of the Dong Na Tham Forest Network. He married a local woman, remained in this area after leaving Nature Care, and assisted the Dong Na Tham Forest Network.

This project assisted villagers in converting parts of *hua rai plai na* forests into "family

forests”, *pa khropkhruea*, with clearly demarcated boundaries and written regulations. The project aimed at enhancing villagers’ awareness of sustainable natural resource usage. The project staff organized meetings in each village at which they briefed the villagers on the project and requested their participation in the form of at least 1 rai of each family’s *hua rai plai na* forest. Participants in each village held more meetings, which were attended by village headman and other village leaders, to establish the regulations for these family forests. These regulations applied to all participants in each village, and participants were given a sign stating the regulations as well as small iron plates to place along the boundary. Although the project targeted 100 participants in Nam Thaeng and Na Pho Klang sub-districts, it attracted more than 150 participants, whose family forests now total 1,076 rai.

The project was intended to conserve privately owned forests by treating them as buffers for community forests, given the demand for natural resources. The staff tried to persuade villagers to consider costs and benefits. Although rubber cultivation can generate substantial income, it is also costly. If all the forests were replaced by rubber gardens, villagers would have to purchase everything. However, if they conserved natural forests, they would be able save money by extracting various resources without any cost. Therefore, it would be reasonable to conserve at least a portion of the forests they owned. The project distributed accounting ledgers so participants could track the value of what they extracted from their family forests; however, no one actually maintained these records.

The number of participants in the project varied by village. One village in Nam Thaeng and two in Na Pho Klang had no participants. Other villages attracted 20–30 participants. Na Kho had nine participants who had a total of 47 rai in their family forests. These participants offered the following reasons for their participation: They wanted to conserve their own forest resources, such as food materials and timber, because they believed forests would become increasing scarce in the future. Some intended to preserve their forested lands without obtaining a SPK 4-01 certificate from the government by appealing to the importance of sustainability and the role of well-established family forests. One villager noted that this institutionalization of “family forests” seemed overly formal and, thus, distant from their daily practice.

These villagers applied the basic concept underlying community forests to their family forest to protect their own resources from outsiders. Owners were also required perform certain duties to achieve sustainable use and management. The regulations concerning family forests in Na Kho clearly reflect these goals. They prohibit outsiders who are not family members from entering family forests or utilizing resources from family forests without permission. Outsiders who illegally clear family forests are admonished and fined not more than 5000B upon their first offense. With respect to rehabilitating family forests, when the owner of a family forest cuts a tree, he/she has to plant five trees; tree planting is carried out once per year, and holes must be filled after extracting wild yams.

Unlike community forests or other development projects, the family forest project did not involve large-scale collective activities or investments. Some villagers could not understand the significance of the essentially individualistic and conservative characteristics of the project. However, throughout the project, participants seemed well aware of the importance of family forests, even though the number of such participants was limited. With the exception of one household with nine participants, the eight households who cultivated family forests in 2010 still do so.

3.4 Increasing Concern about the Rights Governing Private Forests

Although the family forest project may initially seem conservative, insofar as it tries to preserve existing forests without any special inputs, it actually has the potential to bring about critical changes in local customs. What is most remarkable is that the regulations stipulate that outsiders obtain permission from owners to extract resources. Until this point, it had been customary to allow everyone to extract non-timber forest products (e.g., mushrooms, bamboo shoots, fish, and animals), from anywhere in the vicinity of the village except ancestral forests, regardless of land ownership. The family forest regulation conflicts with this custom. In reality, this provision is not enforced, but the custom that those in the same village or kinship group can extract all resources except timber from one another's lands is still followed. However, the regulation reflects a growing awareness that landowners should have exclusive control over the resources on their land.

Some villagers argue that a *de facto* rule not to extract non-timber forest products, except for mushrooms (which spoil quickly) from others' forests without permission has been in force since the establishment of community forests. On the other hand, others, having cultivated all of their own land, do not hesitate to extract any kind of non-timber forest products from others' forests. This fluid perception about resources is reflected in the unenforced regulation. One participant predicted that in the future, probably 10–20 years hence, each household would be restricted to using their own forest. This individual preferred this modern approach. The *ex-kamnan*, a participant in this study, also believed that the regulations governing family forests should be strictly implemented when resources are insufficient, due to population growth in the future. At present, however, some participants in Na Kho do not display the signs with the regulation in their family forest and keep them, instead, in their houses. This careful balance between enforcement and lack thereof discourages potential conflicts over resources. The aforementioned case study by the Isan Community Forest Association reported conflicts among villagers over scarce forest resources. However, when the balance between the demand and the supply of natural resources becomes more tenuous, restricting access to resources to landowners may also cause conflict in Na Kho.

As demonstrated in the foregoing, the increased sense of the right of ownership over

private forests apparent in the family forest project is an extension of the logic of community forests in that the latter protects scarce resources from outsiders. Community forests protect the villagers' collective right to resources from outside exploitation, whereas family forests protect individual rights. Both challenge the custom of open access. As a practical matter, the non-timber products in family forests in Na Kho remain open to other villagers because villagers' daily dependence on natural resources has declined due to changes in lifestyle and the high price of cash crops.

4. Challenges to Ecological Security: Difficulties and Possibilities

4.1 Impact of Rubber Cultivation on Ecological Security

As shown thus far, changes in the living environment have been caused by the rapid expansion of rubber cultivation. Most privately owned *hua rai plai na* forests have been converted into rubber gardens or cassava fields, which has resulted in a decrease in the natural resources available for use in daily life and in contamination by herbicides. These pose inevitable and substantial threats to the ecological security of villagers.

The results of the survey of 109 households show that villagers had cultivated a total of 694 rai of forest land; 331 rai had been converted into rubber gardens, and the remaining 363 rai had been converted into cassava fields since 2002, when the community forest was formally established. Simple calculations based on the number of households show that 872 rai of forest may have disappeared. Although this figure may seem small compared with the size of the community forest, which consists of 2500 rai, the community forest includes a large flat rocky area on the top of a hill. This land is rich in wild mushrooms but does not have watershed protection. Therefore, the loss of *hua rai plai na* forests may have a more serious impact on watershed functions than on food resources. Similar changes have occurred in a much wider area. In the autumn of 2008, the Huai Se River severely flooded, causing damage to paddy fields and cattle, after heavy rains continued for several days. Villagers had never experienced such a severe flood, and many believed that the flood was caused by the loss of *hua rai plai na* forests.

The community forest is currently the only remaining natural forest. However, even this land may be subject to violation in the future, when the rubber gardens and cassava fields have saturated the currently available land. The meaning of the community forest may also change if daily dependence on natural resources decreases due to a shift to a cash economy, which may, in turn, result in a decline in the villagers' motivation to conserve the community forest.

The ecological security of Na Kho and the neighboring area, and the ability of forests to prevent floods and provide resources necessary to survive without cash income, have been damaged and such areas face the threat of additional damage. The maintenance of

ecological security and harmony between livelihood-related and ecological considerations can be achieved by the collective action of the people. In reality, however, collective action has been directed only at conserving community forests, which are like islands in the sea of the global economy, which includes rubber gardens and cassava fields. In this context, the islands may well be flooded.

4.2 Social Aspects of Ecological Degradation

The degradation of local ecological security is not attributable to villagers' naivety. Regulations that prohibit the cultivation of private forests without permission reflect villagers' awareness of the need for the sustainable use of both community and privately owned forests. However, it should be noted that the written regulations pertaining to community and family forests do not represent the independently formulated decisions of the villagers. Although the regulations were discussed and endorsed by the villagers in the absence of explicit pressure from the project staff, the villagers were nonetheless operating under the influence of the "received" knowledge about sustainable forest management and the institutional mechanisms best suited to achieving this goal. As the villagers were not able to logically refute these arguments advanced by outsiders, they had almost no choice but to accept at least their basic outline. This is one reason that villagers established regulations that they did not intend to strictly implement. This kind of gap between rules and practice is widespread in the bureaucracy of this country and serves to decrease potential tensions and flexibly deal with various real situations.

From a different perspective, the unenforced regulations may illustrate the lax enforcement of rules within the village community more generally. For example, those villagers who did not follow the regulations during the period immediately following the creation of community forests were admonished and not fined. It was assumed that new rules would be followed only if individual villagers accepted them and not through enforcement. Indeed, village headmen or *kamnans* do not have the power to enforce unpopular rules. Instead, they must rely on their charisma to convince each villager. It has been noted that it is the fabric of individual ties rather than rules and organizations that form the foundation of social order [Embree 1950; Evers ed. 1969; Mizuno 1981]. This study has presented, then, the background of the failure to prevent the cultivation of *hua rai plai na* forests in Na Kho and neighboring villages.

4.3 Maintaining Ecological Security

Despite these issues related to land ownership, collective action in the service of maintaining the ecosystem is necessary for local ecological security. Specifically, the following measures related to physical conditions are required. First, certain areas of the forests must be conserved to serve as watersheds as well as to provide resources. Agroforestry should be practiced to render rubber gardens more diversified and

multi-layered so that they not only serve as watersheds but also reduce the risks posed by the vicissitudes of nature and ensure self-sufficiency in terms of the resources necessary for agriculture and daily living. Under such conditions, the humanosphere would be secure even in the case of a sharp decrease in crop prices. Agroforestry also makes it possible to avoid using herbicides that damage wild food resources.

Achievement of these goals involves patiently persuading villagers to take these actions until they reach a consensus. However, the actual conditions in the area make this difficult. Indeed, community forest regulations that restrict the usage of privately owned forests have not been implemented thus far. Some individuals cultivate forests without prior consultation with the *kamnan*, and the *kamnan* does not always stop the clearing of old *hua rai plai na* forests even when he is consulted. Additionally, the number of households participating in the family forest project has also been limited, and most villagers are concerned primarily with increasing their income via cash crops. In this situation, persuading the villagers to maintain ecological security by foregoing a certain portion of their short-term economic benefits is very challenging. It is possible that collective action in the service of ecological security may have to wait until a majority of villagers feel that their livelihood is more seriously threatened by the erosion of ecological security. In fact, many successful shifts from capitalistic agriculture to multi-dimensional combinations of subsistence activities have been initiated after an economic or ecological catastrophe.¹²

4.4 Ambivalence among Villagers

At the same time, villagers also maintained their connection to nature in their livelihood-related activities, and it is possible that they do not want to completely sever this tie by shifting to a cash economy. Although the majority of villagers rely on wage labor for cash income, they still considered paddy cultivation, which is oriented to self-consumption, to be their most important activity. The extraction of wild food materials continued even though the amount extracted and the frequency of extraction have declined. Indeed, villagers are facing a dilemma: although concerned about the drastic changes in the environment, they cannot help but be driven by economic incentives. Many villagers expressed regret and guilt about the degradation of their living environment. For example, one villager noted, “All the forests except the community forest have already disappeared.” Another said, “Nowadays, there are few fish in the river, and mushrooms cannot be eaten if they are not from the community forest. It is unlike the past when nature was rich, and abundant resources were easily available. Everything has changed.” When asked if they cultivated rubber, most villagers unhesitatingly answered “yes” and proudly explained how they managed to make this investment. Villagers differed in terms of their concern about

¹² Well-known attempts in Thailand include the agroforestry project conducted by Mr. Wibun Khemacharoen [Wibun 1987], the mixed-agriculture efforts by Abbot Luang Pho Nan [Phithaya 1989], and the integrative alternative development program consisting of mixed gardens, various small-scale manufacturing efforts, micro-credit, and ecotourism implemented in Khiri Wong in Nakhon Si Thammarat [Ponpilai 1989; Anucha 2006].

natural resources: some joined the family forest project and reserved a part of their forests for this purpose, whereas others cleared their land. However, many pursued an entirely capitalistic approach to earning their livelihood, without any concern for nature. Many expressed regret and envy when talking about family forests. They seemed to waver between a desire for material wealth and a feeling of psychological anxiety about the ecological security of their lives. Thus, decisions about whether villagers continue their rubber cultivation or attempt to restore ecological security depend on subtle changes in their state of mind.

Conclusion

Thus far, I have considered the meaning of local ecological security by examining the case of community forests and the expansion of cash crops, especially, rubber, in Na Kho and the surrounding Pha Taem area. Since the 1990s, community forests have been established to protect local forest resources from exploitation by outsiders. Na Kho established and managed its own community forest as a communal resource for villagers. On the other hand, efforts to achieve the balanced use of other forests, customarily owned by the villagers, have largely failed. As a result, wild food resources have been lost or contaminated; moreover, the watershed has probably been disturbed. The case of Na Kho shows that the sustainable use of common or communal resources is not enough to maintain ecological security. Instead, the overall balance of the local ecosystem, irrespective of the ownership of land and resources, must be maintained through collective action undertaken by local residents in collaboration with governments and NGOs.

Thus far, I have discussed ecological security at only the global level. Indeed, we must develop a global plan to deal with the macro-level socio-economic dynamics that affect the ecological balance of the world. However, such a global plan should be based on an understanding of micro-level realities, including how the relationship between local livelihood-related activities and nature has been transformed and how people struggle with these changes, to the end of ensuring harmony between people's livelihoods and the natural ecosystem at the local level. The imposition of a macro-level solution on the micro-level in a top-down manner can lead to unrealistic policies and strategies. We have much to learn from the previous failures of states to implement top-down natural resource management strategies.

Indeed, micro-level ecological security can be achieved and maintained only by approaches that are embedded in the socio-cultural context. The case of Na Kho demonstrates the difficulty of organizing people who are living according to the traditional social order. However, the local people are ambivalent about the trade-off between economic benefits and ecological security. Faced with a rapidly changing environment, people feel insecure about the future. In this context, it is critically important to persuade the people to study and discuss the long-term issues related to ecological security to promote adaptive

responses to ecological challenges and enhance resilience through collective practices. In the absence of adaptive responses and collective practices, the increasing scarcity of resources will lead to an increasing emphasis on private forests. An excessive emphasis on the individual right to access resources may lead to the collapse of community forests, the legitimacy of which are based on a consensus among the villagers. The involvement of outsiders, such as governments, NGOs and intellectuals, who carefully consider local practices, may be necessary to stop this destructive process. Such bottom-up approaches to the micro-level ecological security of diverse places could be the foundation of larger scale (i.e., national, regional, or global) ecological security.

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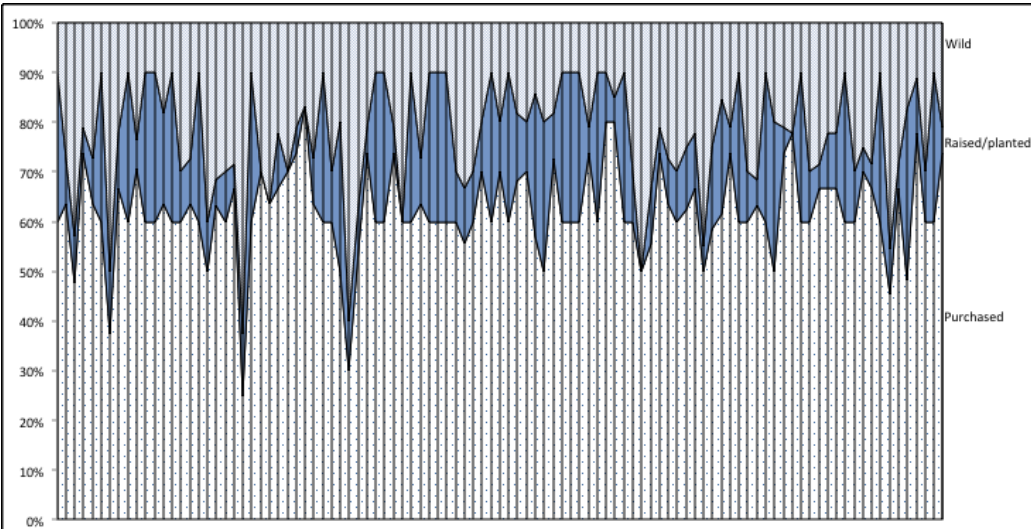


Figure 4. Perception of Current Source of Food Materials, Rainy Season

*Each vertical line shows a household's answer

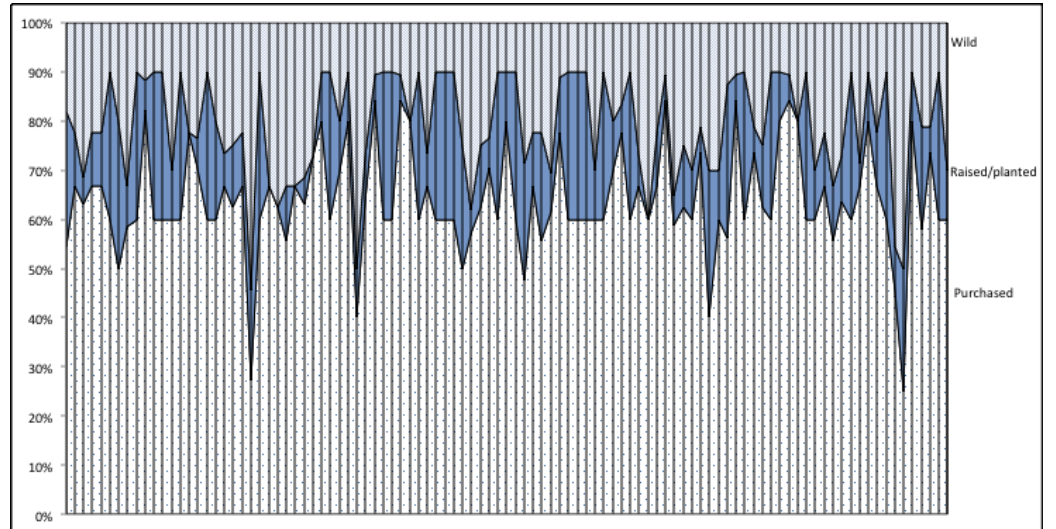


Figure 5. Perception of Current Source of Food Materials, Dry Season

*Each vertical line shows a household's answer

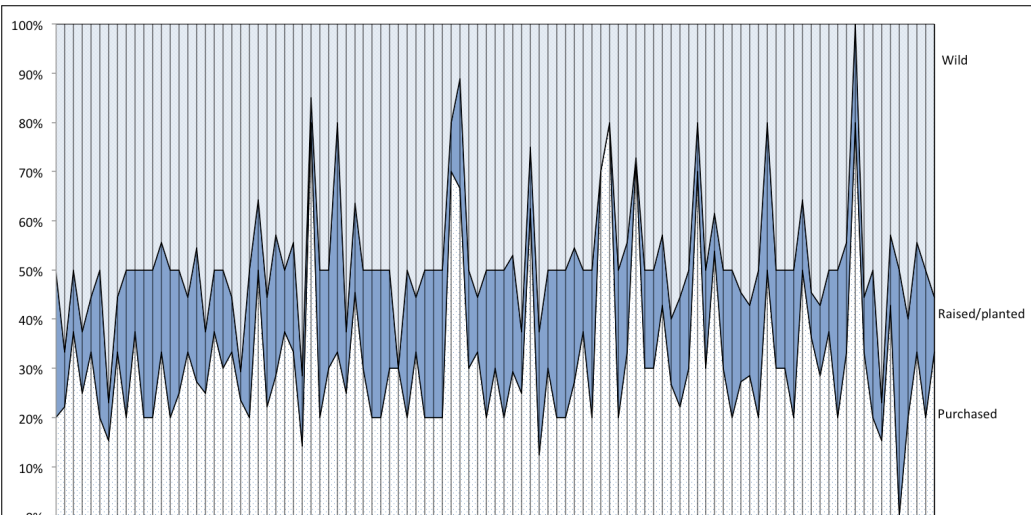


Figure 6. Perception of Source of Food Materials 10 Years Ago, Rainy Season

*Each vertical line shows a household's answer

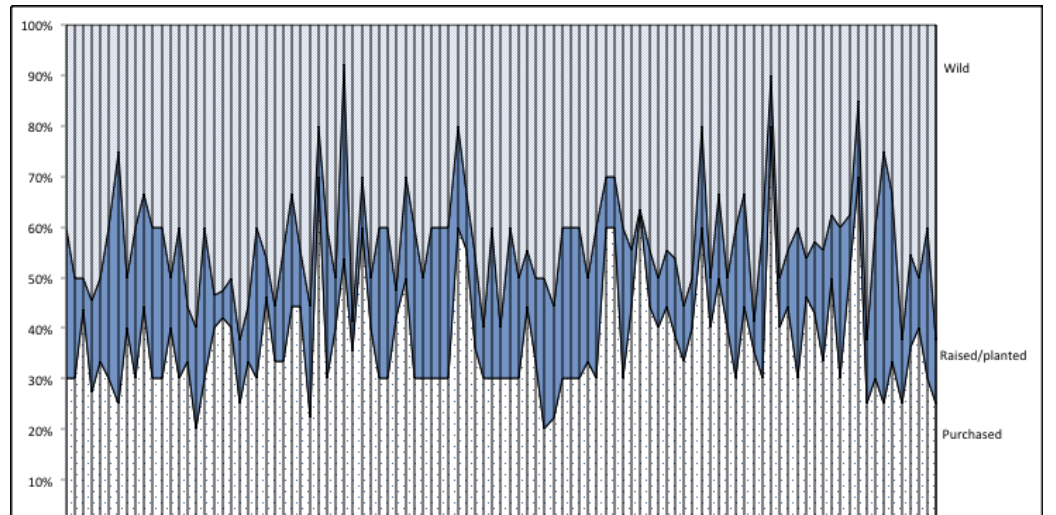


Figure 7. Perception of Source of Food Materials 10 Years Ago, Dry Season

*Each vertical line shows a household's answer

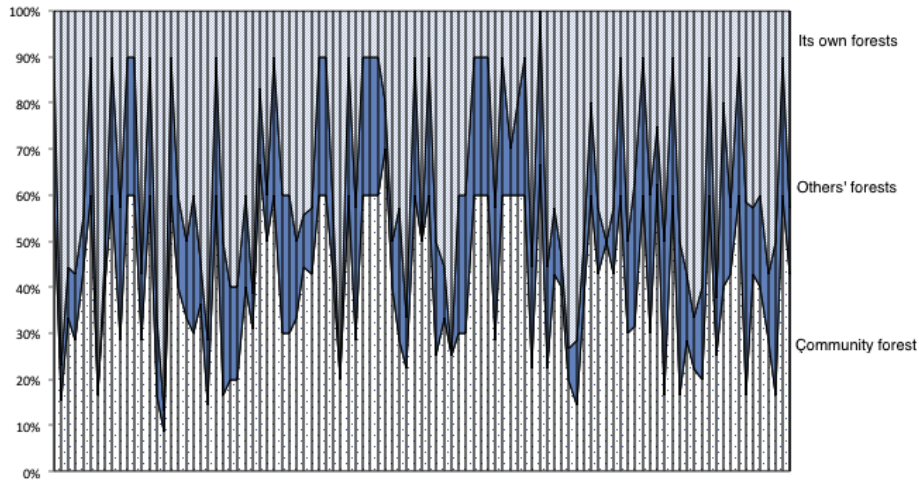


Figure 8. Perception of Current Origin of Bamboo Shoots
 *Each vertical line shows a household's answer

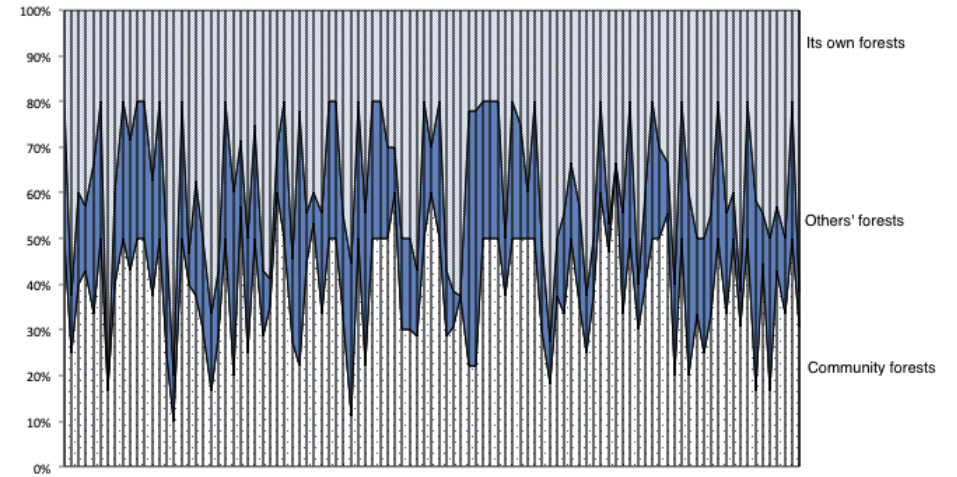


Figure 9. Perception of Current Origin of Mushrooms
 *Each vertical line shows a household's answer

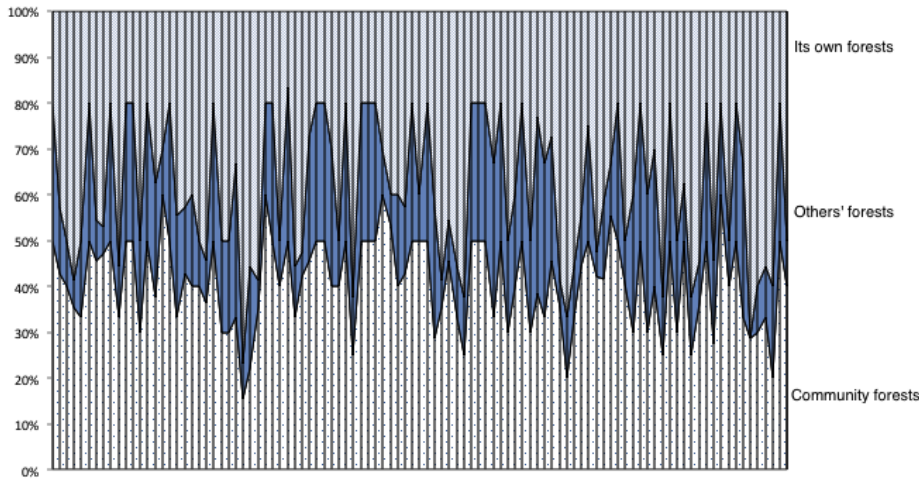


Figure 10. Perception of Origin of Bamboo Shoots in 10 Years Ago
 *Each vertical line shows a household's answer.

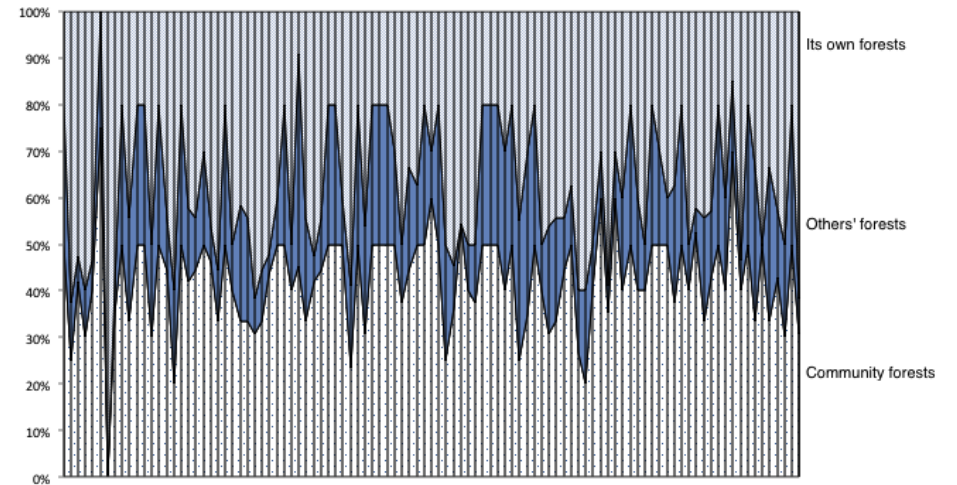


Figure 11. Perception of Origin of Mushrooms in 10 Years Ago
 *Each vertical line shows a household's answer.

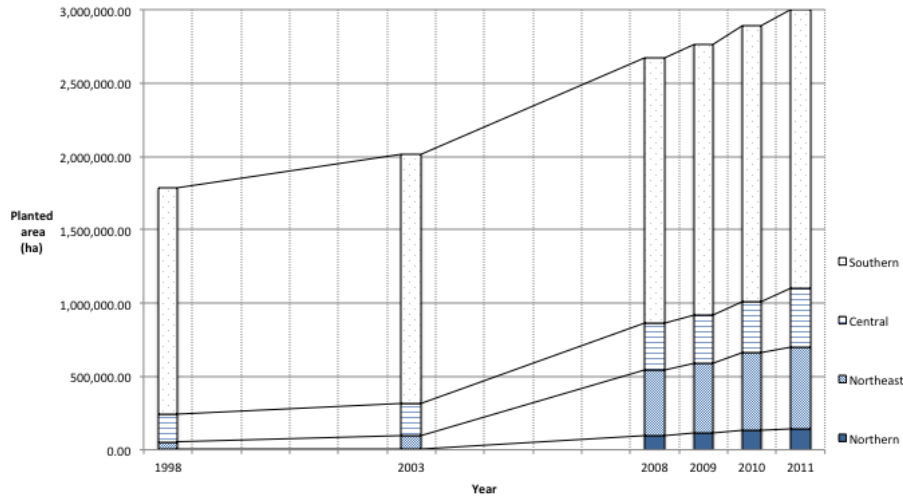


Figure 1. Expansion of Rubber Cultivation Area by Region
 Source: Office of Agricultural Economics (n.d. a)



Figure 2. Price of Rubber, 1997-2012
 Source: Office of Agricultural Economics (n. d. b).

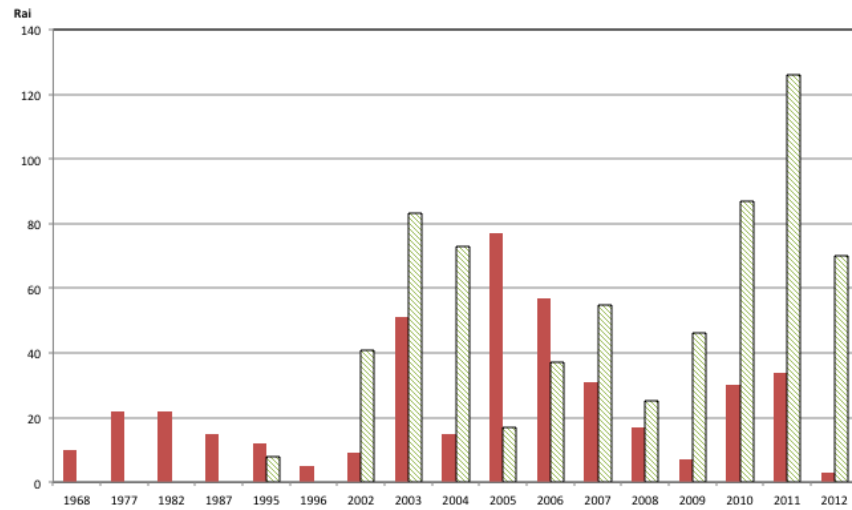


Figure 3. Clearing and Planting Rubber Trees
 *Unshaded bars show the area of clearing that is current rubber gardens.
 Shaded bars show the area of rubber planting.