

HIGHLAND CASH CROP DEVELOPMENT
AND BIODIVERSITY CONSERVATION:
THE HMONG IN NORTHERN THAILAND

BY

WARANOOT TUNGITTIPLAKORN

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Highland Cash Crop Development and Biodiversity Conservation:
The Hmong in Northern Thailand

by

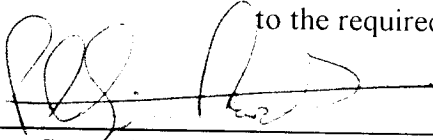
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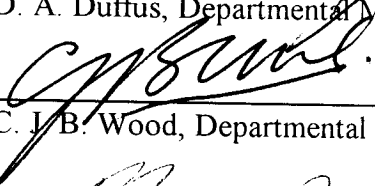
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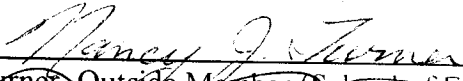
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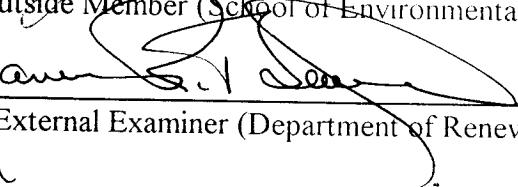
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ABSTRACT

This study explores two interlinked aspects of human-environment relationship - cash crop development and biodiversity conservation - by examining the situations of the Hmong people, the largest traditional pioneer swidden group in the Thai highlands. Cash crop adoption among the Hmong have occurred in two main ways. The first involves the adoption of low-input upland crops and a shift to high-input vegetable crops. This pattern is found in the Lower North and spread to the Upper North, particularly in Tak, Phrae, Nan, Payao and Chiang Rai. The adoption is closely linked to the development of roads into the uplands and the diffusion of maize cultivation in the lowlands. The second pattern is a direct shift from opium to high-input crops, particularly cabbage. Large scale cabbage growing began in the early 1980s as a response to the demand for off-season vegetables. The most important driving factors behind cash crop adoption were the government poppy eradication activities, the contacts between market agents and the Hmong and the increased accessibility of Hmong villages. Adoption was facilitated by favourable market prices at the initial period and by the Hmong clan network.

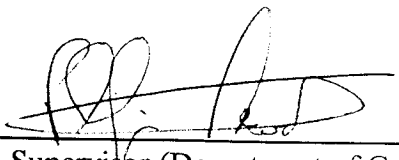
Each type of cash crops has had its particular effects on the Hmong socio-economy. Cut-flowers bring small but regular income into a household while cabbages bring a lump sum, a few times a year. Cabbage production induces high level of truck ownership leading to increased mobility, rapid diffusion of innovations, changing cultural values and increased uses of lowland services (such as health care, schools, market, etc.). Flower production, on the other hand, allows women to take active parts in marketing. The study also found a type

of movement not discussed in earlier literature, the temporary migration of households or parts of households to take advantage of successful cash crop cultivation in other villages for a period of 1-2 years.

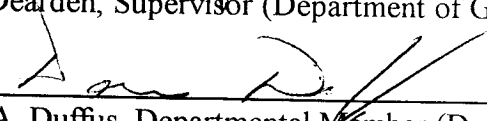
The examination of four cash crops: opium, maize, cabbage and carnations shows that the Hmong have gradually shifted from land extensive to land intensive cash crops. This move to economize on land is, however, recompensed by the need for high inputs in agriculture. The more land intensive the crop is, the more fertilizers and pesticides are used. Comparisons between crops on three variables: population-land ratio, income and pesticide used per unit area, suggest that cut-flowers may be a superior crop, if measures to reduce pesticide uses can be found.

Cash crop adoption affect the relationships between the people and wildlife in three ways. First, the labour-intensive nature of cash crop production prevents farmers from spending as much time in the forest as in the past. Second, cash crops provide incomes which allow the people to obtain meat from the market and thus reducing the needs for wild meat. Third, cash crop economy orients people toward the lowland, resulting in weakening traditional knowledge about wildlife behaviours, hunting or trapping. Most Hmong view hunting as a leisure activity, and some, particular women, see it as a waste of time. Reduced hunting, however, has not lessen the pressure on wildlife as the population of all species are reportedly declining. Many Hmong villages have rules against hunting some species, particularly gibbons. This rule is respected by most people but not all. Since the people do not feel that their livelihood is greatly affected by the disappearance of wildlife, the direct relationships between economic improvement and conservation is not clearly apparent.

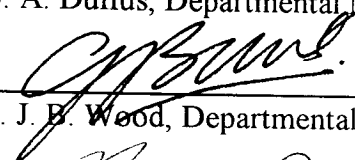
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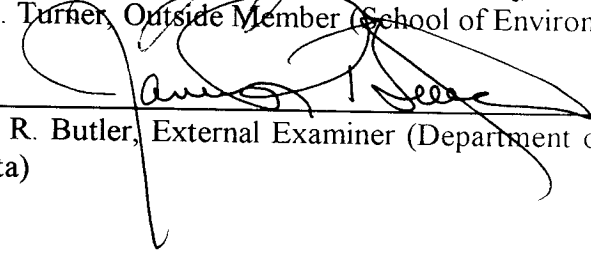
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List of Acronyms

BPP	Border Patrol Police
CMU	Chiang Mai University
CPT	Communist Party of Thailand
CRCDP	Crop Replacement and Community Development Project
DPW	Department of Public Welfare
FAO	Food and Agriculture Organization
HAMP	Highland Agricultural Marketing and Production Project
HI	High Input
IPAD	Integrated Pocket Areas Development Project
KMT	Kuomintang Chinese Nationalist Army
LI	Low Input
MCWDP	Mae Chaem Watershed Development Project
MDT	Mobile Development Team
NESDP	National Economic and Social Development Plans
ONCB	Office of Narcotic Control Board
PLP	Participatory Landuse Planning
RFD	Royal Forestry Department
RP	Royal Project
SC-SF	Short Cultivation-Short Fallow
SC-LF	Short Cultivation-Long Fallow
SM-HDP	Sammun Highland Development Project
LC-VLF	Long Cultivation-Very Long Fallow
TA-HASD	Thai-Australia Highland Agriculture and Social Development Project
TDRI	Thailand Development Research Institute
TG-HDP	Thai-German Highland Development Project
TN-HDP	Thai-Norway Highland Development Project
TRI	Tribal Research Institute
UNDP	United Nations Development Program
UNFDAC	United Nations Fund for Drug Abuse Control
UNPDAC	United Nations Programme for Drug Abuse Control
USDA	United States Department of Agriculture

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Chapter 1

Introduction

*The loss of biological diversity removes forever
creatures of beauty and parts of our cultural heritage
Our Common Future, p.35*

In 1987, the World Commission for Environment and development (WCED) chose the linkage between economic development and environment as the central theme of its report, *Our Common Future*. This perspective has received considerable support among conservationists who often found that “counting critters” alone is not enough to tackle the complex problem of biodiversity degradation. The statement by the Chief Biodiversity Officer at the World Conservation Union (IUCN) reads, “The problems of conserving biological diversity...cannot be separated from the larger issues of social and economic development” (McNeely *et al.* 1990:11). Social scientists were urged to carry out research “to determine how local people manage their resources, how changes in resource availability and land use affect human behaviour, ...to identify the legitimate self-interests of rural people, and design ways of ensuring that the interests of conservation and community self-interest coincide” (p.13, 21).

A similar message is echoed in protected area management literature. According to the publication from the 1992 World Congress on National Parks and Protected Areas, “Biological diversity is not limited strictly to the plant and animal worlds; it includes human cultural diversity ...Understanding the culture of local communities and how they make land use decisions is essential to the protection and future viability of protected areas” (Barzetti 1993:5,6). A subsequent publication accentuates the same idea, “The management of protected areas is necessarily the management of people, for kin, community, class, and culture are fundamental units in the use, conservation, and preservation of natural resources” (Machlis 1995:45). According to the WCED (1987:53), conservation can be successful only when those who “live in ecologically vulnerable areas, such as many tribal groups in forests, desert nomads, groups in remote hill areas, and indigenous peoples” are able to make a living

without harming the resources. “The destinies of the two are intertwined. Species conservation is tied to development” (p.153).

In Southeast Asia, the connectedness between socio-economics and the environment is clearly demonstrated in the shifting cultivation systems of the highlands. In these systems, agriculture is dependent on ecosystem processes. Shifting cultivation relies on natural succession to replenish lost soil nutrients. Shifting cultivators also depend on the diversity of plants and animals for shelter, food, clothing, medicines, and spiritual well being (Anderson 1993).

Yet, the biodiversity of Southeast Asian forests is declining. Between 1990 and 1995, the forest land in continental Southeast Asia decreased by 1.165 million hectares annually (Forest News 1997). Indonesia, the Philippines, Malaysia, Viet Nam and Thailand all rank among the top 20 countries in the world with the highest number of threatened mammal species (IUCN 1996:intro 32). The same countries, together with Myanmar, are also among those with the most threatened bird species (Ibid: intro33). These conditions are likely to change the relationships between humans and wild species that had once been part of many cultures in the region (Dearden 1996).

The highlands of Southeast Asia are home to many distinct cultural groups who farm marginal lands of tropical forests. Through geographic isolation and cultural differences, these highlanders often have the least access to governmental services and are in general poorer than members of the mainstream societies. Nevertheless, they possess a rich cultural heritage including a wealth of knowledge about their environment. In Thailand, they are known as Hill Tribes¹ or *chao khao*. Scholars have distinguished them by their traditional patterns of land use (Grandstaff 1980). The *pioneer swiddeners* such as the Mien, Hmong, Lisu, Lahu and Akha, farm the land until the soil is exhausted before moving their fields and eventually their settlements to new areas. The *established swiddeners*, such as the Karen and the Lua, farm

1

There is no consensus on the usage of this term. It is currently a standard translation of the word *Chao Khao* and is used in official documents. However, some social scientists feel that this label is misleading and disrespectful (see Kunstadter 1967; McKinnon 1989). In this study, the term is capitalized to indicate that it is a proper noun.

the same location but rotate the fields systematically. The established swiddeners have been recognized as being relatively conservative in their exploitation of resources, while pioneer swiddeners, who live at higher elevations, are known to be more extractive (Kunstadter and Chapman 1978, Mischung 1986). The areas where these peoples reside, particularly at the high elevation where the pioneer swiddeners live, are now contested for many other uses: water sources for agriculture and other uses in the lowlands, commercial forestry, farming, tourism development and as the last remaining reservoirs for wilderness and biodiversity preservation.

The Hmong, the largest group of pioneer swiddeners in Thailand, are the focus of this study. The Hmong migrated from China to Southeast Asia in the mid 19th century. Since the 1880s they have slowly moved into Thailand (Geddes 1976, McCarthy 1900). The Hmong were once subsistence farmers, growing rice, maize and opium. However, in recent decades, they have undergone significant economic changes, the most striking being the adoption of conventional cash crops such as vegetables and cut-flowers. These changes have occurred at the same time as the expansion of the protected area system in Thailand, resulting in many Hmong communities becoming enclaves in, or adjacent to, national parks and wildlife sanctuaries. To understand the ramifications of these two developments, this study will focus on the significance of cash crop development on the Hmong's relationships to land and wildlife.

1.1 The Contribution of this Study

Contribution to Geographical Research. The study is located within two major themes in geography: ecological analysis and regional study. Ecological analysis is the study of relationships between human activities and the natural environment (Mitchell 1989). This approach has been used to help understand environmental problems that are caused by human actions. Blaikie (1985), Brookfield and Byron 1993, Rigg (1996a) and Dearden (1996) are recent examples of works by geographers on ecological/environmental analysis in developing countries. This study will add to the body of literature on the relationships between highland inhabitants and biodiversity.

By looking at social, economic and environmental changes in a particular society or place, the study also belongs to the regional geography tradition. This approach is often used in applied geographic research where grand methodology and universal generalization are given less emphasis in favour of diversity; and cultural differences (Johnston 1991:46). The strength of this approach lies in its synthesis nature which utilizes concepts from both natural science and social science. The current study examines the history, economics, politics, cultures and environment of the Thai highlands in order to give a comprehensive understanding of this region.

Contribution to Conservation Literature and Management. While several authors (e.g. Keen 1972; Mischung 1986; Savage 1994) have studied the impacts of the Hmong swidden agriculture on soil fertility and forests, relatively little information is available on the people's relationships to wildlife. Protected areas theoretically aim to conserve the biodiversity of both fauna and flora but conservation agencies such as the Royal Forestry Department have in the past concentrated on protecting trees and on reforestation. Studies elsewhere have pointed out that the protection of forest lands, although crucial, does not guarantee the preservation of animal species (Redford 1992). In fact, many studies have found that the status of wildlife in northern Thailand is at a critical level despite the efforts to protect trees (Round 1984; Elliot *et al.* 1989; Humphrey and Bain 1990; MIDAS 1993). Dearden (1993), for example, described the region as being at a stage of "faunal collapse". This acute problem and the gap in knowledge about wildlife requires improved information and understanding at all levels. This research is an attempt to fill this gap particularly on the issue of local people and wildlife. It is believed that these findings will be useful to conservation managers, agricultural extension workers and development officers whose work is involved with highland communities in protected areas.

Contribution to Ethnographic Knowledge. People's relations to wildlife do not occur in isolation from their social and economic situations. Thus, the second aim of the thesis is to look at the changes in the socio-economic situation of the Hmong people. For more than a

6. How can biodiversity conservation be strengthened in the context of current development in the Thai highlands and particularly in areas where Hmong people reside?

These research questions are addressed primarily through detailed case studies of two Hmong villages. However, these villages are not necessarily representative of all Hmong villages in Thailand and special care is taken to indicate how general the findings might be, and how broadly applicable the recommendations are.

1.3 Organization of the Thesis

The thesis unfolds in nine remaining chapters.

Chapter 2 reviews literature that forms the basis of the author's understanding of biodiversity decline and the relationship between local people and biodiversity. It also surveys the literature pertaining to the characteristics of agricultural societies and how they change over time.

Chapter 3 presents the background of the region under study, the highlands of Northern Thailand. The physical and human geography of the area are described, followed by an historical account of the Thai government policies toward the people and the resources in the highlands. Chapter 4 presents the methodological framework of the study. Here, data collection methods are described and the issue of data reliability and the steps taken to address this problem are outlined.

The research content itself is presented in two parts. Part I, Chapter 5 and 6 is devoted to the topic of cash crop development among the Hmong. Chapter 5 examines first the Hmong's traditional cash crop, opium, and follows the process of change up until the situation prior to the study. Chapter 6 presents the current cash crop situation in two case study villages.

Part Two starts with a survey of literature from different disciplines for the information on the various highland groups and their relationships to wildlife. Although Chapter 7 is based primarily on secondary data, it represents a valuable extraction in that it has been compiled from a broad range of sources on topics for which no such comprehensive

century, the Hmong economy in Southeast Asia was based on opium, rice, maize, livestock, hunting and gathering. The recent shift to a non-opium cash crop economy is an important turn in Hmong history. Economic changes among the Hmong not only have important implications to resource uses but also have profound impacts on culture and social relations. On the basis of these changes, the thesis will update and complement the works done by other researchers on the history and economy of the Hmong people in Thailand (e.g Benazik in the 1930s; Keen and Geddes in the 1960s; Cooper in the 1970s; Radley and Tapp, the 1980s; and Kunstadter 1970s-1990s).

1.2 Research Goals

The study aims to achieve three main goals.

- (I) It explores the relationships between Hmong highlanders and wildlife, past and present. The understanding gained is analyzed in order to provide suggestions for practical approaches to wildlife conservation where Hmong communities are concerned.
- (II) It documents processes of cash crop development among the Hmong highlanders and its impacts on the Hmong society and land use changes.
- (III) It will shed light on the linkage between the economy and biodiversity in the case of the Thai highlands.

Research Questions

The specific questions that this research will address are:

1. What are the processes of cash crop development among the Hmong highlanders?
2. How does cash crop development affect the Hmong society?
3. What are the impacts of cash crop development on land use and on the people's relations to wildlife?
4. Are there identifiable indigenous wildlife conservation practices among Hmong people? If so, what are strengths and weaknesses of these and how have they changed over time?
5. What are the current uses of wildlife among the Hmong and how important are they to the people's livelihood?

synthesis currently exists. Chapter 8 reports the Hmong's present relationship to wildlife, derived from the case studies of the Hmong villages visited during the field work. Current hunting practices, domestic and commercial uses and attitudes toward wild species are presented in this chapter.

Chapter 9 looks at the development of cash crop and its impact on landuse, social differentiation and wildlife uses and the linkages between cash crop development and wildlife uses.

Chapter 10 revisits the research questions posed in Chapter 1, summarizes the finding of this study, concludes and offers recommendations. The chapter offers suggestions to strengthen biodiversity conservation in the context of Hmong communities.

Chapter 2

Conceptual and Theoretical Background

Why should we conserve biodiversity? What are the important issues surrounding biodiversity conservation in developing countries? How do local people interact with protected areas? These are some of the questions that will be addressed in this chapter. The issue of local people and biodiversity conservation has generated debates among those in social and biological sciences. Proposed theories and concepts are reviewed in this chapter. Lastly, theories and concepts about peasant society are reviewed to provide a foundation for understanding Hmong society and their changing economy.

2.1 Biodiversity

Biodiversity is defined as “the variety of organisms considered at all levels, from genetic variants belonging to the same species through arrays of species to arrays of genera, families, and still higher taxonomic levels; includes the variety of ecosystems, which comprise both the communities of organisms within particular habitats and the physical conditions under which they live.” (Wilson 1992:393). For conservation purposes, research on biodiversity has broadened to encompass a comprehensive approach which includes knowledge in biology, sociology, economy, law, ethics and politics (McNeely *et al.* 1990). The study of biodiversity has “encapsulated not only a range of scientific studies on the subject of nature and environment, but also the widespread social and moral issues related to conservation” (Interview of E. O. Wilson by R. Bayon 1996:6).

2.2 The Importance of Biodiversity

The values of biological diversity are multifarious. From an evolutionary perspective, genetic diversity is the key to long-term survival of a species (Soulé 1996). Variation within a species ensures that some individuals are able to adapt and survive when a species

encounters significant environmental changes. Endangered species therefore tend to have less genetic variation than non-endangered species (Frankham 1996).

A loss of individual species may jeopardize the survival of other species. Co-evolved species are the most vulnerable to the extinction of their counterparts. The extirpation of large animals can have a profound impact on the ecosystem they live in, since they often are related ecologically to a wide range of flora and fauna (Soulé 1996). Biodiversity is therefore a self-augmented phenomenon; its depletion essentially leads to a downward spiral (Norton 1986).

From an anthropocentric viewpoint, biodiversity provides numerous benefits to humans. McNeely *et al.* (1990) identifies five types of values assigned to biological resources:

- 1) *consumptive value*, the value gained from harvesting species;
- 2) *productive use value*, the benefits species provide to humans' productive activities, such as species that are pollinators or predators of pests;
- 3) *non-consumptive use value*, the values of species as a source of psychological well-being, spiritual fulfilment, education, and providing ecosystem services to humans;
- 4) *option value*, the values that biodiversity may provide in the future;
- 5) *existence value*, the value placed on the existence of wild species because of sympathy, responsibility or concern, without any intention to use the species.

These values are based on economic, ethics and socio-cultural considerations that often time difficult to translate into economic terms.

The Significance of the Problem. The decrease in biological diversity is a cause for concern because it is occurring at a rapid rate (WCED 1987:148). This rate, if remains unchecked, was suggested to possibly equal "the demise of the dinosaurs and associated species 65 million years ago." (Myers 1993:9).

At the beginning of the 1990s, it was estimated that *tropical deforestation fronts*, the area where deforestation was the most intense - approximately at a rate of 4% or more, covered 1.9 million km², or 25% of the earth's remaining tropical forest (Myers 1993:12). One of these *deforestation fronts* reported by Myer is northern Thailand. In continental Southeast Asia, forest reduces at a rate of 1.165 million hectares annually (Forest News

1997).

Not only that the forest is disappearing, the rate of wildlife depopulation is also alarming. According to the World Conservation Union (IUCN)'s *1996 Red List of Threatened Animals*, 25% of the world's mammal species and 11 % of the bird species are threatened with extinction. The majority of these species are from the tropical regions, These amount to over one thousand species each for mammals (1,099) and birds (1,111). These two classes of fauna are the most well studied among all wildlife. IUCN suggests that "20% of the reptiles, 25% of the amphibians, and 34% of the fish species that have been assessed are threatened with extinction." (IUCN 1996: Intro 25).

Five major factors have been identified at the global level as causing declining biodiversity: 1) destruction of physical habitat, 2) displacement by introduced species, 3) alteration of habitat by chemical pollutants, 4) hybridization with other species and subspecies and 5) over harvesting. Of these factors, habitat destruction alone contributes to three quarters of the diversity decline (Wilson 1992:273). Thus, the main measures to prevent further declines is to set aside areas for the protection of natural habitats.

2.3 Protected Areas

The most important requirements for the persistence of species and their evolution are space and time (Soulé 1996). Species need adequate space in their natural habitat to maintain healthy populations over several generations. One way to allow sufficient time for species to survive and evolve is to protect their habitat. For this reason, conservationists advocate protected areas which are free from adverse human disturbance. While relatively successful in the developed countries, protected areas have had limited success in many less-developed countries (Abel and Blaikie 1986; Dearden and Chettamart 1997; Newmark 1996). One of the factors making protected areas more successful in the west is the high proportion of urban population who do not subsist directly from the land (West and Brechin 1991). The LDCs suffer from pressure on the resources from a large number of poor people as well as from inequitable distributions. They are also faced with insufficient funding and management

expertise. The mandates of protected areas are frequently in conflict with local communities as well as non-local interests. Political problems within the conservation agency itself and between different governmental units who may have contradictory goals, frequently hamper the conservation efforts (McNeely 1995).

The problems plaguing protected area management in developing countries articulated the need to take into account a social dimension into conservation planning (Barzetti 1993). The inclusion of the human component was reflected in the Bali Action Plan, the outcome of the World National Parks Congress 1982, and became the main topic of discussion at the IVth World Congress on National Parks and Protected Areas 1992 in Caracas (Barzetti 1993; McNeely *et al.* 1990, 1995). Since the Bali conference, there have been many efforts to link protected areas to local populations. The main approach has been for protected areas to provide development and economic incentives to surrounding communities. These incentives usually come in the form of jobs, infrastructure development, or direct benefits from controlled sales of wild products (Kiss 1990). So far, the successes of these projects are still limited in most areas. The main challenge has been the creation of meaningful links between conservation and economic benefits (Barber *et al.* 1995; O'Connor and Langrand 1994; Wells and Brandon 1992).

2.4 Conservation of Biodiversity and Local Peoples

Over the past decades, there has been some debate about the impacts local people on biodiversity (e.g. Alcorn 1993; Redford and Stearman 1993). Indigenous peoples, defined as peoples who are native to their regions (Goodland 1982), are sometimes viewed as guardians of the environment due to their long history of living in the forest area. Within this generally positive view, some authors argue that indigenous peoples' ways of life are harmonious with the environment and that indigenous knowledge reflects a conservation tendency (Allen 1974; Bunyard 1989; Luangaramsri 1991; Thongmak and Hulse 1993). Other authors point to the state, market economy and sometimes religious conversion as the reasons for the decline of indigenous conservation (Colchester 1994; Ganjanapan and Khaosa-ard 1995; Peluso 1992;

Kunstadter 1987; Kiss 1990). In some cases, the creation of protected areas is seen as an attempt by the government to expand its territorial control and to appropriate local resources rather than a genuine interest in conservation (Dove 1993; Vandergeest 1994; West and Brechin 1991; Wittayapak 1996). Many studies deal with these political aspects of environmental problems which are sometimes called Political Ecology (e.g. Bryant 1991; Bryant, Rigg and Stott 1993).

Some authors argue that the view of “traditional societies” possessing unique “spiritual wisdom about the environment which sets them wholly apart from modern societies” is a myth (Rambo 1989:7). Traditional societies are conservationists only when they have limited technology at their disposal (ibid.). According to Polunin (1991:109), “traditional tenure seems poorly equipped to cope with the internal societal problems of immigration and rapid population increase.” Indigenous society is also susceptible to change and opportunism (Ibid.) Careful ethnographic, social analysis that takes into account the pattern of vested interests within the local communities must be carried out before implementing co-management between local people and parks (Marks 1991). Tucker (1991) points out that since colonial times, British conservationists have had romantic and paternalistic attitudes towards tribal people. “The conservationists blamed not the tribal [peoples]... Instead, they centred their wrath on the urban traders and exporters” (p. 46). This attitude, however, may not be totally inaccurate in some locations. A study of 6 national parks in Tanzania found that subsistence poaching had relatively minor impact on wildlife extinction compared to commercial hunting (Newmark 1996).

Some researchers who study human impacts on wildlife populations, caution against the “Noble Savage” assumption (e.g. Redford 1992; Stearman 1994). Historical records have shown that indigenous people such as Native Americans were likely to have contributed to the extinction of 30 genera of large mammals (Hunter 1996; Kay 1994). Studies of indigenous wildlife use in the Neotropical rainforests found that indigenous over-hunting could contribute to local species extinction. For example, a study of subsistence hunters, the Piro of Amazonian Peru, shows that hunters do not refrain from pursuing prey in depleted areas (Alvard 1994). Silva and Strahl (1991) surveyed the density of three large bird species in

Venezuela and the hunting practices of indigenous people. They infer that hunting may cause irreversible impact on the ecosystem by reducing the bird density and consequently impacting the plant species that depend on these birds for seed dispersal. Fragoso (1991) who studied tapir populations in Belize suggested that tapir population is threatened more by hunting than by habitat destruction. Still, examination of hunting yields over a decade among Amazon Indians in Ecuador over a decade found that yields of tapir, peccari, rodents and reptiles were stable, thus showing sustainable harvesting of these species, although primates and birds were being depleted (Vickers 1991).

Studies of local people and parks often reflect an antagonistic relationship between the two. A study by Nepal and Weber (1995) looks at the effect of distance between settlements and national parks on local peoples' resource use and attitudes towards parks at Royal Chitawan National Park in Nepal. They report that attitudes towards the park improve as the distances between settlements and the park increase. This is due to less adverse impacts of wild animals on domestic crops in distant settlements. Tanakanjana (1996) identifies dependency on forest resources as the main factor contributing to "non-conforming" behaviours to national park regulations in Thailand. She sees non-extractive economic alternatives as a solution to the problem. The importance of economic activities on resource extraction is also seen in a study of resource use in Doi Inthanon National Park in Thailand. In that study, the pressure on the resource was greater from the population outside and around the park than from those within the park because the communities inside the park were involved in the cash economy rather than depending on the park resource for subsistence (Dearden *et al* 1996). However, economic betterment may not directly induce conservation. Wells and Brandon (1992:21) stated that "There is little evidence to support the assumption that economic improvement will render conservation. Or that community will perceive a self-interest in keeping the environment."

Some propositions about the relationships between indigenous peoples and wildlife culled from this literature can be summarized as follows:

1. The **change of mode of production** from one that depends on subsistence on wildlife to other forms of economic activity will lessen the hunting pressure. This proposition is put forward by Ayres *et al.* (1991) whose study of a Brazilian Amazonian village shows that the shift from hunting to agriculture has reduced the frequency of hunting. In Thailand, Tanakanjana (1996) suggests that economic alternatives based on non-extractive occupations for communities inside and around national parks will lessen the pressure on resources. Dearden *et al* (1996) also find that a community inside a protected area that engages in intensive cash crop production depends less on park resources.
2. Hunting decreases when there are **available substitutes for protein food** sources. According to the study by Ayres *et al.* (1991), wild meat was consumed less partly as a result of available domestic and processed meat.
3. **Wealthier households tend to kill “useless” species** while the poorer households kill “food species”. Glanz (1991) studied mammalian density in an area in Central Panama before and after a park was designated. He found a higher density of mammals after the park was established. He also observed that urban wealthy hunters killed species that do not have specific uses, in contrast to local hunters who targeted desired species. When local target species were protected, the density of these species significantly increased. Glanz’s study points to the impacts of subsistence hunting on “desired species” but another study in Africa found subsistence hunting to have insignificant impacts. Newmark (1996)’s study of Tanzania parks found that in areas where commercial hunting is prevalent, the impact on wildlife extinction tends to come from commercial hunters rather than subsistence hunters. Depending on local situations, both subsistence and commercial hunting can cause species depletion (Redford 1992).
4. The use of **sophisticated hunting tools affects the assemblage of animals being killed**. Larger animals are hunted with guns while smaller ones are hunted with bow and arrows. This proposition comes from a study by Alvard and Kaplan (1991) on prey mortality and procurement technology of indigenous neotropical hunters. The change in tools used by hunters affects the types and number of animals killed.

These propositions form questions which this study will try to address in context of the Hmong society in Thailand.

2.5 Highland Peoples and Biodiversity

People in Southeast Asia have long influenced the composition of the natural landscape (Stott 1984). Fire is a dominant tool in agriculture among forest farmers throughout Southeast Asia (McNeely and Wachtel 1988, Pelzer 1978). The spread of savanna forests in the Thai north-eastern Plateau are believed to have partly been induced through the human use of fire (Stott 1984, 1988). In northern Thailand, evergreen forests are replaced by savanna forests through the elimination of fire-sensitive species and the incursion of bamboo, grass and herbaceous species after intensive fires (Wolseley and Aguirre-Hudson 1997a, Savage 1994). Studies by Fox *et al* (1995) have found that swidden agriculture in the uplands results in increasing forest patchiness and forest edges.

Various groups of forest farmers employ different agricultural practices that may impact biodiversity differently. The established swiddeners (more details in Chapter 3), such as the Karen and Lua in Thailand are known for their more careful use of fire (Kunstadter 1987). Most of their lands are under various stages of forest succession which tend not to exterminate local species. The pioneer farmers generally have higher impacts on the natural vegetation because they cultivate the same piece of land for a lengthy period. Soil structure and species composition are more substantially altered in this system. Thus, the sustainability of the pioneer swidden system depends entirely on the scale of the operation. Forest regeneration takes longer, the larger the disturbed area is and the longer the period over which the disturbance has occurred. At a small scale, swidden agriculture mimics forest gaps that are brought about naturally by wild fires or storms. These gaps, regenerate quickly in the tropical environment (Whitmore 1990). Less intense fire may also help decrease the amount of forest litter that can fuel larger forest fires. In some cases, swidden cultivators bring back forests to areas that were previously deforested or help protect some forest patches. Examples include the Dai people's "holy hills" (Rambo 1989), the Karen and Northern Thai's

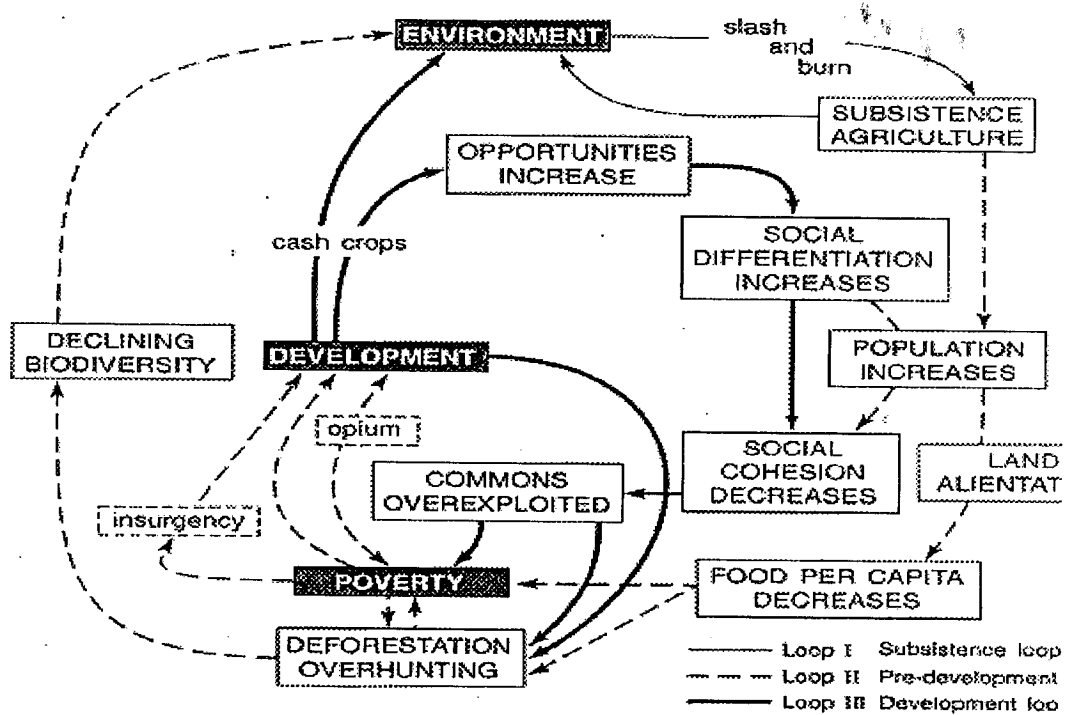
headwater forests, community forest among the Akha (Janet Sturgeon 1996, pers. com.) and forests around some Hmong settlements (author observations). However, these types of forest area are relatively small especially for the purpose of wildlife habitat. Today, all swidden systems face serious challenges. Where soil and micro climate are significantly changed or too few original species remain standing, forest succession by native species may never take place. The prevalence of non-native *Imperata* (*Imperata cylindrica*) grasslands in the Thai highlands today is a result of such a change. Current heavy application of pesticides on cash crops grown by swiddeners may also have negative impacts on soil and water sources (Preechapanya *et al.* 1990).

The impacts of highland agriculture on wildlife is variable. In general, wildlife species that depend on specific plant species or particular parts of plants (such as insects, birds, bats, or other frugivores) have highest diversity in areas where vegetation diversity is high (Huston and Gilbert 1996). The number of these species is likely to be reduced in cultivated areas. On the other hand, cleared forests may encourage increased diversity of vertebrate herbivores (e.g. deer, bovines) who prefer areas of high plant productivity (Huston and Gilbert 1996). However, in Thailand these species are popular targets of hunting and there is no evidence that they have increased in quantity or variety.

The causes of biodiversity degradation in Thailand are complex. Ganjanaphan and Khaosaard (1995) identify factors that have contributed to the decline of the northern Thai forests including land alienation, road development and reforestation projects. The rise in population density in the highlands and increased demands for manufactured goods also contributes to over-exploitation of the natural resources (Kunstadter 1987).

Dearden (1996) reviewed literature on highland groups in Thailand and found that all groups relied significantly on wildlife as a protein source in the past and that this dependency is no longer being fulfilled. He argues that the type of development being promoted in the highlands concentrates on economic improvement but neglects environmental costs. Cash crop promotion led to social differentiation, a break down of common resource management and eventually to the destruction of the environment. Environment, development and poverty are linked together in a positive feedback loop (figure 2.1).

Figure 2.1 The Positive Feedback Loops Leading to Reduced Biodiversity in Northern Thailand



Source: Dearden 1996

The data from the case studies of Hmong communities will be considered in light of this model.

As discussed in Chapter 1, biodiversity conservation and social, economic development is closely linked. The second goal of this study is, therefore, to understand social and economic changes in the Hmong society. Two areas of theoretical context are reviewed

to provide a background for this understanding. The first area reviews the theories regarding peasant society. It offers ways in which peasant societies can be understood and distinguished from other types of society. The second area explores the factors that often lead to agrarian change. This gives a wider perspective into the linkage between outside forces and changes at the local level.

2.6 Peasant Economy

Peasants are “small agricultural producers who, with the help of simple equipment and the labour of their families, produce mainly for their own consumption and for the fulfilment of obligations to the holders of political and economic power.” (Shanin 1990:23-24). Many authors use this term loosely to refer to groups ranging from rural to urban, from poor to middle class farmers, sometimes also including landless labourer (Wolf 1969). Most researchers, nevertheless, emphasize the **subsistence** oriented characteristic of the peasants. According to Chayanov (1966), the peasants’ economic objective is to keep a balance between consumption needs and the drudgery of work. Hence they tend not to become full fledged capitalists. Another important characteristic of peasant economy is their substantial dependency on **family labour**. In the Russian case, Chayanov points to the uniqueness of peasant economy in that they are both **labourers and landowners simultaneously**. Where tenancy and sharecropping are prevalent farmers who are not landowners may be considered peasants. Wolf (1969:..xiv-xv) distinguishes between peasants and farmers :

The peasant “favors production for sale only within the context of an assured production for subsistence...products are sold in the market to produce the extra margin of returns with which to buy goods one does not produce on the homestead. In contrast, the farmer enters the market fully, subjects his land and labor to open competition, explores alternative uses for the factors of production in the search for maximal returns, and favors the more profitable product over the one entailing the smaller risk.”

According to Scott’s (1976) Moral Economic Theory, peasants tend to avoid risks that may jeopardize their subsistence ability. This assertion corresponds to Wolf’s (1966) argument that peasants prefer to “minimize the probability of having a disaster rather than

maximizing his average return” (p.18). The “subsistence ethic” necessitates “social arrangements” such as “reciprocity, forced generosity, communal land, and work-sharing...to even out the inevitable troughs in a family’s resources which might otherwise have thrown them below subsistence” (p.3). These communal norms, subscribed at various levels from family, kinsmen, friends or patrons, work to prevent extreme differentiation within the society and help maintain the peasant form of economy.

Scott’s notion of peasant moral economy provokes debates on the nature of this so called “peasants’ ethics”. Popkin (1979) argues that peasants are rational economic decision makers trying to strike a balance between short and long term economic security. Their communal or reciprocal activities are based on the assumption that they will receive long term benefits in return. When economic insecurity is eliminated, for example when a peasant is economically secure or when she depends more on economic contacts outside the village than within the village, the need to maintain community exchanges is lessened. Popkin stresses that peasant societies do not have intrinsic “moral” characteristics per se, but rather are forced into cooperation by circumstances of economic insecurity.

In highly hierarchical societies, the display of communal ethics is illusive. A study of Javanese peasantry shows that the “traditional village demanded life-style conformity, not selfless sharing or the levelling of class” (Hefner 1990: 154). The “vertical alliance” is more pronounced than “lateral solidarity” (Ibid.) Hefner seems to agree with Popkin that the rich contribute to festivities for the benefit of the social network. Hart (1989) similarly noted that village elites in Thailand act as patrons at village festivities in order to mobilize political support and dampen resentment among the poor. Their contributions decline when they become more involved in inter-regional trade (Hefner 1990, Hirsch 1990).

Studies of peasants in Thailand up to the mid 1970s reveal patterns of reciprocity, and subsistence orientation (Ingram 1971, Tanabe 1994). Thai peasants are described as heavily biased towards subsistence production (Ingram 1971). Tanabe studied rice farming communities in Chiang Mai and Ayuthaya and reported that Thai farmers, particularly in the North, put much more emphasis on subsistence agriculture than on commercial activities. By the late 1970s, deeper penetration of the market economy changed the production and tenure

relationships toward more commercial relations. These changes resulted in increasing land alienation and class differentiation (Ganjanaphan 1989). By the 1980s, the market economy and government intervention reached all levels of peasant society. Leaders within the peasant communities were increasingly linked with commercial and governmental resources outside their communities, rather than with fellow villagers (Hirsch 1990).

2.6.1 Highland Peasants

Durrenberger (1983) analysed the Thai highland economies using various peasant economic theories. He explains the highlanders' work pattern as a compromise between subsistence and drudgery of work, following Chayanov's theory. Following moral economic framework, Durrenberger suggests that the feastings among the Lisu group function to level off economic and social differentiation. The economies of opium growers, "share a common structure with all peasant economies: production for sufficiency" (p. 94). "People eat much of what they grow, and for the most part grow what they eat. If they cannot or do not grow what they need to eat, they buy rice with money from other crops, especially opium" (p. 87). Highland economies exhibit characteristics that warrant them to be classified as "hill peasants" rather than tribes (Kunstadter 1967).

Hamilton (1976) who studied the Pwo Karen in 1961 and again in 1969, noted the change of the Karen culture and economy as they were increasingly influenced by the government administration and market economy. He stated that "the Karen were not peasants. They are, however, in the process of being peasantized as they adapt to, and are being incorporated into the Thai state" (p. xii). Fink (1994:p.67), who studied the Pwo Karen in the early 1990s, commented, "egalitarianism among the Karen is the egalitarianism of opportunities rather than to the actual distribution of resources". On the issue of reciprocity, Fink indicates that there was no conscious effort to lessen social differentiation. She states, "[The] village provides pools of individuals from which friends and work-mates are drawn, but there are no mechanisms to donate food to the hungry or to care for the disabled" (p.70), and "The villagers do not give rice to fellow villagers who have suffered a disaster but leave

them to their fate” (p. 79). Cooper (1984) argues that highland economy does not fit into the frame of peasant economy which is often based on studies of lowland societies. The absence of land tenures among the highlanders make social relations within the highland society radically different from those in the lowlands.

From these reviews some prominent characteristics of peasant economy may be summarized as follows:

- 1). Peasant societies operate under the state and market economy.
- 2). Peasants tends to emphasize subsistence production.
- 3). Peasant societies often have a mechanism such as feasting, reciprocity or patronage to decrease the impacts of social differentiation
- 4). More recent studies found that theories about moral economy may not explain well the situation at a local level. Whether reciprocal mechanisms are designed to maintain an egalitarian society or are simply a result of economic necessity is inconclusive.

The adoption of cash crops among the Hmong is expected to change the nature of the Hmong economy from when they were growing opium. The study will look at this change in light of theories about peasant economy.

2.7 Forces of Change

While the above theories explain the mechanisms that maintain the peasant form of economy, concepts regarding agrarian changes are now reviewed to provide a theoretical background for the understanding the Hmong situation. Three main forces of changed will be addressed below. They are resource scarcity, penetration of the market economy and the impacts of the state.

2.7.1 Resource Scarcity

One frequently cited theory on agricultural changes was proposed by Ester Boserup (1965). Boserup emphasizes the role population pressure plays in stimulating technological

change. In her study of African farmers, she suggested that the adoption of plough and draft animals only occurs when the population density reaches a level which necessitates a change in agricultural methods. The carrying capacity of the land (at the current agricultural technology) must be reached before any shift in the mode of production occurs, regardless of the availability of those technologies. Geertz (1968) points to a similar situation regarding terraced rice cultivation in Java. The change in production method from dry rice cultivation to terraced rice “derived almost entirely from a greater intensification of labour - an intensification made both possible and necessary by the increasing population” (p. 77). However, historical records in Southeast Asia do not always agree with the theory about population pressure. For example, irrigated paddy cultivation has been carried out since the 8th century in Java and Burma, when population was not a pressing factor (Reid 1988). The main inducement for irrigated farming in the lowland may have been cultural diffusion (from India) and environmental factors (McNeely and Wachtel 1988).

Cooper (1984) looks at the situation of the Hmong highlanders and finds that the Hmong change their agricultural and economic system mainly as a response to land pressure. According to Cooper,

This study both supports and qualifies Boserup’s theory of change. Disbalance in the land/labour ratio has led to declining fallow periods in the subsistence sector of the economy, but this decline has not resulted in the universal disintegration of the swidden system and replacement by an irrigated system of rice cultivation; instead the swidden system has been adapted by the Hmong through increased emphasis on the cash sector of the economy (p.227-228).

It is likely that resource scarcity, especially shortage of land is one of the most important factor that dictates agrarian change in the context of the Thai highlands.

2.7.2 State Intervention

Agricultural changes are often brought about by government interventions (Hart 1989). The development of “green revolution” through the introduction of modern irrigation,

high yielding seed varieties (HYV) and chemical inputs may substantially alter the pattern of agriculture. Large scale irrigation projects in central Thailand has replaced broadcasting in rice farming with transplanting method (Tanabe 1994). In northern Thailand, irrigation allows double or triple cropping, which in turn affects the pattern of existing tenure arrangement (Ganjanaphan 1989). HYVs often require changes in cropping schedules, leading to modifications of social and cultural activities. Green revolution can also have inconsistent impacts on different groups in a society. Often, it benefits wealthy farmers more than small subsistence farmers (Pearse 1980). It also tends to accelerate peasant involvement in the cash economy (Ibid).

Besides direct interventions in agriculture, governments may induce agrarian changes through various other indirect interventions. Infrastructure building, conservation policies, land reform, administrative policies, all can have significant impacts on the lives of the peasants.

2.7.3 Penetration of the Cash Economy

The adoption of cash crops, the crops grown mainly for sale, by former subsistence farmers is frequently cited as having an adverse impact on the peasant society. Turton (1989) argues that small producers lose control of their means of production and are caught in the web of the market system when involved in the “commodity circuits”. The adoption of cash crops among lowland farmers in northern Thailand changed the relationships between parents and offspring toward more commercially oriented nature (Ganjanaphan 1988). Among the Hmong, the cultivation of cash crops are said to have exacerbated the inequality between men and women (Cooper 1988). Some authors, however, believe that “there are no universal badness (or goodness) about cash crops” (Harrison 1992:124, Tungittiplakorn 1997, Ornberg 1996). Undoubtedly, agricultural societies are increasingly involved in the market economy, producing for cash, and taking parts in non-agricultural activities (Rigg 1996b, Ritchie 1996).

2. 8 Summary

This study examines the implications of highland cash crop development on biodiversity conservation and social conditions. This chapter reviews some relevant concepts of biodiversity and agricultural changes which are the background for the understanding of the problems. The definition of biodiversity and the rationale behind the need to conserve biodiversity were presented. Most authors agree on the need to incorporate local peoples in conservation efforts and resource management. Nevertheless, there have been some debates about the role of local peoples regarding the environment. Some authors advocate local management, suggesting that many indigenous communities have lived in harmony with their environment for a long period. Others found that some indigenous groups have caused declines in biodiversity. They argue that local communities are not sufficiently equipped to handle negative impacts following economic and cultural changes.

Economic change is a topic of interest in this study, as it has often been identified as affecting the relationships between humans and environment. In this chapter, peasant economic theories were reviewed in order to provide a background for understanding the Hmong economy. Some theories of agrarian change were also presented. There are conflicting opinions about the nature of peasant societies among different authors who study highlanders in Thailand. Some authors maintain that the highlander economy clearly exhibits the characteristics of peasant societies (e.g subsistence, egalitarian). Others did not find coherent evidence to support this proposition. More current studies tend to see incongruent evidence to these theories, perhaps because of the increased complexity of the hill communities.

Chapter 3

The Geographical Context

Understanding complex biodiversity degradation problems requires that the environmental, socio-economic and historical contexts of the region are appreciated. This chapter provides these contexts in three main parts. It starts with the physical descriptions of the North, its administrative boundary, topographical and biological characteristics. Next, the human geography and history of the region are described. Finally, the political and economic relations between the highlanders and the larger mainstream society are presented through a review of government policies towards the highlands.

3.1 Administrative Divisions

Until 1975, the North officially included seven provinces: Chiang Rai, Chiang Mai, Lampang, Lamphun, Mae Hong Son, Nan and Phrae. In 1976, Tak and Phayao were added to the list and the region was named the Upper North. The Lower North consists of eight provinces: Kampanget, Nakornsawan, Petchabun, Pichitre, Pitsanuloke, Sukhothai, Utaradit, and Uthaitani. Since 1976, therefore, the North has been made up of 17 provinces.

Most highland settlements are located within the northern region. A few villages are found outside the North, in Kanchanaburi, Petburi, Prajuapkirikan, Ratburi, Suphanburi and Loei (Figure 3.1). There is also a well-known, but not yet officially recognized community of Hmong at Thamkrabok in Saraburi province northeast of Bangkok (the Nation 2/21/97). Since 94.5% of the highland minorities live within the northern region, it is reasonable to talk about highlanders in association with the North. Furthermore, many authors who write about the highlanders use the terms “Northern Region” or “the North” to mean the Upper North (e.g. Bhruksasri 1989; Van der Meer 1981) because 90.5% of the highlanders live in the Upper North and only 4% in the Lower North (Figure 3.2). Some researchers may include only 8 provinces as the Upper North, considering Tak as part of the Lower North (e.g. Walker 1992:2). This study follows the official definition of the Upper North.

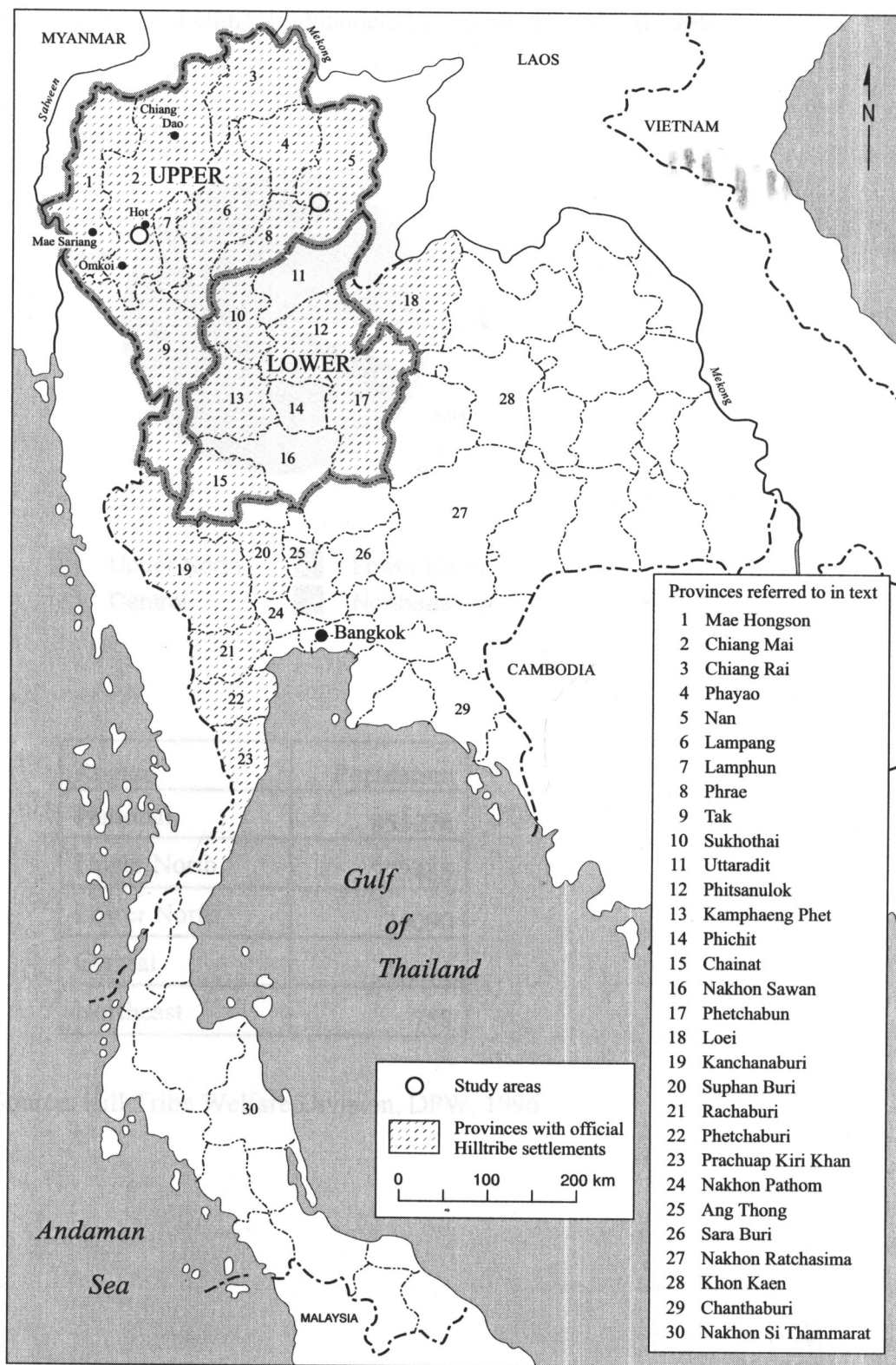
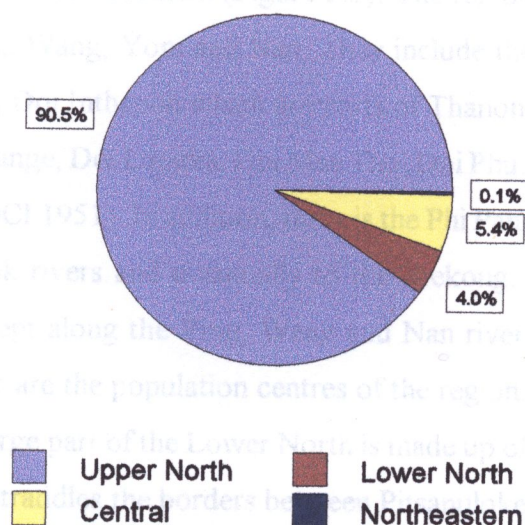


Figure 3.1 Upper North, Lower North and Provinces with Official Hill Tribe Settlements

Figure 3.2 Population of ethnic highlanders by region in Thailand 1995.



Region	Population
National	853274
Upper North	772465
Lower North	34090
Central	45961
Northeast	758

Source: Hill Tribe Welfare Division, DPW, 1996

3.2 Physical Characteristics of Northern Thailand

The Upper North is dominated by north-south mountain ranges which are parts of the Himalaya Central Cordillera (Figure 3.3). The region is subdivided into four main drainage basins: Ping, Wang, Yom and Nan. They include the watersheds of Doi Chiang Dao, Doi Suthep-Pui, Doi Inthanon which are parts of Thanon Thongchai Range, Doi Pha Hom Pok, Khun Tan range, Doi Langka, Doi Mae Tho, Doi Phu Kha and Luang Prabang Range (Round 1988: 32; DCI 1951). In addition, there is the Phi Pan Nam range, whose rivers drain into the Ing and Kok rivers and eventually to the Mekong. Most valleys in the Upper North are narrow except along the Ping, Wang and Nan rivers where flat alluvial plains occur. The valley plains are the population centres of the region.

A large part of the Lower North is made up of river valleys, except for the Petchabun range that straddles the borders between Pitsanuloke, Petchabun and Loei, and the eastern edge of the Thanon Thongchai Range, west of Kampang Phet and Uthai Thani. The hills in the Lower North are lower than in the Upper North. The highest peak in the North (and in the country) is Doi Inthanon, at 2595 meters ASL, while the valley floors range between 50-400 m ASL (Tan-Kim-Yong *et al.* 1988).

The core of the western mountains and the Khun Tan range is made up of Triassic granite. Carboniferous and Permian limestone formations are sporadically exposed among other rocks. The highest limestone formation is located on Doi Luang Chiang Dao at more than two thousand metres above sea level (DCI 1951; Smitinand *et al.* 1978:25; Sternstein 1976). The soil found in the North varies, depending on micro topography, climate, bed rocks and history of land use. In general, mountain soils are shallow on steep slopes and deeper as the slope decreases (Pookajorn 1988).

Soil derived from moderately acid or quartzite rocks is Red-Yellow podzolic. This soil is relatively shallow and in some areas stony. Soils derived from more basic rocks, such as limestone, are the Reddish-Brown lateritic type. Valley soils are usually from Quaternary alluvium and terrace deposits. The Ping, Wang and Yom valleys contain low-humic gley soils, mostly loamy and sandy. Near rivers, alluvial, poorly drained clayey soil is dominant.

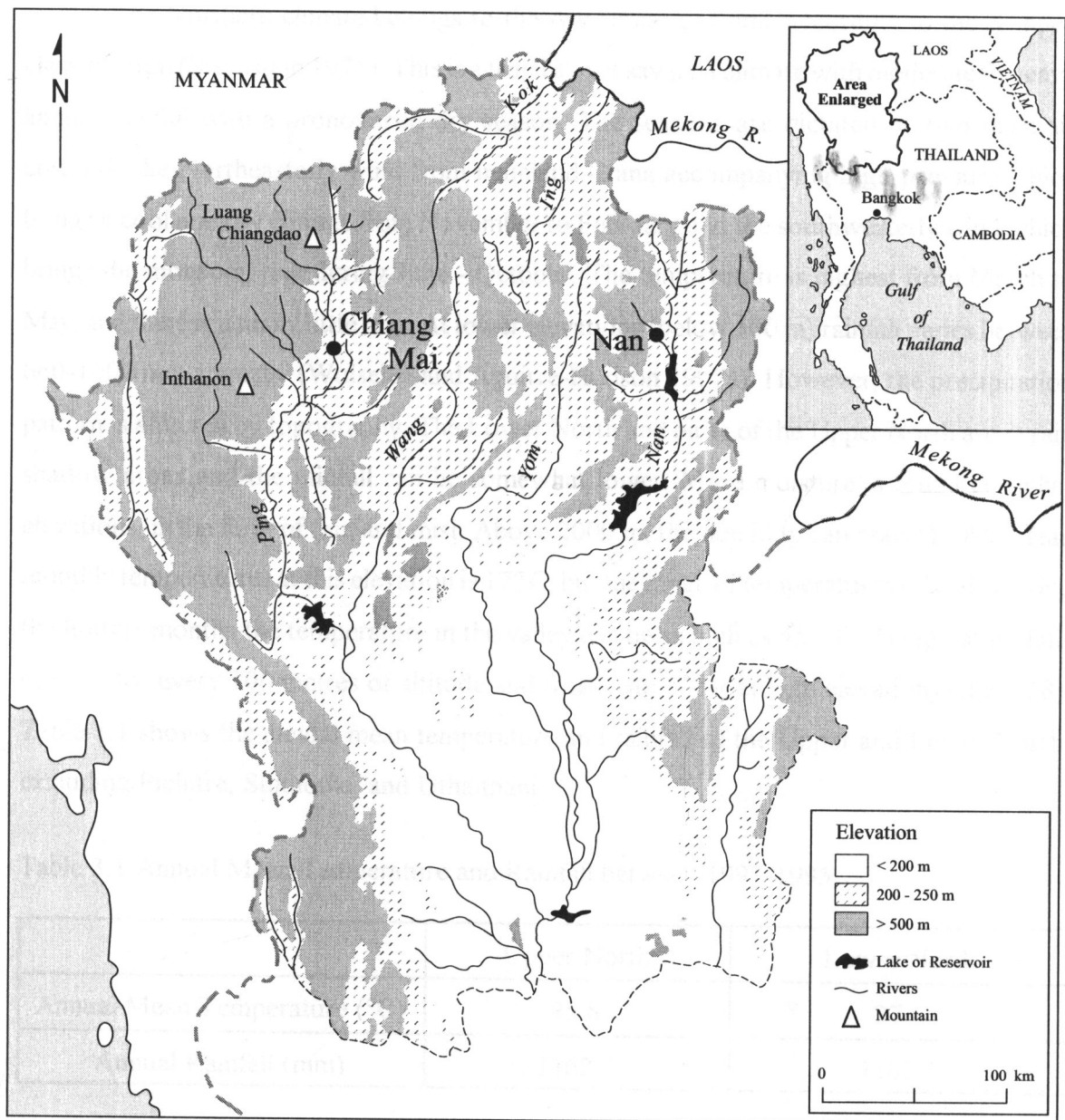


Figure 3.3 Map of Northern Thailand showing topography

The Northern climate belongs to the Aw climatic regime according to the Köppen classification (Sternstein 1976). This is a tropical wet savanna climate with moderate to heavy annual rainfall with a pronounced dry season. The seasons are dictated by two main air currents, the Northeasterly wind from mainland China accompanying high pressure which brings a cool and dry climate from November to February and the southwesterly wind which brings the monsoon rain during June - October. The temperature is highest from March to May, and there is usually little rain. At lower elevations (below 500 m) rainfall varies between 660-1000 mm annually (Wolseley and Aguirre-Hudson 1997a). However, the precipitation pattern is affected by topography. The Lower North and parts of the Upper North are in rain shadow areas and the rainfall can be somewhat lower. More moisture is found at higher elevations, in the form of rain and mist. Above 2000 m, the humidity can reach 100%. Mean monthly temperatures at this elevation is 17° C, but the range of temperatures is large. During the hottest months the temperature in the valley can be as high as 45 ° C. Temperature falls 0.6 ° C for every 100 metres of altitude and frosts can occur at high elevations (Ibid:328). Table 3.1 shows the annual mean temperature and rainfall of the Upper and Lower North, excluding Pichitre, Sukhothai and Uthaitani.

Table 3.1 Annual Mean Temperature and Rainfall between 1991-1995

	Upper North	Lower North
Annual Mean Temperature (°C)	25.8	27.6
Annual Rainfall (mm)	1162.4	1102.5

Source: RFD 1995

3.3 Biodiversity in Northern Thailand

Northern Thailand was once a region of exceptionally high diversity. In the following sections, some characteristics of the region's forests and wildlife will be described. Current problems of biodiversity decline are also discussed.

3.3.1 Forests

Natural forests in northern Thailand are dictated partly by the region's distinct dry season. Historically, deciduous forest dominated by teak (*Tectona grandis* L. f., Verbenaceae) covered most of the lowland valleys. This type of forest except for small pockets has now been replaced by deciduous dipterocarp-oak forest (Dipterocarpaceae and Fagaceae families) up to about 700 mASL (Maxwell 1996). In areas where degradation is severe (from logging, grazing, erosion and fire), deciduous forests turn into scrub and weedlands (Ibid). If the degradation is less severe and sources of original species are still present, succession can slowly take place with bamboos dominating the early stage.

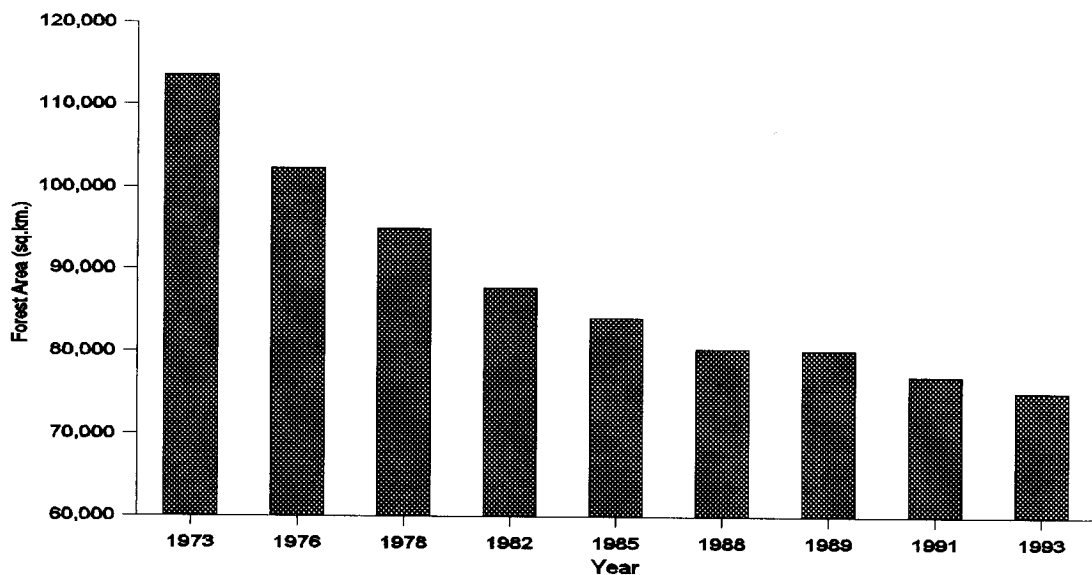
At higher elevations, Mixed Evergreen Deciduous forests (Mixed Deciduous Association) are present. Broad-leaved Evergreen trees are found in relatively humid areas, along watercourses. Epiphytes and shrubs are abundant. Coniferous Evergreen forest often consisting of mixed pines and broad-leaved species is found on ridges (see Table 3.2). This evergreen hardwood and pine forest can be replaced by the dipterocarp-oak forest if there are frequent fires (Maxwell 1996). For extremely degraded land, the non-native species, *Imperata cylindrica* (L.) and *Eupatorium adenophorum* Spreng. (asteraceae, or Compositae) dominate the landscape.

The plant diversity of the northern forests is significantly high. A detailed survey in one relatively disturbed national park, Doi Suthep-Pui near Chiang Mai city, revealed that the number of tree species was "approaching or exceeding that of some tropical rainforests." (Elliott *et al.* 1989: 138). The diversity was 90 species/ha for trees with 10 cm or higher diameter at breast height (p.137). Maxwell found 1,959 species of flowering plants and ferns during the three-year survey in this 256 km² park (Elliott and Beaver 1991:5). Because of the mountain topography, the effect of elevation and water availability (through rainfall or surface water) create micro environments that lead to differential flora compositions as one travels up from the foot of the hill to the ridge (Ibid.).

The northern forest have, nevertheless, been modified by humans, especially through the use of fire in association with shifting cultivation. Logging selectively eliminates many

species of trees. Teak, the most valuable wood has been logged since the last century. *Shorea* and *Pentacme* were heavily logged for use in bridge construction, as telegraph posts and for railway construction from Bangkok to Chiang Mai in the early part of the century (Stott 1978). Other uses such as urbanization, hunting, grazing, mushroom picking, or simply carelessness have also taken their tolls. These result in the decrease of all types of forests in favour of dry deciduous dipterocarp or savanna forest, bamboo forest and *Imperata* or *Eupatorium* grassland (Stott 1978, 1988, 1990; Savage 1994). Figure 3.4 shows the decline of forest area in the North during the past two decades.

Figure 3.4 Forest Areas in the North 1973-1993



Sources: RFD 1988, 1989, 1995

Table 3. 2. The Classification of Forest Types in Northern Thailand

Author	Deciduous	Evergreen
Maxwell 1988, 1996	1. <i>Deciduous Dipterocarp-Oak Association</i> : up to 1000 m, along ridges, or xeric sites at lower elev. widely spaced short trees, ground veg: grass & sage.	1. <i>Hardwood and Pine Forest</i> >900 m mesic areas, 35-50 m tall trees, variety of species.
	2. <i>Mixed Deciduous/Evergreen Association</i> , wetter areas, along watercourse, mid elev., tall trees (20-30m).	
Round 1988	1. <i>Dry-Dipterocarp</i> : low elev. except rain-shadowed ridges, 1000-1500 mm Rf, poor soils, poor lianas and epiphytes, open w/ grass undergrowth, dipterocarp, <i>Shorea</i> and <i>Pentacme</i> species dominant.	1. <i>Semi-evergreen</i> : <900 m., usually in mosaic w/ deciduous & bamboo, dipterocarp trees dominant.
	2. <i>Mixed Deciduous</i> : up to 1000 m. varied structures, dominated by either Teak or <i>Lagerstroemia calyculata</i> .	2. <i>Hill-evergreen</i> : >1000 m., varied structures depending on elev. and topography, less epiphytes in lower elev. oaks and chestnuts dominant.
Smitinand et al. 1978	1. <i>Moist Mixed Deciduous</i> up to 600 m. 1000-1500 mm Rf. loamy soil, teak, taback (<i>Lagerstroemia tomentosa</i>), bamboo, and palms.	3. <i>Coniferous</i> : drier ridges 400 - 1,400 m, <i>Pinus merkusii</i> and <i>P. kesiya</i> dominant but not pure stand, mix with oaks or hill evergreen species
	2. <i>Dry Mixed Deciduous</i> 600-1000 mm Rf. low and high elevation. teak, <i>Xylia</i> (Daeng), annual burning.	1. <i>Low Montane</i> : 1500-2000 mm Rf. two storeyed. upper: oaks, false chest nuts, birch. (chestnuts and birch indicates impact of human). lower: laurels.
	3. <i>Dry Deciduous Dipterocarp</i> Dipterocarpaceae on sandy and lateritic soil subject to extreme leaching, erosion and annual burning.	2. <i>Coniferous</i> , edaphic, sandy, gravelly, or lateritic. steep and exposed ridges, subject to erosion and leaching, 1000-1500 mm Rf. 3 storeyed upper: pine; mid: oak / false chestnuts, and Dipterocarp at low elevation; low: shrubs.
		3. <i>Dry Evergreen</i> , in humid valleys of the low hills along streams, soil is granitic or calcareous loam. 1000-2000 mm Rf, a remnant of forest once covered the plain. bamboos, rattan, dipterocarp.

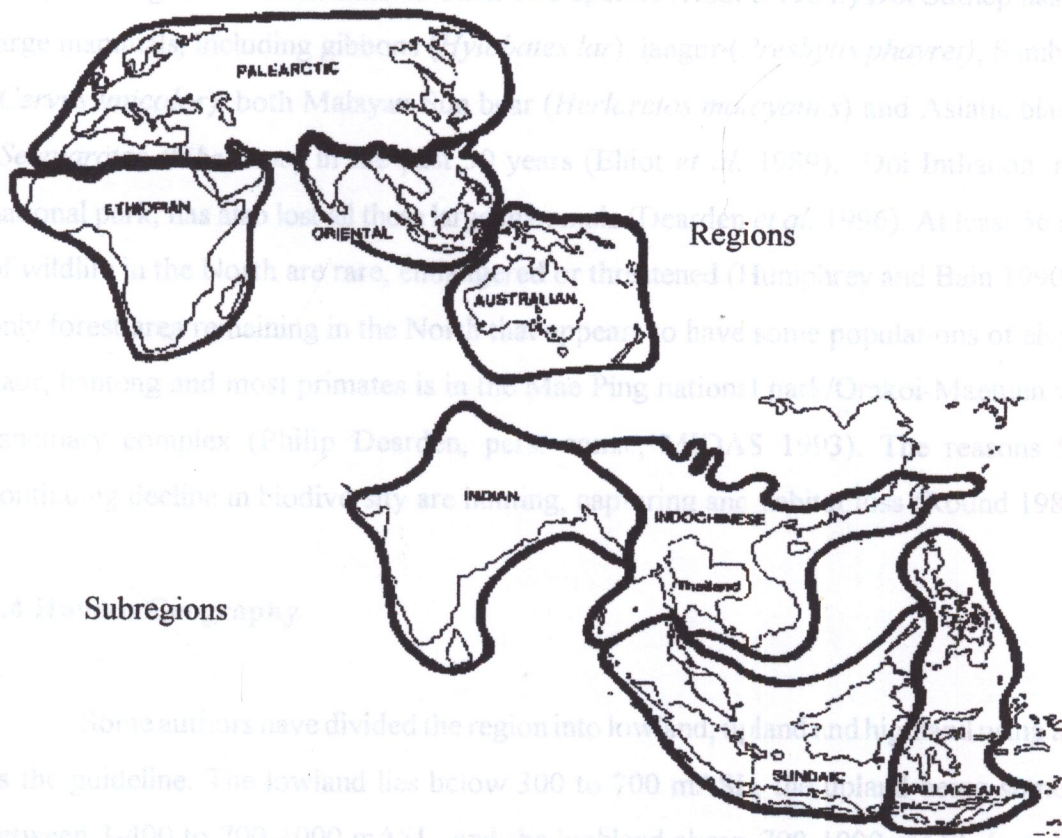
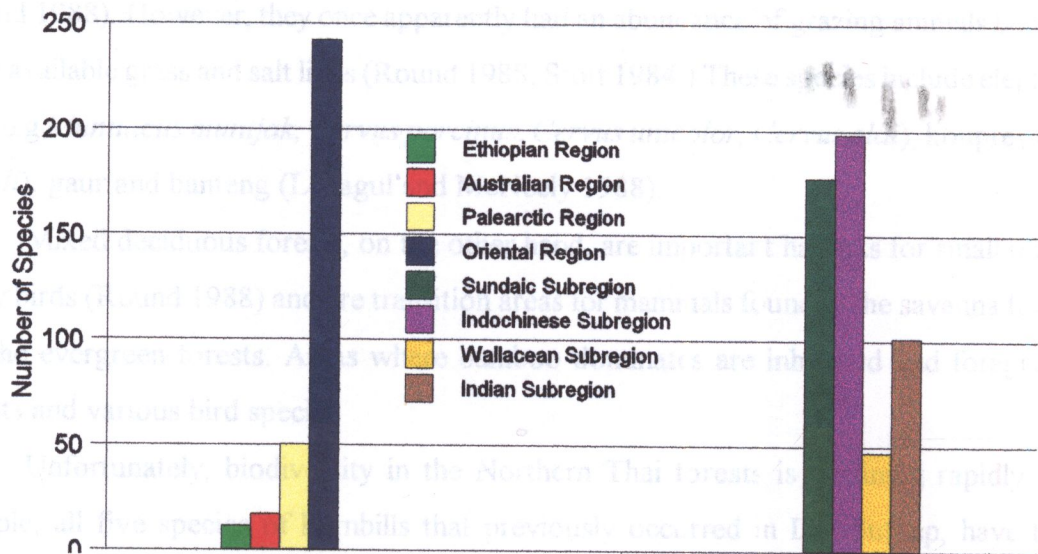
Other Sources: Elliot *et al.* 1989

3.3.2 Wildlife

Located in the Indo-Malayan Realm, northern Thailand is a crossroads where species from both temperate and equatorial regions can be found (Figure 3.5). Mountainous topography also creates a mosaic of habitats which supports diverse organisms and endemic species (Elliot *et al.* 1989; MIDAS 1993). At least 162 mammal species were once present in the North (Lekagul and McNeely 1988). Some of the larger species once found in the North are elephant (*Elephas maximus*), Sumatran rhino (*Dicerorhinus sumatrensis*), banteng (*Bos javanicus*), gaur (*Bos gaurus*), tiger (*Panthera tigris*), leopard (*Panthera pardus*), clouded leopard (*Neofelis nebulosa*), bears (*Selenarctos thibetanus* and *Helarctos malayanus*), serow (*Capricornis sumatraensis*), goral (*Naemorhedus goral*), sambar (*Cervus unicolor*) and primates such as Phayre's langur (*Presbytis phayrei*), lar gibbon (*Hylobates lar*) and macaques (family *Macaca*). In Doi Suthep-Pui National Park, perhaps the most studied park in the North, 326 bird species, 50 mammals, 28 amphibians, 50 reptiles, 300 moths and 500 butterflies have been identified (Elliot *et al.* 1989:158, Round 1984). Elliot and Beaver (1991:6) reported that Doi Suthep Pui National Park contained higher bird and butterfly diversity than Khao Yai National Park in central Thailand, which is ten times larger. This evidence illustrates that northern forests originally hosted a high diversity of wildlife.

According to Round (1988:30) "Northern Thailand is of primary importance for the large number of Sino-Himalayan bird species which occur in association with the hill evergreen forests or successional habitats; 58 species of breeding birds are apparently restricted to this region." Many of these endemic birds are present in a few mountains above 2,000 m. Two species of bird (*Phylloscopus maculipennis* and *Aethopyga nipalensis*), an amphibian (*Rana fasciculispina*) and an insect (*Saturnia pinratanai*) are only found on Doi Inthanon. This highest mountain in Thailand contains at least 343 species of birds (Round 1984). Other endemic species include *Stachyris rodolphei* (Deignan's Babbler) in Doi Chiang Dao, *Theloderma gordonii* (Gordon's Warted Frog), *Ichthyophis cumingii* (Pointed Caecilian - a type of lizard), *Trimeresurus venustus* (a species of snake) and *Calaenorrhinus pinratanai* (a species of moth) in Doi Suthep-Pui (MIDAS 1993).

Figure 3.5 Number of Thai Non-Marine Mammals from Various Zoogeographical Regions and Subregions



Source: Lekakul and McNeely (1988), Pookajorn (1988)

Due to the lack of fruiting trees, bamboos and understory, the dry dipterocarp forests are inhabited by fewer species of small mammals and birds compared to other types of forests (Round 1988). However, they once apparently had an abundance of grazing animals because of the available grass and salt licks (Round 1988; Stott 1984.) These species include elephant, deer (e.g. *Muntiacus muntjak*, *Cervus porcinus*, *Cervus unicolor*, *Cervus eldi*), kouprey (*Bos sauveli*), gaur and banteng (Lekagul and McNeely 1988).

Mixed deciduous forests, on the other hand, are important habitats for small understorey birds (Round 1988) and are transition areas for mammals found in the savanna forests and the evergreen forests. Areas where bamboo dominates are inhabited and foraged by rodents and various bird species

Unfortunately, biodiversity in the Northern Thai forests is declining rapidly. For example, all five species of hornbills that previously occurred in Doi Suthep, have been extirpated together with at least 45 other bird species (Round 1984.) Doi Suthep has lost all large mammals, including gibbons (*Hylobates lar*), langur (*Presbytis phayrei*), Sambar deer (*Cervus unicolor*), both Malayan Sun bear (*Herlarcos malayanus*) and Asiatic black bear (*Selenarctos thibetanus*) in the past 30 years (Elliot *et al.* 1989). Doi Inthanon, another national park, has also lost all these large mammals (Dearden *et al.* 1996). At least 56 species of wildlife in the North are rare, endangered or threatened (Humphrey and Bain 1990). The only forest area remaining in the North that appears to have some populations of elephants, gaur, banteng and most primates is in the Mae Ping national park/Omkoi-Maetuen wildlife sanctuary complex (Philip Dearden, pers. coms.; MIDAS 1993). The reasons for the continuing decline in biodiversity are hunting, capturing and habitat loss (Round 1984).

3.4 Human Geography

Some authors have divided the region into lowland, upland and highland using altitude as the guideline. The lowland lies below 300 to 700 mASL, the upland being somewhere between 3-400 to 700-1000 mASL, and the highland above 700-1000 mASL (e.g. Walker 1992; Shinawatra 1985; Ganjanaphan and Khao-saad 1995). The ethnic groups were placed

within different altitude ranges according to where they traditionally settled. However, the people of the hills today are living at elevations that do not necessarily fit into this typology. The division between highland and lowland is not really geographic but rather a social one. Walker's (1992:17) description of this division is worth reiterating here.

The major divide in North Thailand is that between lowlanders and highlanders, a dichotomy which corresponds, not exactly but quite closely, to the divide between literate, sedentary, politically-centralized, hierarchically-conscious, Theravada Buddhist Tai majority peoples and preliterate, residually more mobile, politically-acephalous, egalitarian, non-Buddhist minority peoples. But this dichotomy is not absolute, and its over-statement can lead to a misreading of often very complex ethnic configurations, in which some communities, generally considered as belonging among the "hill peoples" (Thai, *chao khao*), are found to be living in settled irrigated rice-farming communities in the lowlands, or even as part of the urban milieu, while other communities of characteristically lowland-dwelling Tai peoples are found to be swiddening (and even growing opium poppy...) in the hill country.

This study uses a broad classification and only refers to one lowland group. This is the Tai Yuan, or northern Thai (*khon muang*), who occupy major valleys in the North and are the ethnic majority. The ethnic minorities who live above the valley settlements of the northern Thai are all considered people of the highlands.

3.4.1 Lowland

Until the emergence of the Thai nation state in the first half of the 20th century, there was no well defined border between northern Thailand and the neighbouring states. Smaller principalities affiliated themselves with one or more larger kingdoms simultaneously (Wilson 1985). The important principalities that were closely connected before the end of the 19th century were Chiang Mai, Nan, Lampang and Tak, now in Thailand; Luang Prabang, Chiang Kwang and Wieng Chan in Lao; Chiang Tung and Molmein in Burma; Chiang Rung in Sib Song Pan Na (Yunnan-China) and Sib Song Chu Tai in northern Vietnam. Considerable mobility of people and goods took place between these cultural centres. Chiang Mai's market scene was described by James McCarthy who travelled through the city in 1888.

There is a daily market, managed almost entirely by women, who do all the buying and selling, and judging from the different costumes, many races of people congregate there. The throng must have contained not less than 3000 people,..., It was no unusual thing to see an elephant stalking down the market amidst a crowd of Yang (Karens), Ngios (Shans from the Salwin), Kerns (from Chiang Tung), Kamu (from the Nam Kawg), and even Tai from the distant Sibsawng Chu Tai, and Haw traders from Yunan.

(McCarthy 1900, reprint 1994:114-116)

The principal ethnic group in Northern Thailand was the Yuan who occupied the region at least since the 12th century (Walker 1992). The North was sparsely populated until the beginning of the 20th century. Low population made labour a valuable resource. Principalities, therefore, tried to attract and coerce different ethnic groups into staying within their territories (Walker 1992). As a consequence, the ethnic composition of northern Thailand became highly diverse.

3.4.2 Highlands

The oldest known inhabitants in the highlands were the Lua who lived in the North before the arrival of the Tai Yuan in the 11th- 12th century (Kunstadter 1988:97). Hanks (1983) suggests that the Lua was the dominant group even earlier, although Renard (1988) has commented that some historical records on the Lua refer to non-Buddhist hill dwellers in general and not necessary to a single ethnic group. Other older inhabitants of the uplands are the Htin and the Kammu, both belonging to the Mon-Khmer language family similar to the Lua. Most Htin in Thailand live in Nan province and are considered a sub group of the Lua, thus sometimes called the "Lua of Nan" (*Lua Muang Nan*) (DPW 1996:32.) As many as 20,000 Kammu, emigrated from Luang Phrabang to Nan around 1880 after being defeated in a revolt against the Lao ruler (Lebar *et al.* 1964, McCarthy 1900). Other indigenous groups are the Shan and the Lue Thai, many of whom are valley dwellers outside Thailand. The Shan mostly live in Northeastern Burma but also are present in northern Thailand in Mae Hong Son, Chiang Rai and Chiang Mai provinces. Similarly, the Lue Thai, centred in Sip Song

Panna (Hsi-shuang Pan-na), in Yunnan Province of southwestern China, have inhabited parts of northern Thailand for many centuries (DPW 1996:44.)

The largest group of highland inhabitants in Thailand is the Karen. The main sub-groups in Thailand are the Pwo (Phlong Shu) and Sgaw (Paganyaw Sgaw). Many Karens living in northern Thailand today descend from immigrants that came from Burma more than 300 years ago (Kunstadter 1983). However, according to Bhruksasri (1989: 9), the majority of Karen immigrants came during the middle of the 18th century and were the principal labour in the teak forestry. Some records, however, show that some Karen are indigenous to the North and had lived in the vicinity of Thailand at least since the 8th century (Bhruksasri 1989). Today Karen people continue to migrate from Burma because of the political turmoil in that country.

Later immigrants to the northern Thai hills have been arriving since the middle of the past century (MOE 1987, pers comm. with villagers). The first groups of Mien, Hmong and the Lahu arrived around the last quarter of the 19th century (DPW 1996). In 1882, a Norwegian traveller describes his encounter with some Lahu in Chiang Rai who came down from the forest in numbers to see the whiteman (Bock 1884). McCarthy (1900) also travelled through a Lahu village in Fang, north of Chiang Mai in 1891. The village was said to have moved first from Chiang Rung (in Yunnan) to Chiang Tung (in Burma) before settling in Thailand around 1880s. McCarthy reported seeing Lahu in a market in Chiang Saen (in Chiang Rai province today), bringing cotton and bees wax to barter for areca nuts and betel leaves. He also claims that prior to 1883 there were no Hmong west of the Mekong River. However, when he travelled through Nan in 1884, there was a growing number of Hmong and Mien in the Nan mountains. Another wave of the Hmong came in the 1970's as a result of the Indochinese War (Kunstadter 1983).

The first group of Akha possibly entered Thailand in 1901 or earlier (Goodman 1996, von Geusau 1983). The migration was slow until the fight between the Nationalist Army and the People's Liberation Army in Yunnan broke out in 1951 causing a large number of Akha to flee into Thailand. Later in the 1960s, the Akha who were caught in the conflicts between the Burmese, the Shan and the Burmese Communist Party were again forced to flee further

south and east into Thailand (Goodman 1996:29).

According to Kacha-anan (1983), the largest group of Mien, came in 1910. Chinese Yunnanese, or the Haw, entered into the Thai suzerainty in two waves. The first wave consisted of Muslim Chinese who lost to the Han Chinese at the end of the Muslim Panthay Rebellion (1855-1873). Some of the Haw became marauding troops raiding villages in Laos and Northern Thailand in the 1880s (McCarthy 1900). The second wave of the Haw came in the 1950's-1960's. This latter group was a military unit of the Nationalist Party, Koumintang (KMT), who had been defeated by the communist revolutionary armies in China (Hill 1983; Cohen 1984; McCoy 1972). The KMT occupied the border between Burma and Yunnan and was heavily supported by the United States and the Taiwanese government as a buffer between Communist China and Southeast Asia. After serious political conflicts with the Burmese government, the army eventually moved into Thailand in 1962 and was employed by the Thai government for intelligence and as guards along the mountain border (McCoy 1972).

Because of arbitrary national borders and political problems in the neighbouring countries, many highlanders continued to migrate into Thailand well into the 1990's. The most recent group that has been officially recorded is the Palaung who came from Shan State in Burma to Thailand in the early 1980s (DPW 1989:38.) The Thai government recognizes 16 ethnic groups (including lowland northern Thai) as *Inhabitants of the Highlands*. Of these, eleven groups (Karen, Hmong, Mien, Akha, Lahu, Lisu, Lua', Htin, Khammu, Tongsu and Mlabri) are considered *Chao Khao* or *Hill Tribes*, and four groups (Palaung, Chinese Yunnanese, Shan and Thai Lue) are categorized as *Highland Minorities* (*Chon Klum Noi*). Table 3.3 gives the demographic data of all the highland groups.

Table 3.3 Population of Highlanders in Thailand

Ethnic Group	Villages	Households	Population
Karen	2,017	70,046	353,110
Hmong	242	14,430	111,677
Lahu	447	15,025	82,158
Northern Thai	472	15,921	67,191
Akha	256	8,484	49,903
Htin	152	6,940	48,025
Mien	184	5,737	41,697
Lisu	149	5,403	31,463
Haw (Yunnanese)	65	3,414	19,773
Lua	67	3,308	17,346
Shan	57	2,799	13,810
Khammu	33	1,934	10,198
Thai Lue	14	860	3,904
Palaung	4	347	1,937
Pa-O	4	53	276
Mlabri	1	10	57
Others	9	110	749
Total	4,173	154,821	853,274

Source: Hill Tribe Welfare Division, Department of Public Welfare 1996

3.5 Agricultural Systems of the Thai Highlands

The two main cultivation methods in the Thai Highlands are irrigated paddy and swidden cultivation. Other methods such as tea farms, fruit orchards and non-swidden (cultivation without fire) are present but are not as widespread. The irrigated rice and swidden farming in the highlands are described in more detail below.

3.5.1 Irrigated Rice

The most important form of irrigated agriculture in northern Thailand is wet-rice cultivation. This system requires the fields to be submerged in water for a period of time. The northern Thai have long developed an irrigation system for this purpose (Tanabe 1994). McCarthy remarked in 1891 while travelling from Hod to Chiang Mai.

The system of irrigation adopted by the Lao [northern Thai] is impressive for its completeness. The tributaries of the Me Ping are so thoroughly drawn off and dispersed in channels to fertilize fields and gardens that, as far as the Me Chan, none of the streams can be said to reach the river.”

McCarthy 1900, reprint 1994:148.

The northern Thai irrigation system is supported by an elaborate communal institution, *Muang Fai*, which ensures fair distribution of water (Tan-Kim-Yong 1983; Surarererk 1986). This type of cultivation is made possible in the hills by terrace construction and by utilizing natural gravitation to divert water from upland streams to paddy fields. This irrigation technology was also adopted by the highlanders, first by the upland Lua and later by the Karen. The Lua and the Karen have been observed to increasingly replace swidden fields with irrigated rice paddy to intensify their land use (Kunstadter 1988). The same situation has also been recorded among the Hmong (Cooper 1984; Radley 1986) although at a much more recent time and by fewer people. Where the environment permits, the Hmong have long engaged in irrigated rice production as reported in China (de Beauclaire 1970; Mickey 1947; Ruey 1960). However, the Hmong in Thailand live in locations where irrigate-able rice land is limited.

3.5.2 Swidden Agriculture

Swidden is a method of cultivation that involves clearing and burning vegetation (Nye and Greenland 1960). Clearing allows light to reach the vegetation on the ground. Controlled burning sterilizes the top 2 centimetres of the soil (Zinke *et al.* 1978) and releases carbonate, phosphate, potassium and silicate cations that were locked up in the vegetation. The ash

increases the amount of exchangeable cations by raising the soil pH level. The amount of minerals being released depends upon the type of vegetation that is being burnt. Burning forest, for example, provides a higher level of fertilization than burning grass (Nye and Greenland 1960:69). A study by the Soil Fertility Conservation Project (Terkelboom and Van Keer 1996) finds that among different types of fallow, bamboo fallow contains the highest level of biomass (Table 3.4). However, some minerals such as nitrogen and sulphur are always lost to the atmosphere in the form of gases during the fire (Nye and Greenland 1960: 67, 73).

Table 3.4 Fallow Characteristics at Mae Haeng Lahu Village, Mae Ai District, Chiang Mai

Fallow Types (age)	Indicator Species	Average Dry Biomass (ton/ha)	
		Total	Grass (% of Total)
Degraded Deciduous Woodland (>10 yrs)	<i>Apporusa wall.</i> {j}, <i>Vitex lim.</i> {a}, <i>Cratoxylon coch.</i> {j/a}, <i>Grewia er.</i> , <i>Lygodium flex.</i> , grasses	20.7	2.3 (11)
Bamboo Thicket (4 yrs)	<i>Dendrocalamus membr.</i> , <i>Cratoxylon coch.</i> {j}, <i>Aporusa wall.</i> {j}	34.2	0.1 (0)
Grass-Shrubland	<i>Imperata cylindrica</i> , <i>Byttneria pilosa</i> , <i>Mucuna brevipes</i>	6.8	4.5 (66)
	<i>Microstegium vagans</i>	9.4	6.7 (71)
	<i>Themeda triandra</i>	16.3	14.6 (90)

Note: j=juvenile, a=adult

Source: Terkelboom and Van Keer 1996

Weeds, loss of top soil, pests, diseases and the changing composition of fauna and flora all contribute to subsequent decline in yields if the land is used repeatedly. Weeds are particularly troublesome in the upland rice fields. The density of broadleaf weeds increases from 12 to 2,014 per square metre after the third year (Terkelboom and Van Keer 1996:8). Soil organic matter decreases at a rate around 15% annually in fields lacking conservation

measures (Ibid:9). Thus, a fundamental requirement of swidden cultivation is the fallow. During fallow periods, ecological succession occurs. Regrowth of vegetation from surrounding areas allows the soil to recapture the depleted nutrients. Zinke *et al.* (1978) found that land productivity can be maintained if an adequate fallow period is provided even when cultivation is on a steep slope. The time needed for soil recovery depends on how much the soil structure has been changed. In general, the shorter the period of repeated uses and the smaller the fields, the shorter the time needed for the land to return to its productive stage.

Swiddeners. Although, swidden agriculture is often associated with indigenous forest farmers, the method is practised by many different groups. Spencer (1966:2) points to the diversity of peoples that employ this agricultural system.

...shifting cultivation is the assemblage of techniques of living followed by those for whom it is a practical procedure, at any time, in any place, for any of innumerable reasons and purposes. It cannot possibly be considered a single system, a single device, or a single trait that can be altered by a single simple stimulus. To a given practitioner of shifting cultivation, the practice always involves some multiple complex of motivations, factors, aims, culture traits, habits, political pressures, and causal forces...it is a technology of expediency, used because it will work better under a given set of conditions than will any other system available to the practitioner.

In Thailand swidden is practised by lowland Thai as well as highland farmers. Historically, swidden was the most practical method to convert forest into rice land in Southeast Asia (Grandstaff 1980). Once irrigated rice was established in the lowlands, swidden became a supplemental method for farming the foothills. As land competition escalates in the lowlands swiddening turns into a primary method of agriculture for those who do not own irrigated lands, especially for the purpose of growing upland cash crops. Between the mid 1950s and the 1970s, most of the increased population in Thailand has been absorbed in the middle-terrace (200-300 m) areas through swidden agriculture (Chapman 1978:225-6). In the highlands, swidden farming has been, and still is, the predominant method of cultivation (NREP 1994).

Swidden Typology. The swidden agriculture practised by the highlanders in Thailand is considered to be integrated into the cultures as it is the primary mode of production. The lowlanders, on the other hand, are mainly wet-rice cultivators who employ swidden only to supplement the wet-rice. Conklin (1957) draws a distinction between these two groups calling them “integral” and “partial” swiddeners, respectively. Integral swiddeners are further divided into *pioneer* and *established* subtypes. Pioneer swiddeners clear relatively mature forests (ideally primary forests) for cultivation while established swiddeners rotate fields within a limited territory. The partial swiddeners, on the other hand, are divided into *supplementary swiddeners* and *incipient swiddeners*. Supplementary swiddeners are those who carry out swidden to complement permanent agriculture while incipient swiddeners are those forced to use the method for lack of alternatives, such as lowland landless farmers. Other authors use similar terms to refer to swiddening in northern Thailand based on Conklin’s typology (Table 3.5).

Table 3.5 Typology of Swidden Agriculture in Southeast Asia

Author	Practiced mainly by Lowlanders		Practiced mainly by Highlanders	
Conklin	Partial		Integral	
	Supplementary	Incipient	Pioneer	Established
Walker	Incipient		Pioneer	Established
Grandstaff	-		Pioneer	Established

Sources: Conklin 1957; Walker 1975; Grandstaff 1980

Kunstadter and Chapman (1978) classify shifting cultivation systems in the northern Thai highlands, based on the ratio between cultivation and fallow period. Short cultivation-short fallow, short cultivation-long fallow and long cultivation-very long fallow are the 3 main types of swidden. Later Kunstadter (1988) added another type of swidden, short cultivation-variable fallow which is practised by tea farmers (Table 3.6).

Table 3.6 Cultivation Systems in the Northern Thai Highlands in the 1960's.

Type	Years of Cultivation : fallow	Approx. Altitude Range (m)	Depth of Tilling	Ethnic Groups	Major Crops	Economic Importance
Short cultivation-short fallow	1:3-5	200-500	shallow, stump removed	Northern Thai	Rice	Supplement to wet rice
Short cultivation-long fallow	1:10+	700-1,400	shallow, stumps left for regrowth	Lua, Karen	Rice	Primary Subsistence
Short cultivation-variable fallow	1:3-10	1,000-1,500	Shallow	Northern Thai, others	Rice	Supplement to tea
Long cultivation-very long fallow	3±:50±	1000	Deep, stumps removed	Akha, Mien Hmong, Lahu, Lisu	rice, maize, opium	Primary cash & subsistence crops
Irrigated Paddy	Annual or multi-crop no fallow	200-1,500	Deep, stumps removed	Northern Thai, Karen, Lua	Rice	Primary cash & subsistence crops

Source: Kunstadter 1988: 131.

The most widespread form of swidden in Thailand was the short cultivation-short fallow (SC-SF), originally carried out by the lowland Thai to supplement wet rice cultivation (Kunstadter and Chapman 1978). Later, due to acute landlessness in the lowland, this practice turned into a primary source of livelihood for poor farmers.

From the point of view of conservation, the short cultivation-long fallow (SC-LF) type of swidden is the most sustainable form of agriculture in the forest. It allows indefinite use of land provided that external factors do not disrupt the system. This type of swidden is traditionally practised by the Lua and the Karen; although, the latter group does not have the same degree of conservation as the former. Kunstadter (1988) observed in the 1960s that the newcomer Karen were "less careful in controlling fires and conserving land and forest resources and not tied as tightly to specific farm sites." (pp. 102). The Karen were also the first group who encroached on the land that belonged to the Lua (Kunstadter 1988). The reason that the Karen are less meticulous in their rotational farming may be because they have

adopted this system more recently compared to the Lua ¹. Nonetheless, with the Lua becoming assimilated into the lowland Thai and losing distinctive ethnic identity, the Karen is now the largest group among the highlanders whose cropping techniques closely resemble the Lua's short-cultivation, long-fallow. The Karen swidden system is considered conservative in comparison with the rest of the highlanders.

Unfortunately, today, short-cultivation, long fallow farmers face many challenges. Their fallows have been encroached upon by other groups. Population growth encouraged the expansion of irrigated rice fields at the expense of the swidden system. Unlike swidden fields, which are held communally, irrigated fields are considered private properties. These terraced fields are often sold to outsiders, making it harder to manage the land communally (Kunstadter 1988). Christianization of some villagers also weakens traditional leadership and their swidden management roles (Ibid.). Short-cultivation, long fallowed farmers are forced to reduce the fallow time to the point where their swidden system is no longer sustainable (NREP 1994).

The long cultivation-very long fallow type of swidden (LC-VLF) corresponds to the "Pioneer Swidden" explained earlier. This type of swidden is practised by the Hmong, Mien, Lisu, Lahu, and Akha. In Thailand, some members of these groups also grew opium poppies as a cash crop. As with the established groups, the pioneer swiddeners are now forced by land shortage to practice permanent or short-cultivation, short-fallow swiddening.

These changes have made the association of ethnic groups with particular forms of swidden agriculture becoming less relevant, particularly in more accessible areas. One recent study points out:

Cultural and ethnic differences, long the focus of highland studies, no longer appear to be the major determinant of land use patterns. Many well-off villages of former opium growers are now growing irrigated wetland rice. Many Karen villages, considered subsistence and conservative, are now actively involved

1

Renard *et al.* (1988:24) suggest that the Karen were historically pioneer swiddeners who lived in long houses and frequently moved their farming sites. It was during the end of the 19th century that they began to settle and became rotational swiddeners (Ibid.:34).

in cash cropping. (NREP 1994:1-4).

3.6 Government Policies towards Highlanders

A suitable environment for poppies, the desire to be independent, their health concern over malaria in the lowlands and their relatively recent migration to Thailand brought the pioneer swiddeners to the forests at higher elevation above the Lua and the Karen. The pioneer farming practices of clearing mature forest, moving their settlements regularly and growing opium, all made them targets for intervention from administrators, conservationists and the international community. Since the late 1950s, the Thai government's concerns over *chao khao* has been over three main issues: Opium cultivation, national security and conservation. What follows describe the types of interventions taken by the government, including the policies toward opium, national security, development, forestry and conservation.

3.6.1 Policies on Opium

In 1811, King Rama II of Thailand prohibited the sale and consumption of opium (McCoy 1972) but did not stop the thriving black markets that served mostly Chinese immigrants. This policy continued during the reign of Rama III who had a cordial relationship with China. However, China's defeat in the Opium War (1839-1842 and 1856-1858) and the accession of Rama IV (King Mongkut), who were more westernized than the previous king, led to a shift in the Thai policy. King Rama IV signed the Bowring Treaty with Britain in 1852 resulting in relaxed trade barriers against western companies and their subjects (Wyatt 1987). Opium, the important commodity traded by British and other Europeans, was legalized and the government sold concessions to operate opium dens to Chinese merchants whose main clientele were Chinese labourers (McCoy 1972).

While trades in the port cities were controlled by the government, indigenous opium trade between Yunnan and mainland Southeast Asia had developed well before the opium wars. By the 1830s, vast opium fields were reported by visitors to the Yunnan and Szechwan

provinces in western China and the Shan State in Burma (Maule 1992). By 1886, the area of cultivation had extended to include Kachin and Wa territories in colonial Burma. Caravan traders travelled throughout Burma, Northern Thailand, Lao, and Yunnan, trading opium among other commodities where the monopoly of the government did not reach. The trade was substantial enough that the French colonial government actively encouraged the production in Laos and Tonkin to reduce imports from Yunnan (Feingold 1975).

Cultivation of opium poppy in northern Thailand was carried out by several groups of highlanders especially the Hmong and the Mien. The Akha, Lisu and Lahu are said to have taken up opium growing later (Radley 1986: 74). The indigenous groups such as the Karen and the Northern Thai did not grow opium until recently. While these highlanders are producers, trading was carried out by Chinese. One group of traders was the overseas Chinese who were hired by local rulers as tax collectors (Cohen 1984:151). The second group was the overland Chinese (Haw) who carried out trades between Yunnan and northern Thailand (Ibid.).

In 1907, the Royal Thai Opium Monopoly was established. The monopoly obtained opium mainly from the British East India Company resulting in high taxes and high prices. The monopoly was accompanied by the flourishing black markets whose supplies were smuggled in from the Shan State and Yunnan. To counteract these illegal imports, the government encouraged domestic poppy cultivation in the North (Maule 1992:19). In 1938, the Siamese Excise Department issued licences to cultivate poppies to “hill-tribe growers” in order to increase domestic production (Maule 1992: 32). The government even considered promoting cultivation in the lowlands (Radley 1986).

Restriction and eventual prohibition of opium sales in North America and most of Europe occurred by the end of the 1920s. In 1931, the International Conference on the Suppression of Opium Smoking was held in Bangkok and pressure was placed on the Thai government to ban opium. The Thai government eventually outlawed opium in 1958.

In the first decade after the opium ban, open trade in the lowland was effectively eliminated. The hill producers were not affected by the ban since they lived well beyond the administrative control of the state. The trade and smuggling operation were in the hands of

the Kuomintang (KMT) Chinese Nationalist Army.

However, escalating narcotic problems in the United States in the 1960s and widespread addiction among American servicemen in the Vietnam War instigated the US government to take action against opium production in Southeast Asia. During the 1960s and more explicitly in the 1970s, the United States tied its foreign policies to narcotic suppression (Judd 1988). An important target area for the US policy was the Golden Triangle, of which northern Thailand is a part. As Lester Wolff, chairman of the Subcommittee on Future Foreign Policy Research and Development stated, "...one of the elements which must be actively pursued is the removal of narcotics and narcotic-based materials from the illicit international pipelines as close to the source as possible." (Hearings, April 22-23, 1975:v). The United States spent USD36 million purchasing the entire Turkish authorized opium production and one million on the Chinese Kuomintang Army's 26 tons of opium in 1973 in order to reduce the amount of opium in the market (Hearings 1975:2). Tapping into this policy, the Shan state was proposing similar exchange "to sell the annual Shan opium crop at the Thai border price to any recognized international or governmental body" (Hearings 1975:3). However, various researchers in Burma and Northern Thailand advised the US government that a long-term solution to the opium problem rested on finding alternative crops for the Hill Tribes (Feingold 1975, Cummings 1975.) This approach led to the launching of many development projects in the North, some of which will be described in more detail in section 3.6.3.

3.6.2 National Security

When the North was annexed to Thailand, the former arrangements between the local princes and various ethnic groups were discarded. The relationships between ethnic minorities and the new ruler were ambiguous. King Rama V practised inclusive policy but later campaign emphasizing the three domains: Nation, religion and monarchy (*Chat, Sasana, Mahakasat*) gradually placed the hill minorities outside these national domains (Renard 1991). When the new government began to impose head tax and conscription, revolts broke out in several areas (Ibid.:41). Some high-ranking administrators in King Rama VI's court suggested chasing all

the “non-Thai” people out of the territory (Renard 1986). However, the final decision was to treat minorities with benign neglect.

After World War II, a geopolitical transformation took place throughout Southeast Asia. Struggles for independence in Thailand’s neighbouring countries were followed by the cold war which was eventually manifested into the Indochinese War. Anti-communist policy in Thailand renewed the suspicions against ethnic minorities. Following recommendations from its United States counterpart, the Thai government increased their contacts with highland minorities in the 1950s. Two government units, the Border Patrol Police (BPP) and the Mobile Development Team (MDT) were established. The BPP set up schools in many strategically important villages, gave Thai literacy classes to highlanders, distributing some materials (blankets, seeds, school books, clothes, etc.) and listened to village problems. The MDT concentrated on opium-substitution programs. Both dispensed some modern medicines and engaged in political campaigns to promote loyalty to the nation (Judd 1988; Cooper 1984). The government mandate was to “make the hill tribes loyal Thai citizens.” (Renard *et al.* 1988:50). The Nationality Act of 1965 was enacted allowing Hill Tribe children from officially recognized villages to become Thai citizens (Ratanakorn 1978). In 1968, a very successful Hill Tribe radio network was set up, broadcasting in all major hill languages. The government’s concern has been to mobilize the highlanders’ “support in a defence effort to resist infiltration” (Bhruksasri 1989:15). General Prapas Charusathien, the Minister of Interior’s stated:

In their efforts to create disturbance in Thailand the foreign communists are seeking to arouse dissatisfaction amongst the tribes. By radio propaganda and attempts to infiltrate agitators, they try to present our past tolerant policy as one of deliberate neglect, to create a sense of deprivation amongst the tribal peoples and to allure them with impractical promises.

(Charusathien 1967, cited in Bhruksasri 1989:13).

National security remained a dominant consideration in the 1970s as reflected in the cabinet resolution of July 1976:

“ the problem must be immediately resolved for the benefits of the Hill Tribes and the Nation. Particularly important is the need to prevent the Hill Tribes to engage in separation movement which will damage the unity and security

of the Nation.” (DPW 1992:3)

Since the highlanders of northern Thailand were related to groups outside Thailand, worries about their possible sympathy for the communist party arose during the Vietnam War (Tapp 1989). A large number of Hmong in Laos allied themselves with the socialist movement and thus created suspicion towards the Hmong in Thailand.

Distrust led to conflicts as the government moved in to take control of the hills (Van der Meer 1981). The most serious conflict was the clash between the Hmong and the military in the late 1960's. It was not clear what the origins of the conflict were. According to Radley (1986), the Border Patrol Police extorted bribes from the Hmong who, in retaliation, burnt down the Border Patrol School. The situation was treated as insurgency by the government and their United States counterpart, resulting in military air bombing and napalming of Hmong villages in Nan (Radley 1986:155). A similar episode also took place in Chiang Rai, ending with the burning of a Hmong village in Doi Chompoo (Tapp 1989:36). Many Hmong, Mien and H'tin villages were resettled in the lowlands.

Tapp and Radley suggested that the Hmong anti-government reactions did not stem from ideological differences but rather from resentment against treatment at the local level which the Hill Tribes considered unfair (Radley 1986; Tapp 1989). Radley (1986:156) quoted a Hmong who stated that “when thieves, communists or the army came to our village, we would go and hide in the caves in the forest so that none of them could find us.” Nevertheless, strong reaction did result in some Hmong turning towards the Communist Party of Thailand (Van der Meer 1981).

After the end of the Vietnam War, internal conflict within the CPT and the government Amnesty policy led to a breakdown of the party. By the mid 1980s, the threat of communism in Thailand receded and the concern about national security in relation to hill minorities greatly subsided.

3.6.3 Highland Development

In 1959, the National Committee on Hill Tribes was formed to 1) survey highland conditions 2) establish provincial units 3) establish the Hill Tribe research centre, and 4) study

educational and vocational needs of the highlanders (Judd 1988:101). The first development approach the Thai government took was to create self-help resettlement areas in the lowlands and persuade the Hill Tribes to leave the highlands to live permanently in these colonies (DPW 1992). However, this scheme failed and was eventually abandoned (Suwanbubpa 1978). The highland survey was completed in 1962 (Robert and Renard 1986). The following year, the provincial Hill Tribe centres were set up and in 1964 the Tribal Research Centre was established (Judd 1988). In 1966, another survey called the Socio-Economic Needs of the Opium-Producing Areas in Thailand was carried out by a UN team (Ibid; Oughton 1970).

After the clashes between the Hmong and the military in 1967/8, the government revived the resettlement programs. This time the Hill Tribes were forcibly moved to the centres (*nikom*) in Tak, Nan, Chiang Rai, Payao, Petchabun and Pitsanuloke or resettled at lower elevations. Approximately half of the Hmong population was affected by these resettlements (Kunstadter 1993). These *nikom* became permanent residencies of those who have been relocated, but large numbers of highlanders returned to cultivate the hills. One study found that 80% of the villagers in a Hmong resettlement site in Phayao are cultivating outside the resettlement areas (Satsanyawut 1994).

After the initial approach to stop opium cultivation by harsh measures and forced resettlement did not produce the desired outcome, the Thai government began to look into more positive approaches. The most important approach has been the zonal development concept which aimed to solve the opium, insurgency and resource problems in the same package (Oughton *et al.* 1972; Walker and Jaafar 1975). This approach was first initiated by His Majesty the King of Thailand through his Royal Northern Project in 1969.

The Royal Project

Established in 1969 by His Majesty the King of Thailand, The Royal Project (RP) pioneered development work in the hills. At the outset, research and agricultural experiments dominated the project activities. According to Sutthi (1989:131), between 1971 and 1985, 69 research projects were carried out in association with the Royal Project. Currently, the project has 34 development centres in five provinces in the Upper North (Table 3.7).

Table 3.7 Royal Project Development Centres

Province	District	Centre	Population	Ethnic Groups
Chiang Mai	Fang	Angkhang	2697	Lahu, Lisu, Haw, Palong
	Jomthong	Inthanon	2793	Karen, Hmong , Khon muang
		KhunPae	1913	Karen, Hmong
	Samoeng	Pangda	1100	Khon muang, Hmong
	MaeTang	MaeLod	281	Khon muang, Karen
	K.A.MaeWang	KhunWang	1126	Hmong , Karen
	Chiang Dao	KaeNoi	2664	Lahu, Akha, Haw
		HuayLuek	1400	Khon muang, Hmong , Karen
		NongKhiaw	2472	Lahu, Akha, Lua, Kachin
	Mae Rim	MaeSaMai	1284	Hmong
		NongHoi	2007	Hmong , Lisu, Khon muang
	DoiSaket	PaMicang	2986	Khon muang, Karen
	SanKampaeng	TinTok	1226	Khon muang
		MaeThaNua	2211	Khon muang, Karen
	Mae Tang	Mon Ngoh	1824	Khong muang, Hmong
	SanPatong	MaeSaPok	1741	Khon muang, Karen
		ThungLuang	2647	Karen
	Sanpatong/MaeJaem	MaeHae	1708	Karen, Hmong
	Mae Jaem	Pang Ung	2847	Karen, Hmong
		Wat Chan	3819	Karen
	Mae Ay	MokJam	4702	Karen, Mien, Akha, Shan, Lahu, Lisu
	HangDong	ThungRoeng	764	Khong muang, Hmong
Chiang Rai	Chiang Saen	Sa Ngo	630	Khon muang, Akha
	Wiang Papao	HuayPong	370	Khon muang, Hmong , Lahu
		HuayNamRin	644	Khong muang, Lahu
		MaePunLuang	1253	Lisu, Lahu, Akha, Haw
	MaeSuay	HuayNamKhun	4221	Akha, Karen, Lahu
MaeHongSon	Mae La Noi	Mae La Noi	2679	Karen, Lua
	Mae Sariang	Mae Sariang	2462	Karen, Lua
Lampun	Li	PrabatHuaytom	8842	Khon muang, Karen
PaYao	Pong	PangKha	717	Hmong

Source: Royal Project 1995

Various implementing agencies are assigned to oversee different centres. Planning and Coordination is done by the Highland Agricultural Research Coordinating Committee (Judd 1988). During the early years, the Royal project launched a variety of cash crops such as potato, red kidney bean, baby corn, cabbage, tomato, cauliflower, strawberries, rose, asparagus and temperate tree crops (peach, pear, apple). The project extends seeds, inputs and credit and advices on methods of cultivation. Beginning in 1973, the project also set up its own food processing plants.

In the early years, the impacts of the project was limited. In 1981, seven years after the project arrived in Monya, a Hmong village south of Chiang Mai, Tapp (1989:41) concluded that “alternative crops had made as yet few inroads into the traditional economy.” Piluk and Polperm (1993) attributed this limitations to small market demands, mainly consisting of international hotels.

Since the end of the 1980s and especially in the 1990s, the situation has changed dramatically. The project has been increasingly successful in building exclusive markets for exotic fruits, vegetables and flowers to meet the demands of the urban upper class and tourism industries. The value of vegetables sold by the Royal Project increased from 452,980 baht in 1982 to 20 million baht in 1991 (Piluk and Polperm 1993). Advanced technology was introduced in flower production such as electric lighting that extends the harvesting periods, tissue cultivation, cold storage and advance packaging. Because of heavy inputs and technological requirements, extension was possible to limited areas for flowers (mainly Khun Klang and Khun Wang) (Krasaechai *et al.* 1993.)

The success of the project depends heavily on limited supply of its produce. Once the innovations are taken up by more villagers, overproduction causes the prices to drop. The Royal Project resolves this problem in two ways. First, since 1990, the project has reduced the number of farmers under project supervision (Piluk and Polperm 1993). Secondly, the project continuously shifts to new exotic species. In 1995, the project marketed 56 types of temperate vegetables, 17 of which were newly launched. Nineteen types of temperate cut-flowers were regularly sold in the project shops and eight more species are under experimentation (Royal Project 1995). The project is an important source of technological

information for other projects as well as farmers in the highlands (NREP 1994).

The Crop Replacement Phase :1970s

In 1972, the United Nations Project for Drug Abuse Control (UNPDAC) was established to manage and distribute financial resources from western countries for the purpose of opium eradication. On the Thai government side, a coordinating agency in charge of allocating resources and assigning government departments to implement opium replacement projects was formed in 1979. This agency later became the Office of Narcotic Control Board (ONCB).

With limited knowledge about both highland agriculture and the social and cultural conditions in the hills, the 1970s was mainly an experimental decade for highland development projects (Robert and Renard 1986). The emphasis during this period was placed on filling the economic niche of opium with other crops. One such project was the Thai/UN Crop Replacement and Community Development Project (CRCDP) (1973-1979) under the support of the newly established UNFDAC (United Nations Fund for Drug Abuse Control). The Highland Agricultural and Development Training and Field Crop Development Station was established to facilitate research and training of both project personnel and farmers (Lee 1981). In the highlands, the CRCDP worked in 5 key and 25 satellite villages (later expanded to 38). Three extension workers stationed at each key village to distribute alternative crops to villagers while carry out experimental plots. Over eight hundred varieties of crops have been experimented with (Robert and Renard 1989).

Parallel to the CRCDP, the United Nations Development Program (UNDP) and the Food and Agriculture Organization (FAO) sponsored the Mae Sa Integrated Watershed and Forest Land Use Project (Renard *et al.* 1988). The Huay Thung Chor Highland reforestation project was turned into a Hill-Tribe flower plantation project with the advice of the USDA in 1977, and by 1979 the UN University and Chiang Mai University (CMU) began agro-forestry projects in this area to promote inter-cropping of coffee and rice (which eventually proved unsuitable) as well as pasture research (Chapman 1983). The Thai-Australian Highland

Agricultural Project (TA-HAP) worked between 1972-1980 on livestock and subsistence agriculture improvement (Renard 1986). In the lowlands near Chiang Mai, the United States helped set up the Highland Agriculture in Thailand (HAT), a centre responsible for research on potential substitute crops and their farming techniques (Renard 1986).

By the end of the 1970s, despite gaining substantial understanding on highland agricultural problems, the outcomes of these projects were not clearly apparent. Some researchers offer rather unflattering views of some projects. For example, Tapp (1989:20) comments that the Mae Sa project turned the village “into tourist resorts for Thai and foreign visitors”. Cooper (1984) whose study included several UN project areas in 1974/5, attributed the problem to the lack of follow-up activities, the lack of research before planning, the rivalries between government departments and the fluctuation of cash crop prices. Lee observed one of the key villages in the CRCDP project where no less than 40 species of crops were grown in experimental plots making the task of the extension workers heavily biased towards caring for the plots rather than working closely with villagers (Lee 1978). After 5 years’ contact in Khun Wang, with the project, only one out of 30 household were reported to have benefited from alternative crops (Ibid:51). Moreover, repeated failure on the part of some projects in marketing the produce left the farmers to bear the loss, undermining the enthusiasm and cooperation that the farmers may have had at the early period of the projects (Lee 1978.)

Integrated Development: Early to Mid 1980's

Most HDPs in the 1980s broadened their scope from focussing narrowly on substitute crops to include more explicitly social, economic and environmental components in their mandates. Operationally, these mandates translated into road construction, access to education, health care and drinking water, soil protection and reforestation projects (Robert and Renard 1986; Judd 1988, various project documents).

Many projects in the 1980s were continuations of projects started in the previous decade. The UN CRCDP project area was partly taken over by the Mae Chaem Watershed

Development Project (MCWDP) and partly by the Highland Agricultural Marketing and Production Project (1980-1984) (HAMP) with some boundary adjustment and expansion. The Australian livestock project transformed into the Highland Agriculture and Social Development (TA-HASD) in 1982, co-sponsored by the Australian government and the World Bank. The Netherlands funded the Highland Coffee Research and Development Center at Chiang Mai University (1983-1990) (Angkasith 1986). And, a new bilateral project, the Thai-German Highland Development Project (TG-HDP) was launched in 1979. In December, 1983, the Master Plan for Development of the Opium Poppy Cultivating Regions of Northern Thailand was drawn. This plan proposed eight new Integrated Highland Development projects beginning in 1985-1990, at the cost of \$US 59.9 million. The projects were later consolidated into six projects: Sam Mun, Wieng Pha, Pae Por, Integrated Pocket Area, Thai-Norway and Doi Yao.

One of the biggest projects in the 1980s in term of funding was the Mae Chaem Watershed Development project (1981-1987), receiving approximately twenty-one million US dollars with half of the funding coming from USAID (MCWDP 1988)². Implementing agencies for this project included the Department of Land Development, the Department of Agriculture, the Department of Agricultural Extension, the Royal Forestry Department, the Bank of Agricultural and Cooperatives, each responsible for different components of the project (Robert and Renard 1986:221-222). From project documentation it appears that a large part of the fund was used in constructions (of office buildings, staff housing, garages, storage facilities, 95 small reservoirs, 175 km of roads) and to maintain experimental plots (MCWDP 1988). Nevertheless, the project succeeded in giving land use certificates to over 4,000 highland people covering 3,800 acres (MCWDP 1988, Robert and Renard 1989, McKinnon 1989).

The Highland Agricultural Marketing and Production (HAMP) (1980 -1984) and the Thai-German Highland Development Program (TG-HDP) (phase I -1980-1986) worked mainly with opium growers with an emphasis on crop substitution. They promoted coffee, red

²Mae Chaem was considered a communist insurgency area which helps explain the ample funding.

kidney beans, fruit trees and the TG-HDP also promoted new upland rice varieties (TG-HDP 1989). As an incentive, the TG-HDP gave free inputs, such as fertilizer, to farmers in the project. TG-HDP carried out “a very thorough study of nutritional problems among the hill people of the area.” and had programs that addressed health care problems among the highlanders (Judd 1988:199). However, the crop substitution itself had not been very successful (Robert and Renard 1989).

TA-HASD began its mission slightly different from the other projects. Since opium was not a major problem in its areas, the project emphasized sustainable development through reducing swidden land and increasing productivity (TA-HASD 1987). Its activities included developing more terraced rice land in old swidden fields, introducing tree crops such as tea, coffee, fruit and rubber trees and improving the existing field crops’ productivity. Instead of promoting new temperate crops, the project concentrated on low-input crops such as maize and various legumes.

In the mid 1980s, one significant policy by the Thai government affect the outcome of the highland development projects. The government stepped up enforcement against opium growing by using air surveillance and opium field raids. These harsh measures were implemented in concert with development projects’ activities. After the military raided the fields, projects readily supplied highlanders with substitute crops. This strategy, for example, was used in the the Thai-Norway HDP areas, resulting in the reduction of opium growing areas from 831.2 ha in 1984 to 11.4 ha by 1990/91 (Rerkasem 1994:38). By the late 1980s, the extent of opium fields is significantly smaller and the location less conspicuous (Crooker 1988).

By the mid 1980s, national security was no longer a chief concern in the highlands. Instead, concern over deforestation of headwater forests has become more prominent. The rotational swiddeners were being pressured by both the pioneer swiddeners, the lowland farmers and the reforestation projects to reduce their swidden land (Tan-Kim-Yong *et al.* 1988). The pioneer shifting cultivators reached the end of the frontier, therefore had to become sedentary, at least at a village scale (Cooper 1984). Large numbers of highlanders were adopting non-opium cash crops (more detail of this development in Chapter 5 and 6).

Highland projects supported this development by providing material and technical assistance to farmers such as fertilizers, pesticides, irrigation materials, revolving funds and, most importantly, improved roads between the highlands and lowland markets. They also continued to experiment with new crops such as ginger, tomato, wheat and barley.

As cash crops began to replace opium, problems of different natures emerged. Widespread use of pesticides and the extensive mono-cropping led to rampant conflicts between upstream and downstream communities over the issues of water shortage and contamination (Kaye 1990; Tungittiplakorn and Bengtsson 1996). Highland development projects were criticized for lack of appreciation of the social, cultural and ecological integrity of the highland peoples (Dearden 1995). Development assistance converged the heterogeneous cultural and ecological nature of the highlands to homogeneity, based on cash economy, consumer culture and deterioration of bio-physical diversity (Dearden 1995). The promotion of cash crops undermined the subsistence sector (Kesmanee 1989; Ekachai 1991) and increased the gap between the rich and the poor (Dearden 1996). Towards the end of the 1980s, development projects shifted their emphasis from promoting cash crops to sustainable agriculture, soil conservation and institutional building.

Sustainable Development in Practice. There have been attempts by various projects to address the issue of rice deficiency among highlanders. Many researchers believe that one way to reduce opium production is to increase the rice productivity (Kesmanee 1989; Lee 1981; Van der Meer 1981). In the 1970s, UN projects tried to introduce different varieties of rice in the hills with little success (Lee 1978). More effort was spent on improving dry rice varieties in the early 1980s. Chiang Mai University, the Rice Research Institute, the Department of Public Welfare and the Agricultural Department jointly carried out the research. However, research did not lead to any practical applications (Kesmanee 1989).

Another approach to increase rice productivity was to develop terraced wet-rice. Since doing this by hand takes tremendous time and labour, most projects resorted to heavy machinery. The result was unfortunately hazardous. In the Thai-German, Mae Chaem project and the Thai-Australian project, the lands being graded by machinery were unusable because

the top soil was compacted or lost (Robert and Renard 1989, NREP 1994:4-25). The HASD (early phase of Thai-Australian) project developed over 100 *rai* of paddy in a Hmong village of Pa Pu Chom in the mid 1970s, but could not irrigate the fields because of the condition of the soil (NREP 1994:4-12).

Another aspect of “sustainable development” implemented by highland development projects was soil conservation. TG-HDP’s second phase (1987-1990), dubbed the Soil and Water Conservation Programme, promoted contour grass strips, strip cropping, mulching, zero tillage, no burning and crop rotation (TG-HDP 1989). Cash and in-kind rewards were given to farmers who took up soil conservation measures (TG-HDP 1989). These incentives, however, caused some resentment among the farmers who did not receive the cash rewards and the project later dropped the cash incentive policy (Robert and Renard 1989).

The soil conservation effort was generally not highly successful. In the Thai-Australian and TG-HDP areas, the grass strips could not be maintained. The grass promoted (*Setaria anceps*.) was spreading rapidly, causing the fields to become uncultivable (Rerkkasem 1994). In the Thai-Norwegian Church Aid project, farmers followed the recommendations to some extent but when the project left an area villagers generally did not maintain the contours, or construct new ones (author’s observation). The TA-HASD’s second phase (1988-1993) was perhaps more successful than other projects. Demonstration plots were used to spread gradually the techniques to larger populations. The method has been positively reviewed as an “effective delivery of soil/water conservation practices” (NREP 1994: 2-1).

Salzer (1993) calculated the cost/benefits of grass strips in the TG-HDP area and concluded that the economic losses which resulted from the grass were much too high to be accepted by farmers. Another study came up with a similar conclusion that farmers “perceive it not worth the extra labour and the loss in yield” (Turkelboom and Van Keer 1996: 30). The contour strips compete for nutrients with crops so that, “despite the effective erosion control, the yield at the conservation treatments is not much different from the “open field” treatment” (Ibid: 28). Even with marketable contour species such as lemon grass strips, the annual production of marketable products was only 80% of the plots without the buffer strip (Ibid: 29). Also, when the contours of different fields are not aligned, water flows even stronger

where the gaps exist (NREP 1994).

The third type of conservation activity promoted by projects are fruit tree cultivation. Fruit trees are promoted with the underlying assumption that they function similarly to forest trees and they eliminate the need for burning. However, recent studies have found that soil profiles of fruit orchards were drier and more compacted than those under forest or annual cultivation, making the rate of water run-off even higher under this land use (Tukelboom and Van Keer 1996:33). The orchards also consume large amounts of water during the dry season, exacerbating water shortage downstream. The promotion of fruit trees as a conservation measure may lead to undesirable losses of biodiversity as it allows no forest succession and most wildlife do not inhabit orchards.

Community Empowerment: 1990s

For two decades, highland development was largely a one-way process. Although, projects tried to incorporate the villagers' needs into their planning by conducting problem censuses or by holding occasional meetings to solicit villagers' requests and complaints, planning and implementation were still very centralized. The 1990s saw the growing notion of *Indigenous Knowledge* and the paradigm of highland development once again shifted to a more difficult, more intangible task of institutional building, the empowering of local people to manage their own resources. One of the most high profile development projects that attempted to accomplish this was the Sam Mun project (1987-1992).

The Sam Mun Project, funded by UNFDAC, was carried out by the Watershed Conservation Division of the RFD in collaboration with researchers from Chiang Mai University. Under an approach called Participatory Land Use Planning (PLP), the Sam Mun Project tried to create networks between different communities in order to resolve resource conflicts (Tan-Kim-Yong *et al.* 1994). It used a variety of geographical tools, such as three-dimensional models and maps to facilitate communication between different groups. The community management was successful in solving some disputes between communities. A Lisu village, for example, gave up cultivation in a headwater to conserve domestic water

supply of several communities in the area (Rerkkasem 1994) while the Karen developed an understanding of the acute landlessness among the Lisu and thus decreased the tension between the two communities (Tan-Kim-Yong *et al.* 1994). However, not all disputes between communities can be resolved (NREP 1994). Rerkkasem (1994) comments that some Karen appear not to understand the network processes and did not participate fully in meetings. Moreover, the villagers were less successful in preventing outside influential interests from exploiting local resources. According to Rerkkasem (1994) the project reduced the land under shifting cultivation from 8,352 ha in 1984 to 1,300 ha in 1991 while increasing natural forest area from 8,525 ha to 20,405 ha. Part of the success had been attributed to incentives such as the citizenship registration for villages that are active in the project (Robert *et al.* 1990). The project also engaged interested farmers in contract farming with manufacturers, mainly in the production of potatoes and barley.

Other UN projects (Wieng Pha, Pae Por, IPAD) and bilateral projects such as the TG-HDP have incorporated community resource management in their project planning. Community networking is also used to resolve land use conflicts. This approach is still at an inception stage. Important obstacles to the participatory approach have been the half-hearted support by local bureaucrats whose inherent hierarchical structure does not fit the bottom-up approach (Gary Suwannarat, pers. comm. 17/10/1996) and the inexperience of the people themselves in asserting their needs. In 1994, the RFD prohibited the Karen in the Pae Por project from cutting the fallows that were more than 6 years old. Villagers insisted that decreased fallow time would affect rice production but the community institution was not able to resolve this problem with the RFD (Rerkkasem 1994). Community institutions were nevertheless effective in addressing some nonlanduse-related problems such as drug addiction in the communities (Gary Suwannarat, pers. comm. 17/10/96).

By the mid 1990s, most highland development projects had left the Northern Thai hills. Development aid to Thailand was reduced as a result of economic decline in the west and the end of the cold war (Gary Suwannarat, pers. comm. 17/10/96). High economic growth in Thailand during the 1980s also revoked its position as a recipient of development aid. The political climate in Indochina, with the return to normal relations between the United States

and Vietnam, led to increased western investment in that country, with more development aid now geared towards that region. After several decades of high input into the Thai hills, the highland development projects were finally successful in significantly decreasing opium cultivation in the hills (Table 3.8). However, how closely this development relates to projects' activities will be discussed in the later chapters. Most projects concluded their activities by the mid 1990s. Only the Thai-German project continues to 1998 (UNDP 1994). The Royal Project remains active in the highlands.

Table 3.8 Opium Area Before and After Project Period

Project	Opium Area (ha)	
	Before	After
TN-HDP	831.2	18.6
Wieng Pha	408.8	152.8
Sam Mun	744	83
Pae Por	171.5	134.6
IPAD	635.7	236.5

Source: Rerkkasem 1994

3.6.4 Forestry

Logging in the North was originally carried out by Chinese and Burmese concessionaires who paid local princes for the rights to extract timber (Ingram 1971). Towards the end of the 19th century, Britain expanded teak extraction from Burma into northern Thailand. However, negotiating concessions with local princes was inefficient and often contentious. Thus, Britain moved to influence Bangkok into taking control of the forests in the North. At that time the political situation at the western border was tense. Britain carried out demarcation of the Burmese border which disregarded the Thai's traditional claim

over the east side of the Salween (Wilson 1985). It was also evident to the Thai that the local Karen were leaning towards the British (Ibid.). Nervous from the prospect that Britain would use forestry problems as an excuse to take over the North, Bangkok asserted its claim over the region's forest resources in 1899.

As recommended by a British advisor, H. Slade, the Royal Forestry Department (RFD) was established in 1896 with three main goals: 1) to regulate harvests of commercial tree species; 2) to collect the benefits from royalties and taxes; and 3) to assert authority over the local principalities (Pragthong and Thomas 1990: 168). The Forestry Protection Law enacted in 1897 aimed mainly to safeguard economic benefits from forestry. First, Bangkok claimed the ownership of teak forests in the North. Other valuable species were included in 1913. The forests species are divided into reserved (teak and Dipterocarp species collectively called *mai yang*) and non-reserved species (Hafner 1990). Only reserved species are regulated by concession systems; the non-reserved species could be harvested freely by anyone (until the law was enacted in 1960 to regulate all species of trees in the forest). Due to the lack of demarcation, the early laws did not have much impact on local people (Vandergeest 1994). The highland forests were not of much interest to the government initially because the most important income earner was teak, which only grew below 700 mASL (Van der Meer 1981).

After the end of the absolute monarchy in 1932, the government decreased logging allowances to foreign companies. After WWII, only one British company was allowed to log as a reparation for the war (Renard *et al.* 1988:57). In 1947, the Forest Industry Organization (FIO) was established to manage timber production. Eventually, FIO became a crown-corporation, independent from the RFD, and had a monopoly over teak extraction (Ganjanaphan and Khao-saad 1995). It was also responsible for replanting in logged areas, paid for by private logging companies (Pragthong and Thomas 1990).

In 1985 the National Forest Policy was drafted. The goal was set that 40% of the country's landmass would be set aside as forest. Of this, 25% will be utilized for economic purposes and 15% for conservation. In the Seventh NESDP (1992-1996), this goal was changed to 25% for conservation and 15% for economic utilization. The 1985 policy also recommended stricter enforcement against cultivation in areas with slopes steeper than 35%

and the productivity of shifting cultivation was to be improved, in order to lessen the need for forest clearing, (Bhumibhamon 1986).

Many authors identify the government's forestry policy as one main cause of deforestation in the North (Shinawatra *et al.* 1991; Wattanabhuti 1991). At the beginning of the 1950s, 40% of the forest in the North was being given to logging concessions (Pragthong and Thomas 1990: 170). The concession remained at 40% by the end of the 1960s and increased in the 1970s despite a decline in forest area (Ibid:172). Shinawatra *et al.* (1991) found that 70% of the forests in the Lower North has been given to logging concession (p.118). In the Upper North, forestry projects, covering approximately 79% of the region, were given to concessionaires at the end of the 1970s (Wattanabhuti 1991:9). These include extraction of teak, wood other than teak, multi-purpose timber, wood for railroads, charcoal wood for tobacco curing, pine resin, lacquer, pine and Dipterocarp for pulp and paper and *Bai Lan* (*Crypha lecomtei*) for traditional paper making. Between 1973-1978, more than 6.6 million cubic metres of wood was legally harvested in the Upper North (Ibid:10).

Moreover, logging is believed to be a catalyst for forest encroachment (Pinthong 1991). Logged areas are easier to clear and the roads that were built by the companies attracted landless farmers to settle in the forest (Pookajorn 1992). Where villages already exist, commercial logging often creates a scenario where villagers rush out to cut trees in competition with the companies (Ganjanaphan and Khao-saard 1995).

The forest industry often runs into conflict with highlanders' interests. During the earlier period when wood export was a major income earner for Thailand, the government saw highlanders as destroyers of valuable timber (Van der Meer 1981). On the other hand, the government sometimes gives out concessions in areas that are preserved by highlanders as headwaters or for religious purposes. A case study in Mae Jaem found that logging operations caused severe erosion, obstruction and diversion of stream flows, and destruction of 32 communal weirs that feed the rice paddy (Wattanabhuti 1991). Confrontations between villagers and logging companies occasionally erupted (e.g. the case of Ban Mae Harn in Mae Sariang in Ramitanon *et al.* 1992, the case of Ban Na Fan in Samoeng, Ban Thung Tae in Pong, in Wattanabhuti 1991).

Another contentious issue between the RFD and the villagers is reforestation (e.g. Van der Meer 1981, Hirsch and Lohmann 1989). In the 1980s, the RFD tried to speed up reforestation by engaging private companies, the military, non-governmental organizations and the public in reforestation activities (Pragthong and Thomas 1990). However, in order to accomplish this in a shorter time, the RFD concentrated on mono-cropping of fast growing introduced species (such as eucalyptus in the lowlands and pines in the highlands) with some teak plantations. In the highlands, trees are often planted on the fallow land of shifting cultivators (Kunstadter 1990). This created resentment among highlanders and sometimes led to subversive behaviours such as the burning of reforestation plots.

In the past, the method used by the RFD to plant trees placed little emphasis on ecology. "Deforestation was conducted before planting. For instance the Dipterocarp forest in Chiang Mai has been cleared and planted with native pine (*Pinus kesiya*) instead." (Bhumibhamon 1986:46). Johnson (1997:70,71,73) describes a reforestation method in Nan province:

Sites are burned prior to planting. Once the seedlings or coppice is in the ground, manual cutting of the grass is also required until the seedlings are free to grow...To me, it seemed strange that on one hand the Model Watershed Project was asking farmers not to burn the land, while on the other the RFD was burning the land in order to ensure a viable plantation tree crop...The trees were planted in vertical rows, and seemed prone to exacerbate downhill riling erosion problems. The soil, a hardened laterite, was visibly eroded on the sloped sites.

My own observation in Jomthong in 1991 was similar. The RFD cleared and burnt the natural vegetation before planting eucalyptus. A 10- year-old plot was stunted while the nearby "degraded forest", was covered with diverse herbaceous species and bamboos, as well as small trees. The RFD planned to turn the degraded forest into an additional reforestation plot but was met with fierce opposition from the villagers because this degraded forest was widely used by local people for bamboos, mushrooms and fuel wood. Field foresters I talked to sympathized with the local people but explained that they were under pressure to find reforestation areas to meet the yearly goal set by the Bangkok office. In reality, however, these goals are hardly met. For example, only 10% of the goal was met in 1986 (Judd

1988:113). A higher ranking officer in the Chiang Mai, however, was confident of the conventional reforestation method. He patiently explained to me that reforestation must be done “scientifically” by clearing, burning and weeding any vegetation that may compete with the trees. However, since Johnson’s and my observations in the early 1990s, there has been a policy change in the RFD toward growing more diverse native species and a reduction of the slash-and-burn method (Steve Elliot, pers. com. Jan/96).

In 1989, destructive flash floods and landslides which killed more than 300 people in the South were linked to extensive logging in the watersheds. Consequently, the government imposed a logging ban throughout the country. Since then the amount of timber production was sharply reduced (see Figure 4. 6) and replaced by an increase in the amount of imported logs (Pragthong and Thomas 1990).

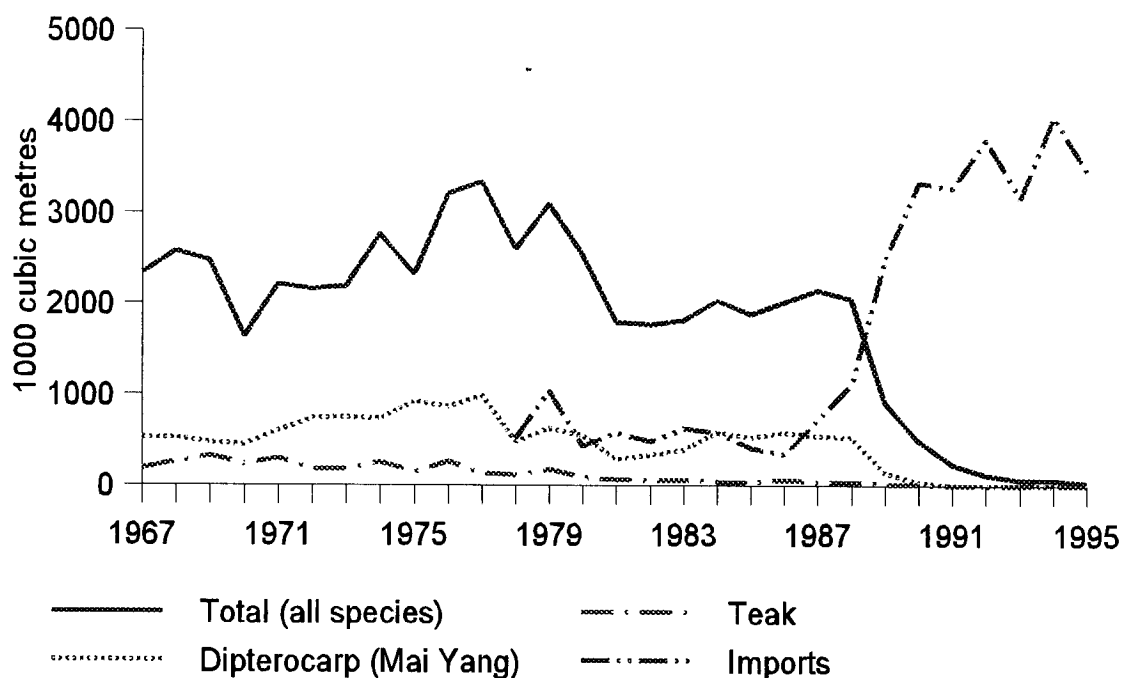
Because forestry has been a major income earner for the country and for the people involved for many decades, vested interests are deeply rooted. The logging ban therefore did not completely eliminate illegal activities. Villagers defy the law because the income from illegal logging has risen dramatically after the logging ban (Ganjanaphan and Khao-saad 1995). Ganjanaphan and Khao-saad describe the situation in one major illegal logging area in Lampang province in 1990 and illustrate the complexity of illegal logging that involves business establishments, government officers, community leaders and villagers.

It can be said that this area is an artery of illegal logging in Lampang. Villagers are from various places, Tak, Sukhothai, Toen, most of whom make a living in the wood industries, wood processing, making tables, chairs, etc. Merchants from Sukhothai and Tak bring trucks to the village. They first “clarify things” with the police ahead of time...At the village level, headmen (*Kamnan* and *Phuyai Baan*) are the dealers. They take commission fees from the merchants... “Influential person (in khakhi uniform)” collect commissions from the sellers. The commission rates depend on the sizes of the transactions. Households that make furniture, each pays 200 baht fee...

The chain of transactions makes it impossible for the villagers to know who actually buys the wood... Politics also played a role. For example, when the big police chief came to town. The loggers who were on the side of the opposition parties during the last election were arrested while the ones that sided with the government parties were not...

(Ganjanaphan and Khao-saad 1995:86-88, my translation)

Figure 3.6 Legal Timber Production and Import 1967-1995



Sources: 1967-1979 from RFD unpublished mimeographs, 1980-1995 from RFD Forestry Statistics of Thailand various years.

3.6.5 Conservation

Although the Royal Forestry Department was established mainly to oversee the economic benefits of forestry, conservation was a concern in the early 1900s (Feeny 1988:124, Vandergeest 1996). Ingram (1971:111) described some of the attempt to conserve forests through increased regulations.

When the original leases expired in 1909, a new and restrictive system was introduced which provided for a thirty-year felling cycle, reduced the number of leases to forty, increased royalties 20%, and increased the minimum girth for felling trees. In 1925 the first half period of the new leases expired, and still more changes were introduced. Minimum exploitable girth was again

increased, the Forestry Department was charged with selection and girdling of all trees to be felled, and royalties were raised...In the case of teak, regulation has steadily moved in the direction of conservation and control rather than maximum production (and revenue).

After 1937, several laws enacted reflect increased concern over conservation (e.g. the Forest Protection Act 1937, 1953, 1954) (Feeny 1988:125, 499). These laws prohibited forest clearing and burning. The 1960s was the period when the most important laws regarding use of forests were enacted. These laws created protected areas which will be described below. Today the management of protected areas is under the jurisdiction of the Office of Natural Resources Conservation of the Royal Forestry Department.

Forest Reserve

The Forest Reserve Act of 1964 was enacted as a replacement for the previous Forest Reservation Act of 1936-37 (and its additions in 1939, 1941, 1944, 1948, 1951, 1953, 1954) (Feeny 1988:125). The legislation was intended to complement the first National Economic Development Plan (NEDP) (1961-1966) that aimed to conserve 50% of the country as forest land (Bhumibhamon 1986). (This goal was reduced to 40% in the 2nd NEDP). However, the main outcome of the legislation has been the government's assertion of ownership on land not registered by private individuals (Vandergeest 1994). When the Act was passed, citizens were given 90 days to register their lands before they lost their rights over them. Since land registration was a new procedure in Thailand, millions of people had not registered their land when the grace period lapsed. This was the beginning of a discrepancy that manifested into conflicts between the government and the million of "squatters" in the later decades. In 1995 there were 1,221 forest reserves, covering 230,109.16 km² in Thailand. Of these, 257, are in the North totalling 111,964.78 km² (RFD 1995)³.

Neither private ownership nor farming are allowed inside the forest reserves. Valuable

3

This number includes some areas that have been upgraded to higher protection categories or have been given over to other uses.

trees and headwater areas are protected. Nevertheless, there were provisions for logging or forestry plantation, livestock grazing, mining, oil drilling, recreational development, economic forestry and land reform. Wildlife and hunting are not mentioned in this legislation. Each and every activity, according to the description of the law, must be regulated by the government officers to ensure the sustainability of the resources. The 1985 ministerial order allows collection of dead trees for fuel wood, bamboo and rattan cutting, resin collection, medicinal plants and food items (mushrooms, bamboo shoots, vegetables, fruit, roots).

The extent of the Forest Reserve and the sheer number of people using it makes the rule unenforceable. In fact, the declaration of the Forest Reserve and the logging allocations occurred simultaneously in many areas causing local people to believe that the government declared Forest Reserves for the purpose of giving out logging concessions (Ganjanaphan and Khao-saad 1995:46). This misunderstanding led villagers to perceive that the government was mainly interested in the trees not the land, and hence, when concessionaires left the areas, farmers moved in to stake out the lands. This problem would later become more complex when other government agencies established contacts with these communities. Pragthong and Thomas (1990:178) describe the situation at the end of the 1980s: “the RFD felt engulfed in contradiction, conflict, and criticism...Vast areas of reserved forests, including logging concessions, were occupied by registered villages receiving services under government programs.”

National Parks

The idea of setting aside a nature reserve for recreation in Thailand was initiated in 1955. The RFD considered Phu Kradung (Loei province) for this purpose, but the plan was eventually abandoned due to lack of resources (Wetbuchakorn n.d.). Later in 1961, The National Park Act was finally enacted “to protect and preserve existing natural resources such as the varieties of plants, animals, landscapes, forests, and mountains in their original forms, for the lasting direct and indirect benefits of the State and the citizens.” (Weawwutthinan 1995:577). The first park gazetted was Khao Yai in 1962. The law contains

regulations against land occupying, land clearing, mining, livestock grazing, collection of forest products, hunting or hunting gear possession, vehicle operation without permission, and land use for any purposes other than those allowed by the park officers. Originally, the function of the park was for recreation and education (National Park Act 1962; MIDAS 1993). However, in recent years, worldwide awareness of the biodiversity crisis has led to the shift toward conservation. Kasetsart University and the RFD evaluated protected areas status in 1987 and recommended the RFD withdraw from tourism services (Kasetsart and RFD 1987). The closing of recreation facilities in Khao Yai National Park is a result of this shift.

From 1962 to March 1996, 63 **terrestrial** national parks, covering 36,519 km² were established and 42 more are in the process of declaration. Altogether, they will cover 59,599.5 km² or 11.6% of the country's land area (RFD 1996). In addition, there are 18 marine parks and 6 more are being proposed (Parr 1996). The North had 25 national parks, with 24 more being proposed, as of March 1996. Both proposed and designated parks will total approximately 16,680 km², or 18.5 % of the North (RFD 1996).

The current expansion of national parks is one of the most contentious issues in the highlands. Due to the rapid rate of deforestation and biodiversity decline, conservationists call for the protection of the remaining habitat before they are permanently removed or further degraded. Expansion of protected areas are seen as the first step in the right direction. The RFD must stake a claim over forest land as soon as possible so that at least legislatively those forests are being protected. Existing land use problems are to be resolved later. This approach makes villagers, whether moving into national parks prior to or after their designation, become illegal encroachers. Theoretically, this means that people have to stop using the forest and that they eventually should be relocated. The government has relocated some of the villages but in general, the numbers of villages in the parks are beyond practical means to be relocated (see Table 3.9).

Table 3.9 Population Residing in Protected Areas in Thailand

Types of Protected Areas	No. of Villages	Area (ha.)		
		Villages and Fields Inside P.As	Villages Outside but Fields Inside P.As	Total
Headwater Forests	2,578	129,834	-	129,834
National Park	418	74,542	35,683	110,225
Wildlife Sanctuary	570	39,401	29,381	68,462
Total	3,566	243,777	65,064	308,841

Source: *Vanasarn* 1995:66

In 1997, cabinet resolutions gave permission for villagers to stay within protected areas if they can prove that they occupy the forest before it was declared protected areas. The resolutions halt any action against encroachers and have created a substantial problem in conserving the remaining forests because of their loopholes (Khaikaew 1998). The policy is now being reviewed to better balance social needs and conservation (Ridmontri 1998).

Wild Animal Preserved Area (Wildlife Sanctuary)

The Wild Animal Reservation and Protection Act (1960) created provision for Wild Animal Preserved Areas (or Wildlife Sanctuaries) and Non-hunting Areas. The main purpose of a wildlife sanctuary is to reserve areas where wildlife populations can be maintained. Regulations of the Wild Animal Preserved Areas are similar to that of the national park but there is no provision for recreation. Hunting, collecting nests and eggs and trespassing without permit are forbidden. Habitats are also protected by this Act, including wetland sites (Parr 1995). Mining, land clearing, livestock grazing, polluting and changing water courses are all prohibited. However, although the law indicates penalties for each violation, the penalty regarding trespassing has been omitted. This means that trespassing was

unenforceable.

The first wildlife sanctuary was Salak Phra in Kanchanaburi, gazetted in 1965. As of March 1996, there were 38 wildlife sanctuaries in the country, totalling 29,186 km² (RFD 1996). Thirty-one more sanctuaries covering 9,327 km² are in the process of being legislated or being surveyed (Ibid.) The North has 14 wildlife sanctuaries (excluding Thungyai Naresuan which straddles Tak and Kanchanaburi and Tabor-Huayyai in Petchabun and Chaiyaphum) and 6 more under the process of declaration covering approximately 1.6 million ha. or 15,950 km² (RFD 1996).

Non-Hunting Areas

Originally, the Non-Hunting Areas protected only the species listed in the national gazette. The size of non-hunting areas ranged from 7.5 ha (Wat Ratsathakayaram-Samutsakorn) to 45,700 ha (Thale Noi- Pattalung, Songkla and Nakornsrihammarat). In 1992, the law was reviewed and protection extended to cover all species whether or not they were declared on the protection list. The revision also banned all hunting, collecting or harming of nests of wild animals, possessing and holding of lands, cutting, felling, clearing, burning of vegetation, mining, raising animals or altering water sources in the non-hunting areas (Waewwuttinan 1995, Parr 1995). Forty-three Non-Hunting Areas had been declared by March 1996 and five were in the process of declaration, totalling 3,464 km² (RFD 1996).⁴ Of these, eleven are in the North, covering 534.7 km².

Watershed Classes

In 1982, the cabinet appointed the Office of National Environment Board (ONEB) to oversee the classification of watersheds throughout the country in the first step to manage water resources. Watersheds of the four major rivers in the North: Ping, Wang, Yom and Nan were the first to be classified. They were given high priority because they are the source of

⁴1849.5 km² of the area under this category overlaps with the Forest Reserve.

water not only for the North but, perhaps more importantly, of the Central region. Classification was made using slope, elevation, soil type, landform, geology, forest types and potential mineral deposits. In 1985, the Watershed Classification was integrated into the development plan for the highland areas. The distribution of watershed classes is shown in Table 3.10.

Table 3.10 Watershed Class Distribution in the Northern Thailand (km²)

Watershed	Class					
	1A	1B	2	3	4	5
Ping, Wang Yom, Nan	27,411.4	1,197.3	16,317.6	11,379.9	10,235.6	38,982.0
Kok, Ing	4,504.7	724.7	2,555.0	2,339.6	2,131.3	5,530.3
Northwestern Border	11,744.6	1,592.8	2,648.3	1,765.5	940.3	499.0
Total	43,660.7	3,514.8	21,520.9	15,485.0	13,307.2	45,011.3

Source: Watershed Division 1992:209,910

According to the definition of watershed classes 1A and 1B (Table 3.11) (mature and disturbed forests), there should not be a problem to distinguish between those areas that were inhabited by people and those that were not. However, when the classification is applied to the real world, a problem occurs because villages often exist in Class 1A areas. Many of them existed after the classification was established but many existed prior to the classification. A closer look at how the classification was derived gives some clue to what may have been the problem. The variable -“Forest” is used to differentiate between class 1A and class 1B. According to the Watershed Division’s report, “Forest” is set to 1 when the area is a forested land (class 1A) and 0 for non-forested land (class 1B). The identification was made from remote sensed images where areas under various stages of forest succession sometimes

cannot be clearly differentiated. The fields of the shifting cultivators, especially, those of the rotational groups, often appear as forested land in satellite images. Moreover, between the time that the map was produced and the time it reached the implementing agency, many areas already underwent land use changes.

Table 3.11 Classifications and Policy Prescriptions

Class	Forest type	Policy prescriptions
1A	Mature Forests	Total protection
1B	Disturbed Forests	Specially controlled
2	-	Mining and forestry with stringent control
3	-	Mining, tree farming, grazing with some regulations
4	-	Farming with some regulations
5	-	Other uses with some regulations

Source: Watershed Division 1992

Wildlife Conservation Laws

The first legislation protecting wildlife was the 1900 Wild Elephant Preservation Act (subsequently updated in 1921). Later, an attempt to protect wild buffalo, wild ox and other large mammals in 1931 never materialized. A more comprehensive wildlife law, the Wildlife Reservation and Protection Act of 1960, provides various degrees of protection to selected wild species. In the original legislation, nine rare and endangered species [Javan and Sumatran rhinoceroses (*Rhinoceros sondaicus*, *Dicerorhinus sumatrensis*), kouprey (*Bos sauveli*), wild water buffalo (*Bubalus bubalis*), Eld's deer (*Cervus eldi*), Schomburgk's deer (*Cervus schomburgki*), hog deer (*Cervus porcinus*), serow (*Capricornis sumatraensis*) and goral (*Naemorhedus goral*)] were classified as Reserved Species to be protected from hunting, capturing or keeping. In addition, several species were classified as Protected Species with less stringent regulations. Protected Species were further divided into two groups: Category

I were those not usually used as human food nor usually hunted for sports (Royal Gazette 1961:1069). Forty mammals, 145 birds, 20 reptiles and 1 amphibian species belong to this category. Live capture and trade with permits were allowed but killing and trading of carcasses prohibited. Protected Species, Category II are those commonly hunted for food or for sport. Twelve mammals, 22 birds and one amphibian species are in this group. Animals in Category II can be hunted and traded live or killed for meat with permission. The law also allow killing of wildlife in personal defence. Shooting of any wild animal, except for tiger, must not occur between sunset and sunrise. (Waewutthinan 1995.)

The Wildlife Conservation Act was revised in 1992 to include the protection of insects and insect eggs. Six more species were added to the Reserved Animal list, making a total of 15. One hundred and eighty-nine mammal species, 182 bird species, 63 reptiles, 12 amphibians, 13 insect species, 4 fish, and 13 invertebrates are in the Protected Species list issued in November 1994 (Waewwuttinan 1995). All wildlife (as opposed to only reserved and protected species) in the Wildlife Reservation Areas are protected under this law. Hunting may not be done between sunrise and sunset. In the case of self-defence, the person who kills the protected species must not move the carcass and must report to the officials immediately. All permits for hunting, trading or possession of Reserved and Protected species were terminated except for zoo-keeping purposes. Protected species from a captive breeding programs that had received permission from the government were allowed to be kept and traded until 1994.

Since the passing of the Wildlife Reservation and Protection Act one of the Reserved species is confirmed extinct (Schomburgk's deer) and three have been extirpated (Javan rhinoceros, kourprey and hog deer), reflecting the problem of enforcement of these laws.

Protected Areas in Practice

Dearden and Chettamart (1997) identify four main obstacles to conservation in Thailand. The first threat comes from government development projects themselves such as hydroelectric dams, irrigation, roads, mining and military projects. Second is illegal logging

3.7 Summary

Northern Thailand is a region of exceptional diversity both biologically and culturally. This chapter describes the characteristics of the upland resources and its inhabitants in details in order for readers to fully appreciate the current situation. It also reviews the government policies that have affected the highland areas.

The important geographical changes that have occurred in the North include both physical and human aspects. Physically, the region has experienced continued degradation of natural resources, such as the high rate of deforestation, water shortage and biodiversity decline. Causes of this degradation are population increase, urbanization, the extraction of resources for national economic development and the overall failure to control unsustainable uses. The highlanders themselves are faced with the deterioration of their swidden systems. The established swiddeners were forced to reduced their fallow periods and pioneer swiddeners can no longer clear new lands.

Politically, the uplands has always been at a periphery of the national development. However, since the beginning of the cold war, the region has become increasingly under scrutiny and controlled by the state. The movement across the national boundary of some highlanders has led to the government suspicious views toward them. Thai government's concerns over the highlands revolve around three main issues: national security, opium cultivation and deforestation. Different approaches were implemented to address these problems. Some are harsh such as forced-resettlement, destruction of villages and fields, or arrest. However, since the 1970s, the government has concentrated on a positive approach of bringing development into the highlands. Highland development projects were particularly active in crop substitution programs. They also attempted to introduce sustainable development concepts and institutional buildings to the highland communities with some limited success. As this chapter has shown, problems in the Thai highlands are extremely complex and involves many levels of actors. These backgrounds are the context in which the current situation of cash crop development among the Hmong is embedded.

Chapter 4

Research Methodology

After the first visits to Hmong villages I became convinced that to come up with a suitable and realistic wildlife conservation approach it would be important to understand the people's relations to wildlife within the context of their other important economic activities. This research, therefore, focuses on two main interlinked topics: the study of cash crop development among the Hmong and the study of the Hmong relationship with wildlife. The two topics are first described separately and later brought together analytically to shed light on the effects of cash crop development on biodiversity conservation. This chapter explains the methodological approach of the field research, the problems involved with the data collection and steps taken to address those problems.

4.1 Methodological Framework

This research is exploratory in nature due to a lack of prior studies on the subject of Hmong people's relationships to wildlife. The goal is to provide broad coverage and perhaps to instigate questions for future inquiry. The methods of data collection were relatively open-ended. Much were formed through the readings of ethnological research and the recognition that "hard data" on sensitive issues such as hunting would be difficult to attain. The first visits to the study villages confirmed my anticipation about the sensitivity of the hunting investigation. Any survey that delves into this topic in order to obtain quantitative data for statistical testing may be faced with gross inaccuracy. Confronted with this dilemma, I opted for a qualitative approach, placing more emphasis on probing and gaining data of higher accuracy.

The overall methodology is based on the Grounded Theory approach (Glaser and Strauss 1967). This is in essence an inductive approach where theories in the form of propositions or classifications are derived from the data. The approach is suitable for the type

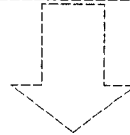
of research that emphasizes the importance of context. Within this framework, “theory-informed description of specific places” takes precedence over verification of existing theories (Eyles 1988:3).

The study is also influenced by ethnographical methodology in that data collection and analysis do not occur as separate entities (Fetterman 1989). The data collected is largely qualitative and the analytical process took place while data was collected, leading to the next step of data collection, and so forth. This approach is reflected in the layout of the thesis, which does not present results and analysis entirely separately.

The research also attempts to incorporate data from a larger geographical region than the case study villages. This task was not completely successful due to limited time and resources. The result is two in-depth case studies and a variety of “short-cuts” (described below) in order to grasp at the “big picture”. A diagrammatic overview of the research design is presented in figure 4.1.

Figure 4.1 Overview of the Research Design

	Larger Context	Case Studies
Cash Crop Development Process	Literature Reviews <ul style="list-style-type: none"> • Highland Development Projects • Highland Communities Surveys/Research • 1987 Kunstadter <i>et al</i> Survey of Hmong Villages • Government Documents, Statistics • Ethnographic Literature Informal Interviews <ul style="list-style-type: none"> • Researchers • Vegetable Distributors • Growers from other Areas 	Semi-Structured Interviews <ul style="list-style-type: none"> • Villagers • Village Middlemen • Village Leaders
Hmong's Relations To Wildlife	Mahidol Database Literature Review Interviews <ul style="list-style-type: none"> • Researchers • RFD Officials • Hmong from other Areas 	Data Triangulation (Semi-Structured Interview With Visual Aid) <ul style="list-style-type: none"> • Men • Women • School Children Interviews w/ Hunters Participant Observations



Suggestions on Approaches to Wildlife Conservation in the Case of Hmong Communities

Substantive Theories about Cash Crop Development among Hmong Highlanders

Comparisons of Hmong Case to Theories/Propositions Reviewed in Chapter 2

Adding to the Body of Ethnographic Literature on the Hmong

4.2 Stages of Data Collection

The collection of data for this study consisted of a comprehensive literature search and field work. Each step in the data collection is explained in detail below, beginning with the literature review and interviews with key informants. The process leading up to site selection for in-depth studies is described and the field data collection methods are explained. Problems of data reliability are also addressed.

4.2.1 Research from Secondary Data

The study analyses cash crop development among the Hmong from the period of opium cultivation. Secondary data, including documents from highland development projects, anthropological accounts and data on household economics and population behaviour of over two hundred Hmong villages in the North carried out by Kunstadter *et al.* during 1986-1988, were used. From these data patterns of cash crop adoption among the Hmong was drawn which give a clearer picture about cash crop development in general. This part of the information is presented in Chapter 5.

The literature on highland groups in northern Thailand was also surveyed for any information available on wildlife uses, beliefs and hunting practices. This information is presented in Chapter 7 as a context in which the Hmong's relationships to wildlife is embedded. It also served to develop specific questions during data collection in the field. Database produced by the Center for Conservation Biology at Mahidol University is used to provide guidelines for expected species in the study areas supplemented by other information from Lekagul and McNeely (1988).

4.2.2 Interview with Researchers/key informants

Initial interviews were conducted with researchers from Kasetsart University, Mahidol University, Chiang Mai University, Payap University, the Royal Forestry Department, the

Tribal Research Institute, members of highland non-governmental organizations and individual researchers whose studies have involved highlanders in northern Thailand. Several Hmong and Karen individuals living in Chiang Mai or visiting markets in the lowlands were also interviewed. These interviews were open-ended, aimed mainly at finding more information about Hmong people's use of wildlife, their involvement in cash crops, and the situation in their villages in general. Each individual was helpful in furnishing me with information as well as referring me to other experts. After these interviews I developed preliminary question guidelines for my own use.

4.2.3 Study Site Selection

During the early stage of the field work, I was searching for villages where I could do more in-depth investigation. Desirable characteristics included villages in or adjacent to protected areas where wildlife still exists. The village which I call "the Hod village" was found during a reconnaissance survey. It is an enclave in a national park which borders a larger complex of protected areas. After the first visit, the headman was cordial enough to allow me to return for my research under the condition that I receive permission from the district officer. The choice of the second village was based on a suggestion from Peter and Sally Kunstadter, who have had long experience researching among the Lua, Karen and Hmong in northern Thailand. The village is located in a forest reserve in Nan province and has a history of wildlife conservation. This second village, which I call "the Naan village", is located in a different region than the first village. It differs from the first village in many aspects such as age, size and the types of main crops (Table 4.1). I felt that working in this village would broaden my perspective on Hmong communities, especially those outside the realm of the development projects that cluster around Chiang Mai. Also, the village was known to have practised wildlife conservation and thus was particularly relevant to this research.

Table 4.1 Characteristics of the Two Study Sites

Characteristics	Hod Village	Naan Village
Year founded	Around 1960	Before 1900 (emigrated 1927), returned 1945
Group	Blue Hmong	Blue Hmong
Population	303	1,349
Elevation	1,200 mASL	1,300 mASL
Main Crop	carnation	cabbage

4.2.4 Field work

Field research in the villages was conducted between January and November 1996. I visited both villages alternately. Between the time spent in both villages I visited libraries and interview informants in Chiang Mai, Nan and Bangkok.

To get to the Hod village, I either took a public bus or drove to the district centre and waited at the market to hitch a ride to the mountain. Sometimes I waited at the house at the base of the mountain which belongs to a Hmong family. This house is used by all Hmong in the Hod village as a kind of bus station. Hmong trucks usually stopped at this house to pick up people (or the people stop them regardless of the willingness of the drivers). Students who attend high school in the lowland also stay here during the week. In general, there were trucks commuting on a daily basis. On a lucky day the wait may be 3-4 hours, but generally 5-6 hours, although once I had to return the following day. These Hmong trucks are vital means of public transportation. They are always filled with Hmong and Karen passengers (at times more than 20 people).

To commute to the Naan village, I took the Chiang Mai-Nan public bus, getting out before the bus arrived in Nan at the beginning of the road leading to the village. Similar to Hod, I hitchhiked with Hmong trucks up to the mountain. Unlike the Hod village, there was no common stopping point at the base of the mountain, therefore, it was more difficult to hitch a ride with the Hmong trucks here.

These rides on the trucks provided unexpected learning opportunities during the field work. Trucks sometimes veered off to Karen villages where the Hmong collected produce from the Karen. They dropped farmers off at local agricultural supply stores where the Hmong took their silver to pawn for agricultural inputs or cash. They stopped at lowland chicken farms to buy manure for their fields. Once in a while they visited sites in the lowlands that somebody wanted to inspect (before buying). These trips gave me a chance to learn more about relationships between the Hmong and other groups outside the village.

Being a Thai researching in a Hmong village created what Lofland and Lofland (1984) called a “difficult setting” because historically there have been “conflicts between the people being studied and the larger society” of which I am a member (p.17). As my previous experience with the Hmong had taught me, Hmong people are slightly suspicious of the lowlanders since they are always bombarded by accusations from the lowlanders about opium, deforestation, etc. I learned that it was much better to do research in a Hmong village together with a Hmong person at least at the initial period. Since I was looking for information on potentially illegal activities, such as hunting, I needed all the help I could get to gain confidence from the villagers. I therefore was accompanied by two Hmong women during the field work who took turn to be my research assistants in the villages.

Because of other commitments, both assistants, Ntsee and Miv Yaaj could only stay in the field for a few days each time. This led me to change my initial plan to stay in the villages for an extended period and settled for frequent shorter stays. I also was concerned that if I spend several months in one village, and then move on to the next village I may miss information that relates to the seasons of the year. Other logistical reasons made shorter stays more practical. For example, I found that when the food supplies I carried with me were finished (I normally gave them to the host families on the first day), it became a burden to the host family to find extra food for me and my assistants. I was contemplating paying cash to the host families but felt reluctant to create another monetary transaction in the village. I preferred to bring food and gift items since it maintained the relationship in which the host families were not serving me for money but were extending their generosity to me. I found this type of relationship more pleasant than if money was involved directly. Short, repeated

visits seem to have lower impacts on the host families.

Lastly, I realized that my data would have to be obtained mainly from interviews. There were no central places or gateways where all hunters pass through, meet, or distribute their meat, where their activities can be observed (as with the Khamu's long house - see Tanyanin and Lindell 1991). With these considerations, I proceeded to conduct the field research, spending 3-6 days each trip from January to September 1996. Altogether, the time actually spent living in these two main villages was about two and a half months. October 1996 was mainly spent visiting other villages and interviewing farmers at market places.

4.2.5 Interviews

I did most of the interviews myself. I have some knowledge of the Hmong language, from the intensive course at the Southeast Asian Studies Institute (SEASSI) the summer prior to my field work. I also had some experience working with Hmong refugees and did my M.A. thesis in a Hmong village. However, my language training was in the White Hmong dialect whereas the two study villages spoke Green (Blue) Hmong (Moob Leeg/Moob Ntsuab) dialect. The overlap between the two dialects allowed me to comprehend about 60-70 percent of the answers, but I could not express myself well in Green Hmong. Miv and Ntsee filled in the gap when my language ability was inadequate. However, most Hmong, especially the men, were fluent in northern Thai, a dialect I can use fluently. Often the interviews were conducted in the northern dialect. Some Hmong also prefer to use central Thai. In general, language did not pose a significant problem in this research.

Besides interviewing villagers, I also interviewed some individuals that belong to special interest groups: Village leaders, the Hmong middlemen, some hunters, vegetable distributors and some Hmong villagers at market places. Among non-Hmong informants, I talked to Royal Forestry Department officials, both from protected areas and other divisions such as the watershed protection unit, and district forestry officers near the village areas.

4.2.6 Participant Observation

I was interested in joining the hunters on their trips to the forests in order to improve my understanding of the activity. However, it became clear that in the eyes of the Hmong (and probably of hunters elsewhere in general), it is not natural for a woman to be interested in, or be able to participate in, hunting. A man expressing the same interests would have had a better chance of being accepted, regardless of his previous hunting experiences. In fact, my husband, who accompanied me during the last trip to the Naan village, was invited by a hunter to join him while walking around in the forest.

Nevertheless, I was once allowed to participate in a group hunting session in Naan. One morning while waiting for a truck to return to the lowland I saw quite a few men with guns heading for the forests. Apparently, someone claimed they saw deer tracks not far from the village. I asked several men whether I could go along with them but was refused. No one, understandably, wanted to take a city woman on a hunting trip. After substantial pestering, finally, one young man agreed to take me on the back of his motorcycle. I checked with my research assistant for her approval. He was one of her relatives. Thus, I conducted my only chance of participant observation which I describe in more detail in Chapter 8.

4.3 Data Accuracy

Getting accurate quantitative data about wildlife use was one of the most difficult tasks in the research. The Hmong know well that hunting is illegal. It was not possible for me to observe hunting activities in each household. I therefore use triangulation methods to cross-check the data by asking similar questions to different sections of the communities. The steps taken to try to improve data quality were as follows.

1. I made anonymity explicit to the respondents. When interviewing the households no individual names or household numbers were asked or recorded. To protect villagers from any unintended consequences that may arise from this thesis, I also keep the villages'

identities anonymous.

2. Prior to the interviews, the research assistant and I would explain the reason for our survey and make clear that the respondents were under no pressure to answer all the questions. “I don’t know” answers were respected. The high level of understanding about what I was doing was a little surprising to me. The majority of the men knew about graduate study. The Hmong value education and the majority send their children to school. A few had children who were attending vocational schools and teachers’ college.

I tried to maintain a casual atmosphere as much as I could during the interviews, believing the more relaxed the respondents are, the more accurate the information is. Besides, it would be inappropriate for me to pressure anyone into discussions against their will. If the respondent showed signs of tiredness I might switch the subject or shorten the interview. The order of the questions was flexible depending on the situation of the interview at the moment. This leads to some inconsistency in the data obtained from each person because the interview length is determined by the conditions of the respondents.

3. Since cash crop development was a much less sensitive issue than wildlife use, I began my first round of interviews with this subject. Nevertheless, I did ask in general what the interviewees do in their spare time (in hopes of getting some leads into hunting activities). I avoided using the word “hunting” directly, but rather asked whether they “go to the forest”, which for the men, almost always implies hunting. Also, during this first round of interviews, I used the opportunity to observe the inside of the houses for any signs of animal trophies or carcasses or household items that may have been made of wild animals. Interviews lasted from 30 minutes to 2 hours.
4. After the first few visits to talk about cash crops, I began my second round of the interviews which focussed on wildlife. Using information from the Mahidol University Biodiversity Database and McNeely and Lekagul (1988), I made a list of wildlife expected in the areas. I brought pictures of mammals, the Birds of Thailand (Lekagul and Round

1991), and pictures of some reptiles and amphibians. When I began my interview, I realized that to go through the list of all species is a formidable task. One problem is that many species are unidentifiable by most people. There were more than 1000 species of birds in the book and it is impossible to go through them with any accuracy. The bird species were therefore conveniently grouped into a single class, “birds”, unless the villagers actually identified the species with confidence. The same is true for bats, squirrels, rodents, snakes, frogs, etc. Even with the relatively shorter list such as the case of mammals, going through the whole list takes many hours and is quite overwhelming for the respondents. I regrouped the species that are difficult to distinguish. These are mostly nocturnal animals such as the linsang and the civets. I was forced to abandon the attempt to differentiate the monkeys when too many people gave conflicting names and descriptions. I asked villagers whether they have seen the animals in their forests, the last time they have seen them, the number of animals they saw and how far from the villages they were seen. I asked whether the animals were alive and if not what happened to them. I also asked about the general uses of each type of animal among the Hmong people. This round of interview was conducted exclusively with the men.

5. To cross check the data, I conducted the third round of the interviews with the women. This time I asked questions about household sources of protein: how often they eat meat, where does the meat come from, and went through the list of wild animals and asked whether they get meat from each species and how often. The women can identify fewer species than the men, so I narrowed down my list. They also gave lower numbers than the men. The reason for this lower report is discussed in Chapter 8, but one of the reasons may be the fear of implicating their husbands in illegal activities. In some cases, I had difficulties establishing a relaxed atmosphere with the women when the husbands were present. The men felt uneasy when I specified that I would like to interview the women. In general, the men were more confident in giving out information than the women.
6. Because the numbers on frequency of wildlife intake gathered from the women were

significantly lower than what the men reported, I decided to try one more round of interviews with school children from grade 5 and 6. I asked them questions similar to those posed to the women's group. The children's answers were bias towards smaller animals, the results of which are discussed in Chapter 8.

Despite all these measures, there is no way to quantify the amount of hunting and be sure of the accuracy. The data should thus be used with caution. The results are presented in Chapter 8 in order to give a general impression of the current level of wildlife use.

4.4 Species Identification Issues

Wildlife pictures were used as visual aids for species identification, but not without difficulties. One group of animals that was difficult to identify was the macaques (Genus *Macaca*). The folk categorisation most widely used by the Hmong in both study areas separates the macaques into two groups: *lab noj nplej*, “the monkey that eats rice” (sometimes also called *lab tub saab*, or “thief-monkey” from their habit of eating domestic crops, especially rice) and *lab ntoo*, “the monkeys that are in the forest” or “tree-monkey”. This system follows animal behaviours rather than their appearance. A name could therefore account for more than one species. According to the Mahidol database, four species of macaques are expected in the study areas. These are: 1) Stump-tailed macaque (*Macaca arctoides*); 2) Rhesus monkey (*Macaca mulatta*); 3) Assamese macaque (*Macaca assamensis*); and 4) Pig-tail macaque (*Macaca nemestrina*). The last one is only expected in Naan. Two of these four species, Assamese and Pig-tailed macaques are predominantly arboreal; both might therefore be identified by local people as *lab ntoo*. The other two often raid rice fields, thus belonging to the *noj nplej* type. However, some older men had another name for the macaque, *lab dlaaj*, which are said to have larger bodies and darker colour. From the villagers' descriptions and picture identification, no conclusive verification of *lab dlaaj* could be made. Some large male individuals of Stump-tailed and Pig-tailed species could both be classified as *lab dlaaj*.

Some villagers in Naan also have two additional types of monkey in their vocabulary.

One is *lab nplooj txhawb*, “banana leaf monkey”. This monkey is said to be small and live in troops of up to 20-30 individuals, (possibly Rhesus or Pigtailed macaques). The other type is *lab tus hawj* which is said to have disappeared 40 years ago. In the Hmong taxonomy (as with the Thai’s), slow loris, a primate from a different family [Lorisidae] than the monkeys [Cercopithecidae], is also considered one of the “monkeys”. They are called *lab cua* (a direct translation of the Thai word “ling lom” or “wind monkey”) or *lab pus muag*, “the cover-faced monkey”. The name stems from the particular behaviour of loris, covering their face when seeing humans (or perhaps when the flashlights are directed towards them, as they are sensitive to light).

Folk taxonomy of bear is also different from the scientific categorization. The Hmong divide bears into three types: “horse bear” (*dlais nees*), “pig bear” (*dlais npua*) and “dog bear” (*dlais dlev*). The horse bear was clearly the Asiatic black bear. The pig and dog bears were said to be different in the length of their snout, the latter’s being longer.

The lowland Thai have three categories of bear: “buffalo bear”, “dog bear” and “hook bear”. These refer to Asiatic black bear (*Ursus thibetanus*), Malayan sunbear (*Helarctos malayanus*) and binturong (*Arctictis binturong*) respectively. Although the Hmong recognize the bearlike appearance of the binturong, they do not confuse binturong with bear, because binturongs have conspicuously long prehensile tails, are much smaller in size and live mostly in trees. The Hmong called binturong *maab* or *maab dlais*. I tried to distinguish the different bears identified by the Hmong but can only make a guess from the size of a bear. The two smaller bears recognized by the Hmong are both possibly the Malayan sun bear.

The attempt to differentiate between various types of civets, palm civets and linsang (Family Viverridae) was equally unsuccessful. Some villagers called the civet *pua* and its variations *pua thimthoob* and *pua khlw nqeeb*. The palm civet is called *maab* in Hmong, with sub groups being *maab tsho*, *maab nkhab* and *maab leej tsws*. However, pinpointing which species each name refers to is difficult. Part of the problem was the limited number of photographs I had of these animals. Some informants maintained that the pictures did not look like the animals we were talking about. Some made contradictory identifications. Moreover, the jungle cats (Family Felidae) were occasionally identified with this group

because they share many characteristics with the civets, as far as an average Hmong is concerned. They are all nocturnal, and frequently steal domestic fowls.

4.5 Broader Understanding of the Hmong Situation

While time and resources confined my detailed work to two sites, I tried to increase my understanding of the Hmong situation through interviewing Hmong villagers in market places. These were people who came from different villages throughout the North. This information, although limited, helped expand my perspective to wider geographical areas. In addition, I made short visits to Hmong villages in Omkoi, Chiang Dao and Pai during my last month of research. Again, I relied on the 1987 survey (UCSF, PSRI Mahidol, TRI survey) as well as research materials by Chiang Mai University and other institutions for this purpose.

4.6 Hmong People's Attitudes towards a Thai Researcher

In general the Hmong people are helpful and cordial toward me and my Hmong research assistants. However, as a Thai researcher in a Hmong village, there might be an inherent disadvantage in that the relationship between the Thai and the Hmong has not always been good. The Thai often are in contempt of the Mountain Peoples. The Hmong have experienced disrespect in town from merchants and others. They are also in conflict with the Thai authorities over legal aspects such as forest farming and hunting. All these factors are likely to have influenced the people's attitudes toward me. There was one man and a few Hmong women that clearly did not want to talk to me because of distrust. One man threatened that if the RFD "gave any problems" to the village because of my study, I would have to be responsible for the consequences. However, most villagers were friendly, frank and confident.

Chapter 5

Cash Crop Development among the Hmong

For over two decades, considerable resources were spent in trying to substitute opium with other cash crops with little success. However, in the late 1980s, it became noticeable that a large number of the highlanders, particularly the Hmong, began to adopt conventional cash crops. Why is there a lag time between the promotion of cash crops and their actual acceptance by the highlanders? What caused earlier resistance? and What prompted the adoption? Chapter 5 answers these questions through the examination of secondary data. It also identifies patterns of cash crop adoption among the Hmong since the 1970s.

5.1 Opium as a Cash Crop

Although there were historical variations in the Hmong economy from different regions¹, their economy in southeast Asia until recent years was relatively less diverse. Swidden agriculture was predominant (Halpern 1958; Binney 1968; Shrock *et al.* 1970; Geddes 1976). The majority of the Hmong subsisted on upland rice, livestock, hunting and gathering, and grew opium poppy (*Papaver somniferum* L.) as a supplementary cash crop (Savina 1930; Keen 1966; Geddes 1976; Cooper 1984)

It has been suggested that because the Hmong grew opium, they were already in the cash economy and hence were equipped to adopt cash crops quicker than other groups (Renard *et al.* 1988). This observation must be considered with caution to appreciate why it has taken a long time for the Hmong to abandon opium for other crops. It is important to recognize the differences between the Hmong involvement in opium production and the commercial processes associated with conventional cash crops.

Although opium is considered a cash crop, opium producers had relatively limited

1

In China, the Hmong were subsistence farmers, irrigated rice farmers, opium swiddeners, livestock keepers and even loggers (Mickey 1947; Graham 1954; Ruey 1960; de Beauclair 1970; Jenks 1994).

involvement in the market. Several studies point to this fact. Cooper (1984:52), for example, comments that opium trade does not benefit the Hmong since

the caravans arrive with armed guards and no bargaining is permitted over price, which is probably determined by the monopoly wholesalers. There is also, perhaps, a certain amount of coercion involved in the remoter villages to deal only with the caravans and to sell opium at the lowest post-harvest-price.

Cooper supports his argument by pointing to the absence of regional price variation. Prices do not follow the process of supply and demand but are fixed by wholesalers according to domestic, international demand and risks (Cooper 1984:269). Keen (1966:89) presented a similar scenario from Tak during 1961-1964.

The organization of the opium trade is such that it operates in favour of the trader and to the disadvantage of the producer. The opium is sold to traders (Thai or Haw), most of whom are in the villages with which the bulk of their trading is done. These people are loath to buy opium for cash, preferring to barter their trade goods, so as to receive a two-way profit. They resell the opium to lowland organizations at a profit up to one hundred percent. In addition, they are accustomed to making advances in kind, against the proceeds of the next season's crop, keeping many of the villagers in constant debt by this means.

Beside dealing with caravan traders, some villages may be in contact with petty dealers. Cohen (1984:154) describes of Karen and Hmong villages in the San Patong, Chiang Mai before the opium ban in the 1950s.

The petty dealers confined their transactions to the tapping season during which they bartered snacks for small amounts of opium in the poppy fields. Then there were the itinerant traders who had sufficient capital to buy pack horse or hire porters and were able to sell a wide range of goods to the Hmong in exchange for opium...Most of these traders were dependent in some way on a big dealer (in the lowlands)...Many sold their opium to him rather than make the long and dangerous journey to Bangkok. Some were his agents who purchased opium on his behalf on commission.

After the ban of opium in the late 1950s, the local lowland dealers were eliminated and opium was traded mainly through Shan, Chinese, Northern Thai or Haw who set up grocery shops in Karen or Hmong villages. Cohen (1984:154) again describes:

(The shopkeepers) got opium by extending credit to the Hmong. Some Hmong took rice on credit if their stocks of opium had been depleted. For the same reason they sometimes borrowed opium from traders either to smoke or to pay Karen workers. Also, the demand for credit to obtain miscellaneous goods and cash loans was high just before the celebration of the Hmong New Year in December. The Hmong paid off some debts in cash but most were settled in opium after the tapping, which lasts from December through to early February...

From these descriptions the Hmong's level of involvement in the cash economy while growing opium is believed to be quite limited. The chance for any family to accumulate substantial wealth was also restricted. Geddes (1976) comments that "usually even the most fortunate can gain only a moderate margin above subsistence in any one year, and accumulated margins can be dissipated by a few years of poorer fortune" (p.194). Other authors stress that opium was grown for cash in order to make up for rice deficiency (Lee 1981; Durrenberger 1983; Kesmanee 1989). Durrenberger (1983:94) considers the highland economy as a whole and argues that all crops grown by highland farmers should be considered subsistence crops because the societies exhibit strong subsistence characteristics. Opium itself also had several functions in the Hmong society. Ruangkiattiyotying (1991) lists the Hmong uses of opium which include use as a currency (in bartering for goods, paying debts, dowries, fines, service fees, obtaining lands, livestock, hiring labour); a collateral in obtaining credit; in some spiritual ceremonies; for entertaining guests; as food (seedlings and seeds); as animal fodder and for pharmaceutical purposes (antibiotic, anti-depressant and stimulant, relieving fevers, coughing, head, stomach and body aches, relieving diarrhea, relieving pains from animal stings, use as poison for committing suicide).

These suggest that growing opium does not necessarily mean the Hmong in general have the tools, the knowledge and the capital to engage in mainstream cash cropping. Review of literature on the Hmong and highland development projects show that there were several obstacles to cash crop adoption.

5.2 Problems Associated with Substitute Cash Crops

Factors that hampered the adoption of cash crops in the earlier period can be grouped into four main problems: 1). Technical problems associated with substitute crops, 2). Problems of marketing, 3). Problems inherent in the way projects were administered and carried out, and 4). The inferiority of other crops compared to opium. These problems are discussed in the following sections.

5.2.1 The Suitability of the Substitute Crops

Substitute crops were introduced to the highlanders often on an experimental basis. Among the crops promoted were fruit trees (peach, apple, plums), strawberries, mushrooms, legumes (soy bean, kidney bean), coffee and nuts. The two most widely promoted, however, were red kidney beans and coffee. Both were not easily perishable and had relatively high prices at the time of the initial promotion. However, the crops' performances were inconsistent and in most cases were quite poor (Lee 1978; Leeprecha 1990; Robert and Renard 1989). Red kidney bean was plagued by Anthracnose or bean flies and were also susceptible to frost. In the TN-HDP survey (1987), the project found that more than 50% of the farmers in their area had problems growing red kidney beans. The project extended red kidney beans to at least 353 ha. in 1987, but the area grown in 1990/91 was reduced to only 98.6 ha (Rerkasem 1994:38). In Khun Wang, the small yields caused many farmers to abandon this crop by the end of the 1970's (Lee 1978). Lee (1978:57) commented, "if they still grow beans today,..., it is mainly to defend themselves against official accusation of their indifference, even when realizing fully well that the extra labour involved will not be paid off." An officer for the Thai-Australia project stated in a seminar in 1987 that "We do not recommend red kidney bean because of disease problems and low average yields. Also it does not produce sufficient vegetative bulk to provide good ground cover" (HASD 1987).

According to Tapp (1989:42), "The history of the attempts to replace opium production with that of coffee in Thailand prior to 1985 was a sorry one and not essentially

different from the earlier 'favourite' alternative crop, kidney beans." Coffee trees are damaged by Leaf Rust, a fungal related disease. It also suffers from drought in the dry season and frost when grown above 1500 mASL (Salzer 1993). Farmers in the Thai-Norway HDP indicated that "yields do not cover cash and labor costs" (Robert *et al.* 1986:10). After decades of promotion, experts from the Highland Coffee Research Centre accepted that without greater labour and agricultural inputs, coffee will hardly produce satisfactorily yields (Op de Laak 1986). By 1990, only 32% of the planted coffee in the North bore fruits (Rerkasem 1994). Furthermore, since its promotion, coffee has experienced continued price depreciation. International coffee prices fell by 40% between 1981 to 1991 (Rerkasem 1994). Farm prices dropped from 80-100 baht/kg to 35-40 baht/kg in 1991 (Salzer 1993) and then to 12 baht in 1996 (Hmong farmers, pers com.). Finally, in 1993, Salzer who studied agriculture in the Thai-German project area, concluded that coffee and red-kidney beans were not appropriate crops for promotion in the Thai highlands.

5.2.2 Marketing Problems

Preoccupation with the promotion of substitute crops distracted the developers from a glaring problem of marketing. During the early years, projects such as the UNPDAC and the Royal Project bought large amounts of kidney beans from the farmers to encourage cash crop adoption. However, this brought significant financial burden on the projects and the policy was eventually abandoned (Tapp 1989). The Royal Project established its own marketing outlets but the amount of produce that can be channelled through these exclusive markets is limited. Despite the absence of markets, farmers were still encouraged to grow substitute crops and often found themselves bearing the cost when they could not sell the produce. Lee (1978) recounted how farmers felt betrayed by the projects because of this issue. "In the first two years, nearly all households in the main village and at Upper Khun Wang were eager to participate in replacement crop cultivation, but this eagerness soon changed to disillusion where their expectations and efforts were not rewarded" (Lee 1978:51). This not only cost the farmers' time and labour, it also led to a loss of native

varieties since local variety seeds were usually collected from year to year. Hmong farmers in Omkoi told me of the situation when the villagers were encouraged to grow corn and carrots in place of opium. When the crops were harvested, they could not sell the produce at any markets. The farmers finally took the produce to the military camp (Khai Kawila) in Chiang Mai to look for the military personnel who had promoted the crops to them. Finally, one officer paid a nominal sum for a truck load of carrots and corn. Since then, the farmers were sceptical about any crops promoted by the government. A similar situation was described by a Hmong farmer interviewed by Tapp (1989:57).

Every month in the rainy season I look after a hundred kinds of vegetables and fruits. But it is impossible to sell them...Only the Kaset (agricultural project) will buy, but at very low prices. There's nothing one can do about it; one has to wait a long time before they pay up, sometimes many months. Now I think it is better to grow opium.

The problem of marketing was not simply a lack of demand. In some cases markets existed, but the Hmong were not able to break into the marketing structure because of their unfamiliarity with the system. Prejudice might also play a role in preventing Hmong from selling their produce. Lee (1978) told of Hmong farmers who could not sell their vegetables at a lowland market, yet, their Thai friend was able to sell the very same vegetables without difficulty.

5.2.3 Relationships between Farmers and Projects

Development projects are usually initiated with good intentions. However, less-than-ideal relations between project personnel and hill farmers came up time and again as a factor that dampens the projects' effectiveness (Keen 1966; Lee 1978; Renard *et al.* 1988; Tapp 1989). While farmers saw problems of growing alternative crops in marketing, in lack of time, labour or inputs, developers may view the farmers' habits, attitudes and traditions as the main obstacles to the conversion to cash crops (Punsri 1993). In one project document, the villagers were described as: "not understanding community development, cooperating little

(with the government), selfish, leading a simple life, not enthusiastic, only living from hand to mouth without thinking of village development.” (SM-HDP 1992:n.p.-12). Project workers claimed that farmers did not follow instructions while farmers insisted that the project did not have sufficient follow-up assistance (Lee 1978:63). Kesmanee (1989:69) noted the lack of communications between projects and their target populations.

Highland farmers are supposed to take extension advice in good faith even though it does not include such information as: likely returns from the harvest; who will buy their produce; where they will sell it; how they will get it to market; how it may have to compete with lowland produce that does not have to meet high transport costs.

Ineffective communication techniques and bureaucratic culture have also been pointed out as weaknesses of the projects. Lee (1978) cited a project worker in his study area mentioning that he was working for the King not for the Hill Tribes. Renard *et al.* (1988:162-63) put it most succinctly.

when development presentations are made, they are done so in a Thai-centric “package”: in Thai, using Thai thought patterns, and putting the message in an official Thai context. Not surprisingly, when such presentations are made, very few positive reactions...are forth coming. All too often, those making the presentations do so as if they were the unquestionable authority imparting “THE TRUTH” to the benighted unwashed. In the worst cases, they will stand above sitting listeners, using a domineering tone of voice that Thais use with servants or those considered inferior to them, or otherwise indicate to the audience that the speaker is superior and they are inferior. Obviously these “packages” will not evoke a satisfactory response among the listeners.

There were probably some dedicated workers whose work exceeded the value of their small salaries. But a typical scenario is perhaps as Tapp (1989: 34) summed up. “Thai extension workers who find themselves isolated and alone in cultural communities which are not their own, have no real or abiding interest in the villagers or their problems, and leave as soon as they feel they can.” Robert *et al.* (1990:8) see the performance of project workers as one of the most significant factors in crop adoption, “successful production of alternative crops is contingent upon the services of a well-trained and dedicated extension team.”

5.2.4 Cash Crop Viability Compared to Opium

Alternative crops are inferior to opium in many ways. Opium has reliable markets, relatively stable prices and compatible planting schedules with other subsistence crops and social engagements. It is non-perishable, and grown well in the mountain environment. Its disposal is possible where modern transportation facilities are absent. All these factors have made growing opium much more attractive, and economically sensible than growing kidney beans or coffee or any other vegetables or fruit trees. No annual crops introduced in the hills have matched opium when considering the low cost of poppy cultivation (Salzer 1993).

5.3 The Pattern of Cash Crop Adoption

Today, the Hmong have moved in the direction that has long been promoted by the government, abandoning opium to take up cash crops. The pace of cash crop adoption varies from one Hmong village to another. At a small scale, Hmong farmers have grown crops other than opium for sale for some time. These were native varieties of vegetables mixed with crops extended by the government, including castor bean (*Ricinus communis*), red chili (*Capsicum annum*), and Chinese cabbage (*Brassica chinensis*) (Keen 1966). Villagers from Pa Kia in Chiang Dao and Ban Khae in Jomthong have grown a high-yielding-variety potato (*Solanum tuberosum*) using chemical fertilizers at least since 1967 (Keen 1972, Binney 1968). These cash crops, however, were not taken up by the majority of the Hmong. Keen observed that the households that grew potatoes in Pa Kia were the ones with large numbers of people (and hence, more spare labour).

During 1986-1988, the Institute for Health Policy Studies, the University of California at San Francisco and the Institute for Population and Social Research of Mahidol University in collaboration with the Tribal Research Centre surveyed 198 Hmong villages on household economics and population behaviour. This survey provides a glimpse into the pattern of cash crop adoption among the Hmong throughout the North. Peter Kunstadter, the principal investigator kindly allow the author access to the questionnaires from this survey. The

information from the questionnaires were used to draw pattern of cash crop adoption among the Hmong during the 1980s. Because the survey was conducted with different objectives from the present study, particular information on cash crops is not always present. For example, in some cases it is difficult to determine whether maize (*Zea mays*) was grown as a subsistence or cash crop. In such cases, auxiliary information was used to help assess the nature of the cultivation. Such information could be the average amount of land devoted to maize, whether artificial fertilizers were used and the situation in other villages in the region. Other documents were also used where available. Tables 5.1 and 5.2 summarize the finding about the types of cash crops grown by the Hmong in 1987. Information on tree crops was omitted since, for most cases, tree crops had not yet become the main source of income for the Hmong (although there is a trend to move towards tree crops in recent years). The number derived from the author's reading the questionnaires without consultation with the original data collectors.

Table 5.1 Number of Hmong villages with cash crop cultivation (1987)

a) Total*	230
b) Surveyed	198
c) Growing Cash Crops	186
d) Growing mainly Low-Input, Upland Crops	83
e) Growing mainly High-Input, Vegetable Crops	70
f) Growing both LI and HI Crops (Transition)	33
g) Growing Cabbage	90

Source: *McKinnon and Vienne 1989; Survey by UCSF, Mahidol University and TRI 1987
(compiled by author).

Table 5.1 clearly demonstrates that most Hmong villages had taken up cash crop cultivation by 1987. The types of crops adopted can be divided into two main groups: low-input (LI) upland crops (maize chili, cotton, castor beans, peanuts, sesame or soy beans) and high-input (HI) vegetable crops (such as cabbages, ginger, lettuce, potatoes and carrots.). In 1987, some villages were growing mainly LI and some mainly HI crops. We also see some villages growing both upland crops and vegetable crops side by side. From the data, this last group of villages took up HI vegetables only a few years prior to 1987. They seem to be in a transitional stage, moving from extensive to intensive crops. This is not to suggest that all villages shifted along this path from upland LI to intensive HI crops. Some villages moved directly from opium to high-input crops, especially those in the western part of the North where upland crops did not diffuse into the area before the HI vegetables arrived. The geographical distribution of these villages is presented in Table 5.2.

Table 5.2 Types of Cash Crops Grown in Various Parts of the North

Province	Amphur	Number of Villages				
		Surveyed	1. Growing mainly low - input, upland crops (LI)	2. Growing mainly high - input, vegetable crops (HI)	3. Growing both LI and HI (transition)	Without cash crops
Chiang Rai	Chiang Khong	12	11		1	
	Chiang Saen	1	1			
	Mae Chan	3	2		1	
	Toeng	9	3	1	5	
	Wieng Pa Pao	3			3	
	Phya MengRai	4	2		2	
	Wieng Kaen	6	2		4	
Chiang Mai	Muang	1		1		
	Chiang Dao	3	1	2		
	Jomthong	4		4		
	Hang Dong	9		6	2	1
	Hod	4		4		
	Mae Chaem	12		10	2	
	Mae Rim	10		9	1	
	Mae Tang	5	1	2	2	

Province	Amphur	Number of Villages				
		Surveyed	1. Growing mainly low - input, upland crops (LI)	2. Growing mainly high - input, vegetable crops (HI)	3. Growing both LI and HI (transition)	Without cash crops
	Om Koi	2		2		
	Phrao	3	2		1	
	Samoeng	5		5		
	SanPatong	9		8	1	
Tak	Muang	5	3		2	
	Ban Tak	2	1	1		
	Mae Sod	2	1		1	
	Phob Phra	6	3		2	1
	Ung Phang	15	15			
Nan	Muang	2	1		1	
	Chiang Klang	1			1	
	Mae Charim	2			1	1
	Na Noi	1	1			
	Pua/Boklua	3	1			2
	ThaWangPha	2	1		1	
	ThungChang	3	1		1	1
	Sa	4	1		3	
Petchabun	Santisuk	1	1			
	Lom Kao	1		1		
	Khao Khor	9	2	3	4	
Payao	Chiangkham	4	4			
	Pong	5	4		1	
Phrae	Rong Kwang	3	3			
	Song	1		1		
Maehongson	Muang	3		2		1
	Khun Yuam	3		3		
	Mae La Noi	1		1		
	Mae Sariang	2		1		1
	Pai	3		3		
	Pang Ma Pha	2	1			1
Lampang	Chae Hom	4	2		1	1
	Muang Phan	2	2			
Loei	Dan Sai	1				1
Total		198	73 (37%)	70 (35%)	44 (22%)	11 (6%)
Village Growing Cash Crops			187 (94%)			

Source: UCSF, Mahidol and TRI survey 1987 (compiled by author)

5.3.1 The Expansion of Upland Crops

The significant increase of upland cash crop cultivation in Thailand occurred during the 1960s and 1970s, mainly as a response to higher demands from the animal feed industries in Japan and Europe (Ingram 1971; Hafner 1990). Upland cash crops, predominantly high-yielding maize, reached the Lower North in the mid 1960s (Shinawatra *et al.* 1991). This development was synchronized with rapid road development and a high influx of peasants from elsewhere into the region. Two seemingly unrelated circumstances in these decades facilitated cash crop development among the Hmong: communist insurgency and the expansion of the logging industry.

Between 1967 to 1982, the war between the Thai military and the Communist Party of Thailand (CPT) escalated in the North (particularly in Tak, Petchabun, Kampanget, Nan and Chiang Rai). One strategy adopted by the Thai government was to accelerate the urbanization of remote areas, dubbed “town surrounding forest” (as opposed to the guerilla strategy embedded in the slogan “forest surrounding town” used by the CPT), by building or upgrading road network and settling “volunteers” along these routes (Shinawatra *et al.* 1991). These volunteers were mainly landless farmers, many from the Northeastern region. The policy was funded by the United States who used Thailand as a military base of operations during the Vietnam War. It was in effect from 1958 to 1973, but was implemented most vigorously in the 1960s (Saimwalla *et al.* 1990).

Since the forests were home to communist insurgents, their “thinning” was seen as complementing national security. The logging expansion resulted in increased accessibility of the highlands and increased communication between the highlands and the lowland markets. Phukajorn *et al.* (1983:68), who studied the Mlabri group in Nan province, describes the effect of logging during 1973-1981.

The logging stopped in 1981 when there was no more large trees left to be cut. The obvious benefits villagers received from the logging operation was the roads connecting various mountain settlements to the Phrae-Nan highway,...the conveniences resulted from the clearing of the thick forests and the building of the roads by the logging company led to a large number of

Hmong from Amphur Pua to migrate and settled in Bo Hoi.”

The access roads allowed the Hmong who were pressured into abandoning opium to adopt the upland cash crops. A popular crop was maize because it was widespread in the lowlands and because it was a familiar crop for them (Sutthi 1989). Maize was grown on a large scale by the Hmong in Kamphangpet, Petchabun and Phitsanuloke in the Lower North; and in Tak, Phrae, Nan, Phayao and Chiang Rai in the Upper North. The Lower North accounted for 49% of the total area planted with maize at the end of the 1970s (The World Bank 1983).

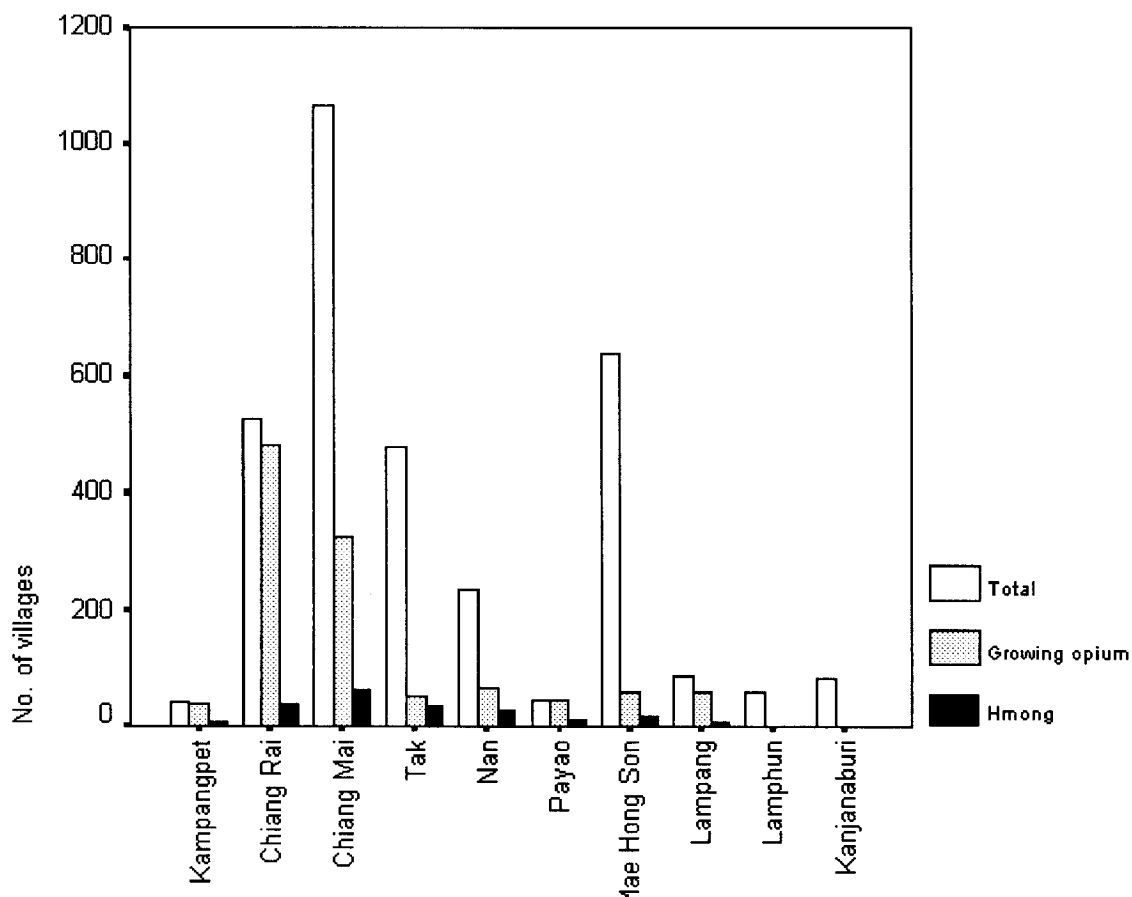
5.3.2 The Expansion of High-Input Crops

The adoption of high-input crops concentrated in the Upper North, particularly around Chiang Mai (Table 5.2). One reason for this geographical pattern is the numerous highland development projects in this part of the North. The concentration of projects in Chiang Mai was due partly to the distribution of the highlanders, Chiang Mai having the highest numbers of Hill Tribe communities (Figure 5.1), and partly to the city being the administrative and commercial centre of the North. Despite this logical connection between projects and high-input crops, evidence has shown that the projects were not the main force in the drive toward large scale cash crop adoption.

High-input vegetables, unlike low-input upland crops are grown mainly for domestic consumption not for export. The substantial development of vegetable markets in Thailand occurred late in the 1960s and grew rapidly in the 1970s as a result of the country's high population growth (over 3%) during 1950-1970 (Siamwalla and Setboonsarng 1989; Scott 1992). The growth of the non-agricultural sectors contributed to the demand for vegetables (Siamwala and Setboonsarng 1989; Siamwalla *et al.* 1990; Siamwala 1991). By the 1980s, most types of vegetables were in demand all year round and this sustained demand was satisfied through the development of efficient distribution processes facilitated by improved infrastructure (particularly trucking). Tourism industry expansion also contributed to the

demand for fresh vegetables.

Figure 5.1 Provinces with Highest Numbers of Highland Communities.



Source: McKinnon and Vienne 1989

Many researchers have suggested that market mechanisms are more potent than interventions by development projects. Hanks (1985:71), who surveyed over 200 highland settlements during 1964-1974, commented that it is “inescapable that outside agricultural programs have been less effective in changing the life of the hills than the uplanders themselves”. Similar comments were made by Renard *et al.* (1988:165): “The individual

changes, such as new varieties of crops, would have come...regardless of the project or government agency”.

The widespread adoption of cabbage (*Brassica deracea* var. *capitate* L.) among the Hmong clearly illustrates this point. The history of cabbage adoption described below is based largely on Shinawatra (1985).

The History of Cabbage Diffusion. The imported variety of cabbage was first adopted by highlanders in the mid 1970's. The headman of a Karen village, Ban Mae Ho in Mae Sariang district, learned about cabbage cultivation from a northern Thai who produced cabbage for the market in Mae Sariang town. Around 1975, Chiang Mai and Bangkok wholesalers came into contact with the Mae Ho headman. They wanted the villagers to produce cabbage during the months when it was too warm to grow cabbage in the lowland. The produce could then be transported on a good highway which was upgraded in 1965 from Mae Ho to Chiang Mai. These off-season cabbages enjoyed exceptionally good prices. Within a few years, cabbage cultivation spread to all Karen villages around Mae Ho and along the Hod-Mae Sariang Highway.

In 1983, a Hmong village (Ban Metho), located 25 km from Mae Ho on the same highway, and 16 km up the highlands, began to take up cabbage production. Since the late 1970's, Metho had grown various crops, especially potato and red kidney beans promoted by the UN HAMP, the Royal Projects and the T-N HDP. However, the promoted crops did not grow well and the farmers found it difficult to market the low quality produce (Leeprecha 1990). When the Hmong tried to grow cabbage, the result was far better. According to my interviews with the middlemen, cabbage diffused from Ban Hong district in Lamphun province (adjacent to Hod district where Metho is located) to Metho rather than from Mae Sariang. Bangkok wholesalers have first extended cabbage to Ban Hong and the middlemen from Ban Hong extended it to Metho. In the following years cabbage cultivation shifted from Ban Hong to Metho.

The cabbage grown in Metho was of high quality and agents from markets in Bangkok, Lamphun and Chiang Mai bought all the produce at high prices. Within a year,

Metho became a cabbage growing village and henceforth, an epicentre of cabbage cultivation, not only among the Hmong but for the Northern region in general. The Metho area (Metho and the villages around Mae Tho) produces approximately 50,000 metric tons of cabbage annually (CDRPM 1996). The economic success of Metho led to a diffusion of cabbage cultivation among Hmong communities throughout northern Thailand.

The diffusion of cabbage had a greater impact on cash crop adoption than the highland development projects. Information from the 1987 survey reveals that the adoption of high-input cash crops occurred largely during the middle of the 1980's and mainly involved cabbage adoption (Table 5.3).

Table 5.3 Period of Cash Crop Adoption in Hmong Villages

Year of HI Cash Crop Adoption	Types of Crops	Number of Villages	Total
Before 1984	Cabbage	19	26 (25%)
	Other	7	
1984-1987	Cabbage	59	63 (61%)
	Other	4	
Unknown	Cabbage	6	15 (14%)
	Other	9	

Source: UCSF, Mahidol and TRI survey 1987 (compiled by author)

After 1987 the adoption of cabbage continued to gain momentum. Evidence of this is found in the report of the TN-HDP, which covers 67 Hmong and Karen villages (Table 5.4). The report refers to cabbage as “Off-season vegetables”. The regional trend of cabbage cultivation is shown in Figure 5.2.

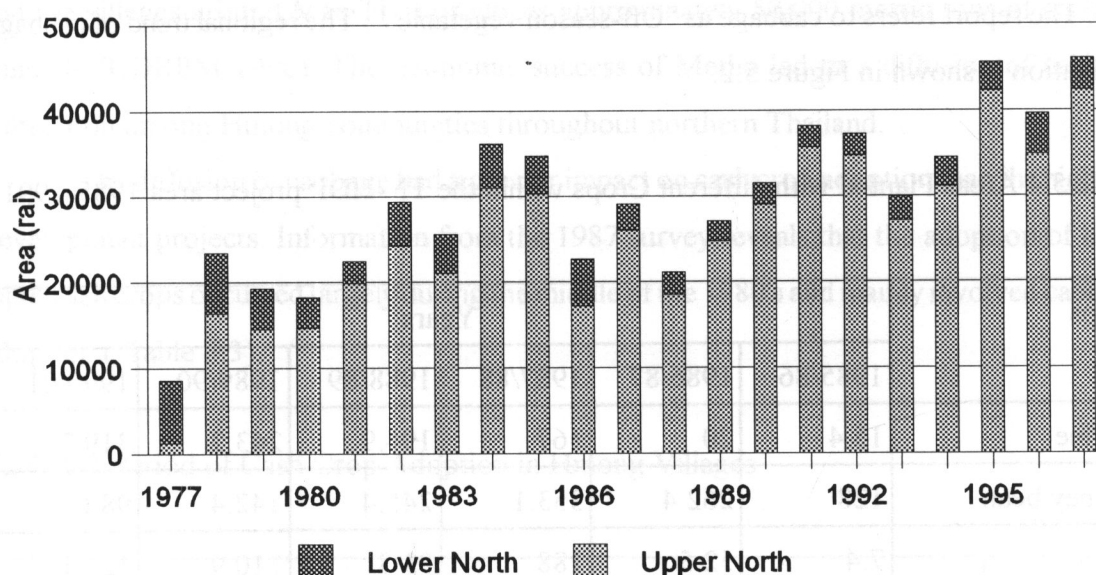
Table 5.4 Areas Planted with different Crops within the TN-HDP project area 1985-1991

crops	Years					
	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91
Coffee	15.4	20	167	194.9	243.2	319.7*
Kidney bean	128	262.4	353.1	245.4	142.4	98.6
Taro	7.4	52.5	188	93.8	110.9	121.1
Potato	52.6	45.1	63.4	58.6	74.4	71.4
Off-season veg.	19.7	42.4	66.1	164.3	246.4	201.4

*total area of bearing trees was 126.4 ha.

Source: Rerkasem 1994

Figure 5.2 Area of Cabbage Cultivation in the North



Sources: Ministry of Agricultural Cooperatives 1976-1980, 1981-1989, 1992, 1997

5.4 Factors Contributing to Cash Crop Adoption

From the above secondary data analysis it is apparent that after a period of unsuccessful efforts by the government to encourage the Hmong farmers to give up opium poppies in favour of cash crops, the Hmong began to adopt non-opium cash crops in a large scale. The most dominant factors that caused this turn of event are discussed below.

5.4.1 Government Intervention.

If opium growing were not against Thai law, the Hmong would probably still be growing this crop today. Pressure from the government is obviously the factor that forced the Hmong to abandon opium for other cash crops. The omnipresent campaigns against opium in propaganda speeches, radio announcements and modern education, all worked

together to undermine the Hmong's confidence in opium cultivation. Hmong were occasionally arrested by the police for possessing opium. Extortion by corrupt officials was not unheard of. Being a minority in a Thai court could also render a very disadvantaged position for a highland peasant (Radley 1986). However, the most important pressure came from the direct suppression of opium cultivation by enforcement.

The government adopted a humanitarian approach for opium eradication through various development projects in the 1970s and 1980s, but the method was only successful on a limited, local scale (Lee 1978, Cooper 1984, Tapp 1989, Kunstadter 1990). From 1983, the United States has tied preferential trade benefits with narcotic enforcement (Crooker 1988). To demonstrate its cooperation with the United States in opium suppression, the Thai government took a harder line against opium growers (Ibid). The military stepped up air-surveillance and systematically raided opium fields. The Hmong economy was effectively disrupted by the destruction of poppies, and this forced them to look seriously into alternatives. The success of opium replacement was largely an effect of the suppression activities (Robert and Renard 1989).

Thus, government intervention played an important role in stopping opium production and trigger cash crop adoption. Yet, the enforcement policy alone did not lead to the rapid crop change. In the 1960s, the villagers often moved to other locations and continued to grow opium after the military had destroyed their opium fields. However, as the 1970s drew to a close, less land was available for movement, and some alternative crops were becoming viable.

5.4.2 The Role of Markets.

Evaluations of the early development projects all pointed to the lack of markets as one of the main obstacles to cash crop adoption (e.g. Lee 1978, Renard 1986, Kunstadter 1990). Substantial development of cash crops in the highlands only occurred when real markets (as opposed to artificial markets where a development agency buys the produce it is providing) were available. In the case of upland crops such as maize, the Hmong were simply an

extension of the established cultivation in the lowlands. The Hmong were connected to the markets through middlemen, who often were the agricultural supply shopkeepers in town. Without these middlemen, adoption could not have occurred effectively. The shopkeepers acted as technical advisers, input suppliers, creditors, and sometimes distributors or linkages to buyers for the farmers.

Since upland crops are also widely grown by lowlanders, the Hmong are at a comparative disadvantage because of the higher transportation cost. An abundant supply effectively kept the price of upland crops low and the international character of the market also made it impossible to circumvent the middlemen.

The largest vegetable market in Bangkok is Pak Klong Talat where produce from all over the country is collected and redistributed. In the late 1970's Pak Klong Talat brokers began to send agents to the North to look for vegetable supplies especially during off-season periods. Contacts were usually made with local people who acted as middlemen between the producers and the market. These local middlemen were responsible for collecting, packaging and shipping the produce to Bangkok. Sometimes, the middlemen have an obligation to provide inputs and credits to farmers. The Hmong supply the market with specialized products: off-season vegetables. This way, they have less competition from the lowlands.

The relationship between the middlemen and the farmers is crucial to the adoption of cash crops. Without middlemen, most farmers could not transport their produce to markets and would not have the knowledge of the processes involved in getting their produce sold. For tribal farmers, language and cultural differences further impeded their communication with the consumers.

5.4.3 The Significance of Roads.

Road development was an important factor that facilitated the adoption of cash crops. Many studies have found roads to be one of the most important prerequisite of cash crop development (TDRI 1988, NREP 1994, Dearden 1996). A TDRI study (1988) found road development to have a direct correlation with agricultural intensification..

In several highland need assessment surveys, roads were placed high on the highlanders' priority list (Cheewasant 1989, Robert *et al* 1986, WDC 1985, TRI 1992). However, in recent years the Royal Forestry Department has been reluctant to allow extensive upgrading of roads for fear of over-development inside protected areas. The Hmong villages in such areas usually resort to their own labour and capital in maintaining the roads.

5.5 Summary

This chapter looks at the process of cash crop development among the Hmong highlanders. It illustrates why, despite much government efforts and the Hmong's familiarity with opium cash crop, adoption of other crops did not occur at a large scale until the end of the 1980s. Several reasons caused slow adoption during the first two decades of the government work, including the inappropriateness of the promoted crops (e.g red kidney beans and coffee), the lack of markets for these crops, the inability for these crops to compete with opium and the way projects interacted with the farmers. Using the data from the survey by UCSF, Mahidol and TRI, a pattern of cash crop adoption throughout the North emerges. The low-input cash crops were adopted in the Lower North, the lower part and the eastern part of the Upper North, while the high-input vegetable crops were mostly adopted in the western part of the Upper North, particularly Chiang Mai province. The adoption of low-input crops was linked to the expansion of upland cash crops at a national level. The adoption of high-input vegetable crops resulted from increased domestic demands for vegetables and, to a limited extent, to the work of highland development projects. The data from 1987 also suggests that transition from upland crops to vegetable crops, particularly cabbage, was occurring in many communities. Overall, cabbage adoption took place mostly during the mid to the end of the 1980s. Factors that have contributed to this development include the tough government policy towards opium cultivators, the active role of market agents and improved communication networks.

Chapter 6

Cash Crop Development at a Village Level

In the previous chapter, factors that stimulated cash crop adoptions were discussed. These factors are illustrated more specifically in the case studies, based on the data collected during the field study in 1996, that will be presented in this chapter. The village data demonstrate the nature of market involvement associated with different cash crop productions and changes that accompanying them.

6.1 Naan Village

Naan village is a relatively old Hmong settlement, established at the turn of the century. During its early history, the village changed clan composition several times. The first clans were the Yaaj and Muas. They were joined by the Xyooj around 1907, while the Muas moved to Tak a few years later. Thus, today the main clans are Yaaj and Xyooj. In 1927, the whole village migrated to a district north of the original location. They stayed for 18 years until 1945 when they moved back to the old site. Since then, the location of the village has probably been stable. A record by an American anthropologist who travelled in the area in 1949, mentions the existence of this village (Lyman 1975).

According to a Hmong teacher, Khru Fong, a grandson of the first headman, the governor of Nan appointed the Hmong headman to oversee tax collection (*Sau se*) in three Hmong and one Mien hamlet, covering areas in southern Nan and parts of Phrae provinces. The tax was in the form of opium. He was given the title Phya Saen Kiri Pok Pracharat (lit. trans. - “protector of the hundred thousand mountain people”), known among the lowlanders as Phor Saen (headman Saen). Today the word “Saen” became a prefix of all surnames in this village (i.e. Saensong for Xyooj clan, Saenyang for Yaaj clan, etc.). Khru Fong mentioned that the Nan governor (*phuwakarn monthon*) appointed Phor Sean to administer over the highlands south of Nan while a Mien chief was appointed to administer the areas North of Nan. This corresponds to Kacha-ananda’s (1983) record that a Mien chief was given

a title Phya Khiri Srisombat, by “the prince of Nan”.

The tax collection in Naan was not popular among the villagers. Indeed several families (of other clans) moved away from the village because of the tax issue during the time that Phor Saen was the headman. Phor Saen himself did not fully agree with the flat tax rate imposed by the Thai officials (said to be 20 *tamlung* of opium per head). This flat rate was seen as unfair because the households produced different amounts of opium each year. The conflict between Phor Saen and the lowland tax officials escalated to the point where the headman challenged the tax collector to a duel. The governor of Nan intervened by transferring the Thai officer away from the area. When Phor Saen died, his oldest son became the headman. By then, the Thai government policy had changed and the title given to the Hmong headman was discontinued.

During the 1960s and the 1970s, Nan province became one of the strongholds for the Communist Party of Thailand (CPT). Several Hmong villages were caught in the battle between the Thai government and the CPT. The war resulted in forced mass evacuation of Hmong from the highlands into *Nikhom* (resettlement areas). The majority of Hmong villages in Nan province were affected (Kunstadter and Kunstadter 1992, Satsanyawut 1994). Naan village, however, escaped from being resettled because the headman, *phuyai* Pao (in office 1971-1990), chose to cooperate with the government. The military were stationed in the village between 1971 and 1983 during which time it trained 30 Hmong men as defence volunteers (gathering information and acting as guides, etc.).

6.1.1 The Adoption of the First Cash Crop

During 1960s-1970s there was an expansion of maize cultivation in several regions of Thailand. Plantations spread to the Northeast, Southeast, Central and the Lower North (Siamwalla 1991; Shinawatra *et al* 1991) and began to make inroads into the provinces of Phrae and Nan. Although the Naan Hmong village was not relocated, the presence of the military, and thereafter, the Department of Public Welfare, had made opium cultivation difficult. The villagers were constantly being persuaded to become loyal citizens which

entailed an end to the opium cultivation. Around 1974, many families looked for a new way to make a living by sending their members to a nearby Hmong village where many of their clan members lived. This village, Bo Hoi, was recently accessible by a road and had taken up commercial maize cultivation. In 1975, a logging road was built from the highway towards the Naan village. The Naan farmers, who had spent a few seasons growing maize in Bo Hoi, returned to their village when the road reached two-thirds of the way. Naan was now sufficiently accessible by road to facilitate commercial maize production. Merchant trucks from the lowland soon came to the end of the road and the Hmong carried their maize down to meet the trucks. Naan villagers began to grow cash crops on a large scale by the end of the 1970s.

6.1.2 Adoption of Cabbage

News of successful cabbage cultivation in Chiang Mai reached Naan in the mid 1980s. Cabbage was launched in Naan by two groups of people. Those who had relatives in Metho went to Chiang Mai to study cabbage cultivation and returned to try it on their own land. In 1987, a group of educated Hmong in Chiang Mai formed a Hmong Company which aimed to extend cabbage to Hmong villages and buy back the produce for further distribution. The company was to make profits and at the same time help Hmong farmers bypass Thai merchants. One of the members of the company came to advise her relatives in Naan on how to grow cabbage. Although, the company was not successful, cabbage production caught on in Naan. By 1990, all villagers had switched from maize to cabbage.

6.1.3 Cabbage Cultivation

Growing cabbage entails a different production process from growing maize or opium. Farmers buy expensive imported seeds, chemical fertilizers and pesticides from agricultural supply shops in town. The fertilizer is the biggest expense and farmers usually obtain it on credit sometimes using their silver ornaments and silver bars as collaterals to borrow cash.

The interest rate offered by the shopkeepers is 3% per month. According to some informants, the Hmong often lose their collateral because they don't have enough cash to pay back the loan in time.

After all inputs are obtained, the seeds are sown in nursery beds. When seedlings sprout, they are sprayed with pesticides weekly. In the meantime the field is burned, hoed, and in some cases, vegetable beds are raised. Some farmers also purchase manure from chicken farms in the lowlands to spread over the fields. The preparation of the fields is done by family members, sometimes in cooperation with other households (*Ao Rang*). Some households hire Akha or lowland Thai labour to prepare the fields. Eleven Akha families, mostly opium addicts from Chiang Rai, have settled permanently in the Hmong village since 1993. The Thai are itinerant labour who come to the village during the peak of agricultural work. Labour is paid either daily, for 60 *baht* a day, or on a piecemeal basis which varies from 500-900 *baht* per *rai* depending on how overgrown a field is.

After four weeks, the seedlings are moved and planted in the fields. The Hmong bring down water from the mountain streams through pipes with sprinklers attached at the end of the pipes. Artificial fertilizer is applied at the time when the seedlings are planted. When the cabbage heads begin to form, fertilizers and pesticides are applied again. The frequency of pesticide¹ spraying depends on the seasons. Cabbages grown in the rainy season are normally less vulnerable to pests than those grown in the dry season and may need to be sprayed only once or twice. If the pests are really bad spraying may be done 4-5 times in short intervals. If that does not solve the problem, farmers normally stop spraying. They said it was no use to keep spraying (the pest has become resistant to the chemicals). After two months, the

1. The pesticides used contains

- a). O,S-dimethyl phosphoramidothioate 60% WV SL, commonly known as abate.
- b). O,O-dimethyl)-4-nitrophenyl phosphorothioate 50% W/V EC, commonly known as dimethyl parathion.
- c). (3-phenoxyphenyl) methyl (IRS)-cis trans-3-(2,2-dichloroethenyle)-2, 2-dimethylcyclopropane-carboxylate 0% W/V E.C , commonly known as permethrin
- d). S,S'-{2-(dimethylamine) trimethylene] bis (thiocarbamate), hydrochloride 50% S.P., commonly known as cartap. For details of toxicity see Verschueren (1983) and Sax (1984).

cabbage is ready for harvesting.

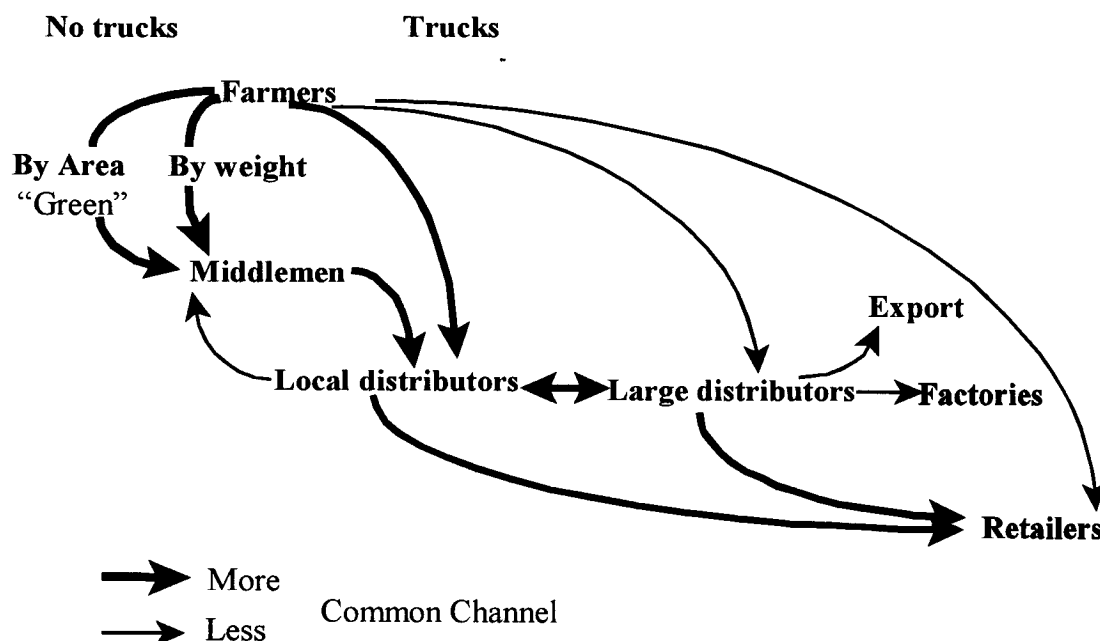
Harvesting is the most labour intensive part of cabbage cultivation. The Hmong usually hire extra hands for this operation. Workers harvest cabbages and carry them on their backs from the fields to the awaiting trucks. Each person carries between 200-400 kg per day and receives 0.15 to 0.50 *baht* per kilogram, depending on how far the field is from the road.

6.1.4 Marketing Cabbage.

There are several marketing channels for cabbage (Figure 6.1). Some farmers may sell the cabbage “green”, that is on a wholesale basis. The price is set well before the cabbage is ready to be harvested. When the harvest time comes, the middlemen pay the farmers the agreed price, regardless of the yields. If the farmers are confident about the yields and think that the market price may be better then they will wait until the harvest season before selling.

During the harvest season, dozens of middlemen arrive in Naan village. They negotiate with farmers whose cabbage is ready to be cut. When an agreement is reached on the price of the cabbage, the middlemen cut, weigh and carry the crop to the markets. The payment may be made over several installments if the middlemen and the farmers are well-acquainted. A common practice is to pay the farmers up to half of the total amount at the harvesting time and the rest after the middlemen have resold the crops. The farmers may demand to be paid the total amount on the spot if they do not trust the middlemen.

Figure 6.1 Cabbage Marketing Channel



The preferred way of marketing for some 40 households who own trucks, is to transport the crops to the local lowland distributors themselves. This practice is necessary when no middlemen come to the village. Also, the farmers usually get better prices this way since they can bypass a layer of middlemen. When the prices at the local markets are low or when the distributors refuse to buy because of oversupply, farmers have to take their produce to larger distributors in Phrae, Nan, or even further in Utharadit, Petchabun, Saraburi, Nakorn Pathom or Bangkok. In some of these larger market towns they may try to sell the produce themselves instead of going through the distributors. For example, they can hire some labour at the market to pack cabbages in 10-kg plastic bags. Early in the morning, retailers from various markets come to buy the vegetables for their stalls. These retailers then buy cabbages by the bag directly from the Hmong.

There is no guarantee that farmers will make more profits by going closer to the main

markets, since they must bear the cost of transportation. In certain instances, their negotiating power is reduced because the distributors know that the farmers have to sell their produce after making a long trip, but in general the prices follow the market price of that day.

6.1.5 The Cost of Growing Cabbage

Table 6.1 shows the cost per *rai* of growing cabbage in Naan. Data from Metho village is included for comparison. The head man of another village in Hod (the case study below) reported even higher variable costs of up to 5,000 *baht* per *rai*. Another report 10 years ago in Jomthong found the costs of growing cabbage to be between 2,040-4,850 *baht/rai* (DLD 1987). The yield in Jomthong was also higher at 4.5 metric tons/*rai*. The cost per kilogram excluding irrigation expenses, unpaid family labour and transportation expenditures is around 1-2 *baht*. Elsewhere the costs were reported to be as low as 0.50 *baht* if labour is not hired (NREP 1994:4-8). Fixed costs, such as irrigation, vary depending on the distance of each field from the water source. Each pipe is 4 metres long and costs around 135 *baht*. The Hmong in Naan use up to 3.2 kilometres of water pipes per household to irrigate their fields. If all the costs are accounted for, the amount may be twice as high as calculated. This is considered high compared to other crops (Table 6.2).

Table 6.1 Cost of Cabbage Cultivation per *Rai* (in *Baht*)

<p>Place: Naan 1996</p> <p><i>Cropping seasons/year</i>: generally 2-3 crops, more if farmers own several plots with access to water</p> <p>Seeds:</p> <p>2/3 cans (Globe brand for dry season)</p> <p style="text-align: right;">@530 =353</p> <p>or 1 can (Champ brand for rainy season)</p> <p style="text-align: right;">@480 =480</p> <p>fertilizers:</p> <p>1-3^{1/3} bags of 21-0-0 @230 =230-766</p> <p>1/2-2/3 bag of 15-15-15 @340-70 =170-246</p> <p>5 bag of manure @25 =125</p> <p>pesticides: 1 bottle @25 = 25</p> <p>(Tansiri&Chondumrongkul 1987 reported 370-460 <i>baht</i>)</p> <p>Labour :</p> <p>land preparation =500-900</p> <p>[in harvesting 0.7 <i>baht</i>/kg * =1,400-2,800]</p> <p>(Yield: approximately 3-4 tons/<i>rai</i>)</p> <p>The production cost per kg of cabbage (excluding family labour and irrigation) is approximately 1.2-2.1 <i>baht</i>, Cost per <i>rai</i> approximately 3,300-5,700 <i>baht</i></p> <p>* If the farmers harvest themselves.</p> <p>Source: Field Survey 1996</p>	<p>Metho 1996</p> <p>3 - 5 crops</p> <p>3 cans (airplane brand)</p> <p style="text-align: right;">@260 =780</p> <p>1 bag of 21-0-0 @220 =220</p> <p>1 bag of 16-20-0 @310 =310</p> <p>(Leeprecha 1990 reported farmers also use manure in nursery, price not reported)</p> <p>1 500 mm³ bottle @175 =175</p> <p>land preparation =500</p> <p>harvesting =1,400</p> <p>(approximately 3 tons/<i>rai</i>)</p> <p>(Tansiri&Chondumrongkul 1987 reported 5.8-6.9tons/<i>rai</i> in Pakluai)</p> <p>production cost per kg: 1.1 <i>baht</i>.</p> <p>Cost per <i>rai</i> approx. 3,500 <i>baht</i></p> <p>Note: In some cases, rent on land is paid at 1,500-2,500 <i>baht</i>/year/plot of various sizes</p> <p>Sources: RPDCM 1996</p>
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Table 6.2 Variable Cost (VC) and Gross Margin(GM) per *Rai* (in *baht*)

	opium	upland rice	maize	sesame	ginger	soy bean	green bean	red kidney bean
VC	100	45-245	30-404	25	1,900-3,460	84-462	2,150	336-760
GM	4,900	495-895	450-796	775	1,850-3,740	546-588	2,250-3,850	644-1,200

Source: Salzer 1993

6.1.6 Income from Cabbage

Off-season cabbage initially brought higher income to Hmong households than maize or opium. Salzer (1993) calculated variable cost and gross margin per *rai* of various crops in the Thai-German project areas (see Table 6.2). He reports the gross margin of opium to be 4900 *baht/rai*. A kilogram of cabbage could fetch up to 8-9 *baht* during the initial period of adoption, giving a gross margin of approximately 20,000-30,000 *baht* per *rai* (assuming the yield of 4 metric tons/*rai*). A family growing 4-5 *rai* a crop could earn 100,000 *baht* in one season. Tansiri and Chondumrongkul (1987) calculated the gross margin of cabbage in the Thai-Norwegian project area at a very low price level of 1.5 *baht/kg*, but at a high productivity level of 5.8-6.9 metric tons/*rai*, to be approximately 8,700 *baht/rai*. Today cabbage price fluctuates greatly. High prices of 5-7 *baht* may occur for a few weeks in a year, particularly in the dry and hot season when the supply is low. The price can slide down to less than 1 *baht* in which case the farmers leave the crops to rot in the fields because the cost of harvesting is higher than the sales price.

Income from cabbage therefore is inconsistent compared to opium since opium can be stored while the prices are low. Some years, a cabbage farmer may be left with a fifty or sixty thousand *baht* debt while the earning may reach the same amount or more in other years. Most Hmong I talked to thought of cabbage cultivation as a kind of gambling game. If they harvest their crop at the right time they can make a substantial income. This is why many Hmong are still attracted to cabbage growing. In his report on Metho, Prasit Leeprecha

(1990) explains that the short growing period of cabbage (approximately 3 months) has allowed farmers to grow 4-5 crops a year, hoping that one of these crops will hit a jackpot. Some Hmong have also learned not to put all their eggs into one basket. They cultivate smaller plots throughout the year (approximately one month apart); it is more likely that some crops will be ready when the price is favourable. This risk spreading strategy is only possible on irrigated land. Most farmers are restricted to 2-3 crops a year. For wealthy households, one or two lost crops do not greatly damage the household economy. In Naan, about ten percent of the households in the village were in this position. The headman of Naan explained that people who owned trucks had an advantage over those that did not because of a wider range of market choices. For the average households, a few price slumps can plunge them into long-term debt.

6.2 Hod Village.

The Hod village is located at 1300 mASL, about 90 km south of Chiang Mai and 18 km up a mountain track. Judging from the villagers' account of a large deposit of Lua artifacts and grave sites found near their rice fields (at lower elevation than the village), the area was probably once a site of an ancient Lua' settlement. Unfortunately, most artifacts were dug up and sold to antique dealers in the early 1990s. When the Hmong moved to Hod village around 1958, there was no other settlements in the vicinity. Some 20 families were said to have walked for four days from Omkoi, over 70 km away. In the following 3 years the number of households increased to almost 50. This number had decreased to 32 in 1985 (UCSF, PSRI, TRI survey 1987) but is now back to 48. Their economy was similar to other Hmong communities, growing opium, rice, maize and raising livestock.

The village is surrounded by a forest which has been kept as a buffer to prevent accidental fire from the fields and to prevent domestic animals from destroying crops. This forest is approximately 25 years old as the last fires were said to have occurred in 1967 and 1972. In 1974, because of an epidemic the village was moved to a location about one and a half kilometres west of the former site. The Hod village remains at this location today.

In the 1970s, the Hmong were joined by several Karen settlements. One settlement consists of Karen who once lived near the lowlands, but moved upward to find new agricultural lands. Another settlement is made up of people who were affected by the flooding of the Bhumibol dam in the mid 1960s. The third Karen settlement was established by Karen from Omkoi who was working as itinerant labour in the Hmong's fields. Most of the Karen in this third settlement were opium addicts (WDC and SRI 1985.) This last village expanded and eventually divided into 4 villages due to internal conflicts. Those who were not opium addicts had their own agricultural fields and raised a substantial number of livestock. According to an RFD report, one of the villages raised on average 17.7 cows per household (Cheewasant 1989). The newest settlement in this area is a northern Thai village established in 1983 by a sub-district head (*kamnan*) from a lowland village cluster who led six landless families up to settle in the forest near the base of the mountain.

A few kilometres from the Hmong village is a watershed development station set up by the RFD. According to the watershed development centre publication, the station, hired 70 Karen to work on various projects such as a rabbit farm, a coffee garden, a Taiwanese tea garden and a ginseng and a pine plantation (WDC and SRI 1985). The station also distributed some cabbage seeds to the Hmong. However, the village was relatively isolated and the farmers did not know how to sell the cabbage so most people continued to concentrate on their traditional crops: rice and opium.

In 1995, the Ministry of Science and Technology installed a solar energy station in the village. Households now can charge their batteries at this station on a daily basis. The battery power provides electric light in the houses and a limited use of electrical appliances such as televisions in some houses. There are two shops in the village, one was established by a Haw man (probably a former opium trader) who died a few years ago. His daughter is currently running the shop. The other is a shop set up by a group of Hmong to compete with the Haw shop. Now it is owned by a Hmong couple whose husband is a school principal in another Hmong village.

The Hod village opium fields were raided several times, starting in 1985, when the Thai government began to clamp down on opium cultivation. After the first raid, each family

was given a 10 kg bag of rice and was told to stop growing opium. The operation caused significant hardship among the Hmong. Amidst this economic disturbance, news about the success of cabbage growing in Metho led many households to seek help from their relatives in that village. Several men in the village went to Metho to grow cabbage. Their families stayed behind and continued to grow opium and rice. Most migrants were economically successful because cabbage was fetching a high price. Two men were able to buy trucks from the two years of cabbage cultivation in Metho. After one or two years in Metho, the emigres returned to Hod to try growing cabbage in their village.

Cabbage cultivation was not as successful in Hod village as in Metho because of the poor road conditions. Few middlemen came to buy the crops and only the late headman and his brother and two other men who bought trucks from Metho had their own means of transportation. The owners of the trucks were able to transport their cabbages down to the distributors in Jomthong. They also hired out their trucks to other farmers at the rate of 1 *baht* per kilogram. However, too many farmers were unable to get transportation when needed and thus some began to pool their money together toward the purchase of their own trucks.

During the late 1980's, a watershed station worker near Hod brought temperate climate flowers from the Royal Project at Doi Inthanon to be grown near the station. He first hired Karen workers to grow the flowers. Later he established contacts with flower merchants in Chiang Mai and began to expand the operation by encouraging Karen villagers to grow more flowers and sell them to him. The station worker became a flower distributor, collecting and selling flowers to outlets in Chiang Mai city. Soon, the Hmong also received seedlings and technical advice. Cut-flowers fetched high prices (8-9 *baht* each), a much higher return than cabbage. The Hod villagers thus soon turned from cabbage to full-scale flower cultivation.

6.2.1 Flower Cultivation

Cut-flowers is one of the most labour intensive crops cultivated by the Hmong. The most popular flower grown in Hod is carnation (*Dianthus caryophyllus*). Carnation growing entails, first, collecting buds from the crops grown in the previous season. The buds are dipped in plant hormones to stimulate root growth and sown in nursery beds. When seedlings are 6-8 centimetres high they are transplanted into flower beds which, unlike cabbage fields, are carefully prepared. Fertilizer is applied when transplanting and every 15 days thereafter (some farmers reported applying fertilizer only once a month). Pesticides are also applied fortnightly in the dry season, or more often if pests are a problem. If the fields are cleared from relatively old fallow, the need to use pesticides is less. Plots that are used repeatedly often are damaged by fungus in the rainy season. Many farmers said that fungicides could not save the crops if the plots were heavily infested. In recent years there has been some clearing of forest (or old fallows) because of this problem. Because the village is inside a national park, there is a shortage of land. Farmers began to talk about the need to grow flowers in greenhouses as done in Doi Inthanon but most people could not afford the greenhouses. They also knew that they need to use new seedlings. Continued propagation from the old plants has led to a decline in quality. However, they said that new seedlings were not available in the markets. The Royal Project, the original source of carnation seedlings, had stopped promoting carnations. As in Naan, the Hod villagers irrigate the fields by diverting water from the stream through plastic pipes. The average pipe length per household is 1.3 km. One family reported as much as 2.5 km of pipes. Many farmers build small ponds to collect water before redistributing it to different fields.

When the crops are about 20 centimetres high, a bamboo stick is tied to individual plants to facilitate a tall, straight stem. By now, flower buds begin to emerge. The buds grown from parallel branches are picked out, leaving only large buds at the top of the stem. As the flowers begin to bloom, the farmers wrap the base of flowers showing signs of breaking with scotch tape to prevent the petals from falling off. Throughout the cultivation period weeding is diligently carried out. Approximately 3 months after the seedlings were transplanted the

farmers can start to harvest the flowers. The flowers are cut on alternate days. Those of highest quality are tied together in a bunch of ten and delivered to the middlemen. A crop can be harvested from 3 up to 6 months, depending on the quality of the original seedlings.

6.2.2 The Cost of Growing Flowers

The total cost of growing flowers is high (Table.6.3) but lower than the cost of growing cabbage because of the semi-contract farming arrangement between the middlemen and the farmers. In the case of carnations, farmers do not have to buy seeds in every cropping season.

Table 6.3 Cost of growing carnation per rai

<i>Cost of growing carnation per rai (in baht)</i>			
fertilizer 15-15-15*	2 -10bags @ 410		820-4100
pesticides/fungicides	4-5 bags @ 250-300	+	<u>1,000-2000</u>
Variable cost per rai		=	1,820 - 6,100
Labour: Raising beds**		+	<u>2,000</u>
	Total	=	3,820 - 8,100

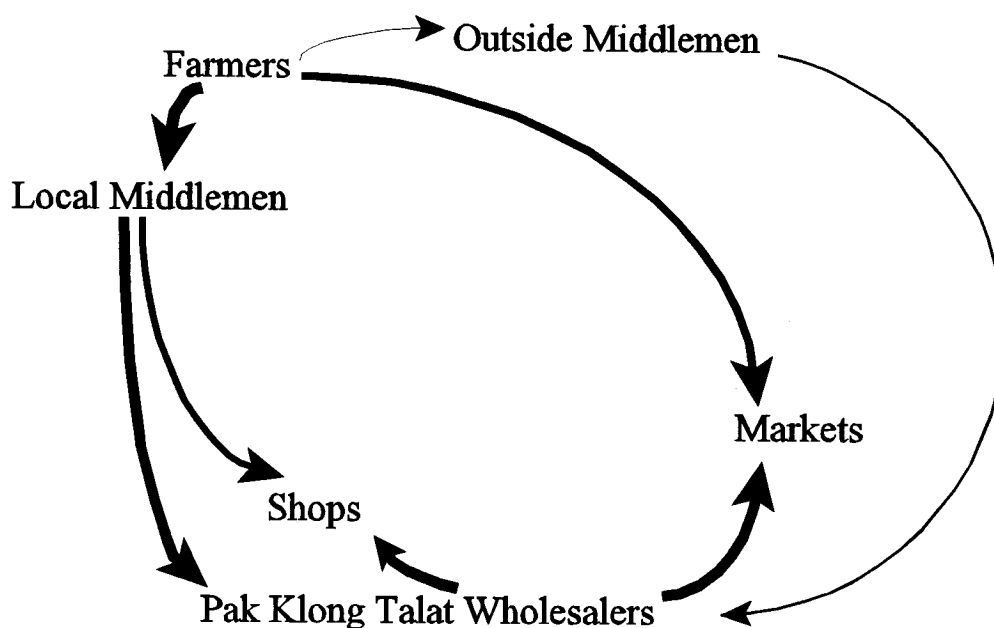
excluding family labour and irrigation costs and miscellaneous expenses (bamboo sticks, strings, scotch tape)

*supplied by middlemen on credit
**fixed investment

6.2.3 Marketing Flowers.

Three marketing channels exist for cut-flower in Hod. The main channel is through the local middlemen. The second, a much smaller channel is through middlemen from other villages. The third, is for the farmers to retail the flowers themselves (Figure 6.2).

Figure 6.2 Cut-Flower Marketing Channels



The Relationship between Middlemen and Farmers. When Hod villagers first adopted flowers during 1987-90, they were selling the crops to the watershed station worker, who by then was a business man as well as a government worker. The station worker obtained seedlings from the Royal Project in Khun Klang (Doi Inthanon) and sold them to the Karen and the Hmong. He gave technical advice to the farmers and supplied the needed inputs on credit.

Carnations had been grown in Khun Klang since 1983. Some Khun Klang farmers had also established contacts with retailers in Chiang Mai and became agents, collecting and delivering the flowers to these merchants.

In 1990, one of these Hmong middlemen from Khun Klang came to buy flowers in Hod. The Khun Klang middleman encouraged the headman of Hod village to become a middleman himself, giving him the names of people to contact in Chiang Mai. The following years, the headman took up the advice and began his successful roles as both farmer and middleman. The headman was soon able to buy his own truck with the money earned from this new entrepreneurial venture. Soon other truck owners began to follow the lead of the headman, becoming “*phor liang*” themselves. By 1996, there were 7 *phor liang* in Hod, besides the headman. All are Hmong except for the daughter of the Haw shopkeeper (who married the watershed station worker). Each *phor liang* has regular clients, or *luk suan*, from whom he or she collects flowers. The headman has the most clients (28) and the Haw shopkeeper has 20. The others have between 4 and 12 clients each, usually their relatives. Therefore, the middlemen are distributed between the various clans in the village. Three middlemen are from the Vaaj clan, the largest clan in the village, two from the Yaaj clan and one from the Haam clan.

The middlemen collect flowers of the highest quality from farmers and transport them to larger distributors or retailers in Bangkok and Chiang Mai. The middlemen engage in an informal contract farming, not unlike the contract farming often heard of between large companies and farmers. The difference is that with flowers, the relationships between the farmers and the middlemen are closer and more flexible. The middlemen provide fertilizers, water pipes and rice to the farmers on credit without charging interest. They give free transportation on their trucks which otherwise would have cost 20 *baht* a person for a trip to the lowland. In return, the clients supply flowers to the middlemen. This arrangement seems to satisfy both sides and I did not hear any complaints about over-exploitation.

Some middlemen have become increasingly sophisticated. Two now carry mobile telephones. Bangkok distributors order specific quantities of flowers over the phone and specify the time of delivery. If a middleman cannot obtain enough flowers from his clients, he may travel to other flower growing villages to procure the amount needed. These trips are more frequent in the rainy season because the flowers in Hod often are damaged by the rain while those grown in greenhouses (in Khun Klang and Khun Wang) are of better quality. The

flowers are packed in boxes, and sent to the customers via road, train or air-cargo, depending on the instructions given by the customers. Money is then wired back into the middlemen's bank accounts. They in turn pay the farmers after deducting their own commissions, half a *baht* for every flower sold.

The following is an excerpt from an interview with one of the middlemen in Hod. It tells how one teenage youth turned himself into a *phor liang*.

Middleman Pao. Pao Haam was merely fifteen when he got married. His family took up flower growing the same year. Like most families they sold their flowers to Hmong middlemen in the village. Pao's family has a truck which they had purchased while growing cabbage. When they switched to flowers, the truck was only used for occasional visits to the lowlands. When Pao was nineteen and obtained a driving licence, he decided to become a middleman. With his nephew, he took a bus to Bangkok, bringing with them 50 carnation flowers. This was their first ever trip to Bangkok and all they knew was the name of the largest vegetable market in city, Pak Klong Talat. When they reached Bangkok, they took a taxi from the bus terminal directly to the market. At Pak Klong Talat, they walked around asking different merchants who might be interested in buying carnations from them. Eventually, they met an interested customer. The two sides exchanged addresses. Pao gave the telephone number of the nearest shopkeeper in the lowland market as his contact number. The merchant instructed Pao on how to send flowers. That night Pao and his nephew caught the first bus back to Chiang Mai. The next day he harvested his flowers and asked his relatives from the Haam clan to sell flowers through him. When he had collected enough flowers, Pao went down to the lowland market and called the Pak Klong Talat merchant. From that initiation, Pao became the youngest "Phor liang" in the Hod village.

By 1996 the price of carnations had dropped considerably. The farmers only got 1.5-2.5 *baht* per flower. It is clear that the middlemen is the most advantaged group since the commission remains the same regardless of the price fluctuation. Nevertheless, the villagers are, in general, still happier growing flowers than cabbage. During the brief period when they

took up cabbage, many were in debt because of the high investment. Most villagers bought fertilizers and rice on credit at high interest rates from agricultural supply shops in the lowlands. When the price of cabbage slumped, they had to borrow more for the next crop. Some also owed large sums to truck companies. In the case of flower growing, rice and fertilizers were supplied by the middlemen at no interest. The farmers still have money left for other uses even after the middlemen deduct the costs of rice and fertilizers. This helped the farmers to recover from the debt they had accrued during the cabbage cultivation years.

6.3. The Roles of the Highland Development Project and the Market

From the Hmong case, some observations on the roles of the highland development projects and market agents on the cash crop adoption process can be noted.

6.3.1 The Roles of HDP

The villages directly under the supervision of the Royal Project undoubtedly have the most rapid and substantial cash crop development (Table 6.4). The most pronounced cases are seen in Khun Klang and Nong Hoi which not only adopted cash crops early on, also diversified the crops at a rapid rate. When the market condition is favourable, those crops grown in Khun Klang and Nong Hoi are copied by other villages. Cut-flowers is a case in point (see Figure 6.3). Therefore, even though the Royal Project was only able to administer a minority of the villages, its role in diversification may be significant.

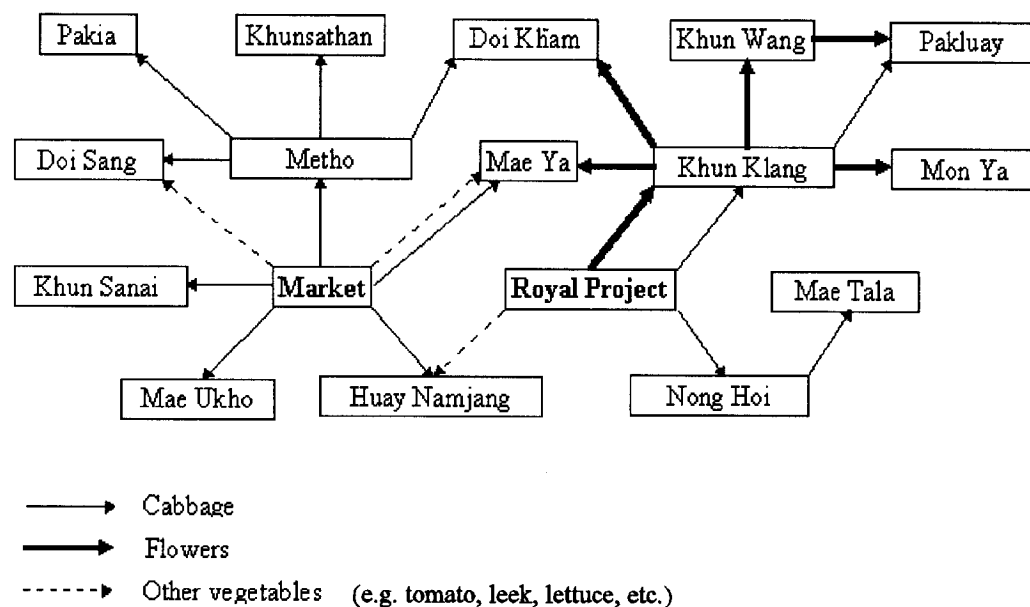
The farmers in the project areas explained that most families under the project engage in a dual production, growing crops for the project and also for the outside markets. In Mae Ya, for example, most households grow cut-flowers for the project and grow cabbage for sale themselves. In Huay Nam Jang, Nong Hoi and Khun Klang, the villagers reported similar arrangement. According to the farmers, the project gives regular income but the payments from the outside markets are more prompt.

Table 6.4 Origins of the Crops Grown in 1996 in Selected Hmong Villages

District	Village	Crops	Origin of the Crop
Chiang Mai	Jomthong	Strawberries (1981), Carnations (1983), Chrysanthemums(1987), Gerbera(1989)	Royal Project
			Merchants
	Mae Ya	Cabbage Carnations, Gerbera	Merchants
			Royal Project at Khun Klang
	Pakluay	Japanese onions, Carrots Cabbage	Merchants
			Khun Klang, TN-HDP
	MaeChaem	Gerbera Cabbage	Khun Wang
			Nong Hoi , TN-HDP
	MaeRim	Lettuce, Onion, Carrot, Cabbage, flowers	Royal Project
	Mae Wang	Gerbera, Chrysanthemums, Carnations	Khun Klang
	Omkoï	Gerbera, Gladiolus, Straw flowers Cabbage (1987)	Khun Klang
			Metho
Samoeng	HuayNamJang	Tomato (1989) Leek, Japanese onion, Potato, Bell pepper, carrot, lettuce	Merchant
			Royal Project
	Pa Kia	Cabbage Cabbage	Merchants
			Metho
	MaeHongSon		
KhunYuam	Mae U Kho	Cabbage, Carrot	Saw other Hmong
	Pai	Khun Sa Nai	Cabbage Saw other Hmong

Source: Interviews with farmers at market places in Chiang Mai, October, 1996.

Figure 6.3. Paths of Cash Crop Diffusion in Some Hmong Villages



From this data it is not yet clear how many other crops introduced by the project will diffuse to other villages. Some crops introduced by the projects require high level of inputs and technology that without substantial subsidies will be difficult to adopt elsewhere. The Royal Project may influence the market by introducing new products or creating a demand among consumers who would like to try exotic produce, but at a lower price. But, the ultimate decisive factor for any crops to be adopted by the Hmong is the demand from the outside market. Thus, the role of market agents in the adoption of cash crops is significant.

6.3.2 The Roles of Distributors and the Hmong's Involvement in the Distribution

The distributor is an important sector of the market that influences the development of cash crops among the Hmong. There are two main distributing centres in Chiang Mai, those along the Chiang Mai-Hod highway, and those in Chiang Mai city at Muang Mai and Kham Thiang wholesale markets. The first serves villages south of the city. Farmers from villages north of Chiang Mai usually sell their produce to the latter markets.

Some of the largest distributors of cabbage are located in Jomthong district on the CM-Hod highway. These distributors originally traded onions, garlic and longan grown in the lowlands. They began dealing with cabbage in the mid 1980s as a result of the development in Metho and its spin-offs. From the interviews and observations made during fieldwork at these places, it was learnt that the distributors lend money to lowland middlemen who travel to buy produces from Hmong and Karen villages. These days, with ample supplies of cabbage, most distributors do not extend agricultural inputs to farmers. Only a Haw distributor who owns the largest distributing centre lends seeds, fertilizers and pesticides to Hmong farmers in Metho.

Farmers from far away villages sometimes telephone the distributors to find out about the demand for cabbages at the distributing points. This is to prevent being turned down by the distributors after they have already made a long trip. When a farmer arrives at a distributing centre, his truck and its load are weighed. The distributor then takes out any poor quality cabbages and subtracts the weight of the rejected produce and the weight of the truck

to get the final weight. The cabbages are immediately loaded on ten-wheeled trucks and transported to larger markets in Bangkok, Ratchaburi, Nakorn Pathom, Nakornsawan, Saraburi, Supanburi, Ang Thong and Chantaburi. The main receiving points in the northeast are Nakorn Ratchasima and KhonKaen. In the south, it is Talat Hua It in Nakorn Srithammarat from where some cabbage is sent on to Malaysia. How much is sent to Malaysia is unknown in the North. Once a year in the dry season, cabbage of the best quality is sent to Taiwan directly from Jomthong distributors. The distributors estimated that about 2% of the total cabbage produced locally is exported to Taiwan. National figure for exported cabbage was 296 metric tons or 2.1 million *baht* in 1996 (Department of Economics and Commerce 1997). In addition, 156 metric tons, valued at 0.5 million *baht* were exported in the form of pickled cabbage (Ibid). The exported amount is small, considering the amount produced in Metho area alone of 50,000 metric tons annually (see Chapter 4).

A recent development among some Hmong is to change their role from farmers to middlemen. As seen in the case of Hod, the main local agents between their fellow Hmong farmers and the Pak Klong Talat distributors are themselves Hmong. A few Hmong have also taken on larger operations. The following is an example of two Hmong brothers who set up a distribution centre in Chiang Mai .

Thongchart, a Hmong Distributor. Thongchart and his brother were part of the Hmong Company briefly in business in the mid 1980's. When the company dissolved, they decided to pursue the business idea on their own by becoming vegetable distributors. In the beginning, they went around in Chiang Mai and Bangkok, talking to potential customers and establishing contacts. Among their customers are Pak Klong Talat distributors, Chiang Mai wholesalers and food processing factories in Chiang Mai and Bangkok. With borrowed capital, they travelled to different Hmong villages in Chiang Mai and bought produce.

Because cabbage was perishable and already had many outlets, they decided to specialize only in relatively hardy and less grown vegetables such as carrots and potatoes. To ensure constant supply, they distributed seeds and fertilizers to farmers on credit, in a kind of informal contract farming arrangement. These agricultural inputs were given to farmers at

market prices and without interest. Today, over a hundred households in some 20 villages in Chiang Mai and Mae Hong Son are their clients. They sometimes only establish contact with a few farmers in the villages, who then become their agents. These agents are responsible for the transportation and distribution of inputs and produce between the farmers and the distributing store in Chiang Mai. Each day Thongchart and his brother receive orders from the customers. They then call their agent or the farmers to tell them about the date and the quantities needed. The farmers or the agents bring the crops to Chiang Mai on the appointed date, by which time the private truck company that Thongchart and his brother contacted is waiting, ready to take the produce to the final destination.

Thongchart and his brother have now been in the distribution business for 10 years. There are two Hmong establishments of this kind in Chiang Mai. The distributors usually make some profit, but they can also lose part of their investment. This is due to the commitment they have with farmers. Once their clients' crops are ready, they cannot turn the crops away even though the market price may be too low to make any profit. In 1995 they had an oversupply of potatoes which they could not sell and they lost several hundred thousand *baht* in that year. In 1996, the Hmong carrots were not able to compete with the Canadian carrots that flooded the market. The Hmong carrots do not look as attractive as the Canadian's. The next step in his business, said Thongchart, is to build a cold storage in order to prolong the life of the produce. When there is a problem with prices, potatoes and carrots can be stored until the market is better.

6.4 Cash Crop Adoption and Social Change

The recent adoption of high-input crops has had some profound impacts on the Hmong society. Two significant phenomena - the Hmong high level of mobility and the women's involvement in marketing - will be discussed here.

6.4.1 Cabbage Adoption and the Increase in Mobility

Cabbage was one of the first cash crops that enjoyed sustained adoption by the Hmong for over a decade after opium. The impact of cabbage on the Hmong economy is significant. It brought a large amount of cash flow into a Hmong household, especially at the initial period of adoption. What has the cash earned from cabbage been used for, besides subsistence and ceremonial necessities? Two main expenses occur. First and foremost, the cash goes directly into the next cycle of crops. Secondly, the cash is used for two other important areas: improving the house and buying vehicles.

Although a few families with a large labour pool might be able to buy trucks using opium money, they used them mainly for transportation between villages and towns. Interviews in both case study villages reveal that truck purchasing largely occurs as a result of cabbage cultivation. At the beginning, the few families who had trucks had an advantage because they could bring their produce to the market themselves. Consequently, more Hmong families began to purchase their own trucks.

The Significance of Trucks. Transportation was not a major concern when the Hmong grew opium. The produce was neither bulky nor perishable and the customers would usually come to the village. Since they were forced to abandon opium cultivation and took to conventional cash cropping, Hmong farmers have found that the differences between profit or loss often depend on having the means to transport their crops to the market. This is particularly true for bulky crops such as cabbage. During the earlier period, when cabbage was in demand and could fetch a high price, middlemen would travel to the villages to buy the vegetables. After the supply saturated the market, it became less profitable for the middlemen to trek to mountain villages. Accessibility is restricted during the rainy season when many roads to Hmong villages are in perilous condition. Even when the middlemen did come to the villages, the Hmong farmers soon learned that the prices paid at the village were much lower than those paid in the lowlands.

Villagers without trucks had to hire their neighbours' trucks to send their cabbage to

the lowlands. One *baht* was charged for every kilogram of cabbage transported. When cabbage prices dropped to below one *baht*, it became non profitable to hire a truck, and the cabbages were left to rot in the fields. Even when the price was optimal, rain could damage the road so badly that transportation was impossible when needed. During a period of several days' continuous downpour, all the trucks may be held up in the lowlands or stuck in the mud along the mountain roads. Trucks may also be unavailable simply because they are busy transporting other peoples' produce. From the farmers' perspective, having control of the means of transportation would can help them get some return on their investment, if not actually making profits. Being at the mercy of others is frustrating for Hmong farmers. For all these reasons, trucks have become a priority to almost all farmers that I talked to. (In Hod, the farmers tend to buy motorcycles instead since trucks are not so crucial to flower growing.)

There are several ways to procure a truck. Farmers without enough cash may buy a second hand car or a new car on installments. This is the most risky way to purchase a vehicle and many Hmong have had their trucks confiscated because they are unable to pay the installments. Another common method is for brothers to pool their money and buy a truck together, which will belong to the family. The more affluent (or the lucky ones who had sold cabbage when the price was high) may also buy vehicles with cash. Table 6.5 shows the numbers of trucks in some Hmong villages estimated by villagers who were interviewed during the field work and reported in literature elsewhere. As time goes by, it is likely that the numbers of trucks in Hmong villages will increase. Therefore, numbers in the 1980s is likely to be lower than the numbers in the 1990s. However, it is also noticeable that the number of trucks in cabbage growing villages is generally higher than in villages growing maize. This is due to low income gained in maize production. In Hod, although the income is high, the number of trucks is lower because there is no need for individual farmer to transport the flowers. Therefore, a crop's marketing processes also influence the level of truck ownerships in a Hmong village.

The economic and social changes resulting from the increased mobility are significant. Trucks allow farmers to bypass middlemen and be more flexible in their selection of market

outlets. More importantly, vehicle mobility allows farmers to sell crops at practically any time of the year. This has helped the Hmong somewhat to offset the fluctuation of vegetable prices. The strategy among the Hmong now is to gauge the pattern of prices during different times of the year and then plan their cropping so that the produce is harvested when the price is higher (usually a different season from the majority of the producers elsewhere). Although not one hundred percent successful, it shows an increased sophistication in the Hmong's marketing strategy.

Table 6.5 Number of Trucks Reported in Highland Villages

Source	Main Crops	No. of Vil./vil name	No. of HH	Ethnic	Number of trucks per 100 households (Village average)
Field Survey 1996	cabbage	Naan	119	Hmong	40
	cabbage	Khun Sa	40	Hmong	27.3
	flower	Hod	48	Hmong	29
TRI 1992	maize	25	1357	Hmong	3
PRDI 1991	soybean	Pasamran	10	Hmong	10
	soybean	Kanghom	28	Hmong	18
Leepreecha 1990	cabbage	Metho	152	Hmong, Haw	50
Cheewasant 1989	cabbage, opium, flower	3	765	Hmong	8.6
	soybean	18	1229	Non-Hmong	1.2
SRI, UNFDAC, UNDP 1984	opium, maize, cabbage	3	252	Hmong	11.5
	maize, rice	7	843	Non-Hmong	3.2

Note: Hmong household size was approximately 10 people in 1988 (Kunstadter *et al* 1989)

The indirect impact of trucks is more far reaching than simply making transportation of produce easier. With the aid of vehicles, Hmong farmers have expanded their horizon while gaining new information at a rapid rate. It is not uncommon for farmers to drive to Bangkok, Ratburi or even northeastern Thailand to sell produce. One farmer in Omkoi district attributed taking up tomato growing to his trip to Nong Khai by the Mekong river to sell cabbage. During the trip he went over to ask local Nong Khai farmers about their tomato growing: how to obtain seeds, how to care for the crops, and how to market them. Direct contact with merchants in wholesale markets such as Pak Klong Talat have also given the Hmong a sense of market demand. This awareness has begun to show up in their diversification of crops. A Hmong farmer in Nan commented that since they took up cabbage growing, Hmong people have travelled further than ever before in a lifetime. Travel had opened their eyes to new knowledge and he saw it as a good thing. It is probably not the cabbage per se, but rather the mobility that came with the ownership of trucks, that has given the Hmong a competitive edge in the cash crop economy.

It may be too early to assess the full impacts of vehicular mobility on Hmong society. The impact of vehicles on men and women is likely to be quite different. So far, only the men control the cars. However, the women also clearly became more mobile as a result of their family having automobiles.

6.4.2 Positive Features of Flowers: The Women's Perspective

An important feature that has made the cultivation of flowers exceptionally viable is that each crop is producing continuously for at least 3 and sometimes up to 8 months. Unlike cabbage that is harvested only once in a cropping season, flower growing allows farmers to earn steady income over a longer period. This continuous flow of smaller income is particularly popular among the women. The Hmong women said that they were often faced with periods of cash shortage during their cabbage growing years. Since the money came in only a few times a year, the lump sum was spent on substantial agricultural inputs required for the next growing season and often on large items such as trucks, house improvements,

motorcycles, etc.

The women also prefer the work associated with flowers to the work in the cabbage fields. Women and men had to carry baskets of 20-30 kg of cabbages from the fields to the road, all day long for several days. With flowers, they harvest a basket or two of flowers every other day, a change most welcomed by the women. The relative ease of transportation has also given Hmong women an opportunity to take part in the marketing of flowers. Instead of throwing the lower-grade flowers away, the women take them to sell at local markets. They ride on the back of a truck or a motorcycle carrying a bucket of flowers down to the lowlands. Since retail prices are higher than wholesale prices, they earn a considerable income (several hundred *baht*) on each trip. For many women of Hod village, it is a novel opportunity to earn cash and retain significant control over it. Therefore, it is not surprising that cut-flowers is the favourite crop for practically all Hmong women I talked to.

It often left me in amazement that only a few years ago, the Hmong were mountain shifting cultivators growing opium. Yet, today some carry mobile phones and discuss the impact of Valentine's Day on flower prices. The following section will examine some of the factors I believe have contributed to the rapid cash crop development among the Hmong. These factors are the clan network, the temporary migration and the increased mobility because of the ownership of trucks.

6.4.3 Clan Network and Temporary Migration

The Hmong have a patrilineal descent system and follow patrilocal residence rules. Clanship in the Hmong culture cuts across locations and encompasses people with no direct recognizable blood relation. At the most simplified form, it is all the Hmong who share a common surname. The importance of clanship in the Hmong economy has been noted by many researchers (e.g. Geddes 1976, Cooper 1984, Kunstadter 1988). For the Hmong, clan relationship ascribes certain expectations to its members such as the sharing of food and shelter. A Hmong from the United States may visit a Hmong village in China and be

welcomed to stay in the home of a fellow clan member. Men of the same clan are considered “brothers” (*Kwv tij*).

Living apart in relatively difficult terrain does not mean that the Hmong are isolated from each other socially. Lyman, who visited some Hmong communities in 1949 and again in the early 1960s, describes the connection between Hmong of the same clan. “The Miao [Hmong] are great visitors, the men of the tribe sometimes travelling as far as 200 miles on foot merely to see relatives” (Lyman 1975:11). Since marrying within the same clan is prohibited and villages were largely made up of a single clan, travelling facilitated the finding of marriage partners (Geddes 1976). A clan network also incorporates a kind of common property institution in which the right to settle within the territory of fellow clansmen is recognized (Ibid). During his visit to a “brother”, a Hmong man will court young women in the village but also exchange news about farming prospects in their respective villages and elsewhere. This kind of trip is very common among the Hmong and is done at least once or twice a year by the men (today, at higher frequency due to improved communication). It facilitates information diffusion to a high degree. It is widely recognized that the Hmong operate economically at a household level rather than at a community level (as compared to the Karen, for example), yet they have an extremely efficient network along the kinship lines.

Clan relations in the past were instrumental in pioneering activities (Kunstadter 1988). It was often the people of the same clan that they turned to when a Hmong family needed to find a new plot of land. The man of the household would visit several villages where his fellow clansmen lived. With their help, he scouted for fertile land. The “brothers” could offer their old swidden or suggest forest areas in the vicinity for the newcomer to clear. When the family moved to the new location, the “brothers” provided initial shelter, food and the necessities to help the newcomers set up their own household. The clan network, therefore, was crucial for pioneer shifting cultivators.

With decreasing land resources, the opportunity for such pioneering movement is reduced. The movement of a whole village is no longer possible. Thus, pioneering in the traditional sense of clearing primary forest is virtually eliminated. The closest form of pioneering is the clearing of relatively mature secondary forest that once was cultivated but

since had been left fallow for a long period. More often, they are forced to rotate the fields and practice short-cultivation-short-fallow swidden.

The shortage of land has led to a new interaction between clanship and pioneer activities. A pattern of movement rarely mentioned in the literature, but prevalent since the end of opium cultivation, involves a household or some members of a household temporarily migrating to cultivate in another village for a period of 1-3 years. The cases of Naan and Hod both show examples of this kind of mobility. In Naan, a large number of the households went to farm in Bo Hoi during the transition period when they were shifting from opium to cash crops. Half of the households in Hod went to farm in Metho when the military had been raiding their opium fields. There is also evidence from other villages that similarly report temporary migration such as Mae Ya in Jomthong and Mae Tala in Mae Chaem (Hmong farmers from those village, pers. comm.) and Pa Poo Chom (NREP 1994:4-15).

Two important conditions can be noted in association with this type of migration: large scale temporary migration and individual household temporary migration. Firstly, the temporary migration occurs on a large scale when there is an economic problem in the old village. For example, households in both Naan and Hod villages sent their members to farm in their "brother" villages when opium fields were destroyed by the military. A few members, usually older people and women, stayed behind to hold on to the land. Most migrants returned when the political and economical turmoil had subsided. This reflects the clear awareness that what land they had in the old village would probably be the last pieces available and thus represented the end of the traditional pioneering movement. The second form of temporary migration occurs at a smaller scale, resembling somewhat the traditional migration at a household level associated with poorer households. This household-level temporary migration occurs when a new crop has been grown successfully in a village. The success attracts "brothers" from other villages to settle for a period of time. Again, in most cases the understanding is that these farmers will stay only temporarily since the chance of securing enough land in the new village, in the long run, is slim. This type of movement, in my opinion, has contributed substantially to an efficient and rapid diffusion of cash cropping among the Hmong. At the destination villages, the temporary migrants learn first hand the

technical aspects of cultivation and perhaps more importantly, the marketing of the new crops. It is therefore not surprising that upon returning to their own villages, the farmers often begin to cultivate the new crops they have learned to grow during the stay at their brother's villages.

There are signs that clan obligations are weakening. Lands that were previously given away to "brothers" are now increasingly sold or rented. In Hod we see the close connection between the clan network and economic enterprise. The middlemen sponsor relatives who move in and become their clients. Clearer pictures on the Hmong clan relationship changes will be seen in a dissertation of a Hmong researcher, Prasit Leeprecha who is currently working on his Ph.D. dissertation on this subject.

6.5 Hmong and Peasantry

The Hmong primarily use family labour and largely "own" their own land. They thus show some characteristics of peasantry according to Chayanov's theory of peasants. On the other hand, they do not adhere to rice production but exhibit willingness to take risks in cash crop production (partly due to land scarcity problem).

Communal ethics among the Hmong are not localized but are seen within the lineage and clan network. Clan members still provide food and shelter for each other but increasingly on a temporary basis and on a commercially related basis. The traditional movement now seems to follow the success of cash crops in the destination villages. For example, newcomers in Hod receive support from the middlemen who are their relatives and supply flowers back to their sponsor. The communal ethic has constrained the exploitation between Hmong middlemen and their clients, since they are usually from the same clan. The relationship between the Hmong patrons and clients does not fit well with Wolf's (1966) description of a didactic vertical relationship. The Hmong clients have no obligations to supply flowers to any particular middleman once they have paid back the initial rice and fertilizer credits. Since the credits entailed in flower growing normally do not carry over to another cropping season, the clients are relatively free to deal with whomever they please.

The clients are poorer than the middlemen, but they do not express hierarchical behaviours, such as showing deference toward their patrons, as often witnessed in the lowlands.

The Hmong economic system clearly does not belong to the primitive type that was described by Sahlins (1972) but lies somewhere between that of small agricultural peasants, who produce mainly for subsistence, and capitalistic entrepreneurs engaging fully in the market economy. For the majority of the farmers, the term “peasants” is probably applicable since the Hmong are farmers who “own” their lands and used their own labour to a larger extent and operate under the state and market mechanism. The Hmong middlemen are however moving away from peasant economy involving in capitalistic venture that was not subsistence oriented and accumulate income from market activities rather than from their land and family labour.

6.6 Future Trends

The farmers point to two future trends in the Hmong cash crop development. First, they are aware that they must diversify to survive in a capitalistic market. Many farmers grow different types of vegetables together with cabbages such as carrots, potatoes, Chinese cabbages). Second, many farmers see their future in permanent fruit orchards. Fruit trees, said the farmers, would bring regular income without back-breaking work and the need for more land to rotate fields. There are also signs in some villages of bringing back subsistence rice production to some degree instead of abandoning it totally for cash crops. This trend is a result of the recent drop in cabbage prices that has caused many families to lose their subsistence income. Many young people are also looking for employment outside agriculture. Many young Hmong men became migrant workers in Taiwan. Migration to work in the cities is rising (Kunstadter 1993). However, the recent economic disaster in Thailand has led many of these migrant workers to return to their villages. It is unclear at this stage what these young people will do in the near future.

6.7 Summary

The process of cash crop adoption and development was illustrated in the two case studies presented in this chapter. Government intervention, roads, and market agents are important factors that jump-started the adoption of cash crops in these two Hmong villages. However, the rapid development and diffusion of cash crops are facilitated by the clan network and the increase in mobility since the beginning of cabbage adoption. Clan relationships help cushion households facing economic problems by providing temporary resources. Where Hmong become entrepreneurial middlemen, the clan relationship increasingly takes the form of patron and clients.

Through the clan network, innovation is rapidly being transferred from one village to another. The high level of mobility due to the Hmong's ownership of vehicles is also a catalyst for cash crop diffusion and the transformation of some Hmong from farmers to entrepreneurs.

The economic changes among the Hmong have been discussed in the last two chapters. Now we turn to the issue of the highlanders' relationships to wildlife and the implications of cash crop development on biodiversity conservation in case of the Hmong communities.

Chapter 7

Wildlife in Highland Cultures: Historical Perspectives

Chapter 5 and 6 gave an overview of the Hmong's most important economic activity, their agriculture. In the following Chapters we will turn to the aspect of the Hmong's relationships to wildlife. The presentation follows the previous structure on the cash crop development discussion. First, in Chapter 7, the information from secondary sources are presented in a broad context in order to demonstrate that Hmong hunting is part of a larger hunting culture in the highlands. Data from the field work will be presented in Chapter 8.

7.1 Wildlife in Highland Cultures

Although it is well-known that wildlife was a significant food source in the highlands in times of food shortage (Bernatzik 1947; de Beauclair 1970; Lebar et al. 1964; Shrock *et al.* 1970; Tanyanin and Lindell 1991; Wongprasert 1974), the significance of wildlife in the highland cultures is less well-documented. The prevalence of wild animals in legends and folktales of various groups offers clues to the historical significance of wildlife among the highlanders (Graham 1954; Johnson 1985).

In many upland cultures, human death is perceived to have an important connection to animal spirits. The Akha believed that "neglected souls return in the shape of birds and insects in order to eat up the harvest and the livestock" (Bernatzik 1970: 225). When relatives died, Akha men would not go hunting for a year as they feared the spirits of the dead relatives might be residing among the animals (Bernatzik 1947; Lewis 1970). One common theme prevalent among many groups is the transformation between humans and tigers (McNeely and Wachtel 1988). The Hmong believed that before being properly buried, the dead could transform themselves into tigers and prey on human blood (Bernatzik 1947). The Hmong in China carried a sword against their chests while walking in the forest at night to protect themselves from the tiger spirits (de Beauclaire 1970).

Cultural taboos reflect the attitudes towards certain species. The Akha do not kill

hornbills, rhinoceros, elephants and snakes as they are considered “friends of the ancestors” (Bernatzik 1970:667, 299). The Kammu consider elephants equal to humans and refrain from killing them (Tayanin and Lindell 1991). The Karen do not hunt tigers that had killed a buffalo for they believed it was the will of the spirits (Young 1974:75). Among the Hmong, black squirrels were regarded as a creature of bad luck and should not be eaten (Bernatzik 1947). The Lahu hold that sickness or death will occur if a green snake climbs into a house and woven grass symbolizing a green snake is used to protect the people from these evil spirits (Walker 1988:58,62).

Bernatzik (1947), who studied the Akha in the late 1930s, reports that the Akha keep skulls and to lower jaws of bears, barking deer or wild boars in their houses for spiritual worship. Since the bones were kept in the male part of the house, Goodman (1996:14), interprets this as “symbolic of male hunting prowess”. Akha in some areas nailed rows of monkey skulls to the roofs for decoration (Bernatzik 1947; Lewis 1970; Goodman 1996). Bernatzik speculates that this practice is related to head-hunting in pre-historic time.

Use of animals in names and words is another element in the highland culture. The Mien clan names are derived from the names of wild animals (Zhang and Zeng 1993). A Lisu headman is called “backbone meat”. This is because he always receives this portion of the kill whenever big animals were brought down by the villagers (Dessaint 1972). In Hmong, *tsuv tom* or “tiger bites” is the strongest curse in the language. This reflects the great fear the Hmong has toward this animal.

Wildlife sometimes served to enhance prestige both for the keepers and the hunters. Elephant accumulation is a symbol of wealth among the Karen (Kunstadter 1978). Both the Lisu and the Lahu consider hunting skills important assets of a man. “Reputation as a hunter is an important means for a Lisu man to attain status” (Dessaint 1972:81). According to Jones (1967:132),

The most respected man is a good hunter. He is a man who works hard and who finishes his work first. He has lots of big pigs and has meat to eat with his rice. The meat should not come from killing his own pigs or chickens but from hunting.

Hunting functions to strengthen relationships in a community. For example, after a successful hunt, the Kammu hold a village feast where the meat is shared. Tayanin and Lindell (1991:34) explain that to remind “the hunter that his strength and skill should serve the whole community and not only himself and his immediate family”, the hunter who brought the animals down received the smallest share of the meat. Morse (1974) indicates that when a Lisu hunter kills an animal, he gives away all the meat to other families until he himself was left with merely the bones. However, Dessaint (1972) did not observe that degree of sharing in the villages he visited. If an animal was found accidentally, every household is entitled to a share, but for a normal hunt, the backbone is given to the headman, the first four left ribs to the person that draws first blood, a shoulder to the weapon owner, the inner organs to the killer, and the rest divided among the participants of the hunt (Dessaint 1972:81). Thus, there is variation in practices even within the same group. Among the Akha, the best part (the right foreleg; Lewis 1970) is given to the village priest and offered to ancestral spirits. The second best part was consumed by the hunter’s family and the rest distributed to others (von Geu Sau, pers. comm. 1996). The Lahu also distribute wild meat reciprocally among households (Wongprasert 1974). Smaller scale hunts can also have a social role. Among the Kammu, rodents and squirrels were often exchanged between “wife-givers” and “wife-takers” in the rites to fortify their alliance (Tayanin and Lindell 1991).

Hunting has always been a mobile activity, carried out beyond the immediate vicinity of the village. Different highland groups may cultivate different agricultural niches but they share the same hunting environment. The result is a collective knowledge about wildlife behaviour and in many instances similar methods of hunting. The following section on hunting practices of different highland groups is based on various ethnographic literature. It serves as a background to the upcoming case studies on Hmong hunting. It also shows that the practices among the Hmong are not unique to their group, but shared by many forest dwellers in the highlands.

7.2 Hunting among Highlanders

Accounts of hunting practised by major groups of highlanders in Thailand, Indochina and China are summarized below. Kammu hunting is omitted since they are a relatively small group in Thailand. Detailed information about the Kammu hunting can be found in Tayanin and Lindell (1991). Lua hunting practices are also omitted for lack of information. Hmong hunting is presented in Section 7.3.

7.2.1 Lahu

The Lahu were presumed to be nomadic hunters in western Yunnan as far back as two thousand years (Ma Yin 1989). According to their legends, both men and women engaged in hunting (Zhang and Zeng 1993). Zhang and Zeng (1993) translate the word “Lahu” as “roasting tiger” and suggest that the name came from the way the Lahu cooked tiger meat when they were hunter-gatherers. Dhammabandit (1991:16), on the other hand, states that the word means “raising tigers” and offers the legend about the Lahu raising tigers to protect themselves against wild animals and enemies. The Lahu are reputable as “huntsmen par excellence” (Lebar *et al.* 1964:31). The Shan call them by the name “Mussuh” which means “hunter” (Young 1974).

Gordon Young, who was born and raised among the Lahu commented that, “All hill tribesmen are great hunters, but the Lahu Na, followed by the Lahu Nyi are the most distinguished. There is a saying among Lahu, “When the Lahu man goes away from the mountains, he longs more for the hunt than for his own family” (Young 1974:14). Young (1991:25) compares the knowledge of the Lahu and the Akha:

The Akha tribe, for instance, are keen enough hunters and trappers, but most of them recognise only three kinds of ants in the jungles: big, medium and small. The Lahu have intricate names for thirty or more species, grouped into five or six generic classifications

A study by Jones (1967), however, showed a variation between different Lahu

villages. He encountered both a village where hunting was insignificant and no organized hunting took place during the period of his study and those that hunted intensively (the most intensive being a Christianized village). For most villages, Jones found only a few keen hunters. In Wongprasert's (1974 :165) study, the Lahu spent seventy-six days a year hunting. Young (1974) gives an even higher estimate, two to three days a week.

The main hunting tools of the Lahu were crossbows with poisoned arrows and guns. They often hunted in groups using hunting dogs. When an animal was killed, the head and the tail were given to the marksman and the rest shared among the hunting group. The hunter pulled a tuft from every animal he shot and put it on his weapon or smeared the animal's blood on the barrel of the gun to display his marksmanship (Zhang and Zeng 1993; Young 1967). This ritual seems to be common among all groups as Bernatzik also reported similar practice by the Hmong and the Akha (Bernatzik 1947).

According to Lebar *et al.* (1964), wild meat contributed significantly to the Thai Lahu's diet. "The gibbon in particular is thought to be a great delicacy" (Shrock *et al.* 1970:390). Out of 147 meals randomly selected from May to August 1969, Wongprasert found that 24 meals contained meat from hunting (p.124). He concluded that wildlife "provides a greater quantity of animal protein than does animal husbandry" (Wongprasert 1974:120).

Young observed that the Lahu in small hamlets sometimes sold barking deer or porcupine meat to the Lahu in larger settlements in exchange for opium. They also traded dried meat at lowland markets for salts and other necessities (Lebar *et al.* 1964; Young 1974). "Some of the Lahu make their entire living by selling the smoke-cured meat of deer and wild cattle and the velvet horns of sambar buck as medicine to the plainspeople" (Young 1974:14). Others make a living from catching live birds. Boyes and Piraban (1989:96-97) interviewed a twenty-five-year-old Lahu in Chiang Rai in the late 1980s. The bird-catcher explains the process of trapping and selling birds:

Early in the morning, I set the cage and put some bait inside. I usually use fruit or rice. Then I leave the cage up a tree in the jungle. But before I leave the cage, I have to put a bird inside. The captive bird makes a noise, and the wild

birds hear the noise and go inside. And then the trap shuts... Me, I got five birds in three days. We catch them to sell, but we eat them if nobody wants to buy them. Thai people often come to the village to buy birds so I don't need to go to the town with them. I sell one bird for fifty baht, sometimes forty baht if it's difficult to sell...

These days it is more difficult to make a living solely from hunting. Hunting environmental has changed over the years. The same hunter explained:

Hunting is nothing to do with spirits. Two things are important, good dogs, clever dogs, and good guns...Once, there were many boar...there was even too much to eat. In those days, my wife had to dry the meat so we could keep it for later.. Now there aren't many animals. There're too many hunters. Everybody shoots and makes a noise. They make the animals run further away. Once, if you heard a gun, you would think somebody'd got a deer or wild boar, but now, now you can hear a gun go off everyday. Sometimes even the children shoot. (Boyes and Piraban 1989:97-98)

7.2.2 Akha

The Akha, as compared to the Lahu, are less ardent hunters (Lebar *et al.* 1964). Bernatzik noted that the Akha he encountered in northern Thailand did not hunt large animals such as elephants or rhinoceros. In the old days, unless a special man who was believed to possess "gaur spirit" was present, the hunters would have to perform elaborate ceremonies before they could kill a gaur (Lewis 1970). Tigers and leopards are only killed if they attack people. In general the people do not eat meat from animals that have bitten humans (Ibid). There were several taboos regulating wildlife hunting. Some Akha in Burma prohibited the hunting of elephant, rhinoceros and "big snakes"(Lewis 1970). A couple who are expecting a child should not kill any snakes and pregnant women are forbidden from eating wild pork (Goodman 1996). Bernatzik (1970:475) also found taboos against killing hornbills, ravens and vultures. Furthermore, the Akha do not shoot young animals (Von Geusau, pers. comm. 1996). If they discover that they have shot a female animal with litter, they will abandon the carcass (Lewis 1970).

Among the species reportedly hunted by the Akha are tiger, deer, mountain goat, monkey, wild boar, marten, wild cat, civet, pangolin, monitor lizard, snake and rodent

(Bernatzik 1947; Lewis 1970; Goodman 1996). Despite their many taboos, Young (1974:5) comments that “the Akha eat nearly everything that could possibly be eaten from the jungles, including maggots and animals thought to be “unclean” by other tribes.” These include a kind of large spider, cicada, grasshoppers, praying mantis and larvae of bees and wasps.

September does bring a favourite Akha culinary treat - bamboo grubs, deep-fried or chopped into salads. More rarely, Akhas at this time capture combs of wild bee larvae, at night when the bees are in torpor, which they boil or chop into their salad (Goodman 1996:42).

Sometimes they obtain these insects by cutting down trees or digging in the earth (Lewis 1970). Lewis reports that Burmese Akha eat bird eggs of all types with the exception of crow and buzzard eggs. They also like to eat birds, with the exception of vultures and house swifts (Lewis 1970). “Akha love to hunt birds. Every spare minute young boys get they will go out into the jungle to shoot birds with their slingshots” (Lewis 1970:518).

Eight to twelve men is considered a good size for a group hunt. The Akha use rifles and a few older men still use crossbows with poisoned arrows (Goodman 1996). Hunting dogs accompany them to track down wounded animals (Shrock *et al.* 1970). Beaters (sometimes young boys) drive the animals towards the armed men, be they gunners or archers. If they kill a large animal, a special ritual is performed by the shooter to prevent the “spirit owner of the animal” from attacking him (Lewis 1970). Couples refrain from sexual intercourse the night before a major hunting expedition (Goodman 1996:59). In addition, the wives may not go fishing during the period of the men’s hunt (Lewis 1970). These prohibitions are associated with the word “slip”, hence animals slipped away. The Akha believe that the rainy season is the time when spirits go hunting and mishaps can easily occur. They do not bring hunting dogs during the rainy season (Goodman 1996).

On their daily trips to the fields, men usually take along guns and traps or snares. During the midday break, they may check old shares and traps or set up new ones. “Men who’ve brought their rifles along may take a separate route back, through the forest, to look for game...The birds they catch they will simply toss into the fire long enough to burn off the feathers and cook the meat. Bigger animals, such as civets or lizards, caught in the snares are taken back to the village and eaten there” (Goodman 1996:22).

The Akha people also use nets and nooses (Shrock *et al.* 1970). A mouth piece instrument made of bamboo or decoy birds are used to lure partridges and pheasants (Bernatzik 1947; Lewis 1970). Live parakeets, parrots and pigeons are captured and raised as pets or used as decoy birds (Bernatzik 1947). Lewis (1970) explains the method of netting employed by Akha people in Burma.

It is fixed so that anything hitting against it will cause the net to collapse from its taut shape and generally fold itself over and around the bird. Sometimes the whole flock of birds can be caught if they fly into the net at the same time. They often set these up early in the morning, or sometimes in the evening. These are times when the birds cannot see the net very well, and also the favorite times for the birds to be flying. Sometimes the nets are left set all day. (p.519)

Another method called “plank-fall trap” is used to kill birds that eat rice in the paddy.

Often when they have a field far off from their village, they will pile up their paddy at an intermediate spot about half-way between their field and village. Then later on they will transport that paddy on to the village. While it is exposed in that way, the birds flock to the spot. So often they rig up a board or a series of boards nailed together, or a split bamboo section. They prop one side up with a stick which has a string attached to it. As the birds congregate under the raised board to eat the paddy, a person standing off a ways pulls out the peg, and then quickly runs over and jumps on the board or bamboo section, to make sure all of the birds that were caught under it are killed. (Ibid:p.521-522).

Goodman (1996:83) describes the mechanism of an Akha noose:

...the bird trap made from a bamboo stick half an arm's length, to which a taut string is attached from a long piece of split bamboo which has been bent for tension. On the base stick is mounted a pin whereon the Akha fixes a grub or worm, just beside a noose. When the hungry bird reaches for the bait the slight movement is just enough to trigger the nose that slips around and breaks its delicate neck. Most Akha houses store at least a dozen of these and take several to the fields when they go to work there for the day.

Hunting is not only an economic activity. Lewis mentions that whenever he asked the men to choose the subject to talk on, they usually choose to talk about hunting. “Not only do they hunt for the meat they get - they love the excitement and challenge of it, along with the

companionship” (Lewis 1970:523).

Besides using wildlife for food, the Akha make use of various animal parts for other purposes. Dried bats and sparrows are common ingredients found in the Akha pharmacopoeia (Goodman 1996:65). Monkey hair (gibbon hair according to Goodman 1996) is used to decorate women’s headdresses and make infant toys (Bernatzik 1947). Deer antlers and skins are used to make sitting stools that are “comfortable, durable and a visible trophy of their prowess” (Goodman 1996:83).

7.2.3 Lisu

Shrock *et al.* (1970) indicate that hunting is not as significant as agriculture and livestock for the Lisu. Nevertheless, others suggest that it plays a significant role in Thailand and China (Lebar *et al.* 1964; Ma Yin 1989). The importance of wildlife is reflected in the pioneering practice of the Lisu when they took the abundance of game into account when they looked for new fields (Morse 1974:49-50). As with other hill groups, economy is not the only explanation for the Lisu hunting, as commented by Dessaint (1972:81-2): “Although hunting involves considerable expense in time, firearms and ammunition, the Lisu regard it as relaxation not work...Game is highly welcomed as a supplement to the normal diet, quite out of proportion with its actual contribution.” He goes further and claims that “the importance of hunting sometimes leads even poor Lisu to forego good agricultural lands for a village with fine hunting territory, or to spend less time than the optimum in agriculture, in order to hunt.” (Dessaint 1988:40).

Hunting was “avidly pursued by all able-bodied males” (Lebar *et al.* 1964: 29) and the Lisu were known to be excellent marksmen (de Beauclaire 1970), “knowing potent poisons to use on their arrows” (Young 1974:33). Lisu men in China were trained in archery from childhood and always carried crossbows wherever they go (Zhang and Zeng 1993). In Thailand, “Because of their extreme fondness for hunting, Lisu men and boys seldom venture outside their village without a firearm, crossbow or slingshot (Dessaint 1972:81). Tools such as decoy birds, snares and hunting dogs are used (Dessaint 1972) but the favourite of all is

guns. Young (1974:33) remarks that the Lisu, “invest eagerly in new guns with the cash they earn from opium. It is considered more important to buy another gun (or rifle if possible) than to buy new clothes for themselves.”

Some Lisu do not kill elephants because the animals are considered “good trail-makers” (Morse 1974:118). Among the animals reported to be hunted by the Lisu are tiger, bear, deer, wild cats, boar, fox, monkey, squirrel, flying squirrel, jungle fowl, hare, bird, and occasionally elephant (Lebar *et al.* 1964). Monkey meat was considered ‘tree pork’ (Morse 1974). Pangolin and jungle monitor are also pursued using hunting dogs. The dogs chase these creatures into burrows where the people can easily capture them (Wongprasert 1991). The Lisu at the border between Tibet and northern Burma hunt musk deer for the scent glands (Morse 1974:118). Wongprasert (1991) reports that during the end of the rainy season, 2-3 bears often came to eat the Lisu’s corn early in the morning. Each year one or two bears would be killed by the villagers. The bear gall bladder was used for medicine but the meat and other parts were discarded.

Tigers were sought for their presumed medicinal values. Wild cats, civets and wild dogs were normally caught in traps. They were killed because they preyed on domestic pigs and chicken. Carnivores were not eaten as they had a pungent smell (Young 1974; Morse 1974). Lisu hunters in the late 1950s to early 1960s occasionally sold hides and skin from deer, civets, tigers and monitor lizards to lowland merchants (Wongprasert 1991). The prices of deer in the late 1970s reported by Wongprasert (1991:40) was 1,100 baht each. Other animals included wild pigs, which were sold at 1,200 baht each, jungle fowl at 60 baht and pangolins and snakes at 100 baht.

7.2.4 Karen

Young (1974:78) describes Karen men as, “avid hunters (who) enjoy the chase in the same spirit that Lahu men do.” This corresponds to Mischung’s (1986:72) description: “Hunting is a favourite spare time activity of Karen men, who rarely fail to take their muzzle-loading guns with them whenever they walk to a distant field or look after their water-

buffaloes and cattle during the rainy season". They also engaged in animal drives (Fink 1994).

Karen are reported to hunt a wide variety of animals from elephants to wildcats, mice, snakes, and birds (Shrock *et al.* 1970:827). Hamilton (1976:52-3) studied a lowland Karen village in Hod in 1960 and comments that

Both monkey and gibbon are considered good to eat. These anthropoids are caught and either eaten or, more often, sold from time to time. In general, however, the larger of the wild animal population is not very significant to the Karen in the Hod plain. Small animal life, on the other hand, is much more important. Squirrels of various types abound and are eaten...In slack times, a group of men will hunt birds and squirrels to add variety to the menu...A very large lizard is hunted for food; a small species is often caught by using a snare and added to the family curry. A few snakes are poisonous, and a few are eaten at times. Honey is considered a delicacy. A large variety of insects, including beetles and ant larvae, are collected and used in curries.

A more recent study indicates that the Karen in Mae Sariang district hunt deer, serow, squirrel, wild boar, bamboo rat, jungle fowl, coucal, hawk, etc. (SRI and LCDI 1994:14). A Thai poet, Sunthornphu, was given salted lizard (probably *Varanus bengalensis*) and roasted dusky leaf monkey (possibly *Presbytis obscura*) by local Karen in Suphanburi province in 1841 (Renard 1980:101). Young (1974: 78) reports that "Turtles and lizards rank among the most relished wild meats."

Karen boys, similar to other highlanders, shoot rats and birds and learn to use crossbows and make traps (Trakarnsupakorn and Arun waraluk 1991). A Karen elder from Mae Jaem told of his childhood:

I followed my mother everywhere with the little bag and a slingshot. I was so thrilled when I got a bird. When we reached the field, I went straight to the traps to see if we caught any rats. (Boyos and Piraban 1989:17)

The hunting tools used by the Karen includes slingshots, blowpipes, crossbows with poisoned arrows and guns. Young (1974:79) describes the Karen as "expert in catching wild animals and birds with snares and decoys. Particularly common traps in the old days were those with pointed objects (*Salao*) and those with falling weights (*Katam*) (Garrett 1929).

Hamilton (1976) reports that there were virtually no guns in his study village in Hod. Home-made cross-bows were the only hunting tools (beside slingshots) in his study village. Therefore, large animals were rarely caught.

Recent reports on Karen hunting-sometimes contradict the above observations. The abbot of Wat Saphan Phong at Thung Yai Naresuan Wildlife Sanctuary stated that Karen do not kill elephants, tapirs, gibbons or deer (Singhasakorn 1996). Young (1991:137) claimed that he initiated the taboo against killing hornbills among the Lahu, which later spread to the Karen and the Lisu. However, it seems that the idea has been around longer than his claim. The Karen saying, "A dead hornbill makes seven fig trees lonely, a dead gibbon, makes seven forests dreary" or "One gibbon dies, seven forests cry in grief; One bird is lost, seven Banyan trees are in solitude," indicated the Karen aversion against killing these two families of wildlife (SRI and LCDI 1994; Thongmak and Hulse 1993; Trakarnsupakorn and Arunwararak 1991; IMPECT and CCTMD, n.d). Hornbill and gibbon are believed to possess "souls" (Sarn Lanna 1994). Birds that have beautiful calls or are closely associated with humans in Karen myths are prohibited from being hunted. These are drongos, koels, vultures, woodpeckers, minnivets, crows, owls, hawks and swallow (Moothoo, n.d Trakarnsupakorn and Arunwararak 1991). Birds such as cuckoo, doves and pigeons are believed to bring peace to a household and therefore should not be killed (Ibid.). Pythons are considered a form of forest deity and are not killed (Ibid). Linsangs and wild fowls are not hunted because those who eat them together may not see each other again (Ibid.). The Karen do not hunt in sacred areas around salt licks (Sarn Lanna 1994: 34) nor in head water forest or village burial forests (*Pa cha*) (Trakarnsupakorn and Arunwararak 1991). According to Trakarnsupakorn and Arunwararak (1991:8), the Karen have rules which allow each hunter one gaur per year (today gaur have been extirpated from most areas in the North). They believe calamity will fall upon the hunter's family if the quota is exceeded.

The contradicting reports may be a result of local religious differences between Karen in various parts of Thailand. Karen in the Umphang district of Tak Province in western Thailand and in the Li district of Lam Phun Province in the North are reportedly vegetarians. The former group follow a rushi cult, the latter are followers of Khruba Wong, the disciple of

the revered monk, Khruba Sriwichai (Thongmak and Hulse 1993; Mr. Bandit Sukchote of the TRI, Lamphun branch, pers. comm.).

7.2.5 Mien

Zhang and Zeng (1993) reported that hunting was a significant economic activity of the Mien in China because it provided protein and helped protect the crops from being damaged by wildlife. In Guangxi Zhuang Autonomous Region, the Mien engaged in large scale capture of a migratory bird (referred to as “snowbirds”) during August and September. According to Zhang and Zeng (1993), a Mien family catches up to a thousand or more birds per year. The birds are preserved in jars and served as a delicacy and also used as a home remedy for dysentery.

In Thailand, the Mien hunt in groups during agricultural lag time. Hunting trips last for 2-3 days. The animals hunted include wild pig, deer, bear, wild buffalo, gaur, monkey, langur, loris, civet, porcupine, monitor lizard, squirrels and birds (Chotichaiphul 1991). According to a Mien reporter, Chotichaiphul (1991), each hunter can take no more than 5 large animals a year. If he exceeds this limit he will meet with bad luck such as being shot at by other hunters or being wounded by wild animals. A common practice is to stop at the 4th animal. The fifth animal is normally kept as a “reserve quota.”

7.3 Hmong's Relations to Wildlife

The Hmong consider wildlife to be under the care of the spirit *Txiv Lauj* and hunters worship this spirit for their luck in obtaining plenty of meat (Bernatzik 1947). When large game is killed, an offering must be made to the animal spirits. Today, some Hmong still adhere strongly to this belief as reflected in an explanation given by one hunter interviewed in the late 1980s

The boar and gun spirits are so important. Good and bad depend on the spirits. We have to get some white paper, incense and also cooked meat from the boar, and rice and drinking water. I put everything with the gun and the boar's

head on the floor just inside the door. Then I invite a village elder who knows about spirits to come and tell the spirits, the pig's spirits, "It's your meat that we are eating, and we burn the white paper for you."...Then I must say to the boar's spirit, "Excuse me for killing you. Do not remember that it was I who killed you, forget everything that happened today." Then I must say to the spirit of the gun, "Last night you shot a boar, today we eat the meat of the pig from last night. I have to eat, you have to eat. Next time if we go hunting and you see a wild boar, make sure it is a boar. If you see a person, make sure it is a person. Do not kill by mistake. Do not kill by accident. If you see a pig, shoot the pig and make sure the pig is dead. If you go off by accident, do not hit anything."...If the spirits cannot eat, nobody can eat.

It is a Hmong tradition that you make offerings to the spirits every time you get something. If somebody thinks the spirits are not too important and he doesn't give anything to the spirits, then the spirits will do something bad to him the next time he goes hunting. In the past, hunters had to check the day to see if it was a good day or a bad one for hunting. There were special old men to check the days. Now it is not too important.

(Boyes and Piraban 1989:140-1).

Some rituals performed among the Hmong hunters are similar to those performed by other groups. These include smearing the weapon with blood of the slain animal or glueing hairs or feathers to the gun in order to maintain the potency of the weapon (Bernatzik 1970:254).

Chinese Hmong believe that the deads can be reborn as animals (Graham 1954). Hmong tales often depict stories of human-animal transformation (Johnson 1985). The Hmong are fearful of a spirit, *dab tsov si*, who appeared in the form of wild-cats (Ibid.). Another spirit, *Dab phim nyuj vais*, takes the shape of different animals: a monkey with long red teeth, a bear, or a lone gibbon (Ibid:65). Large snakes can turn into dragons and "steal a person's soul with magic power" (Johnson 1985:156). When a Hmong person kills a small snake he must make sure the animal is dead so it will not return as a big snake and take revenge (Ibid). According to Johnson (1985:156), "The Hmong never eat snake meat...If a snake gets inside the house, it is driven out but not killed, for it may have been sent by evil spirits, and killing it would only make matters worse. Or the snake may have been sent by the deceased parents of the household head (*dab niam dab txiv*), as a message that they need something". Bernatzik (1970) also found that the Hmong associated black squirrels with bad omens.

7.3.1 Social Aspects of Hunting

When I was twelve, my elder brother liked to hunt...I liked to go with him for fun...I learned very quickly. I became a better hunter than my brother.

(Laojongser, in Boyes and Piraban 1989:138)

Hmong boys are socialized into hunting at an early age. The first toy a boy used to receive was a toy crossbow. Bernatzik (1970:349) comments that "The boys are barely able to walk when they learn to handle this weapon" and they put them into use as much as in to play. Small boys catch lizards, birds and small rodents which they roast and eat with friends as snacks or bring to their families for dinner (Ibid.) During his field work, Benatzik asked the Hmong boys to draw pictures. He found that boys often depict hunting scenes in their drawings.

When the boys reach puberty, they join their fathers, brothers and male friends to hunt. Male friendship is formed around the hunting. It is an exercise of sport and leisure as much, if not more than, a quest for food (Shrock *et al.* 1970; Savina 1930). Young (1974:43) agrees that the Hmong are comparatively self-sufficient and thus hunt rather "for sport and pastime than as a necessity." There are, however, observed differences between the Hmong living in Indochina and in Thailand. Bernatzik (1970:460) noted that hunting was less significant for Indochinese Hmong than Thai Hmong because the economic conditions were better for the people in the former region in the 1930s.

In the past, Hmong farmers often combined guarding their rice or maize fields with hunting. During the time when the corn was producing tassels, farmers spent the nights in the fields to drive off or shoot bears, wild boars and monkeys that came to eat the produce (Savina 1930:217, 230). A forty-two year-old Hmong hunter explains:

Early in the morning when there is no rain, the people in the village go to the fields...Sometimes they see tracks made by big animals. Everybody is experienced at recognising animal tracks. When they see the tracks, they come back to the village to tell the hunters. Then the hunters get their guns, and some plain rice, salt and chillies and go out to follow the tracks. Sometimes the hunters have to follow the animals very far, until the animals are tired from being followed and not being able to stop and eat. Sometimes the animals can't

eat for three or four days. They get very tired and can't walk properly and have to stop for a while in an area of thick jungle.

The hunters know where the animals are, they know the animals are tired. They can see that the tracks go into the thicker jungle and then stop. The hunters, many people, split up and stand around the area where the animals are. Then they send in the dogs. The dogs bark and frighten the animals and make them run from cover. The person who shoots and kills the animal keeps the head and half the body. All the rest of the hunters share the other half. Sometimes there are ten or fifteen people who have to share.

(Boyce and Pirabon 1989:134-5)

The literature does not describe how hunting is perceived by the Hmong communities. However, since successful hunters could bring significant amounts of meat to their families, and sometimes also to extended relatives and guests, hunting probably led to enhanced status in the community. According to Johnson (1985), a hunter may give a leg of a large game species to the village chief. Therefore, he is likely to gain favourable recognition in the village. Bernatzik (1970) tells of a Hmong hunter who was so skilled that he could marry three wives, a practice normally reserved for a man of high status and wealth. There is no evidence however that such a case is common. According to Cooper (1984:51):

The food-sharing rationale hinges on hunting and pre-supposes lack of knowledge of food preservation techniques. It may have once had a certain application to the Hmong lineage, when hunting was a more important element of Hmong economy. Until recent years members of a single lineage would hold special units in which the women and children would burn a hillside in a horse-shoe fashion, leaving only one exit for game, which was then shot by the men and divided up equally. Vestiges of this form of hunting were witnessed at the time of the annual burning of the fields in March. However, hunting is of small significance to contemporary Hmong economy precisely because the increase in village size has denuded the environs of most villages of any significant game. In the rare event that a man does kill a large animal (a wild pig or deer) it might be shared with any kinsmen present in the village, but this is not required behaviour. It is more probable that after the family has eaten its fill the remainder will be dried over the fire—a simple process that allows meat to be kept for months without deterioration.

Wildlife trade can also contribute to the economy of some Hmong individuals. De Beauclair (1970:50) talks of wildlife trade among the Hmong in China in the 1940s, “A

monopoly is held by the Miao for certain products and medicines, as bear paws, and gall bladder, the pouch of the musk deer and various skins of wild animals”. However, he went on to state that these wildlife parts were collected by all mountain groups. The Hmong and other tribal peoples sold animal parts at markets where traders from all over China came to purchase them (Ibid: 27, 74). The income was normally used to obtain goods from the lowlands, such as iron pans, nails, matches, sulphur, wax, silk thread and salt. At a Hmong village in Wiang Pa Pao district, Chiang Rai province, wild pigs and barking deer were supplied to lowland clients every two weeks during the late 1970's (Wongprasert 1980:38).

Some hunters accumulate considerable wealth through the wildlife trade (Bernatzik 1947; de Beauclair 1970). Bernatzik (1970:464) describes a 45-year-old man who killed more than 20 elephants, two rhinoceros and an uncountable number of deer and buffalo. Through trading wildlife, he was able to accumulate considerable wealth.

7.3.2 Hunting Methods

*Do Lang led the dogs out to chase the rabbits.
Do Ndzeo released spotted dogs to chase raccoons...
Do Lang poked into a cave in which a tree was growing and saw a raccoon inside.
Do Ndzeo chased a rabbit out of a grassy hill...
Do Lang then lighted a fire in the mouth of the cave to smoke the raccoon out...
Do Ndzeo also used fire to burn the grass...
The fire of one of them burnt the grass so that there was smoke over all the big hill.
The fire of the other went directly into the cave and filled it with smoke.
The raccoon then could not hide inside and came out and ran.
He then released the dogs to chase it.
The rabbit also was unable to sleep and was leaping toward the big mountain opposite.
The dog were released to chase the rabbit.
Do Lang ran to the crossroad and waited.
When the raccoon ran in front of him,
with one grab he seized the tail of the raccoon
and struck the raccoon against a rock until it was killed.
Do Ndzeo also waited below the mountain.
He seized the rabbit and killed by beating it against a rock .*

(A Hmong song, Graham 1954:110)

Hmong men are expert on wild animal behaviours. Bernatzik (1970: 262) who participated in hunting with the Hmong in the 1930s described their knowledge:

The Meau are familiar with the habits of game to a remarkable degree, naturally far more so than we Europeans...They know the weather and the wind directions in relation to the haunts of the game, they are familiar with the scarce sources of salt in the primeval forest, which are regularly visited by all the wild animals; they know whether and at what time of the day or night the various species of animals seek out the water holes or the salt licks; they deduce from the tracks of a wounded animal when it will take cover; in a word, they know the answers to all the questions that are involved in success for a hunter in the primeval forest.

According to Bernatzik (1970:462) the Hmong did not hunt in large groups but in small parties of two to four men. The Hmong in Tonkin were said to organize group hunting only when tigers had been attacking livestock (Savina 1930:231). Traditionally, the Hmong avoided hunting alone (Bernatzik 1947). Hmong homemade weapons allowed the hunters to fire only at close range thus leaving the users vulnerable to attacks from large, angry animals.

De Beauclair (1970), however, reported that the Hmong in China hunted in large groups using hunting dogs. This has also been a common form of hunting in Thailand. Cooper (1984:51) alleges that "Until recent years members of a single lineage would hold special hunts in which the women and children would burn a hillside in a horse-shoe fashion, leaving only one exit for game, which was then shot by the men and divided up equally." A Hmong hunter explains how group hunting is organized:

In the past we preferred to go hunting in big groups. Sometimes we caught many animals...When we hunt in big groups, we always have one person to be the leader. He's usually quite old. He has to be clever, he has to make the plans. He tells the other hunters where to stand.

If a person moves when they are waiting for the animal to break from cover, and the animal goes towards him, and he shoots and misses, then that person has to pay a fine. If you miss your chance to kill the animal, you are fined a pig. If you do not have a pig, you have to give a chicken.

(Boyes and Piraban 1989: 135)

According to Bernatzik, Hmong hunters in Thailand in the 1930s did not use fire to drive animals. He reasoned that the thick damp forest did not allow such burning in the Hmong environment. However, data from Tonkin shows that the Hmong there have taken advantage

of their newly burnt fields to pursue wild animals. Savina (1930:230-31) told of a hunting strategy where hunters spread salt on newly burnt areas.

Other hunting strategies include using noises to attract animals by shaking pellets in a bamboo trunk, blowing on blades of grass or leaves. Some hunters smeared elephant dung on their bodies when stalking elephants to disguise their scent (Bernatzik 1947). Sometimes hunters waited near natural salt licks or water sources or inspect droppings and disturbed grass. They also built blinds and platforms over trails. If big cats had killed their livestock they would wait near the carcass. Although, Bernatzik claims that Hmong only dig dead falls in the riverbed to catch tigers, Savina (1930:231) describes large dead falls dug along the path frequented by rhinoceros in Indochina.

Hunting was practised all year round but more intensely in the dry season after opium harvesting. The hunter commented:

The season is not too important. I can go hunting all-year-round... There are a lot of animals in the wet season but I'm too lazy to go. It's too wet and cold, and too difficult to walk. In the cold season, the animals are cold and come out into the sunshine (Boyes and Piraban 1989:138).

The widespread use of guns however has become a safety concerns among hunters. The same hunter comments:

I like to go alone. It's easier to walk when I'm alone. I have to be careful all the time. But I don't have to worry about accidents with guns... Sometimes when you are walking, it's possible for a creeper to catch on the trigger and fire the gun by accident. The people walking in front or behind can be shot by mistake. People have to be careful when walking along a small track with very old guns, home-made guns, because the guns don't have safety catches.

(Boyes and Piraban 1989:139)

7.3.3 Hunting Tools

The Hmong were different from other hill groups in that they had long possessed the skill of making firearms. According to Chinese records, the Chinese general Huang Ming, took refuge among the Sheng Hmong in Kwangsi for some twenty years at the end of the 17th century, during which time he taught the Hmong to forge guns and make gunpowder (de

Beauclair 1970). It is believed that the Hmong acquired their knowledge of gun smithing during this period. Nevertheless, in Thailand, the preferred hunting device until the early part of this century was crossbow with poisoned arrows. Home made guns were used only for stalking large animals (Bernatzik 1947). By the end of the 1930s, the flintlock gun gradually replaced the crossbow (Bernatzik 1947: 525).

Crossbow. The crossbow was once the most popular hunting tool among all highlanders (Cooper 1984). This tool was suitable for short range shooting of small animals such as squirrels, mice, birds and for ambush hunting. Skillful archers could also hunt ungulates, elephants or even tigers with poisoned arrows (Bernatzik 1947:392-3). The crossbow was almost as accurate as the muzzle-loader gun and it was quicker to load and also quieter (Cooper 1984:39).

Crossbows are made from hard wood. The arrows can be made of wood or bamboo with iron, copper or aluminum points. The string is made of hemp or rattan fibre. The roots of a woody vine *Gelsemium elegans* or the latex of *Antiaris toxicaria* provides poison for the tip of the arrows (Anderson 1993:88,89). Each crossbow is created to fit the owner's size and strength. As mentioned, boys learn to handle this tool early in childhood. The prototype used by children is shown in Figure 7.1 and that used by adults in Figure 7.2.

Figure 7.1 Children Crossbow

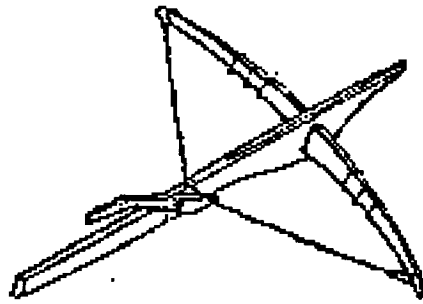
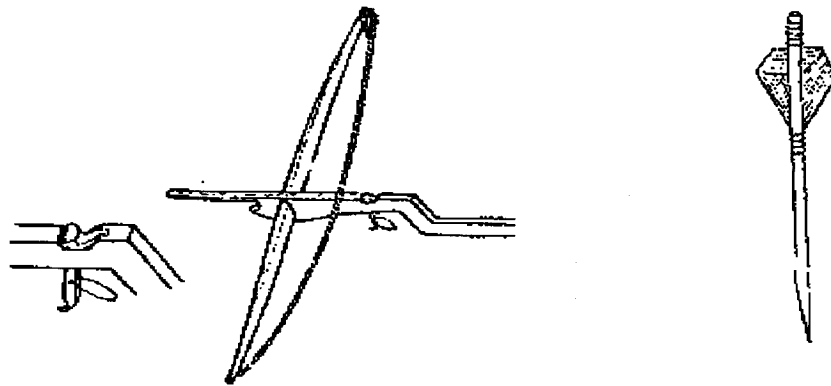


Figure 7.2 Adult Crossbow



Source: modified from Bernatzik 1970:530

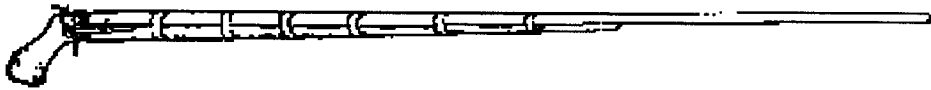
Guns. Hmong gunsmiths forge their own guns from iron obtained from traders. The ammunition is composed of gun powder, homemade lead bullets and bamboo fibres (Bernatzik 1947). The gun powder (*tshuaj tua phom*) is a mixture of charcoal, sulphur, bat guano and either commercial potash or saltpetre. It is loaded through the front of the barrel. Bamboo or iron ramrods serve to pack the powder into the barrel. After the powder is securely packed, homemade lead bullets are loaded through the front of the barrel. Some scrap materials such as bamboo strips or rags are pushed into the barrel to serve as a plug. Sparks created by striking flint against a metal snap ignite the powder in the barrel and fire the gun (see Figure 7.3c). The earliest model of the Hmong gun did not have a shoulder stock (Figure 7.3a.). The

gun was dangerous as it could recoil violently and hit the shooter.

The increasing availability of modern guns after World War II has significantly reduced wildlife populations (Kunstadter and Kunstadter 1992). The same situation was reported from Laos during the Vietnam war. According to Johnson (1985:145), “About 1960, modern rifles were distributed in all Hmong villages (in Laos) for resisting communist attacks, tigers and bears have all but disappeared from the region.”

Figure 7.3 Hmong Gun

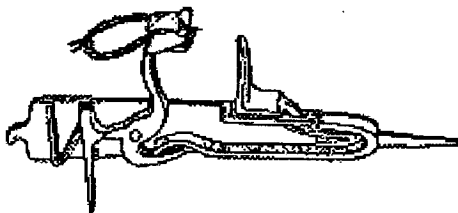
a



b



c



Sources: modified from Johnson 1985, p.93, Bernatzik 1947, p. 526.

Traps. Hmong boys learn to set traps from a young age. The nooses are used with decoy birds and bait to catch pheasants and partridges. Bernatzik (1970) did not find that nets were used by the Hmong in the village he studied in Nan. He reports that the more popular traps were the self-firing traps using crossbows.

7.3.4 Types of Animals Hunted

Among the animals hunted by the Hmong were leopard, tiger, badger, marten, boar, muntjac (barking deer), mountain rats, birds, deer, elephant, rhinoceros, turtle, wild buffalo, gaur, fox and civet (Savina 1930; Bernatzik 1947; de Beauclair 1970; Shrock *et al.* 1970). The preferred species in the Tonkin region in northern Vietnam were ungulates, boar and bears (Savina 1930). Bernatzik reports that the Hmong in Northern Thailand were enthusiastic hunters of rhinoceros and elephants but also hunted virtually any other animal.

Everything that inhabited the jungle, as long as it has hair or feathers, is regarded as game by the Meau. Everything is used from the mouse to the elephant, from the small mammal to the wild peacock, with the exception of the large black squirrel, although there are, of course, considerable gradations in popularity. Elephant, rhinoceros, deer, muntjac, and wild pig are especially desired. Birds, on the other hand, are less so, because they provide too little meat, as the informants said. Lizards, snakes, and worms, on the other hand, are not eaten...Literally everything that comes within shooting range of the hunter, male animals as well as females, gravid animals as well as the young is shot. (Bernatzik 1970:461-462)

According to Bernatzik “the passion for hunting induced the Meau to drop their extremely important field work in order to track down a stray elephant bull”. For this reason, “within a short time after the founding of a village the game in the immediate vicinity, and soon in a wider area, is exhausted” (Bernatzik 1970: 462).

By the mid 1970s, a daily bag consisted at most of 1-2 small birds (Cooper 1984:39). Large animals were only obtained from expeditions to areas far from the villages. The pauperization of wildlife seems to be widespread since the 1970s. This is not, however, unique to the Hmong. Reduced hunting success is also reported among the Lua (Kunstadter 1978) and the Karen (Mischung 1986).

7.4 Summary

This chapter has reviewed the relationships between highlanders and wildlife in a historical perspective. One aspect found in the literature was the widespread beliefs about animal spirits, particularly in larger animals such as tiger, bear, monkey, gibbon, elephant, hornbills, bird of prey and snakes. Wildlife was ubiquitous in names, myths and folktales among the highlanders. Hunting served practical needs as a protein food source, as well as being an important part of socialization. It brought prestige to successful hunters and strengthened ties between members of the communities.

All highland groups in northern Thailand were actively engaged in hunting. The literature shows that highlanders from all groups were skilled and enthusiastic hunters. They shared knowledge, techniques, tools and rituals.

The Hmong held several beliefs regarding wildlife. Some wildlife was considered spirited beings. These included larger mammals such as tiger, wild pig and deer. Hmong songs and folktales often depict transformation between humans and wild animals. Their beliefs in animal spirits did not prevent them from killing the animals. Instead, they dealt with the spirits by appeasing them with rituals, apologies, and offerings after the killing.

The Hmong utilized several hunting methods. Group driving using dogs was widely reported both in China and in Southeast Asia. Only Bernatzik's study did not find this method to be prevalent. Traps were also made to capture a variety of animals. The most common hunting tools among all Hmong men were crossbows and more recently guns. With the exception of snakes, black squirrels and clarions, the Hmong seem to have eaten a wide range of species, from elephant to rodents. They also traded wildlife in the lowlands, both in China and Thailand.

Chapter 8

Hmong People and Wildlife: The Current Situation

In the previous chapter, the historical relationships various ethnic groups had with wildlife were reviewed to provide a general picture of the situation in the highlands. This chapter focuses on current hunting, wildlife use, wildlife trade and indigenous conservation in the two study villages, supplemented with the information collected from more general interviews in other villages in Omkoi, Chiang Dao and Mae Hong Son.

8.1 The Socialization of Hunting

A Hmong woman in her early 30s recalled when she and her male cousin received their first toys at the age of five. She was given a small basket to carry on her back while the boy received a crossbow. Thirty years ago, the boys would “play” with their crossbows (*hneev*) until the age of 13 to 14 when they were allowed to use the guns. Today few children still receive crossbows from their elders. The easily obtainable slingshot is a more common toy, good enough to sharpen their marksmanship. Although a few boys may graduate from slingshot first to crossbows, the tendency is to turn directly from slingshots to guns. The age at which they begin to use guns is also said to be a few years earlier than what it used to be. We found a boy reporting to handle a gun as young as nine. Most, however, begin shooting in their mid teens (Table 8.1).

The first animal hunted by boys between the ages of 6 and 9 was usually a bird. Boys in their early teens could accompany their fathers or older brothers on short hunting trips, trapping birds, shooting squirrels, looking for porcupines, jungle monitors and other small animals. Boys at this age already contribute to the family diet. A 13-year-old son of our host family in Hod brought home three small birds for dinner one night. The birds were the size of a robin and were plucked clean by the time they reached the home. They were boiled, finely chopped and made into *laap*, a spicy lowland dish.

Table 8.1 The Age that Hmong Boys Reported Using Guns for the First Time.

Village	No. of Boys Being Interviewed (age)	Age when first use gun					
		9	10	11	12	13	Never
Naan	9 (12-15)			1	2	1	5
Hod	9 (10-12)	1					8
MaeHongSon	6 (13-16)			1		1	4
Chiang Dao	4 (13-14)			1	2	1	-
Total	28	1		3	4	3	17
%		3		36			61

Source: Interviews 1996

Boys in their mid teens often form groups and make a day trip to the forest. Animals shot in the forest can be eaten there or brought home to be shared with the rest of the family. At this age, hunting trips are clearly a social occasion. Hunting is the time the youth spend with their mates. They shoot anything that comes into their path, not yet seriously pursuing difficult animals. A few older boys begin to join the adult hunting groups and may develop skills that are exceptional among their peers. These boys return home from the lowlands during school breaks and take part in hunting for fun. Most boys have a chance to handle at least a homemade gun by the time they reach 14-17 years old. The youth are said to be keen on hunting because of these newly acquired weapons.

Most boys who do not further their education in the lowlands get married in their late teens. The newly-wed couple normally lives with the groom's parents, although they maintain separate cash crop fields. The young families usually have two or three children by the time they reach their late 20s. The majority of the men interviewed said they reduce the hunting frequency because of family responsibilities. Only a few individuals who develop a special liking for hunting continue as regular hunters and acquire more powerful guns if they can afford the price. The villagers indicated that only two to three men in Hod are considered enthusiastic hunters. In Naan, four or five men were said to be in this category. These men

who “like to go to the forests” include a few opium addicts who rely heavily on wild meat for food. However, because of their health, they concentrate on small animals that are easy to catch, generally rodents.

Individual hunting frequency varies greatly. Most men stop hunting by the time they turn fifty. The villagers suggested that the frequency of hunting depends on the time available from other economic activities, the quality of the weapons, the amount of wildlife in the area and personal preferences. Table 8.2 shows some examples of hunting frequency reported in Naan and Hod.

The economic status of the exceptionally poor and exceptionally rich are noted, using mainly the appearances of the house condition and belongings (trucks, TV, motorcycles, etc.) as clues. In general, respondents indicated that their hunting frequencies have reduced over the last ten years. This roughly coincides with the beginning of cabbage cultivation. However, it is possible that “ten years” is simply a catch phrase. Most respondents were inclined to talk about reduced hunting frequency or frequency of the past instead of current hunting frequency, perhaps for fear of incriminating themselves. The data is not adequate to make conclusive remarks about the economic status and hunting frequency. However from the interviews it seems that the exceptionally wealthy do not have much time to hunt while the exceptionally poor, drug addicts, routinely hunt for subsistence.

Table 8.2 Hunting Frequency by Some Villagers in Naan (N) and Hod (H)

Econ	Age	Village	Year							
			-----1960-----	-----1970---	1975--	1980---	1985---	1990--	1992--	1994--1996
w	18	N								regularly
m	25	N					-----	2/day	stop
m	25	H								regularly
m	30	N				----very often-----			1/yr
p	33	N						-----	30-60 days/yr	
w	35	N						less.....		
m	35	N			20+/yr-----		less.....			1-2/yr
p	35	H					migrated from other area.....			4-5/yr
m	36	N						less.....		
m	38	N				-----	2-3/yr.....		once every 2-3 yrs	
m	39	H							every 1-2 days	
m	39	H							stop	
p	44	N				-----almost everyday-----				
w	44	H						-----	stop	
m	45	H					lessen.....		stop	
p	57	N	every 3-4 days-----						3-4/yr
m	57	N						-----	stop	
m	59	N						-----	stop	
m	67	N						-----	stop	

w=wealthy,

m=middle,

p=poor

Source: Interviews 1996

8.2 Hunting Methods

There are similarities and differences in hunting methods between villages. For example, animal drives by a large group of people is a common method in all villages except the village in Mae Hong Son where, for religious reasons, group hunting is no longer carried

out . Large group hunts are done more frequently during agricultural lag times, from January to April, and whenever large wildlife species (e.g. barking deer, wild pig, serow) are spotted in the vicinity.

I was once allowed to follow such a hunt in Naan. The following is an account of that experience.

April 17, 1997.

There were 12 men in the group ranging in age from late teens to men in their 40s. All the men carried their own guns, muzzle-loaders or shotguns, except for one man who owned two hunting dogs. The dogs were thin and have short reddish brown hair. They didn't look much different than stray dogs in Chiang Mai temples. The hunters started out around six in the morning, mostly in trucks and motorcycles, to a place approximately 5 km from the village. I hung on to the back of a teenage motorcyclist who drove swiftly along the thickly fogged dirt road. We parked at the edge of the road and walked on the path through mostly old swidden that had turned to grassland. Soon we met the rest of the group. The dog went ahead and started to bark. The hunters ran after the dog, at different paces. The group were scattered. The faster men went up the next hill while the slow ones were half a kilometres behind. I stayed with the slow ones because I did not want to be in the path of the gun barrels that were pointing in all directions in the front group and trying to be less intruding since they were not thrilled to have me in the first place. Soon that group disappeared behind the next hills.

We kept running in burned fields, through some bamboo groves and *imperata* grassland. The men were shouting and the dogs were barking noisily. After a while, some one shouted that the dogs saw a hare, not a deer. A few men went after the hare and someone fired a few shots but missed the animal. After an hour of running, the slowest man started to complain that this was a waste of time. He looked exhausted and out of shape. The owner

of the dogs, who did not run as the others, commented that the dogs were no good. Some of the men agreed. It seemed to me that the dog owner did not have to spend as much energy as the others, as his share of the work was to bring his dogs to aid the hunting. By midday and with no results, the men began to break up into groups. The young ones disappeared, probably to continue on their own. The fast runners were going behind another hill to put up fences for their cattle. I was not aware of any previous intention to combine the hunt with other business, although it might have been a spontaneous decision. They would not return to the village until late evening. I had no supply of food or water so I returned to the village with the slowest man.

Since large animals are becoming scarce, group hunts no longer occur frequently. A small hunting band is more common especially among young men. This type of hunt happens throughout the year. Solitary hunting, on the other hand, is only practised by keen hunters. These hunters may look for specific animals such as jungle fowls, particular birds, or they may go for a trip to the forest, hunting any species they find. Another type of solitary hunting is what might be called “on-the-way hunting”. Older men said that 20-40 years ago they hunted almost every day on the way to the fields in the morning or after work in the evening. This was possible when fields and forests were adjacent. Today fields cover a large area and the forest edge may be quite far.

8.3 Hunting Tools

I have my father's gun. He bought it from some Yao people. He paid for it with silver coins, not with Thai money. It was very expensive. It cost thirty-two haeng. That's about one hundred thousand baht in today's Thai money
(Laojongser, in Boyes and Piraban 1989:138)

The gun is the most common hunting tool, owned by almost every Hmong household.

The crossbow, on the other hand, is practically obsolete. None of the young boys interviewed indicate ever using crossbows. Most began with slingshots and proceeded to homemade guns, and some to more powerful shotguns. Other tools are less significant. Certain kinds of traps are still in use, such as noose and net, mainly to trap jungle fowls and ground birds. The description of the hunting tools in the study areas are presented below.

8.3.1 Guns

The most common homemade gun today is the muzzle-loading rifle called by the Thai name *Puen Gap* (*Puen* is gun; *Gap* comes from the English word, percussion cap). There are two sub-types depending on the design. *Puen Tii Lang* (back-hitting gun) where the percussion cap is placed in a hole on the top of the gun and *Puen Nom Nu* where the percussion cap is placed on a small raised metal platform. This latter version is probably adopted from the lowland Thai. The homemade “bullets” are sometimes made by cutting the handle of a metal bucket into small rods. The propellant charge is loaded from the front of the barrel. The shape of the gun is similar to the flint-lock gun shown in figure 7.3. The gun can be ordered from Hmong gunsmiths and cost around 5-600 baht in 1996. Percussion caps were sold by *Kheet* (equals to 1/10 of a kilogram). One *Kheet* costs 10 baht and is enough for 4-7 shots.

Muzzle-loaders are still widely used, but manufactured shotguns (*Puen Luk Song*) or rimfire .22 calibre rifles (*Puen Luk Krot*) are now increasingly common. About half of the men in the Hod village own modern shot guns. The other half still uses the *Puen Gap*. In Chiang Dao, the most common type of guns is shotgun. *Puen Luk Song* requires manufactured bullets which are more expensive (35 baht each) and used mainly for bigger animals such as deer or wild boar. The prices range from 5-6,000 for a second-hand gun to over 10,000 baht for a new one. The most recent development is to use a rifle scope on the gun. Only very keen hunters have invested in this type of equipment. I did not obtain information about the kind of gun each man had, but asked these questions in a collective manner. The impression from the interviews is that owners of good guns use their weapons

more often than those who own old, cheap guns. Several informants insisted that there was no clear pattern that richer people own better guns or hunt more or less than others.

8.3.2 Crossbow

During my fieldwork, I did not see any men carrying crossbows. Some claimed that they are now used only by young boys. Young men in Omkoi said that crossbows are tools of their fathers' generation and are practically outmoded today. Mae Hong Son villagers said that crossbows were only used for archery competitions during the Hmong new year festival. One sixteen year old teenager, for example, did not know how to use a crossbow but had begun using a muzzle loader at 11. Even for shooting small animals such as birds and squirrels, the homemade gun is the preferred choice. The shape and types of crossbows I saw in some houses have not changed much from what Benezik illustrated in the late 1930s (Figure 7.1 and 7.2).

8.3.3 Traps

The art of trap making is disappearing along with the wildlife. I asked a forty-six-year old man in Omkoi to show me how to set traps. The man picked up some bamboo sticks and made 6 miniature traps of various types in half an hour. Younger men (in their 20s) who stood around to watch, all said that they did not know how to make those traps. Many men interviewed in Nan claimed that traps have not been used for the past twenty years. Likewise, the men in Chiang Dao also attested that there were too few animals to use traps effectively. Traps for large animals certainly had vanished. We occasionally ran into some men who talked about a few small traps that were still in use in all villages. These traps can be grouped into six main types described below.

1. Snare (*cuab hlua qaib* or *hlua ncaws* or *cuab koob*). Used with bait to catch birds such as partridge and wild rooster. A trigger is released when an animal touches the bait and

a string loop will catch hold of the animals' necks. Another type snatches the birds' legs (*hlua duab cos taw qaib* or *hlua teg*). Some hunters said that they also used this type of trap to catch porcupines and hares. The height and size are adjusted according to the target animals.

Rat nooses (*raaj cuab tsuag*), common among the Karen but not among the Hmong, were also used by some people. This is a portable trap used to catch mice. A string loop is placed in front of a bamboo cylinder containing the bait. The loop can also be placed around a rodent entrance in the ground (*cuab hlua naas kus* or *cuab tsuag twm*).

2. Spring lance (*cuab ntaa npuj* or *ntaa npuj*). A sharp pointed bamboo stick attached to a spring mechanism (usually a pulled-down branch or sticks) that will shoot forward and pierce the animals when disturbed. This type is used to trap animals near rice fields. I was told that this kind of trap was common for catching large animals such as deer, wild boar and monkeys in Nan twenty years ago. Today they are used for porcupines only. In Omkoi, only old people know how to make this trap.

3. Falling Weight (*ntxab cuab koob* or *cuab koob*). This trap comprises of a bait, a trigger and a heavy object such as a log or a stone. It is used to capture mice, squirrels and birds. It is not common among the Hmong. None of the young men know how to make it, although some said they have heard of it and one had seen Karen people use it. One 58-year-old man in Nan said he had seen it used by Hmong people and a forty-six year old man from Omkoi demonstrated how to make one from bamboo.

4. Glue Trap (*za cuab noog*). This kind of trap is still widely used by the Hmong. Most teenage boys learn to make this type of trap to catch green pigeons and parakeets. Wooden sticks are dipped in a gluey substance made of various plant saps such as the substance from the root of *Mussaenda parva* (Anderson 1993). The hunters place the sticks on tree branches where birds like to perch. The birds are caught by the glue and the hunters proceed to capture them alive. The highlanders today do not mix the substance themselves, but have turned to commercial rat glue (*gao dak nuu*).

5. Net. Nets are often used together with decoys or baits to capture ground birds. The decoy birds are placed in a bamboo coop and placed where birds often pass. When the decoy birds call, curious wild birds will approach the decoy and get caught by the net. Some villagers told me that they occasionally placed nets in their fruit orchard to catch bats. It is not a common practice because bats are eaten by very few people. An Omkoi villager said that the net was used in the old days to catch *Nploog* (*Atherurus macrourus*-bush-tailed porcupine) in front of their nesting caves.

6. Self-inflicting Gun trap. By attaching a snare to the trigger of a gun, the Hmong hunter can set a trap that will shoot at animals without the presence of the hunters. This was previously a common method for catching wildcats. Today it is occasionally used to shoot jungle fowl.

8.3.4 Other Tools

The Hmong have a bamboo device (*raaj dlib kauv*) which they use to imitate the voice of a fawn in order to attract adult deer. Hunters may also blow on a leaf to attract small animals. Fire was sometimes used to drive animals. Simple tools, such as a wooden stick, may be used to hit bats or porcupines in front of their caves. Squirrels living in tree trunks are sometimes pierced with sharp spears. The slingshot is widely used by the children. The children also told me that they sometimes tied strings to an insect so that they could follow it to its nest and take the insect larvae for snacks. In Chiang Dao, the villagers used poison to kill wild rats and squirrels that destroy rice and corn. Poison has also been used to kill wild dogs that take domestic animals.

The hunters make use of their knowledge about animal behaviour. They explained how the porcupine comes out from the caves more frequently on dark moon nights. The beginning of the rainy season was the best time to track animals because of soft ground. Jungle fowls are caught during the mating season (dry season) when it was easier to locate them as the male crows to attract the female. The hunters sit and wait for birds during the

tree fruiting seasons or in newly burnt fields where the fresh grass attracts ungulates. They also wait at salt licks, water holes and other key areas for wild animals.

8.4 Species Hunted in a Life Time

Information on species hunted in a life time was reported by some men in Naan (Table 8.3) and in Hod (Table 8.4). The older men had obviously hunted the highest number of wildlife in the past, but usually forgot how many animals they had killed. Teens and men in their early twenties have killed fewer large sized animals. This is certainly because there are fewer of the animals left and the youths are not as skilled as the older men. Modern education and economic changes have also led the young generation to increasingly turn towards the lowland society, giving up the traditional way of hunting and subsistence living. Men in their 30s-40s are the group that still is active in hunting whatever game is left in the areas. They have experienced the traditional subsistence life-style while growing up. The villagers in Omkoi claimed that single men were the most active hunters since they do not have family responsibilities.

Table 8.3 Numbers of Wildlife Hunted in a life time by some Naan villagers

Hunter's age	Barking deer <i>Muntiacus muntjak</i>	Sambar deer <i>Cervus Unicolor</i>	Serow <i>Capricornis sumatraensis</i>	Wild boar <i>Sus scrofa</i>	Asiatic black bear <i>Ursus thibetanus</i> / Malay sunbear <i>Helarctos malayanus</i>	White-handed gibbon <i>Hyllobates lar</i>	Phayre's Langur <i>Presbytis phayrei</i>	macaques Genus <i>Macaca</i>	Slow loris <i>Nycticebus coucang</i>	Asian wild dog <i>Cuon alpinus</i> / Asiatic jackal <i>Canis aureus</i>	wild cats Family Felidae	linseng/ civets/palm-civets Family Viverridae	Gaur <i>Bos gaurus</i> / Wild buffalo <i>Bubalus bubalis</i>
18	2			1									
25									2		4		
30	30+	1	2	8	1			8					
35	6		1			1		10+		1	1	2	
39	20-30		10+	2			8	30		10		10	1
44	10+		2	10	2			17			3	12	
56	5			7			5	11					
57			1		2	1		2			2		
57			1										
59													2
tot*	83+	1	15+	28	5	2	13	78+	2	11	10	24	3

* Total number is possibly over reported since animals were often hunted by a group of people

Source: Interviews 1996

Table 8.4 Numbers of Wildlife hunted in a life time by some Hod villagers

Hunter's age	Barking deer <i>Muntiacus muntjak</i>	Serow <i>Capricornis sumatraensis</i>	Wild boar <i>Sus scrofa</i>	Hog badger <i>Arctonyx collaris</i>	Asiatic black bear <i>Ursus thibetanus</i> / Malay sunbear <i>Helarctos malayanus</i>	White-handed gibbon <i>Hyllobates lar</i>	macaques Genus <i>Macaca</i>	Slow loris <i>Nycticebus coucang</i>	Asian wild dog <i>Cuon alpinus</i> / Asiatic jackal <i>Canis aureus</i>	wild cats Family Felidae	linseng/ civets/palm-civets Family Viverridae
15							12				
17			3								
24	1		1	4			9	1	1	1	4
25	1										1
29			3								
35	1		2								
39	3		5	1		2	3			5+	5
39	4		2	1		3			2	8	4
42	50		20+								
44		10+									
45	10+	10+	2	20	2					1	9
tot*	70+	20+	38+	26	2	5	24	1	3	15+	23

* Total number is possibly over reported since animals were often hunted by a group of people

Source: Interviews 1996

8.5 Current Hunting Level

The magnitude of current hunting is indicated by the following data on approximate numbers of animal hunted in 1996. Comparative results from the interviews with three groups: men, women and school children are shown in Tables 8.5 and 8.6. Similar data were collected from students in Hmong villages in Chiang Dao (Table 8.7) and Mae Hong Son (Table 8.8) and with some men in Omkoi (Table 8.9).

Men are generally more interested in larger animals such as wild pig and barking deer. They give less value to small animals and therefore do not remember very well how many they have killed. The children reported highest numbers for birds and squirrels as they are the main hunters of these species. Children use slingshots to get these small animals while adults with guns tended not to waste their ammunition on small animals. The significant differences in the amount of birds eaten by children and women in Hod is likely to be a result of the women's under-reporting as well as the fact that children ate the birds themselves instead of bringing them home to the families. The women were generally more reluctant to discuss wildlife use. They probably did not want to implicate their husbands in this illegal activity. They may also have less interest in wildlife in general. Cooking and eating meals are not as memorable as pursuing and bringing down animals. The discrepancy between these three groups' reports indicate the problems with the accuracy of this kind of information. Again, the numbers should only serve to gauge the magnitude and not be taken as absolute fact.

Table 8.5 Approximate Number of Animals Hunted in Naan Village

Wildlife	Reported by Men (N=23) Jan-Apr 1996	Reported by Women (N=23) Jan- Jun 1996	Reported by School Children (N=24)	
			Jan-Sep 1996	1995
birds (Class Aves)	n.a	59+	61	52
Jungle Fowl (<i>Gallus gallus</i>)	n.a	14	31	22
squirrels (Family Sciuridae)	33	59	26	41
porcupines (Family Hystricidae)	2	1	3	7
Malayan Pangolin (<i>Manis javanica</i>)	n.a	1	16	15
Monitor Lizard (<i>Varanus bengalensis</i>)	5	18	33	5
turtles (Family Testudines)	n.a	5	8	6
Hog badger (<i>Arctonyx collaris</i>)	2	1	6	4
civets/Linseng/small wild cats (Family Viverridae and Felidae)	1	4	11	10
Macaques (Genus <i>Macaca</i>)	2	2	4	4
Slow Loris (<i>Nycticebus coucang</i>)	2	0	0	1
Wild Boar (<i>Sus scrofa</i>)	2	1	1	1
Barking Deer (<i>Muntiacus muntjak</i>)	3	3	3	n.a
Serow (<i>Capricornis sumatraensis</i>)	2	1	1	1
bears (Family Ursidae)	1	0	0	0

n.a not available

Source: Interviews 1996

Table 8.6 Approximate Number of Animals Hunted in Hod

Wildlife		Reported by Men (N=26) Jan-July 1996	Reported by Women (N=22) Jan-July 1996	Reported by School children (N=15)	
				Jan-August 1996	1995
birds	parakeets (Genus <i>Psittacula</i>)	17-27	n.a	n.a	n.a
	Spotted Dove (<i>Streptopelia chinensis</i>)	43-53 (>100/ village*)			
	partridges (Genus <i>Arborophila</i>)	21-31			
	Jungle Fowl (<i>Gallus gallus</i>)	32-42		33	
	Not specified	119-169	41	287-304	
squirrels (Family Sciuridae)		115-125	104	108	
porcupines (Family Hystricidae)		8	9	15	
Malayan Pangolin (<i>Manis javanica</i>)		1	n.a	8	
Monitor Lizard (<i>Varanus bengalensis</i>)		1	9	4	
turtles (Family Testudines)		3	5	13	10
Hog Badger (<i>Arctonyx collaris</i>)		3	1	5	n.a
civets/Linseng/small wild cats (Family Viverridae and Felidae)		3	1	2	7
Macaques (Genus <i>Macaca</i>)		10	5	6	15
Wild Boar (<i>Sus scrofa</i>)		7	4	2	5
Barking Deer (<i>Muntiacus muntjak</i>)		10**	2	1	6
Binturong (<i>Arctictis binturong</i>)		2	n.a.	1	n.a

n.a not available

Source: Interviews 1996

* Estimated by one hunter. ** the highest estimation of one hunter.

Table 8.7 Approximate Number of Animal Hunted in Chiang Dao Village

Wildlife	Amount Estimated by Two Men Jan-Oct 1996	Amount Reported by School Children (N=10)	
		Jan-Oct 1996	1995
birds (Class Aves, unspecified species)	n.a	123	122
parakeets (Genus <i>Psittacula</i>)	n.a	2	
Jungle fowl (<i>Gallus gallus</i>)	30 ;(10/hh/yr*)	19	32
squirrels (Family Sciuridae)	n.a	186+ ; (10+/hh/yr*)	
flying squirrels (Family Sciuridae)	n.a	20	
porcupines (Family Hystricidae)	n.a	13	13
Malayan Pangolin (<i>Manis javanica</i>)	3	10	6
Monitor lizard (<i>Varanus bengalensis</i>)	50	11	4
turtles (Family Testudines)	n.a	18	17
Hog Badger (<i>Arctonyx collaris</i>)	n.a	2	
civets/linseng (Family Viverridae)	20-30	9	15
jungle cats (Family Felidae)	2-3	10	0
macaques (Genus <i>Macaca</i>)	1	0	4; 4 (in1994)
Slow Loris (<i>Nycticebus coucang</i>)	n.a	0	1; 2 (in1994)
Wild Boar (<i>Sus scrofa</i>)	2-3/yr	6	8
Barking Deer (<i>Muntiacus muntjak</i>)	20+	10+	10+
Serow	5	4	5 (in1994)
bears	1	3	2
Binturong	n.a	1	1 (in1993)
gibbon	n.a	0	2

hh= household

Source: Interviews 1996

* estimated by one person

Note: 2-3 in Hmong language can mean “many”

Table 8.8 Approximate Number of animal Hunted in Mae Hong Son Village

Wildlife	Amount Estimated by Two Men Jan-Sept 1996	Amount Reported by School Children (N=10)	
		Jan-Sept 1996	1995
birds (Class Aves)	n.a	160+	55
Jungle fowl (<i>Gallus gallus</i>)	n.a	22+	20-
squirrels (Family Sciuridae)	n.a	35	46-
porcupines (Family Hystricidae)	n.a	0	5
Malayan Pangolin (<i>Manis javanica</i>)	n.a	0	1
Monitor lizard (<i>Varanus bengalensis</i>)	n.a	0	1
turtles (Family Testudines)	n.a	0	1
civets/linseng (Family Viverridae)	n.a	3	5
wild cats (Family Felidae)			
Slow Loris (<i>Nycticebus coucang</i>)	n.a	3	1
Wild Boar (<i>Sus scrofa</i>)	5	5	3
Barking Deer (<i>Muntiacus muntjak</i>)	3	3	1
Binturong	n.a	5	0

Source: Interviews 1996

Table 8.9 Current Hunting in Omkoi Village (village level data)

Animals	Approximate Amount Hunted
barking deer	3/ year
wild boar	2/year
jungle fowl	1-2/week
silver pheasant	1-2/year

Note: one man reported a barking deer or wild boar taken every couple of months.

Source: Interview 1996

A unique situation was found in a village in Mae Hong Son. Contrary to the situation observed by Jones (1967) of increased hunting among the Christian Lahu, this village has a low frequency of hunting due to the conversion to the Seventh Day Adventist religion. Of the 52 households, 47 have at least some members who have converted. Seventh Day Adventists prohibit followers from consuming wild pig and most other wild meat such as turtles, snakes, monitor lizards, squirrels, porcupine, frogs and non-scaly fish. Interviews with the students showed that hunting is significantly higher in families that did not convert. However, a converted family may include some members who have not been baptized and therefore are allowed to eat pork and wild meat. Furthermore, different families may interpret the rule differently. For example, some families do not eat wild meat at all, but others believe that eating barking deer and serow is allowed.

Another important factor contributing to the low hunting in this village was that about three years prior to the field, the villagers' guns were confiscated by the authorities as part of the Royal Forestry Department's campaign to reduce hunting.

Compared to the other villages, the forest around the Omkoi village is more intact. The villagers claimed that langurs were still common in the area which may be an indicator of the health of the forest. The villagers have, however, noticed a reduction in barking deer in the past 10 years. They claim that this is due to lowland hunters coming into the area. Monkeys have also been greatly reduced in the past decade. The villagers said that the animals had left their areas since they stopped growing rice and corn.

8.6 The Status of Some Mammals Compared to Expected Levels

During the interviews, the respondents were asked when they last saw a particular species and whether they considered the species to be abundant. The answers about abundance is qualitatively categorized into *Frequently Seen (F)*, *Occasionally Seen (O)*, *Scarce (S)* and *Extirpated from the Area (ex)*. Table 8.10 and Table 8.11 compare the results from the interviews with the Center for Conservation Biology (Mahidol) database of the nearby National Parks.

Table 8.10 Latest Sighting of Some Mammal Species in Naan

Scientific Name	English Name	Con	RDB	Cmp	Abun	Latest Sighting (Abun)		
						1996-95	1994-90	<1990
<i>Nycticebus coucang</i>	Slow Loris	*			O	x (O)		
<i>Macaca nemestrina</i>	Pig-tail Macaque	*			O			
<i>Macaca mulatta</i>	Rhesus Monkey	*			O	x (O)		
<i>Macaca assamensis</i>	Assamese Macaque			V	O	x (S)		
<i>Macaca arctoides</i>	Stump-tailed Macaque	*		V	O			
<i>Presbytis phayrei</i>	Phayre's Langur	*			O	x (S)		
<i>Hylobates lar</i>	Lar Gibbon	*		Nt	O	x (S)		
<i>Canis aureus</i>	Asiatic Jackal			V	S		x	
<i>Cuon alpinus</i>	Dhole/Wild Dog			V	S	x (S)		
<i>Ursus thibetanus</i>	Asiatic Black Bear	*		V	S	x (S)		
<i>Helarctos malayanus</i>	Malay Sunbear			Dd	S	x (S)		
<i>Mustela sibirica</i>	Siberian weasel			E	S	n.a		
<i>Martes flavigula</i>	Yellow-throated Marten*				O	n.a		
<i>Arctonyx collaris</i>	Hog-Badger	*			O	x (F)		
<i>Melogale personata</i>	Burmese Ferret-Badge				O	x (O)		
<i>Lutra lutra</i>	Common Otter	*		V	O	n.a		
<i>Viverricula indica</i>	Small Indian Civet	*			O	x (O)		
<i>Viverra zibetha</i>	Large Indian Civet	*			S			
<i>Viverra megaspila</i>	Large-spotted Civet			V	E S			
<i>Prionodon pardicolor</i>	Spotted Linsang			E	S			
<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	*			O			
<i>Paguma larvata</i>	Masked Palm Civet				O			
<i>Herpestes javanicus</i>	Javan Mongoose	*			O	n.a		
<i>Herpestes urva</i>	Crabeating Mongoose				O	n.a		
<i>Pardofelis marmorata</i>	Marbled Cat			Dd	E S	x (S)		
<i>Prionailurus viverrina</i>	Fishing Cat	*		Nt	V S			
<i>Prionailurus bengalensis</i>	Leopard Cat	*			O			
<i>Felis chaus</i>	Jungle Cat				E S			
<i>Catopuma temmincki</i>	Golden Cat	*		Nt	V S			
<i>Neofelis nebulosa</i>	Clouded Leopard			V	V S		x	
<i>Panthera pardus</i>	Leopard	*		V	V S			x
<i>Panthera tigris</i>	Tiger	*		E	E S			x
<i>Elephas maximus</i>	Elephant	*		E	S			x
<i>Sus scrofa</i>	Common Wild Pig	*			O	x (O)		
<i>Muntiacus muntjak</i>	Barking Deer	*			O	x (O)		
<i>Cervus porcinus</i>	Hog Deer			Dd	E S			x
<i>Cervus unicolor</i>	Sambar	*			S	x (ex?)		
<i>Bos javanicus</i>	Banteng	*		E	V S			x
<i>Bos gaurus</i>	Gaur	*		V	S			x
<i>Capricornis sumatraensis</i>	Serow	*		V	S	x (S)		
<i>Manis javanica</i>	Malay Pangolin	*		Nt	O	x (O)		
<i>Hystrix brachyura</i>	Malayan Porcupine	*			O	x (F)		
<i>Atherurus macrourus</i>	Brush-tail Porcupine	*			O	x (O)		
<i>Lepus peguensis</i>	Siamese Hare	*			O	x (O)		

CCB Report: Con=Confirmed, Cmp=Computed Status, Abun= Abundance; O= Occasional, S=Scarce, V= Vulnerable, E=Endangered

RDB (Reddata Book 1996 Status): V=Vulnerable, Nt=Near Threaten, Dd=Deficient Data, E=Endangered

Sighting: O=Occasional, S=Scarce, F=Frequent, n.a= not available, ex=extirpated

Sources: Computerized Data Base, Center for Conservation Biology, Mahidol University, 1996; IUCN Red Data Book internet data base 1998; Interviews 1996

Table 8.11 Latest Sighting of Some Mammal Species in Hod

Scientific Name	English Name	Con	RDB	Cmp	Abun	Latest Siting (Abun)		
						1996-95	1994-90	<1990
<i>Macaca assamensis</i>	Assamese Macaque	*	V		O	x (S)		
<i>Macaca arctoides</i>	Stump-tailed Macaque	*	V		O			
<i>Macaca mulatta</i>	Rhesus Monkey	*			O	x (O)		
<i>Presbytis phayrei</i>	Phayre's Langur	*			O			x
<i>Hylobates lar</i>	Lar Gibbon	*	Nt		O	x (S)		
<i>Cuon alpinus</i>	Dhole/Wild Dog		V		S		x	
<i>Ursus thibetanus</i>	Asiatic Black Bear	*	V		S			x
<i>Helarctos malayanus</i>	Malay Sunbear		Dd		S			ex
<i>Arctonyx collaris</i>	Hog-Badger	*			O	x (F)		
<i>Melogale personata</i>	Burmese Ferret-Badge				O	n.a		
<i>Lutra lutra</i>	Common Otter	*		V	O	n.a		
<i>Viverricula indica</i>	Small Indian Civet	*		E	O	x (O)		
<i>Viverra zibetha</i>	Large Indian Civet	*			S			
<i>Viverra megaspila</i>	Large-spotted Civet		V	E	S			
<i>Prionodon pardicolor</i>	Spotted Linsang			E	S			
<i>Arctogalidia trivirgata</i>	3-striped Palm Civet	*			O			
<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	*			O			
<i>Paguma larvata</i>	Masked Palm Civet				O			
<i>Herpestes javanicus</i>	Javan Mongoos	*			O	n.a		
<i>Prionailurus viverrina</i>	Fishing Cat	*	Nt	V	S	x (S)		
<i>Prionailurus bengalensis</i>	Leopard Cat	*			O			
<i>Felis chaus</i>	Jungle Cat			E	S			
<i>Catopuma temminckii</i>	Golden Cat	*		V	S			
<i>Neofelis nebulosa</i>	Clouded Leopard		V	V	S			x
<i>Panthera pardus</i>	Leopard	*		V	S			x
<i>Panthera tigris</i>	Tiger	*	E	E	S			x
<i>Elephas maximus</i>	Elephant	*	E		S			ex
<i>Sus scrofa</i>	Common Wild Pig	*			O	x (O)		
<i>Muntiacus muntjak</i>	Barking Deer	*			O	x (O)		
<i>Cervus porcinus</i>	Hog Deer			E	S			ex
<i>Cervus unicorn</i>	Sambar	*			S			ex
<i>Cervus eldi</i>	Brow-antlered Deer		E	E	S			ex
<i>Bos javanicus</i>	Banteng	*	E	V	S			ex
<i>Bos gaurus</i>	Gaur	*	V		S			ex
<i>Capricornis sumatraensis</i>	Serow	*	V		S	x (S)		
<i>Hystrix brachyura</i>	Malayan Porcupine	*			O	x (F)		
<i>Lepus peguensis</i>	Siamese Hare	*			O	n.a		

CCB Report: Con=Confirmed, Cmp=Computed Status, Abun= Abundance; O= Occasional, S=Scarce, V= Vulnerable, E=Endangered

RDB (Reddata Book 1996 Status) :V=Vulnerable, Nt=Near Threaten, Dd=Deficient Data, E=Endangered

Sighting: O=Occasional, S=Scarce, F=Frequent, n.a= not available, ex=extirpated

Sources: Computerized Data Base, Center for Conservation Biology, Mahidol University, 1996; IUCN Red Data Book internet data base 1998; Interviews 1996

There are a few species that were reported to be present in Hod but did not appear in the Mahidol database. These species are listed in Table 8.12.



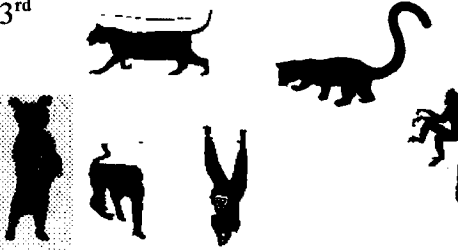
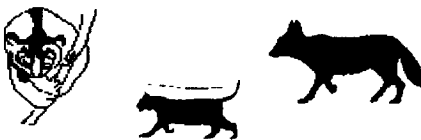

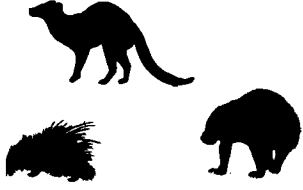
Table 8.12 Species Sighted in Hod within 1995-1996 but not in the Mahidol Data Base

Scientific Names	Common Names	Abundance
<i>Nycticebus coucang</i>	Slow loris	Scarce
<i>Canis aureus</i>	Asiatic jackal	Occasional
<i>Arctitis binturong</i>	Binturong	Scarce
<i>Manis javanica</i>	Malay Pangolin	Occasional

Source: Interviews 1996

The data suggests that some species were extirpated earlier than others. The species that tend to be extirpated first are bovine and elephant followed by larger cats and larger deer and birds that depends on old growth such as hornbills. The third group that disappeared are medium sized cats, larger macaques, langur, gibbon, binturong and bears. These species were possibly eliminated because of hunting pressure. Gibbon and langur were also affected by the disappearing mature forests. Next in line were the species that were not traditional sources of meat. They are small cats and wild dogs. Hunting pressure is the main force against them because they are considered pests. With other larger predators eliminated, they became the main takers of livestock. Smaller animals such as slow loris also were affected by the lack of mature forests and moderate hunting pressure. Serow have been able to prolong their existence because of their inaccessible habitat but now are under considerable pressure since they are among the few remaining large wildlife. The species that seem to be the most resilient against hunting pressure are wild pig, barking deer and rhesus monkey. Now the pressure is mounting on them and they are reported to be greatly reduced. The last group of species occurred more frequently and are less threatened. However, although civets and linsang are reported to be found regularly, there are many species in these groups and some may be more threatened than others. Table 8.13 summarized the disappearing order of these species.

Table 8.13 Groups of Wildlife Species in the Highland and the Order of Disappearance

Order of Disappearance	Species
<p>1st</p> 	<p>Bovine: banteng, gaur, wild buffaloes</p> <p>Elephant</p>
<p>2nd</p> 	<p>Large cats: leopard and tiger</p> <p>Larger deer: sambar, brow-antler deer, hog deer</p> <p>Large birds: hornbills and others</p>
<p>3rd</p> 	<p>Medium: clouded leopard, Asian golden cat, cats fishing cat</p> <p>Primates: langur, stumped tail macaques, gibbon</p> <p>Bears: Asiatic black bear, Malayan sun bear</p> <p>Binturong</p>
<p>4th</p> 	<p>Slow Loris</p> <p>Serow</p> <p>Asiatic jackal, wild dog</p> <p>Small cats: leopard cat, marbled cat, jungle cat</p>
<p>5th</p> 	<p>Macaques (Assamese, pig-tailed, rhesus)</p> <p>Wild pig</p> <p>Barking deer</p>
<p>6th</p> 	<p>civets, linsang, badgers</p> <p>pangolin, jungle monitor</p> <p>brush-tail porcupine</p>

8.7 Uses of Wildlife

Hunting was an integral part of the Hmong livelihood in the past and is deeply rooted in the Hmong culture. The use of wildlife has changed over time but remnants of these uses remain in the Hmong consciousness. What follows is a summary of Hmong's wildlife uses by species group.

8.7.1 Birds (*noog*)

The University of California at San Francisco, Mahidol and TRI questionnaires from the survey in 1987 shows that ornamental birds, doves and parakeets, were kept in at least 32 of the villages surveyed (those not recorded may have the birds, but since this variable was not the main variable in the questionnaires, sometimes it was not recorded by the field data collectors). The **ornamental birds** are captured alive and kept as pets, decoy birds or for sale. The species observed in 1996 are shown in Table 8.14

Table 8.14 Ornamental Birds

Species	Common Name	Known Hmong Name
<i>Psittacula roseata</i>	Blossom-headed parakeet	<i>yeeb kub tsuas liv</i>
<i>Psittacula finschii</i>	Grey-headed parakeet	yeeb kub
<i>Psittacula alexanandri</i>	Red-breasted Parakeet	<i>yeeb kub ab</i> or <i>ab ab</i>
<i>Psittacula cupatria</i>	Alexandrine Parakeet	-
<i>Streptopelia chinensis</i>	Spotted dove	<i>nquab taus</i>
<i>Treron curvirostra</i>	Thick-billed Pigeon	-
<i>Gallus gallus</i>	Red Jungle fowl	qab qus
<i>Gracula religiosa</i>	Hill Myna	<i>lauv kub</i>

Source: Interviews 1996

Other bird species were taken opportunistically **and are consumed as food** with the exception of partridges and quails which are intentionally trapped. Some of the bird species reported to have been eaten are shown in Table 8.15.

Table 8.15 Birds Reported to be Consumed by Villagers

Species	Common Name	Known Hmong Name
<i>Lophura nycthemera</i>	Silver Pheasant	raaj
<i>Arborophila chloropus</i>	Scaly-breasted Partridge	
<i>Turnix tanki</i> or <i>suscitator</i>	Yellow-legged or Barred Buttonquail	
<i>Centropus sinensis</i> and <i>bengalensis</i>	Greater and Lesser Coucal	tsaw nuv
<i>Otus spilocephalus</i> or <i>lempiji</i>	Mountain or Collared Scops-Owl	
<i>Upupa epops</i>	Hoopoe	
<i>Ptilolaemus tickelli</i>	Brown Hornbill*	
<i>Megalaima virens</i>	Great Barbet	ab hau
<i>Megalaima haemacephala</i>	Coppersmith Barbet	tauja vaub
<i>Picumnus innominatus</i>	Speckled Piculet	
<i>Picus flavinucha</i>	Greater Yellownappe	
Genus <i>Pericrocotus</i>	Minivet	
Genus <i>Chloropsis</i>	Leafbirds	
<i>Aegithina tiphia</i>	Common Iora	
<i>Pycnonotus melanicterus</i> , and <i>jocosus</i>	Black-crested and Red-whiskered Bulbuls	
<i>Criniger flaveolus</i>	Puff-throated Bulbul	
Genus <i>Dicrurus</i>	Drongo	
<i>Oriolus xanthonotus</i>	Black-naped Oriole	
<i>Urocissa erythrorhyncha</i>	Blue Magpie	
<i>Corvus macrorhynchos</i>	Large-billed Crow	
<i>Pellorneum ruficeps</i>	Puff-throated Babbler	
<i>Garrulax leucolophus</i>	White-crested Laughing thrush**	tsaas fwj
<i>Rhipidura albicollis</i>	White-throated Fantail	
<i>Terpsiphone paradisi</i>	Asian Paradise-flycatcher	
Genus <i>Lanius</i>	Shrikes	
<i>Sturnus nigricollis</i>	Black-collared Starling	
<i>Aethopyga saturata</i>	Black-throated Sunbird	
<i>Zosterops palpebrosus</i> or <i>japonicus</i>	Oriental or Japanese White-eye	
<i>Passer montanus</i>	Eurasian Tree-Sparrow	
	Birds of prey	dlaav or laj

Source: Interviews 1996

*Hornbills were reported as extirpated in all villages but are spotted on rare occasions. In 1996, a brown hornbill was reportedly shot in Hod.

**A popular target among children because of its large size, conspicuous colour and calls.

8.7.2 Rodents

Rats and Mice (*nas*) [Suborder Myomorpha]. Rats are either killed opportunistically by children or trapped near fields or rice and corn storage. They are often discarded but are also eaten by some people

Squirrels (*nas ncuav*) [Family Sciuridae] are common food species among the Hmong. Squirrels are relatively easy targets for slingshots, thus killed mostly by children and youth. They are also important sources of protein for poor families. According to Bernatzik (1970), black squirrels were not eaten by the Hmong. However, I did not find any taboo against them today.

Flying squirrels (*nas ncuav tsau*) [Subfamily Petauristinae] are also edible species. However, they are hunted to a lesser extent since they are nocturnal. Some people also said that their meat is bitter. A Hod villager maintained that flying squirrels are in demand in traditional pharmacies. Each small silverish flying squirrel (possibly *Hylopetes phayrei* or *Hyloperes alboniger*) fetches 50 baht. Flying squirrels normally live in trees and are hunted by piercing wood into their burrows in the tree trunks.

Porcupines [Family Hystricidae] are sought after by the Hmong. There are two species of porcupine in Northern Thailand and both are easily identified by the Hmong. Malayan porcupine (*tsaug*) [*Hystrix brachyura*] is the more common species. Bush-tailed porcupine (*nploog*) [*Atherurus macrourus*] is less abundant, living mostly in caves. Their meat is popular and different parts of the animal are believed to have medicinal values. Porcupine quills are roasted, powdered and eaten by nursing mothers to increase lactation. Some people suggested that the quill powder also relieved coughing. The porcupine guts are believed to cure stomach ache, or when preserved in whisky, is a panacea for back pain.

8.7.3 Reptiles and Amphibians

Snakes (*nab*). According to Johnson (1985:156) “the Hmong consider all snakes as feared and hated enemies...and habitually kill every snake they see...The Hmong never eat snake meat...If snake get inside the house, it is driven out but not killed, for it may have been sent by evil spirits, and killing it would only make matters worse.” Today the majority of the Hmong still do not eat snakes. Many girls in Naan said that they were taught not eat snakes. Some younger Hmong men have begun to eat these reptiles. They however are usually eaten outside the homes as the people still believe that bringing a snake into a house will upset the household spirits.

Turtles (*vaub kib*). A villager in Mae Hong Son insisted that traditionally Hmong did not eat turtles. However, Naan villagers maintained that they have long eaten turtles. Today they are eaten in both study villages. The edible species include Yellow Tortoise [*Indotestudo elongata*], Paddy field turtle [*Malayemis subtrijuga*] and Snapper Tortoise [*Platysternum megacephalum peguense*] and Siamese box terrapin [*Cuora amboiensis*]. Turtles are usually collected opportunistically during fishing. The method of obtaining turtle meat is explained by a Naan villager. First, the hunters heat its rear with a fire, forcing the animal to thrust its head forward. The head is cut, and the shells opened to retrieve the meat inside. According to an Omkoi villager, turtle head is a cure for mushroom poisoning. The explanation given is that turtles eat all kinds of mushrooms and therefore produce an immunity against mushroom toxicity.

Jungle monitor (forest monitor/bengal monitor) (*naab qa dlev*) [*Varanus bengalensis nebulosus*] was not Hmong traditional food. It is however a delicacy among the northern Thai and the Karen. Today some younger Hmong eat the monitor, but more often the animals are sold to lowlanders. This species is regularly sought after.

8.7.4 Pangolin

Pangolin (*kum zaug*) [*Manis javanica*] scales are believed to have medicinal value by Chinese people. Lekagul and McNeely (1988:330) reported that “between 1958-1964, over 60 tons of pangolin scales were legally exported from Sarawak,..., representing over 50,000 pangolin). Hmong interviewed in Omkoi also mentioned that pangolin scale is a remedy for “urinal infection” (venereal disease-Lekagul and McNeely 1988). Hmong in other villages only mentioned that they are used for curing fever.

8.7.5 Primates

Loris (*lab cua* or *lab pus muag*). The only species present in Thailand is Slow Loris [*Nycticebus coucang*]. This animal still exists although its numbers are greatly reduced in the northern highlands. The villagers in Nan, Hod and Omkoi reported that there are Loris in their areas. The Hmong indicated that the animals were reduced because the forests were burnt down. During my stay in Naan, a loris was shot by a group of teenagers. According to a villager, Loris’s meat was tough and not tasty (probably not a preferred meat in the past).

Macaques (*lab*) [Genus *Macaca*]. Attempts to differentiate between species of macaques with the Hmong have been problematic. The younger the men, the fewer species were identified. The most basic categories are “rice eating monkey (*lab noj nplej*)” and “tree monkey (*lab ntoo*)”. In Hod and Nan, monkeys were said to be abundant when the Hmong grew rice extensively. Troops of 50-100 monkeys often raided rice and corn fields. The Hmong in general do not have compassion for monkeys. They are perceived as pests and are killed in order to protect the crops and for food.

In recent years, monkey troops are much smaller. A 39 year-old man from Naan reported seeing a group of 3-4 individuals in 1994 (possibly pig-tailed); a group of 4-5 individuals were also spotted eating corn in 1993. One was shot during the field work. The larger monkeys, such as stump-tailed macaque (*Macaca arctoides*) have disappeared from

Hod and Naan over two decades ago. In Hod, a troop of over 10 individuals were seen in 1996, of which 7-8 individuals were killed.

Sometimes, the people eat the mother and keep the babies as pets (or hoping to sell them). During the survey, one household in Naan keeps two small pig-tailed macaques [*Macaca nemestrina*] this way.

Langur (*nyaaq*). The only species present in the North is *Presbytis phayrei*. Langurs are largely extirpated from the areas around all Hmong villages visited, except for Omkoi. They were said to have disappeared from Hod in the mid 1980s. A 58 year-old man in Naan said that they were gone two decades ago and even before then there were few. However, a 44 year-old man estimated that there were as many as 20 langurs twenty years ago. Another villager claimed that he saw one pair 8 years ago within one kilometre from the village. This report is supported by two other men who mentioned that they saw langurs five years and two years ago about 3 km from the village. At any rate, the langur population is on the brink of extirpation.

Some villagers stated that langur blood was a tonic drink for a person recuperating from inner organ bruises.

Gibbon (*cuam*). The species present in the North is *Hylobates lar* or White-handed gibbon (or lar gibbon). Because gibbons normally move in groups, the Lao Hmong believe that a solitary gibbon may be a forest spirit (*dab phim nyuj vais*) and should not be killed (Johnson 1985:64-65). This belief is unknown to the Thai Hmong. According to historical records, Hmong did not treat gibbon differently from other wild animals. That is, when found they are shot and eaten or sometimes sold. According to a Hmong in Hod, baby gibbons were sold to lowlanders at 100-200 baht each twenty years ago.

However, today Hmong people in all villages that we visited expressed fondness and compassion toward gibbons. In both Hod and Nan, the headmen have prohibited gibbon hunting for at least 15 years. The villagers in Omkoi came to the same agreement more than ten years ago. Mae Hong Son villagers have a similar rule.

There were three reasons for these special feelings towards gibbons. First, gibbons do not destroy crops. Second, unlike monkeys, they do not have tails, which to the Hmong, made them closer to human. Hmong hunters claimed that when a gibbon is shot, it touches its wound and cries. This human-like behaviour makes most Hmong pity the animal. Third, Hmong people are fond of gibbon calls. The calls are said to help predict weather condition. If gibbons call early in the morning, the rain will fall; if they call late in the morning, the day will be sunny. Unfortunately, deforestation and continued hunting by some people have extirpated gibbons in Nan and Hod despite efforts to preserve the species. In Nan the last one was probably killed 2 years ago. Only one man claimed that he saw two individuals in the past year. In Chiang Dao, villagers reported that gibbons still exist but only in the Wildlife Sanctuary adjacent to their communities. The Mae Hong Son villagers commented they had not heard gibbon calls since last year when a group of soldiers came to hunt in the area.

8.7.6 Wild Dogs

There are two species of wild dogs in the North, Asiatic jackal (*dlev qus*) [*Canis aureus*] and Asian wild dog (*maa*) [*Cuon alpinus*]. Only the villagers in Nan differentiated between these two species. Nevertheless, there was some confusion with identification and sometimes contradictory identification occurred. The best clue is that jackals normally are solitary or move about in pairs while the wild dogs stay in packs. From the interviews, jackals were less abundant, only spotted once in a while on the road when villagers were driving at night. Wild dogs were said to be more abundant, but are likely to be nearly extirpated now. A pack of wild dogs were poisoned six years ago and another pack in 1995 because the dogs attacked domestic buffalo calves. Similar stories are told in Hod and Naan. Villagers laid poison on the carcasses to kill the dogs that returned to eat their kills. Neither dog species are eaten by the Hmong people, but respondents in Hod claimed that they are eaten by some Karen.

8.7.7 Bears

There are only two species of bear in Thailand: Asiatic black bear (*dlais nees*) [*Selenarctos thibetanus*] and Malayan sun bear (*dlais dlev*) [*Helarctos malayanus*]. In Hod and Omkoi black bear still exists while sun bear is said to have been extirpated. A black bear was killed at the end of 1995 in Naan while a sun bear was last seen three years ago (1993). However, some villagers indicated that a medium size bear called *dlais npua* was hunted last year. This may have been a sun bear or a small black bear.

Bears have long been considered pests by forest farmers because they sometimes raid rice and corn fields. What endangers them the most, however, is the medicinal reputation of their gall bladders. Villagers in all villages mentioned that bear gall bladder was highly priced by Chinese pharmacies. In 1996 several arrests were made of tour operators who brought Korean tourists into Thailand specifically to eat bear parts (see Appendix A). The Hmong themselves also believe in the gall bladder medicinal values. They roast the organ and use it to cure fever, lung disease, measles and leprosy. The Hmong do not use the bear bones but they sometimes sell them to traditional pharmacies in the lowland.

8.7.8 Wild Cats and Civets

Small wild cats (family Felidae such as *Felis chaus* and *Felis bengalensis*) and civets (family Viverridae) are sometimes confused with each other because both are nocturnal and attack domestic fowls. Wild cats are called *plis* or *plis zoov* and civets are called *pua* in Hmong. The Hmong identified several sub-groups of civets such as *pua khlw nqeeb* (possibly *Viverricula malaccensis*) and *pua thimthoob* (identified as *Viverra zibetha*).

The relatives of the civets - palm-civets and linsang - do not usually raid chicken coops and are called with a different name, *maab*. The Common palm civet is the *maab nkhawb* while the linsang is called *maab plis*. The sub-group of palm civets are called *maab tsho* or sometimes *maab leej tsws*. However, it was not possible to clearly identify which was *Arctogalidia trivirgata* (three-striped palm civet) and which was *Paguma larvata* (masked

palm civet) because of too many contradictory reports.

Traditionally, the Hmong do not eat these animals because of their strong scent. They are killed mainly because the people believe they steal chickens. Some younger people now eat them, but more often the animals are discarded or given to the Akha and Karen labour. A villager in Omkoi said that civet perineal glands can be sold to Chinese merchants. The dried gland is believed to have a medicinal property similar to smelling salts.

Larger cats such as tigers (*tsuv nplooj tsuab*) [*Panthera tigris*] and leopards (*tsuv thoov seej pom* or *tsuv hnub qub*) [*Panthera pardus*] are virtually extirpated from Hmong villages. In Hod, these cats disappeared 15-25 years ago, although there was a report that tiger tracks were found in 1994. One man said he spotted a tiger in 1995. The last leopard was shot in Hod in 1988.

A Naan villager showed a picture of a clouded leopard (*tsuv fuab* or *tsuv pom teev*) [*Neofelis nebulosa*] he had killed in 1994. A sighting of an Asian Golden Cat (*tsuv lab*) [*Felis temmincki*] was also reported in 1994. Tigers have been extirpated from Naan. The last sighting was over a decade ago. Villagers in Chiang Dao and Omkoi reported that tigers were spotted in 1996, but in both places, the cats were believed to have wandered off further into the core of nearby protected areas.

When these large cats were more abundant, they occasionally took domestic calves. The Hmong generally are fearful of them. However, tiger is also a valuable commodity. Even twenty years ago, a tiger were sold at 2,000 baht. Tiger penis is sometimes sold in traditional pharmacies as an aphrodisiac.

8.7.9 Binturong

Although closely related to the civets, *Arctictis binturong* look and behave differently, and are therefore easily identified by most people. The animal was considered to be half way between a palm civet and a bear. In Hmong language, it is called *maab dlais* (*maab*=palm civets, *dlais*= bear). Binturong still exist in Hod. A skin was being dried on a roof of a house during the field work. They disappeared from Naan over a decade ago and were not reported in other villages.

8.7.10 Wild Pig

The only wild pig in Thailand is *Sus scrofa*, or *npua teb* in Hmong. This animal is one of the two main species targeted by Hmong hunters. Wild pigs are sought after by Hmong as well as lowland Thais in all other areas visited except in the Mae Hong Son village (due to religious reasons). Nevertheless, Mae Hong Son villagers reported that soldiers from Chiang Mai occasionally came to hunt wild pigs in their area. The meat is almost always consumed by the hunters and their families and not sold.

8.7.11 Hog Badger

This insect and root eating animal (*loob tswb*) [*Arctonyx collaris*] is not a popular food among the Hmong but they are commonly killed and discarded (for no particular reason). The animal has a strong smell and older Hmong do not eat this animal. The Hmong sometimes gave away the dead animals to Karen neighbours whom they claimed eat them. The Mlabri hunter-gatherer who lived in the vicinity of the Hmong in Naan were also said to be fond of hog badger meat. Some Hmong in Naan indicated that hog badgers had a tonic property which improved the eaters' blood quality. Some men also cited that it could cure gallstone.

8.7.12 Ungulates

Deer. Various types of deer have been extirpated from northern Thailand. The only deer that exists in any numbers in the highlands today is the common barking deer (*kauv*) [*Muntiacus muntjak*]. Its meat is perhaps the most popular of all wild meat and is in high demand in lowland markets. Sometimes the hunters will sell the animals to lowlanders instead of consuming them. Group drives mainly target the barking deer.

Another species of deer that existed until recently was sambar deer (*mos lwj*) [*Cervus unicolor*]. These deer were present near Naan village but were completely wiped out two

years ago after the villagers' attempt to conserve them failed (see Section 8.10 for details). In Omkoi, villagers reported that sambar deer disappeared a decade ago. There is no report in Hod of this species.

Serow. The only other remaining ungulate that occasionally occurred in the study areas is serow (*sai*) [*Capricornis sumatraensis*]. This species lives near cliffs in Nan, Hod, Chiang Dao, and Omkoi. This is the most inaccessible and least cultivable area. Serow is not traditionally preferred meat because of their strong scent, especially the bucks. Sometimes the meat is given to Karen people, but not every Karen will eat it either. Some Hmong believe serow's blood can cure back pain and inner bleeding. An RFD official commented that the northern Thai believe that serow's oil can be used to heal bruises, and their bones are also used for medicinal purposes. In Hod, the Hmong villagers informed us that there was one last serow left in the area and it was being pursued by some villagers.

8.8 Attitudes towards Hunting and Wildlife

This is truly a good son-in-law. They are really capable people who are able to get fresh deer meat and save it for us"

(a Hmong song, Graham 1954:111)

When asked why they go hunting, the answer from the men was overwhelmingly similar: for fun, to pass time, as recreation (Table 8.16). Some men mentioned food but often as a secondary purpose after recreation. This confirmed the observation by other authors that the Hmong regard hunting as a recreation rather than as a necessity (Shrock *et al.* 1970; Young 1974). We only asked three men in Naan, all of whom indicated recreation as the main purpose for hunting.

Table 8.16 Reasons for Hunting in the Hod village (multiple answers allowed)

Reasons	Number of Respondents (% of N=26)
Recreation	21 (81%)
Food	7 (27%)

Source: Interviews 1996

Hunting may be an accepted activity and even brought respect to a Hmong man in the past. Today, it has largely lost its prestige. The majority of the women said that they preferred the men to help them with farm work instead of going hunting (Table 8.17). Hunting no longer contributes significant amount of protein to households. The men see hunting as a recreational activity. Virtually none of the people interviewed thought that the reduction of wildlife caused any significant suffering in term of protein deficits.

Table 8.17 Women's Attitudes towards Men's Hunting

Attitudes towards Hunting		Hod (N=21)		Nan (N=23)	
		No. of Resp.	Summary	No. of Res.	Summary
Indifference		1 (5%)	5%	0	0
Like	if men go when there is no work in the fields	3 (14%)	19%	2 (9%)	39%
	because of meat contribution	1 (5%)		7 (30%)	
Dislike	preferred men to help in the fields	5 (24%)	57%	9 (39%)	52%
	worry about safety/ being arrested	4 (19%)		3 (13%)	
	not specified	3 (14%)		0	
No Answers		4 (19%)		3 (13%)	

Multiple answers accepted

Source: Interviews 1996

The attitudes towards wildlife can be categorized into the following groups.

1. **Pest Species.** The species that attack livestock were the most disliked. These are wild dogs, wild cats, civets, tigers and leopards. The second most disliked are the species that damage agriculture such as monkeys, wild boars, bears, porcupines, squirrels, rats and birds.
2. **Taboo Species.** Snakes and tiger are associated with evil spirits. The Hmong still believe that bad things will happen to the household members if a snake enters one's house. Most people will not eat snakes, especially women. Tigers are practically extirpated from northern Thailand but are still feared by the Hmong. The strongest curse in the Hmong language is the phrase "tiger bites" (*tsuv tom*).
3. **Food Species.** Some species are pursued specifically as popular food. These are wild pig, barking deer, jungle fowl, partridge and quails. Other species (porcupine, pangolin, jungle monitor) can also be specifically pursued depending on the individual hunter. Children and some adults regularly hunted birds and squirrels.
4. **New Food Species.** Certain species were not normally eaten by the Hmong but now are eaten by younger people, perhaps, because of fewer other traditional animals left and also the adoption of other groups' cultures. These are serow, hog badger, civet, bat, monitor lizard and snake.
5. **Amicable Species.** Gibbon and sambar deer are well liked by the Hmong and were often being conserved, though not successfully.
6. **Species that are regarded with indifference.** These are species that are eaten by the Hmong whenever they opportunistically found them. Examples are binturong, langur, loris, marten, pangolin, etc.

Many villagers expressed concerns over wildlife disappearance and the fact that the younger generation will never see these species. They missed the sound of birds and gibbons that they used to hear.

8.9 Wildlife Trade

*“... When the tigers’ meat had been eaten, they took the skins and bones to sell.
They first tried to sell them to Chinese from below, but the Chinese would not
buy them.
Then they carried them to the emperor’s capital.
They saw that the capital of the emperor was bright like gold.
The great officials of the emperor came to buy the skins to wear
when they were in the emperor’s throne room and in the emperor’s palace.
The two men received silver and gold and brought it home.
All the people in their families were very glad.
So, yah. After this our children and grand children
will all want to learn to place bows and crossbows on the mountains
and hunt game and capture tigers so as to get gold and silver.”*
(A Hmong Song, Graham 1954:124)

In all the villages we visited we found some occurrences of wildlife trading. In general, the selling takes place randomly. The only animals that are captured for sale are ornamental birds and sometimes the jungle monitor, more rarely monkeys. People said they like to keep the birds as pets but would sell them if there were interested customers. Since the birds are kept alive, I suspect the majority eventually end up being sold to lowlanders. The jungle monitor is a popular meat in the lowlands, therefore some hunters also hunt them with a commercial intention. Villagers in Chiang Dao reported that a few merchants from the city provided ammunition to the Hmong in exchange for barking deer. The animals are sold back to the merchants at a low price, 600-700 baht each (or 60 baht/kg) instead of the usual price of 1500-2000 baht per animal. One student told that his family sold parakeets and mongoose to trekking tour guides (*guide farang*). Some of the reported trades in Naan village are presented in Table 8.18. Table 8.19 shows the prices of wildlife that have been sold by the Hmong in three villages in Omkoi, Chiang Dao and Mae Hong Son.

Table 8.18 Wildlife Trade Reported in Naan village

Wildlife	Approx. Year Sold	Price (baht/individual animal)
barking deer	1996	female 2000 (male 3000 fawn 1200)
	1991	1800
bear	1996	bone 80/kg = 1500
	20+ years ago	10-15 /kg
civet/linseng	1996	200
	1996	30
pangolin	1996	180 (100+/kg)
jungle monitor	1996	100
hog badger	1996	100
macaque	1996	200 (to Akha villagers)
	1995	500
leopard cat	1991	30+/kg, 4,000+
spotted-neck dove	1996	50
tiger	1986	3000

Source: Interviews 1996

Table 8.19 Wildlife Trade Reported in Some Hmong Villages

Place	Wildlife	Yr	Price (baht)
Omkoï	bear's gall bladder	Offered	10,000/0.1kg
	jungle monitor	1996	70-80/kg
Chiang Dao	doves	in general	80 each
	parakeets	1994-1995	50-120 each
	macaque (live-one animal)	1991	50 each
	mongoose	unknown	120-150 each
	barking deer	1996	1500-2000 each 600-700 (ammunition supplied)
	jungle monitor	1996	50/kg
	pangolin's skin	1996	100/kg (150 each)
Mae Hong Son	doves	in general	300-400 each
	parakeets	in general	50-200 each

Source: Interviews 1996

Wildlife trade depends mainly on markets in the lowland. Trading is much more frequent in Naan than in Hod because the market in Naan is well established. There are two lowland wildlife traders at the village where the road to Naan village meets the highway. During the hunting season (dry season and early rainy season) the traders come to the village every month to purchase wild animals. They are well acquainted with the headman who even announced their visits through the village megaphone. Villagers can also bring the wildlife to their houses in the lowland. This trade is well known in the area. Even the forester at the research station acknowledges it. Most wildlife products find their way to the merchants in Phrae province. Phrae is renowned for hunting and logging; a sort of Thai cowboy town. It was also the province with the highest level of illegal logging (Tantiwithayapitak 1992:154). Passing through Rongkwang, a district in Phrae, one saw houses decorated with stag or buffalo horns and other stuffed wildlife. A fashionable house design in Phrae and Nan is one with several poles in the front porch, styled after the “hundred-pole house” belonging to a local politician and lumber baron (and former Minister of Agriculture). The poles are made of whole trunks of hard wood trees, especially teak. The larger the trunk, the more prestigious. This somewhat grotesque housing style has become fashionable among the local Thai and is now also being taken up in Naan Hmong village. The poles are sometimes the disguised illegal logs awaiting to be sold at a later date.

This situation in the lowlands is the background for understanding the Hmong’s involvement in wildlife trade. Wildlife has long been a popular commodity in this region of the North, and the Hmong are one of the many groups taking part in it. A study of wildlife trade in the neighbouring Lao P.D.R and along the Thai-Lao border found 23 mammal, 33 bird and 8 reptile species being sold in the markets (Srikosamatara *et al.* 1992:7). The most common species among these were variable squirrel (*Callosciurus finlaysoni*), red bellied tree squirrel (*Callosciurus erythraeus*), lesser mouse-deer (*Tragulus javanicus*), common barking deer and black giant squirrel (*Ratufa bicolor*) in the dry season. For the wet season, great bandicoot (*Bandicota indica*), lesser mouse-deer, Siamese hare (*Lepus peguensis*), variable squirrel and Malayan pangolin were the most traded species (Ibid). The amount of wildlife being traded is considerable (estimated 8,000-10,000 mammals, 6-7,000 birds and 3-4,000

reptiles). The highland ethnic groups in Lao, of which the Hmong are one, are regular suppliers of wildlife to the lowland merchants (Ibid). The same situation can be observed at the border between Thailand and Myanmar, the same authors found a “very large scale of the trade in wildlife products on the Myanmar side of the border” (Ibid:22).

Thailand has long been a major centre for wildlife trade. McClure and Chaiyaphun (1971:41) reported that between 1967-1969 over 300,000 birds were sold annually at the Sunday Market in Bangkok. This number had decreased to 44,800 in 1987-88 (Round 1990). None of the villagers interviewed had wildlife trade as their main occupation. Most did not know where the animals they sold to the lowlanders go, although one informant in Naan said that a merchant in Phrae sent them to Taiwan.

All officers of the RFD acknowledge the existence of wildlife markets and restaurants. The largest market is Talat Thung Kwien in Lampang province. I was told that there was relatively little regulatory actions against these business because of vested interests involving law enforcement officers. Also, most RFD officials in parks and wildlife sanctuaries, who are concerned with wildlife conservation, do not have jurisdiction over anything outside the protected areas.

8.10 The Hunters

All hunters are farmers in both Hmong villages in the case studies. Although I was told there are a few keen hunters in the villages, it has been difficult to interview these individuals about their hobby. In Hod, one hunter identified by other villagers was quite unhappy when I told him that I had heard that he was a keen hunter. He demanded to know who had told me that he was a hunter. Over time, we developed some understanding and he was willing to talk to me about hunting methods and hunting in general as long as I kept it to the impersonal level. His life is quite unconventional for a Hmong. He was “adopted” by a well-to-do Thai who took him to Bangkok for education and to work as a hand in the house. When he finished high school, he returned to his village and became one of the Hmong farmers. Hunting is his favourite hobby and he has developed exceptional skills in jungle fowl hunting.

He is a middle-rung farmer, neither poor nor rich. In fact, hunting may have hampered his wealth since he spends less time tending the fields (which are mostly in the care of his two wives). Another regular hunter I talked to in Naan was an opium addict. He does not have his own fields but sells his labour to other Hmong. He hunts mainly small animals to fill the day-to-day family plates. I could not openly pursue exceptional hunters for interviews because too direct inquiry into this matter could create unwanted fear of me in the village.

8.11 Indigenous Conservation

Despite the absence of traditional resource management institutions, the Hmong in many villages have rules against hunting. These rules were mostly initiated by village leaders who through their contacts with the lowland authorities had been influenced (or pressured to) regulate hunting. However, the villagers in some cases genuinely desired to preserve some species of wildlife. Naan is one such case. The following section details the effort by the ex-headman of Naan and the Naan villagers to conserve sambar deer, gibbon and other species. This case illustrates the strengths and weaknesses of indigenous conservation.

Sambar Deer Conservation in Naan. Numpov Xyooj was the village headman of Naan for almost two decades (1971-1990). He has an exceptionally strong conviction about forest and wildlife conservation. As soon as he took office, he led the village committee to demarcate the area around the village as community forest, putting red marks on the trees at the boundary and forbidding further clearing for agriculture.

In the early 1980s, seeing that there was a small herd of sambar deer inhabiting this community forest, headman Numpov ruled that these animals should be preserved. Fines were set at 700 baht for village committee members and 300 baht for ordinary villagers who breached the rule. These amounts were considerable at that time for a Hmong. The villagers cooperated with the headman. For ten years, the herd grew from a few animals to about a dozen animals and were so tame that the villagers said they acted like a herd of cows. To ensure the safety of these deer, Numpov also circulated a letter to all surrounding lowland headmen asking the lowlanders not to hunt sambar deer in the Hmong forest. This act was met with hostility. In the monthly district meeting, he was told by the district officer not to

interfere in other villages' business. Occasionally, there were lowland hunters that came to hunt in the village area, but as the sambar were relatively close to the village, they were not hunted.

When Numpov retired from the headman position, a new man was selected to replace him. A problem soon occurred when the sambar deer ventured into eating villagers' crops. The crop owner took his complaint to the village committee. It was then decided made that the sambar deer could be shot if it went into the fields and ate crops. The meat would be divided among all villagers. Soon, a sambar again went into the field and was shot down by the crop owner, who happened to be a relative of the headman. The man reported the incident to the village committee. However, the following day, the headman announced that the report was false and nothing of the sort had happened. Immediately, a rumour spread that the headman and his relative had sold the deer to a lowland wildlife dealer. From then there was confusion and dissatisfaction among the villagers about the rule regarding the deer. Many people got the impression that they were not allowed to hunt openly but would get by without reproach if they only did it in secret. However, since most villagers were still unsure, they did not kill other animals. The new headman was also renowned for his close friendship with policemen and logging tycoons in the lowlands. He began hosting a group of policemen who came to hunt the sambar deer. The deer benefit was split between the headman and the hunters. Seeing the sambar now taken by outsiders, some villagers resumed hunting and eventually the last deer was extirpated from the village forest.

Beside the conservation of sambar deer, headman Numpov also set a bag limit of one barking deer per hunter per trip. However, once a man killed two barking deers in one trip but lied to the village committee saying that there were two hunters. His account was later contradicted by other villagers, leading to arguments within the village. At the next village meeting, villagers decided that barking deer were still plentiful and the whole regulation about barking deer was cancelled.

Numpov also prohibited villagers from killing gibbons, using poison or electricity to catch fish in the streams and using hunting dogs. All these rules were eventually nullified when he left the office.

Numpov in interviews expressed distress about the loss of beautiful species such as the deer and gibbon from the forest. He is hoping to write to the Queen asking for a pair of gibbons to be reintroduced into the area. But he is an old man, now addicted to opium, and has lost his prestige and power to influence other villagers. He criticized the current village leadership for not caring about wildlife conservation. The current headman is a son of the headman who took over Numpov's office. Some villagers said that he, like his father, was involved in the logging business with the lowlanders. The illegal logs were disguised as his house, the planks not cut to fit the walls, but left as long a length as the trees they came from. Some of the planks were not nailed to each other but were simply placed on the beams. This is a well-known strategy in illegal logging. The house will later be dissembled and the wood sold as "used wood". A school student also said that the headman announced the arrival of lowland wildlife dealers in the village through the village intercom. Numpov was concerned that younger generations will never see the animals that used to live in the forest. This sentiment was echoed by many villagers both in Naan and Hod, ironically sometimes by the most ardent hunters.

8.12 Comments by the Royal Forestry Officials

Interviews with RFD officials were conducted during the field work in order to gain more information from the perspectives of the protected area managers. The Naan village is inside a Forest Reserve and according to the chief of the watershed research centre, located about 2 km from the village, the threat of hunting come from both villagers and lowland hunters. According to the Wildlife Preservation and Protection Act of 1992, no wildlife can be hunted anywhere unless permitted by the RFD. However, enforcement is concentrated only in protected areas. The official reported that after the road through the village was improved in 1987, there had been an increase in influx of lowland hunters. Most were government officers from the police and local administration. This information is supported by villagers. These more influential hunters come in jeeps or 4-wheel-drive trucks equipped with spot lights, usually two vehicles each night. They arrive at the crest of the mountain between midnight and one a.m and return to the lowland by five in the morning. The hunters used

powerful H.K carbine guns and modern rifles. They hire 3-4 Hmong hunters as guides. These hunting expeditions occurred about 2-3 times a week between the end of October and January. However, after an accident that killed one of the hunters, these visits have been greatly reduced in the past two years. The watershed research centre does not have the mandate to enforce wildlife protection laws so there have been no arrests of any hunters. The chief of the centre had been at this station for 12 years and believes that the hunting has not declined among the Hmong villagers.

In Hod, the park officers believed that the Hill Tribes did not have much impact on wildlife reduction since they only hunted for their own consumption. The group of people that the park officers were worried about were the hunters from the Physical Education college in Chiang Mai who regularly came into the area equipped with spot lights and powerful weapons. The district RFD officer believes that the Hod forest is unsuitable as a wildlife habitat. He also thinks that the Hod villagers do not have significant impact on wildlife population.

An official in Chiang Dao wildlife sanctuary similarly said that villagers' hunting is largely for consumption and he considered it "not excessive." Officials in Chiang Mai city indicated that the continued demand of wildlife in the lowland for exotic food was an important cause for wildlife hunting among the villagers. A conservation officer I interviewed in Bangkok, however, believed that the impact of hunting from villagers was significant and could lead to the extirpation of wildlife in protected areas.

8.13 Summary

Data from the case studies show that hunting now is mainly a social activity for the majority of the Hmong. Most Hmong do not rely on protein from the forest nor do they have particular concern about this disappearing source of protein. However, the study found that a few poor people, mainly drug addicts, rely quite heavily on small wildlife, especially rodents for food. Many people nevertheless mentioned that they miss the wildlife that were once part of their environment and regret that the younger generations will not see these creatures.

Hunting methods are now less diverse than before as a result of the reduction in

animal varieties and quantity. The common trend is that the younger generations possess less skills in making traps, tracking animals and identifying different species. The younger generation also eats the types of animals that once was taboo or commonly not eaten by the Hmong. The driving hunt using dogs is still practised. The main species being pursued with this method are the wild pig and the barking deer. Another popular method is to use glue and decoy birds to capture parakeets and pigeons.

The most popular hunting tool today is undoubtedly the gun. Crossbows are no longer used, except by a few children. Three types of guns are used, the home-made muzzle loader, modern shot guns and .22 calibre rimfire. Some Hmong have also begun to use rifle scopes. Other tools, such as nets, noose, snares, traps are used on small animals. Small children also hunt small animals, mostly squirrels and birds with slingshots.

The Hmong use wildlife as food, traditional remedies, commodity and pets. Very few men engage in hunting as their main professions. However, a few keen hunters still exist in the villages. These men may hunt regularly and supply wild meat to lowland markets or hire themselves out as guides for urban hunters. Wildlife trading is more active in Nan than in Hod but occurs at various degrees throughout the North. It often involves lowland merchants who regularly visit Hmong villages. They buy whatever is available in the village at that time. They may offer prizes for some sought after species, even providing ammunitions to the Hmong.

Hunters have little prestige in today's Hmong economy. Hunting is considered an uneconomic activity, "a waste of time" by most women. Some youths do not have guns and do not hunt at all. Many young people have given up hunting because they are busy with their new cash crops. They are oriented toward the lowland market rather than the forest.

The RFD officials acknowledge the problems of hunting by villagers. However, the park officers appear to be more worried about urban hunters equipped with powerful weapons (and influential connections) than about the villagers.

Chapter 9

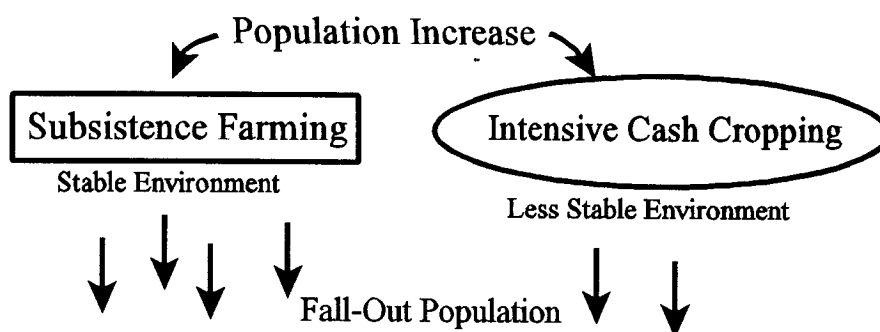
Cash Crop Development, Hunting and Biodiversity Conservation

This chapter looks at the implications of cash crop development on biodiversity conservation. First, the impacts of cash crop on land use is analysed in term of land intensity. Second, the issue of cash crop development and social differentiation as proposed by Dearden (1996) is considered in the context of the Hmong. Finally, the chapter discusses the relationships between cash crop development and hunting, using the propositions reviewed in Chapter 2 as guidelines.

9.1 Impacts of Cash Crop Development on Landuse

Without intensive rice farming opportunities, the majority of the Hmong are likely to leave subsistence rice production and become cash crop farmers. Hmong farmers take up cash crops not only for economic, but also for land-related reasons. Early and successful cash crop adoption is one of the reasons why the Hmong were able to mitigate the problem of growing population and land shortage. It allows more Hmong to have relatively stable life style as a group without too many “fall-out” members who have to leave their communities and become itinerant labours (Figure 9.1). In other words, cash crop cultivation helps absorb increased population to the degree that subsistence farming may not be able to.

Figure 9.1 Subsistence versus Intensive Cash Cropping



By examining the landuse intensiveness of various cash crops adopted by the Hmong, this chapter will show that the Hmong have continued to move toward more land-intensive farming, using the same or less land, to support an increasing population.

9.1.1 Land Intensiveness

Two variables can be used to compared the level of land intensiveness of a crop. One is the population level that a crop can support per unit area. Second is the level of income a crop brings per unit area. Four crops grown widely by the Hmong, opium, maize, cabbage and carnations are compared in light of these two variables.

Population-Land Ratio. Population-land ratios were collected in the 1980s from several Hmong villages and show the population-land ratios of villages ranging from 0.11 to 2.74 persons per hectare, averaging 0.79 persons per hectare or 0.58 when the two extreme cases are omitted (Table 9.1). No statistically significant differences were found between villages with and without opium (the data did not come from a random sampling, thus, tests of significant difference may not be valid). The two extreme cases may be a result of not including fallow lands in the calculation but no information is available to verify this.

Table 9.1 Population-Land Ratios of some Hmong Villages that Grow Mainly Rice, Maize and Opium

Province	Village	Population-Land (persons/hectare)	Crops
Chiang Rai	Huai Ku	1.14	Rice, Maize, Opium
	Huai Han	2.74*	Rice, Maize, Opium
	Ratraksa	0.48	Rice, Maize
	Romphe Thai	0.70	Rice, Maize, Opium, Bean
	Lao Ta Kao	0.11	Maize, Rice, Bean
	Phaya piphak	0.44	Rice, Bean
	Khun tha	0.40	Rice, Maize, Opium
	Huai Muang	0.37	Rice
	Ratpakdi	2.36*	Rice, Maize, Bean
	Pang Ung	1.18	Maize, Rice, Bean
Chiang Mai	Pakia	0.63	Opium, Maize, Rice
	Sak ka jue	0.46	Rice, Opium
	Meo Huay Yen	0.20	Maize, Opium, Rice
	Huai Hoy	1.27	Opium, Maize, Rice
	MonYa Mai	0.20	Maize, Opium, Rice
	MonYa Tai	1.09	Rice, Maize, Opium
	MonYa Nua	0.44	Maize, Opium, Rice, Bean
	Huai Nam Jang	0.66	Opium, Maize
Payao	Sipsong Pattana	0.20	Bean, Maize, Rice

Source: SRI 1984, SRI, UNFDAC, UNDP 1984.

Average 0.79 SD 0.70

After omitting the outliers(*)

1. Average 0.58 SD 0.37

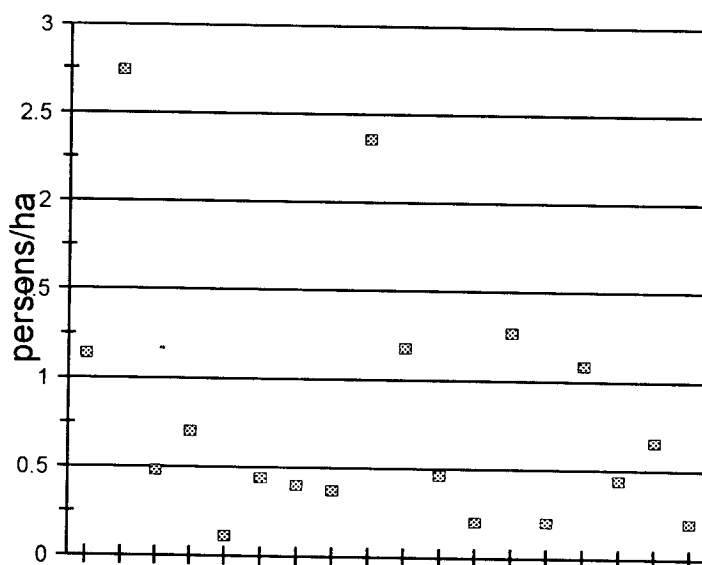
2. Villages without opium

Average 0.46 SD 0.35

3. Villages with opium

Average 0.65 SD 0.35)

Scatter plot



The data from Naan suggests that maize cultivation is the most land extensive, compared to other cash crops. During the fifteen years of maize cultivation in Naan, each family reported clearing approximately 20-30 *rai* (3.2-4.8 ha.). Pookajohn (1983:68) who observed a Hmong village nearby gave an even higher estimate, 70-80 *rai* per family. Several factors contribute to the extensiveness of maize cultivation.

- Maize requires low capital and labour inputs. Given a fixed amount of available labour and investment, a family can handle a larger area of maize than of crops that demand more labour or capital.
- Maize brings in low gross margin profit per unit area. More land thus has to be cultivated to bring back the same nominal return as opium.
- Maize is often grown where there is relatively less pressure on land from the government or nearby communities.
- Maize cultivation does not cause disruption in the subsistence sector, upland rice, which also is land extensive. Therefore, together, maize and rice system leads to extensive landuse.

The population supported by cabbage cultivation appears to be twice as high as the population supported by the system of opium/rice/maize. Table 9.2 gives the data for three villages that grow cabbage. The data from Pakluai was collected twice, before and after the village turned completely to intensive cash crops. The population-land ratio for cabbage is probably better represented by the data of Metho since this village has grown cabbage for a relatively long period, at least a decade.

Table 9.2 Population-Land Ratios of Villages that grow cabbage

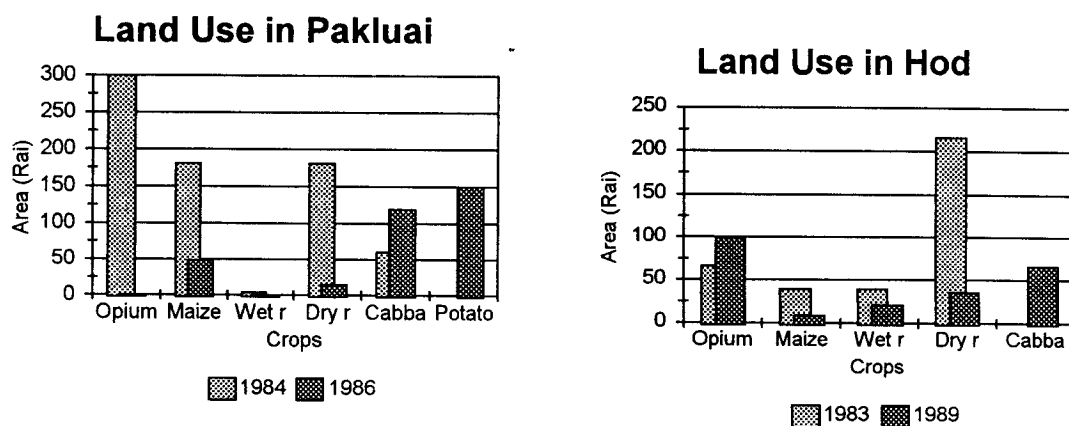
Village	Population-Land Ratio (persons/ha)	Crops	Sources
Pakluai	1.14	Maize/Rice, Cabbage	SRI, UNFDAC, UNDP 1984.
Pakluai	2.64	Potato, Cabbage, Maize	Tansiri and Chondamrongkul 1987
Metho	1.61	Cabbage	CDRPM 1996
Naan	1.60	Cabbage	Field Data Collection 1996

Average 1.75 SD 1

Cabbage cultivation requires high input of capital and labour and it is therefore not possible to grow cabbage to the same extent as to grow maize. Data from Naan suggests that a family tends to have 3-6 plots of land used in rotation, ranging from 1 to 5 *rai* (0.16-0.80 ha). At most times 2-3 plots are being used. The length of cultivation is two years and the fallow period is also approximately two years. Crop rotation is common, alternating between rice, maize and cabbage in order to prolong the productivity of the plots, sometimes up to 6-7 years with some decrease in quality and quantity of yields.

While it was possible for a family to grow maize, rice and opium together, sharp declines in rice cultivation are often seen in villages that adopt cabbage. This is due to two factors: the competition for labour between cabbage and rice and the land scarcity problem which has become more severe since the 1970s. Figure 9.2 shows examples of the decline in dry rice after cabbage adoption at Pakluai and Hod villages.

Figure 9.2 Landuse Change in Hod and Pakluai Hmong Villages



Sources: WDC&SRI 1985; Cheewasant 1989; SRI, UNFDAC, UNDP 1984; Tansiri & Chondamrongkul 1987

Flower cultivation is the most labour intensive. The crops must be tended throughout the growing period, making it impractical and uneconomical to hire extra labour. Only the initial raising of the flower beds may be done by hired labour. In Hod, the largest flower field was approximately two *rai*. A plot is cropped only once before fallowing for one year. In rare cases, the fallow may be 2-4 years. Farmers also alternate between flowers, rice and maize to prolong the productivity of the field. The population-land ratio in Hod was approximately 1.6 in 1996, increased from 0.09 in 1987/8 at the beginning of cash crop adoption and 0.04 during opium cultivation in 1983 (WDC and SRI 1985; Cheewasant 1989).

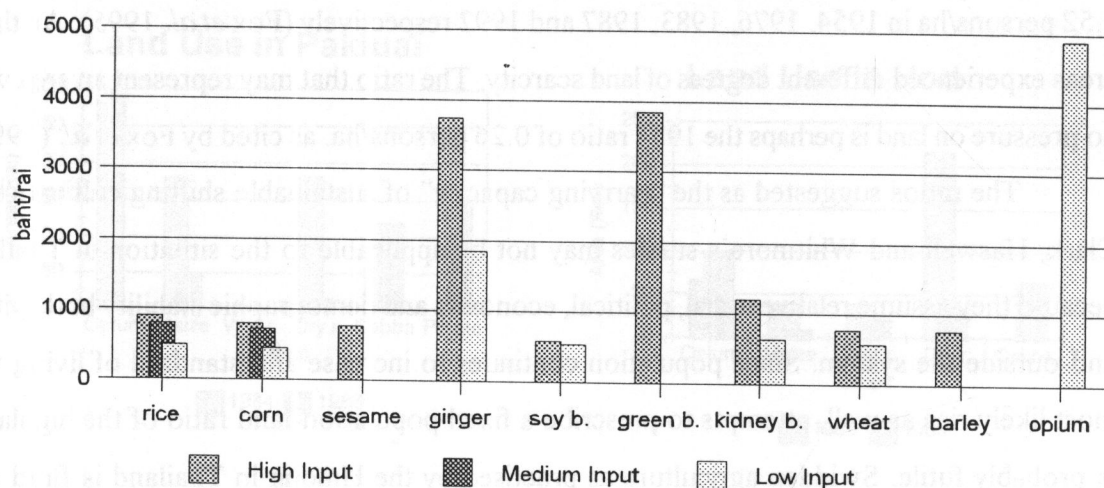
From this data, it appears that High-Input cash crops are able to support larger populations than Low-Input cash crops per unit area. The current levels of population-land ratio of HI are much higher than what have been considered sustainable in the traditional shifting cultivation system. Clark and Haswell (1970) and Whitmore (1990) reviewed various studies of shifting cultivation in the Philippines, Indonesia and Malaysia. They reported the maximum population-land ratio for sustainable shifting cultivation at approximately 0.11-0.48 persons per hectare. In Thailand, studies from the 1960s found the population-land ratio ranging from 0.33 to 0.44 in the 1960s (Kunstadter *et al.* 1978). Prangkhiew (1988) reports

the population-land ratio of Akha and Lahu villages to be 0.80-3.10 in Chiang Rai. Longitudinal data from an area north of Chiang Mai reveals the ratio of 0.26, 0.30, 0.51 and 0.52 persons/ha in 1954, 1976, 1983, 1987 and 1992 respectively (Fox *et al.* 1995). All these areas experienced different degrees of land scarcity. The ratio that may represent an area with no pressure on land is perhaps the 1954 ratio of 0.26 persons/ha. as cited by Fox *et al.* (1995).

The ratios suggested as the “carrying capacity” of sustainable shifting cultivation in Clark, Haswell and Whitmore’s studies may not be applicable to the situation in Thailand because they assume relative social, political, economic and demographic stability both within and outside the system. Since population continues to increase and standard of living will most likely rise as well, attempts to prescribe a fixed population-land ratio of the highlands is probably futile. Swidden agriculture as practised by the Hmong in Thailand is fluid and adaptive. Farmers are always looking for ways to stretch the life of their fields for another season by adding fertilizers, applying herbicides, rotating crops or fallowing the fields for a few years. No data was available on how long each adaptive strategy prolongs the life of each crop but there is possibility of a high variation from field to field depending on the types of soil and topography. However, despite these strategies and inputs from outside the system, there is probably an ecological threshold to which land can continue to adequately support a population through farming.

Gross Margin Benefit. The gross benefit per unit area is another variable that determines indirectly the extent of land required to support a population. The higher the gross margin benefit of a crop, the smaller the area needed. Salzer (1993) studied this variable in detail for rice, maize, sesame, ginger, various beans, wheat/barley and opium grown in the Thai-German project area. Figure 9.3 shows the gross benefits per *rai* of these crops.

Figure 9.3 Gross Margin per Rai of Cash Crops in Nam Lang Area, Mae Hong Son.



Source: Salzer 1993.

The gross margin per *rai* variable is affected by price fluctuation and yields. For example, the gross margin of opium at different yield and price levels can range from as low as 558 baht/rai to 26,000 baht/rai (Table 9.3.).

Table 9.3 Gross Margins of Opium at Various Yields and Prices

Source	Year	Price per Joi (1.6 kg) in baht	Yields (k.g/rai)			
			0.5 (1)	1.0 (2), (4)	1.6 (3), (4)	2.1 (5)
Cooper 1984	1964	1,115	558	697	1,115	1,450
Geddes 1976	1965	1,200	600	750	1,200	1,560
Cooper 1984,	1974	2,000	1,000	1,250	2,000	2,600
Tapp 1989	1975	3,000	1,500	1,875	3,000	3,900
	1976	1,500	750	938	1,500	1,950
	1977	1,100	550	688	1,100	1,430
	1978	1,500	750	938	1,500	1,950
	1979	20,000	10,000	12,500	20,000	26,000
	1980	15,000	7,500	9,375	15,000	19,500
	1981	3,000	1,500	1,875	3,000	3,900
	1982	2,500	1,250	1,563	2,500	3,250
Radley 1986		1,875-3,125	938-1,563	1,172	1,875	2,438
Tapp 1989	1983	4,000	2,000	2,500	4,000	5,200
Salzer 1993	1985	8,000	4,000	5,000	8,000	10,400
Cheewasant 1990	mid-late 1980s	3,500- 20,000	1,750- 10,000	2,188- 12,500	3,500- 20,000	4,550- 26,000
Salzer 1993	1991-2*	9,600	4,800	6,000	9,600	12,480
Michaud 1997	1992*	16,000	8,000	10,000	16,000	20,800

*Average Gross Margin/rai 1991-1992 = 10,960 baht

Source: (1) Cooper (1984) reports an average yield of 0.8 kg/rai

(2) Radley (1986) reports 1.0 kg/rai

(3) Cheewasant (1990) reports 1.6 kg/rai

(4) Salzer (1993) reports 1.0-1.76 kg/rai

(5) Geddes (1976) reports 1.1-2.1 kg/rai

There are fewer data available on cabbage. Tansiri and Chondamrongkul (1987) calculated the annual gross margin/rai of cabbage in detail. Table 9.4 shows the gross margin at different prices and yields.

Table 9.4 Gross Margin Benefits of Cabbage at Pakluai, Jomthong in 1986/87 season.

Cropping Period	Price (baht/kg)	Yield (kg/rai)	Gross Margin/Crop (baht/rai)	Gross Margin/Yr (2crops) (baht/rai)	
(1) May-Jul/Aug	3.78	4,500	12,160	(1)+(3)=16,631	average = 14,077
(2) Jun/Jul-Sept	0.72	7,352	1,717	(1)+(4)=22,639 (1)+(5)=18,038	
(3) Jul/Aug-Sept/Oct	1.54	4,682	4,471	(1)+(6)=18,498	
(4) Aug-Nov/Dec	1.92	6,778	10,479	(2)+(5)= 7,595 (2)+(6)= 8,055	
(5) Oct-Jan	0.89	9,990 ¹	5,878	(3)+(5)=10,349	
(6) Oct-Jan/Feb	1.86	4,505	6,338	(3)+(6)=10,809	

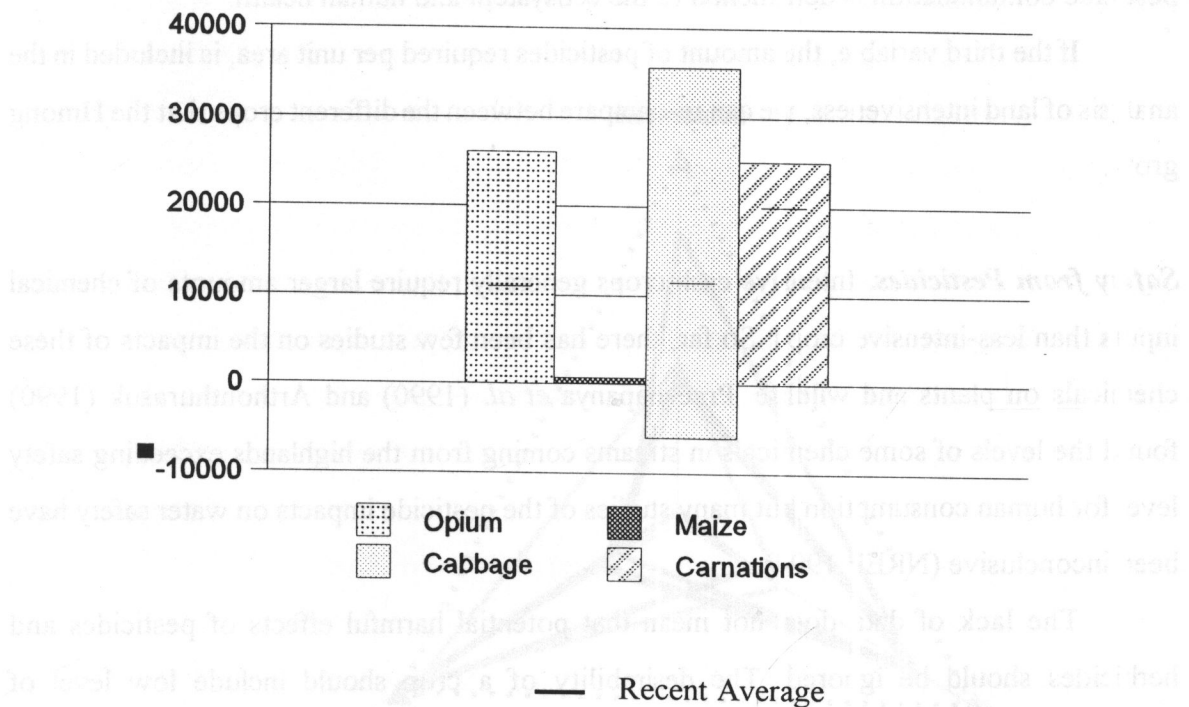
Source: Tansiri and Chondamronkul 1987.

The yields in Naan and Metho were lower than in Pakluai, approximately 3-4 tons/rai. The annual gross margins at these two sites were approximately 7,000-10,000 baht/rai/year at the price of approximately 2 baht/kg. Villagers in Naan reported that cabbage prices fluctuate greatly. The gross margin benefit/year may be as low as -6000 (total lost) or up to 35,000 baht/rai/year if the price is really high, at 5 baht or more.

Gross margin benefits per *rai* of carnations is approximately 20,000 baht at the price of 1 baht each. One crop of carnations brings income 9 months in a year. Figure 9.4 compares the annual gross margins of opium, maize, cabbage and carnation diagrammatically. The most recent average for opium comes from the 1991-1992 data (see Table 9.3). The cabbage average comes from an estimate of the following variables: yield = 3.5 tons/rai, price at 2.5 baht/kg, production cost 3,000 baht/rai, and two crops/year. The maize data comes from Salzer (1993) and carnations from Hod.

¹This level of yield is unheard off in my experience.

Figure 9.4 Approximate Gross Margin of Opium, Maize, Cabbage and Carnation and Recent Average



Sources: Geddes (1976); Cooper (1984); Tansiri and Chondamrongkul (1987); Cheewasant (1989); Tapp (1989); Salzer (1993); Field Data (1996); Michaud (1997)

Figure 9.4 suggests that carnations bring the highest average annual income per unit area while cabbage brings an income per unit area that is comparable to opium (because it is grown twice a year). Maize brings the smallest amount of income.

What are the implications of land intensiveness on conservation? This study does not measure the direct impacts of cash crops on land, e.g. the impacts of crops on plant or animal diversity, the impacts of crops on soil composition or erosion. Some of these evaluations have been done by others (e.g. see Tulkerboom and Van Keer 1996; Savage 1994; Fox *et al.* 1995). However, the intensive use of land means that less land is needed to support a population and therefore, the extent of landscape changes is more limited. This can contribute positively to biodiversity conservation if population increase is low. However, current land

intensiveness means larger amount of chemical inputs and although scanty data is available on the impacts of pesticide use in the Thai highlands, evidence elsewhere has shown that pesticide contamination is detrimental to the ecosystem and human health.

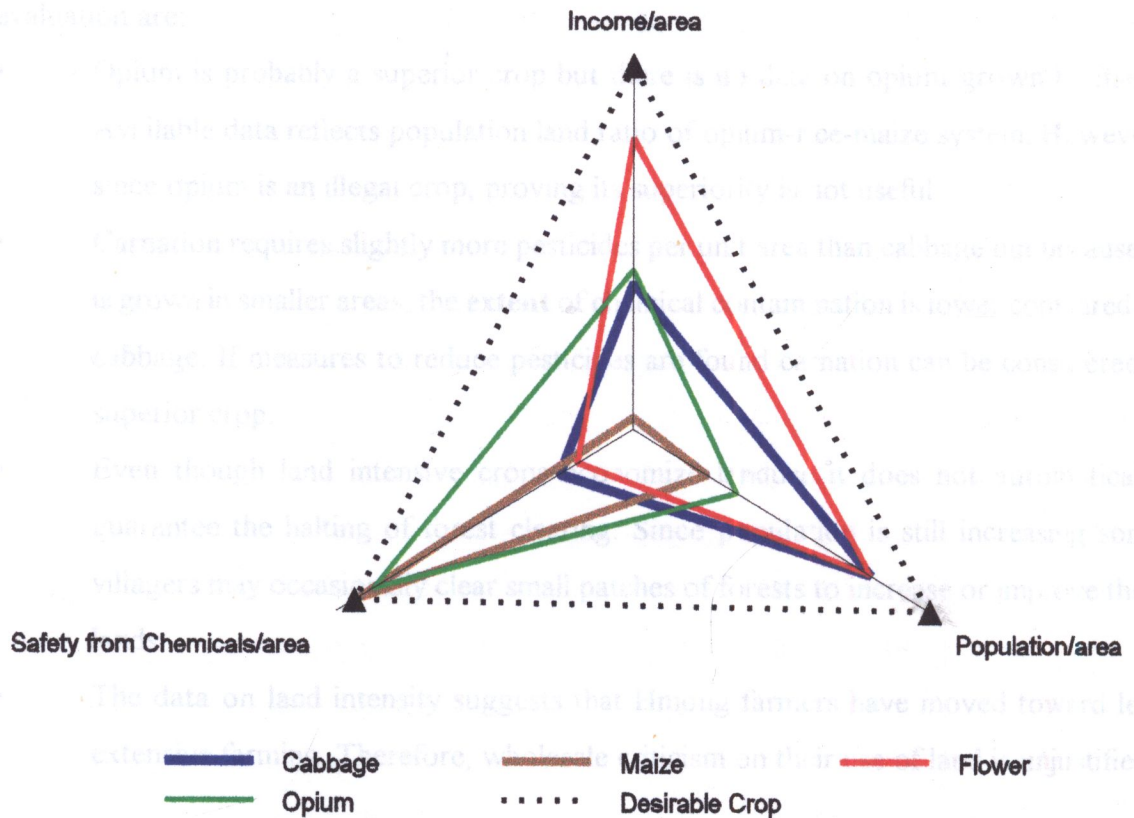
If the third variable, the amount of pesticides required per unit area, is included in the analysis of land intensiveness, we can re-compare between the different crops that the Hmong grow.

Safety from Pesticides. Intensive cash crops generally require larger amounts of chemical inputs than less-intensive crops. So far, there has been few studies on the impacts of these chemicals on plants and wildlife. Preechapanya *et al.* (1990) and Arthonthurasuk (1990) found the levels of some chemicals in streams coming from the highlands exceeding safety level for human consumption but many studies of the pesticide impacts on water safety have been inconclusive (NREP 1994).

The lack of data does not mean that potential harmful effects of pesticides and herbicides should be ignored. The desirability of a crop should include low level of contamination risks. Currently, we only know that farmers use few chemicals in the production of opium and maize. In cabbage and cut-flower cultivation, pesticides/herbicides expenses reported by farmers vary from a few hundred baht to 1,200 baht per *rai*. Tansiri and Chondamrongkul (1987) reports an average of 425 baht/*rai* for each cropping season while Leeprecha reports 175 baht. The farmers in Naan indicate less than a hundred baht expense on pesticides, while the farmers in Hod recall spending about 1,200 baht/*rai* when growing cabbage. The carnation farmers report pesticide/herbicide expense to be approximately 1,200 baht/*rai*.

Based on population/area, income/area and the level of pesticide required/area discussed above, a conceptual comparison between opium, corn, cabbage and carnations can be drawn (Figure 9.5). A crop is considered "More Desirable" if it can support more population with less land, brings higher income from limited area, and posed less chemical contamination risk on land (and its inhabitants).

Figure 9.5 Conceptual comparison between Opium, Maize, Cabbage and Carnation on three variables



9.1.2 Social Differentiation and Biodiversity Degradation

Dearden (1976) describes an indirect impact of cash crop development on biodiversity. This is a degradation of biodiversity that takes place because cash crop adoption accelerates social differentiation, leading to the weakening of local institutions that had in the past protected common resources. This problem is playing out in the Karen and the Lahu societies (Gnanadass 1990; Ganjanapan 1987; Kunstadter 1987; Tun-Kan-Yong *et al.* 1988). Before we discuss the impacts of cash crop development on social differentiation, it may be useful to first look at social differentiation in the context of the Hmong society.

In general, the Hmong are known to be an egalitarian society (Rehard *et al.* 1988).

Figure 9.5 shows that cabbage and flowers use land more economically than maize and opium but have higher contamination risks (lower safety level) while opium and maize are better in terms of chemical impacts on the ecosystem but are more land extensive. None of the cash crops are desirable in all measures. Some precautionary observations about this evaluation are:

- Opium is probably a superior crop but there is no data on opium grown by itself. Available data reflects population land ratio of opium-rice-maize system. However, since opium is an illegal crop, proving its superiority is not useful.
- Carnation requires slightly more pesticides per unit area than cabbage but because it is grown in smaller areas, the **extent** of chemical contamination is lower compared to cabbage. If measures to reduce pesticides are found carnation can be considered a superior crop.
- Even though land intensive crops economize land use it does not automatically guarantee the halting of forest clearing. Since population is still increasing some villagers may occasionally clear small patches of forests to increase or improve their lands.
- The data on land intensity suggests that Hmong farmers have moved toward less extensive farming. Therefore, wholesale criticism on their use of land is unjustified.

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In general, the Hmong are known to be an egalitarian society (Renard *et al.* 1988).

Cooper (1984) observed that in Huai Menao, described as “the only village to rely almost entirely on opium cultivation, the “divisions of wealth are much less marked” (p.210). The lack of economic stratification among Hmong opium growers was also observed by Geddes (1976) and Radley (1986). However, some differentiation has been noted in the late 1970s. Cooper wrote that the division of wealth in the Hmong society occurred through two processes. First, resource scarcity prevented those who were unfortunately poor at the time when “the end of the frontier was reached” to recuperate by acquiring new lands. Second, an accumulation of wealth occurred when it was possible for the rich to obtain permanent land, particularly terraced rice (as in the case of Khun Sa where richer households bought terraced rice from the Karen). Michaud (1997) substantiates these observations saying that the clan that happened to be poor at the time of opium suppression and at the end of pioneering were the poorest today. Radley (1986), on the other hand, suggests that wealth is a product of mature labour forces and access to productive land. He does not agree with Cooper that acquiring paddy land entrenches social stratification. According to Radley, paddy cultivation promotes cooperation among villagers (in labour exchange).

Since cash crops had yet to make a substantial inroad into the Hmong communities at the time of these studies, the impact of the new cash crops were not fully addressed. Nevertheless, Cooper comments that the richer sector of the population was better able to afford to experiment with new crops. Thus he predicted that if cash crops were profitable (this was not always the case at the time of his study), it would accentuate social differentiation.

In short, social differentiation in the Hmong society originates from differential access to land and labour at the end of the pioneering era. Those fortunate to be wealthy during this period began the process of accumulation by transferring their wealth to longer-term means of production such as paddy fields. These means of production gave these households an advantage over the rest of the communities.

How do non-opium cash crops affect social differentiation in the study areas? The two main groups of households that were visibly poor in the case study villages were the opium addicts and the temporary migrants. Cooper argues that poverty was the main cause of opium addiction. “The opium and the comradeship relieve the psychological problems of poverty and

the feeling of shame at having failed to fulfil social obligations” (Cooper 1984:193). From the literature and the interviews with villagers, I found no substantial evidence to support this suggestion. The majority of the Hmong families had at one time or the other experienced debt and poverty but seldom did they find solutions in the use of opium. Since the explanation of opium addiction is beyond the scope of this study, I cannot offer reasons why an individual becomes an addict. What is clear, however, is that once a person becomes an addict, his economic status slides below average. This group of poor households grew little of their own crops but hire themselves out to other farmers.

The short-term migrants, like the addicts, live in the most basic conditions. Two families in Hod shared a bamboo shack separated by a wall in the middle. The temporary status of their residence does not warrant investment in permanent structures. They are also poorer to begin with and moved into the village to take advantage of the booming cash crops. In Hod, 10 families had come from elsewhere in the past 3 years, but only 3 are still in the village. A couple of families may settle permanently with the help of their relatives. We observed that families that had settled for a decade or so appeared similar to other households. This may suggest that the poor newcomers, over the course of time, improve economically and become part of the average group. The situation 10 years ago and now, however, may lead to different outcomes. It can not be said for certain what will happen to today’s newcomers in the next decade.

The poorer section of the communities is not as pronounced as the rich. In Hod there are twice as many wealthy-looking households than there are destitute households. The rich build houses in a lowland style from plank wood and concrete. Some are two-storeyed and contain TVs, VCRs and refrigerators. The rich have newer and bigger trucks. In Hod, most are middlemen or closely related to the middlemen (11 out of 48 households). In Naan, the nature of their wealth is more dubious. A few of the rich are said to have supplied illegal logs to lowland “big men”. One was a gasoline distributor in the village. Most of the well-to-do Hmong (about 15 households of the total of 303) have strong connections to lowland business interests.

The evidence from Hod and Naan suggests that poverty of the Hmong in the study

villages, if not associated with drug addiction, is rather transient. The opportunity to temporarily migrate to successful villages contributes to this situation. Cash cropping that causes poverty in one place may help alleviate poverty in other places. Cash crop cultivation also provides wages to drug addicts who would otherwise have no income. Cash crops seem to raise the standard of living of the Hmong as a whole, but particularly strengthens the upper strata of the society. Cash crops create opportunities for the Hmong to be involved in entrepreneurial activities. Those that capture these opportunities become more wealthy than the rest of the community and invest further in long-term means of production such as buying trucks, developing fruit orchards, sending children to school or buying land in the lowlands. They also increase their standard of living by building new houses, buying convenient goods and using modern health care, etc.

Those that do not engage in entrepreneurial activity gain only a moderate level of benefits. Most people I interviewed indicated that they lost money sometimes but gain it back other times. It is possible that some households cannot sell the crops at reasonable prices repeatedly and are driven into poverty. However, I did not encounter this in the study villages. It is possible that they had already migrated elsewhere.

How does social differentiation affect biodiversity? Kunstadter (1978), indicates that the change in land tenure from communally "owned" to privately "owned" is the main cause for the break down of communal institutions. Dearden (1996) suggests that cash crop development accentuates social differentiation leading to weakened communal resource management, and eventually biodiversity degradation. Both theories are clearly applicable to the highland groups that traditionally had resource management institutions such as the Karen and the Lua. In the Hmong case, however, I found no clear evidence to support that stratified Hmong communities exploit the resources more heavily than the non-stratified communities in the past. This is because the Hmong do not have traditional communal resource management. The arrival of cash economy or more stratified economy therefore does not have a direct impact on conservation in term of destroying management institutions. However, in the case where the Hmong have tried to construct resource management schemes (such as the case of wildlife conservation in Naan), village unity and leadership may be indirectly affected

by social differentiation. This point, however, can not be proven by this study because the break down of the Naan wildlife conservation scheme was mainly caused by the lack of integrity of the new leaders.

9.2 Cash Crop Development and Hmong's Relationship to Wildlife

This section returns to the propositions about the relationships between indigenous people and wildlife that were presented in Chapter 2. These propositions will now be discussed in light of qualitative data from the case studies.

Proposition 1). The change from subsistence to employment from outside the forest will lessen hunting pressure (Ayres *et al.* 1991; Tanakanjana 1996). The change from subsistence to a market economy will reduce hunting pressure (Dearden *et al.* 1996).

Discussion: Outside employment was not significant in the study villages and thus a conclusion cannot be made on this point. However, since 1997 there has been an increasing number of Hmong men in Naan who had gone to Taiwan to be construction workers. This has resulted in less farming in Naan, and possibly less hunting. However, I do not have any data on this most recent development.

The move from a subsistence economy towards a cash economy is evident in both study villages. Rice production has been reduced to the level just sufficient to fulfil the ceremonial purpose (*noj nplej tshab*). However, this move is not complete. Hmong households still grow most of their own vegetables and raise livestock for their own consumption.

The most frequent point that came up when the villagers talked about hunting frequency was the lack of time due to demanding work in cash crop cultivation. Cabbage growers in Naan said that they were more busy when growing cabbage and did not spent as much time in the forests as they used to (Table 9.5). One farmer indicated that since he bought a truck, he had to concentrate on cash crops in order to find money to repay the debts.

Villagers in Hod similarly stated that cut-flower cultivation kept them away from hunting. Those that engage more heavily in trade such as the middlemen have even less time to go to the forest. This evidence suggests that intensive cash crop development contributes to reduce hunting through competition for labour and time.

Table 9.5 Reasons for Less Hunting

Reason for reduced/stop hunting	Number of Respondents	
	Naan	Hod
1. Illegal	-	2
2. Reduction in animals	2	4
3. No time because of family responsibility	-	1
4. Less time because of current cash crop	6	9
5. Have to be diligent /make money	3	-
6. Dangerous	1	1
7. Age	2	1

Source: Interviews 1996

The reduction of wildlife has made the return of hunting so low that this activity is “a waste of time” in an economic sense. However, since hunting is still practised by most Hmong males, it clearly is not an activity driven by economic consideration alone but rather has a strong root in the Hmong culture (see Chapter 8).

Thus, economic *improvement* may not lead to reduced hunting in the case of the Hmong. Competition for time, labour and changing cultural value seem to have more direct impacts on hunting behaviours.

Proposition 2) Hunting decreases when there are available substitutes for protein sources (Ayres *et al.* 1991).

Discussion: When asked to compare the amount of meat available for consumption during opium, maize, cabbage and flower growing periods, the majority of the women appeared to feel that today's meat consumption is greater than in the old days, mainly because they now have money to buy meat from the market (Table 9.6). A few respondents did say that meat was more abundant before current cash crop development, either because more domestic animals were raised or because more wild meat was available then. A 34 year-old woman in Naan told of her childhood when meat was easier to obtain than rice and how her father and grandfather dried meat and stocked it up to give to children as snacks. In her opinion, today's Hmong children consume less protein than her generation.

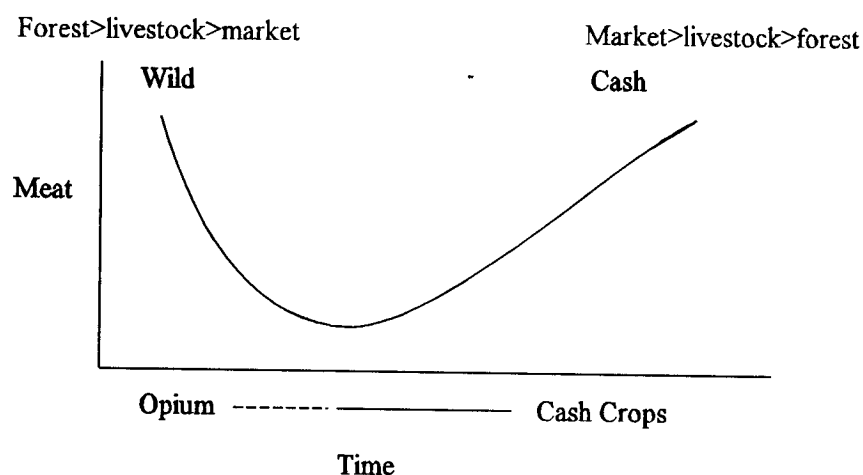
Table 9.6 Women's Response about Periods of High Meat Consumption

Period of Highest Meat Consumption	Hod	Naan
when growing opium	5 (29%)	4 (20%)
when growing cabbage	1 (6%)	11 (55%)
when growing flowers	11 (65%)	n.a
when growing maize	n.a	1 (5%)
no difference	-	4 (20%)

Source: Interviews 1996

From the results of the interviews, it appears that cash crop adoption leads to higher meat consumption. This contradicts studies by Vryheid and Wongcharoen (1988) who commented that children from many cash crop villages suffered worse nutrient deficiencies than many from poorer subsistence villages. Possibly, toward the end of the opium growing years, the impact of wildlife reduction had already been felt by the Hmong. Unless the men travelled far, or were keen hunters, the amount of wild meat reaching the families was probably inadequate even then (Figure 9.6). In the past three decades, the women have experienced protein shortage and therefore regarded wild meat as an insignificant contribution to family food. They prefer the men to earn income from cash crops and buy meat from the markets.

Figure 9.6 Sources of Protein



Substitute sources of protein may have indirect impact in that the women see the markets as a more reliable source for meat and dismiss the importance of hunting. Assuming women's attitudes influence the men's behaviours, we may say that available substitute sources of protein (and having the resources to access them) contribute to hunting decline. However, for the men, having substitute protein sources available seems to play little role in directing their decisions about whether to hunt. In the Hmong case, hunting frequency and the availability of substitute protein sources does not seem to be strongly related.

Proposition 3). Wealthier households tend to kill “useless” species while the poorer households kill “food species” (Glanz 1991).

Discussion: Typically, poor households in the Hmong communities are those whose main labour force are addicted to opium. These households cultivate little on their own behalf. They are perhaps the only people that truly hunt for subsistence. Their prey is usually small animals such as squirrels, rats and birds. They do not have good health nor good weapons and rarely join hunting groups.

Another group of poor households, the temporary migrants, are in the village to take

advantage of the cash crops thus they concentrate on cash crops rather than going into the forest. The newcomers that will settle permanently in the village hunt occasionally like the other members of the villages. The exceptionally wealthy Hmong, mainly entrepreneurs, do not have time to hunt but may occasionally buy meat from others. The demand from richer neighbours for wild meat is insignificant.

It is possible that the same species may be considered useful by a poor drug addict but useless by the richer neighbours. Therefore, the poor and the rich may kill the same species but one eats it and the other discards it. There are traces of such pattern among the Hmong but not enough data available to substantiate the theory.

Proposition 4). The use of sophisticated hunting tools affects the assemblage of animals being killed (Alvard and Kaplan 1991).

Discussion: This study cannot address this proposition. The crossbow is no longer used by the Hmong and modern rifles with telescopes have been acquired by a few people. According to some villagers, owners of powerful modern guns hunt more frequently and enthusiastically than those with old homemade guns. This study cannot confirm this observation due to difficulties of interviewing really keen hunters.

In summary, this study agrees with some of the points brought up in other literature on the impacts of cash economy on hunting. The development of cash cropping among the Hmong seems to lessen hunting frequency mainly because of the labour and time competition between cash crop production and hunting. The availability of substitute protein (and the availability of cash to purchase it) may indirectly contribute to the decrease in hunting frequency by making the activity less economically significant as reflected by the Hmong women. However, the availability of substitute protein seems to play little role in the men's decisions to hunt.

There is no evidence that wealthier households kill 'useless' species while poorer households kill 'food species', although some Hmong do kill species that they do not eat or

use and discard the carcasses or give them to Karen neighbours. Among the opium addicts, small species are killed regularly for food while the rest of the hunters concentrate more on large animals or popular small animals, i.e. jungle fowls and jungle monitors. The effects of hunting tools on the types of animals being killed are not known.

9.3 Summary

This chapter compares opium, maize, cabbage and carnations by looking at three variables: population-land ration, gross margin benefit, and safety from pesticides per unit area. Available data shows that no particular crops are superior in all aspects. Maize is land extensive, bringing low income to farmers and thus can only support small population per unit area. However, it requires little chemical inputs, and thus poses less contamination risks. Cabbage is land intensive but requires high amount of pesticides per unit area. Flower brings the highest income per unit area but also requires the highest amount of chemicals per unit area. Opium brings relatively high income without the impacts of pesticides, but has always been grown together with rice and maize which makes the total production system land extensive. If pesticide use can be reduced, cut-flowers may be considered the most desirable crop compared to the others. The study finds that the Hmong farmers have moved from land extensive to more land intensive crops.

The impact of cash crop adoption on social differentiation are complex. Those who sell cash crops at good prices are able to reinvest in means of production such as developing permanent fruit orchards or wet rice terraces, acquiring automobiles, sending children to schools, or having enough savings to insure them against hard times and thus allowing them to experiment with better methods and better crops. They also can become entrepreneurs which further extends their advantage. In this regard, cash crops encourages social differentiation by creating a class of exceptionally wealthy Hmong.

On the other hand, cash crop economy helps alleviate extreme poverty. Households that are not successful in their villages have an opportunity to take advantage of cash crop cultivation in more successful villages. Poor households that are drug addicts can also earn

some income from hiring themselves out to other cash croppers.

The linkage between social differentiation and conservation is not clearly evident from the case studies. There is no supporting data to conclude that the Hmong conserved their resources better before they engaged fully in cash crop cultivation. One of the main reason being that traditionally the Hmong has not had resource management institutions that require egalitarianism.

The impacts of cash crop development on the Hmong's relations to wildlife can be summarized as follows.

- 1) Cash crops that require intensive labour result in lower hunting frequency.
- 2) Cash crops allow the villagers to buy meat and therefore place less reliance on wild meat as food source. However, this can also be a result of less successful hunting due to the decline in wildlife.
- 3) Very poor households such as those with drug addicts depend on small wildlife for food. They may eat species that are discarded by others. Other households hunt mainly for leisure.
- 4) There are some suggestions that those who own powerful guns hunt more frequently. However, this study could not confirm this proposition.

Chapter 10

Conclusion and Recommendations

The needs to understand the linkages between economics and environment has increasingly been recognized by conservationists throughout the world. This study seeks to understand these linkages through the examination of highland cash crop development and biodiversity conservation. The study focuses on the Hmong people, the largest group of traditional pioneer swiddeners in northern Thailand. The Hmong once carried out subsistence farming but have now turned to cash crop cultivation. Land pressure and government control led the them to settle permanently and replace opium cultivation with conventional cash crop cultivation. How these changes affect the Hmong society and biodiversity conservation is the subject of this study. The study aims at contributing to three areas of knowledge: Human Geography (Human-Environment Interaction and Regional Analysis), Conservation Management, and Ethnography.

The goals of this study are

- (I) to document processes of cash crop development among the Hmong highlanders and its impacts on the Hmong society and land use changes.
- (II) to explores the relationships between Hmong highlanders and wildlife, past and present in order to provide suggestions for practical approaches to wildlife conversation where Hmong communities are concerned.
- (III) to shed light on the linkages between economic changes and the relationships between the people and wildlife.

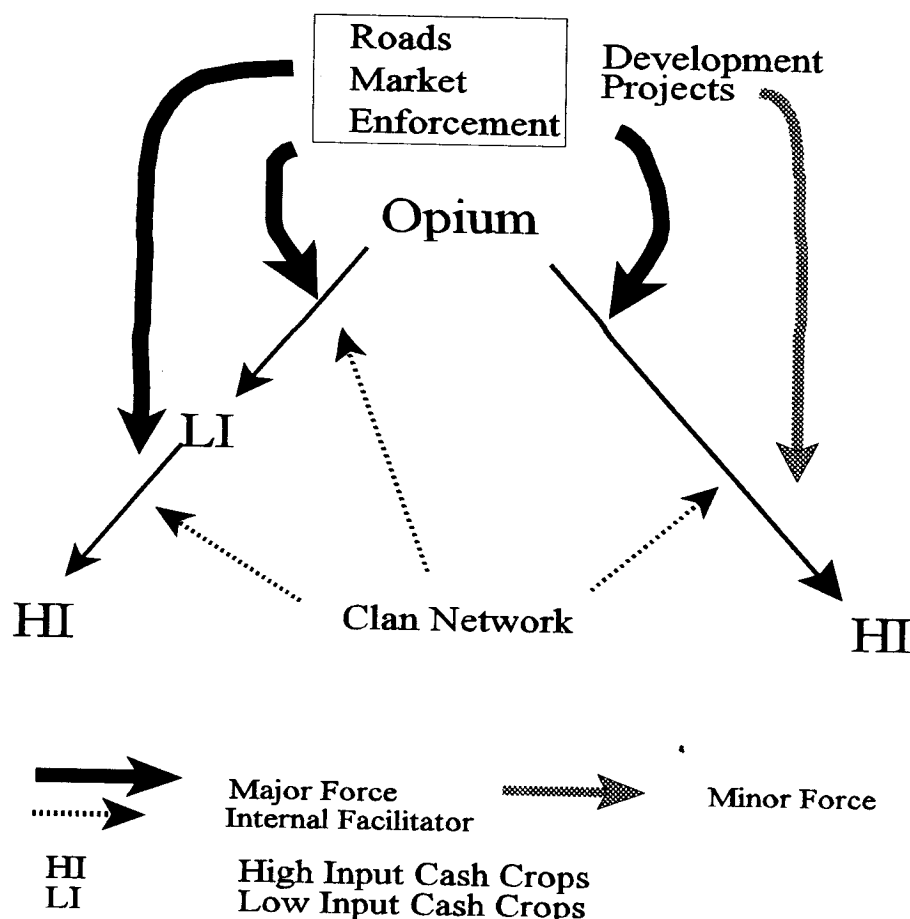
10.1 The Processes of Cash Crop Development

The study has found that the development of non-opium cash crops among the Hmong occurred mainly in two ways. One route involves the adoption of low-input upland crops followed by a shift to high-input vegetable crops. This pattern occurred in the Lower North and spread to the Upper North, particularly in Tak, Phrae, Nan, Payao and Chiang Rai. The

adoption is closely linked to the development of roads into the uplands and the diffusion of maize cultivation in the lowlands. The second pattern involves a shift directly from opium to high-input crops. Large scale adoption of vegetables, particularly cabbage, began when the Hmong in Ban Metho adopted cabbage in the early 1980s. The Hmong cabbage production satisfied the demand for off-season vegetables that could not be supplied by the lowlands.

The important factors that triggered the adoption of non-opium cash crops were the government poppy eradication activities, the increased accessibility of Hmong villages and the contacts between market agents and the Hmong. The recent rapid adoption of cabbage was stimulated by favourable market prices at the initial period and by the Hmong clan network. The processes of cash crop development are presented diagrammatically in figure 10.1.

Figure 10.1 Processes of Cash Crop Development



The limited availability of new land has prevented most Hmong from leaving their land to clear new areas. Instead, they grow crops in a permanent location by rotating between different fields. The rotation cycle is short and is managed at the household level. Soil fertility is maintained through the use of chemical inputs and to a lesser extent, organic inputs. However, it is doubtful whether soil fertility will be able to be maintained indefinitely by these inputs since fertilizers only replenish macro but not micro-nutrients.

10.2 Movement Associated with Cash Crop Development

Various authors have recorded the types of movement in the Hmong society at the village and household levels (e.g. Geddes 1976; Cooper 1984). The village movement, for example, has been noted by Cooper (1984) to follow three patterns: linear, explosive and divisive. At a household level, movements includes moving to completely new area (pioneering) or moving to live with relatives in other villages. These movements were done with the intention to stay permanently or until the lands were exhausted.

During the field work, another pattern of household movement that has not been discussed in earlier literature is found to be prevalent in association with today's cash crop cultivation. This movement involves the entire family or some members (only males) migrating to other villages for a period of 1-2 years. Temporary migrants depend on the assistance of fellow clan members or closer relatives but with the understanding that they will not stay permanently in the new village. This type of movement is associated with successful cash crops in the destination villages. Upon returning to their original villages, the migrants often brought with them the new technology from the host villages. This results in efficient diffusion of new crops and technologies and contributes to the resilience of the household economy. It can be said that the nature of the Hmong pioneering activity has been changed from securing new land to exploring new agricultural technology.

10.3 Social Implications of Cash Crop Development

When examining cash crops closely, it was apparent that each type of cash crops had different effects on the Hmong socio-economy. Low-input crops such as maize cause less

dramatic change compared to high-input crops because they do not substantially alter the income level nor the subsistence sector of the economy. High-input crops, on the other hand, affect the economic and social conditions more significantly.

First, high-input cash crops tends to out compete subsistence sector of the economy. Since subsistence production alone usually can not meet family needs, farmers generally chose to abandon upland rice for cash crop production. Once the farmers adopted cash crops, it is difficult to return to subsistence production because cash crops require higher capital which is often obtained through credit from one season to the next.

The second effect of high-input cash crops is the substantial cash income gained, particular during periods of favourable prices. This leads to two notable outcomes. One is a formation of an exceptionally wealthy households in the village. These households were those that had large labour pools, suitable lands and were able to sell the produce at good prices. The rich displayed their wealth in housing styles and material possessions which, in turn, inspired the rest of the community to reach similar standards of living. The second outcome is associated with the high level of automobile ownership among the Hmong. Economically, trucks allow owners to bypass the middlemen and have more marketing flexibility. Automobiles also lead to more frequent contacts between farmers and the markets, raising their awareness of market demands, new technologies and increasing the level of consumption. Socially, automobiles increase the level of contact between the Hmong and the lowland cultures and may have profound impacts on the Hmong cultural values in the future. Moreover, trucks are essential tools for the Hmong who become entrepreneurs. In the flower growing village, ownership of trucks is a prerequisite for transition into middlemanship. The degrees of automobile ownership, however, seem to depend on the type of crops grown. In villages that grow bulky vegetables such as cabbage, there tends to be higher numbers of trucks than flower growing villages. This is because cut-flowers are harvested and marketed in small batches while cabbages needed to be harvested in large quantity.

Cash crops may also affect the role of the women in the Hmong society. Traditionally, Hmong women had limited involvement in the world outside their villages. Increased vehicular mobility has changed this to some extent. In the village where cut-flowers are

grown, however, women have become active in the marketing process of the crops. The lighter weight of the produce has allow the women to regularly travel to the lowland to sell the sub-standard flowers. Participation in markets is likely to have many impacts on the roles of the women since it increases their control of cash and their contacts with the lowland society. It is likely to influence their values, consumption and choices in the long run.

10.4 Cash Crop Development and Land Use

When examining the Hmong landuse pattern, the study finds that each cash crop that the Hmong have adopted has differential impacts on landuse. Hmong farmers have moved toward land extensive to land intensive cultivation. Low-input cash crops such as maize have caused extensive clearing of the forest, bring low income to farmers and thus can only support small population per unit area. High-input cash crops such as cabbage and flowers are better able to support the growing population but requires high pesticide inputs. When comparing opium, maize, cabbage and carnations in term of: population/area, income/area and safety from pesticides/area, no particular crops are superior in all three variables. Opium brings relatively high income without the impacts of pesticides. However, since it is an illegal crop its cultivation is out of question. If pesticide use can be reduced, cut-flowers may be considered the most desirable crop compared to the others. The rankings by the three variables are shown below.

Population/area	Income/area	Pesticide Safety/area
1. Carnations	1. Carnations	1. Maize
2. Cabbage	2. Cabbage	2. Opium
3. Opium*	3. Opium	3. Cabbage**
4. Maize	4. Maize	4. Carnations

* Opium was considered within the system that includes rice and maize.

** Cabbage use slightly less amount of pesticide per unit area than carnations but the extent of the area sprayed is higher because of larger fields.

10.5 The Highlanders' Relationships to Wildlife and Hunting

Wildlife was once an important element of the highland cultures and were omnipresent in folklore and religious beliefs. One common theme found among various highland groups is the transformation between the soul of the dead and wild animals. Taboos against killing or eating certain species were also prevalent. Groups such as the Akha, Kammu and Karen revered elephants and will normally not kill this animal. Tigers and snakes are feared by all groups and therefore were often prohibited from being eaten or even being mentioned. Other animals protected by some groups included hornbills and gibbons.

Hunting plays important roles in strengthening solidarity among members of the communities. This can be seen in the meat sharing rituals of the Kammu and the Lisu. For other groups, meat is usually shared only among those participating in the hunts, their relatives, and sometimes with village religious leaders. Most important of all, wildlife was an important source of food for highlanders, especially in times of food shortage.

Hunting methods are relatively similar across all groups. The hunting drive was a popular method for tracking large mammals. Hunting on the way to and back from the fields was common. Boys learned these skills from older males early in their lives. Crossbows with poisoned arrows were once the most important tool but have now been replaced by guns. Traps of all sizes and types were widely used by highlanders including those that utilized sharp objects, weights, nets, glue and decoys.

10.6 Current Hunting among the Hmong and the Impacts of Cash Crop Development

Today hunting is still practised by almost all Hmong boys and men, generally from 9-50 years old. Boys hunt birds and rodents with slingshots and gradually learn to handle guns in their teen years. Knowledge about wildlife and hunting is nevertheless regressing among younger generations. Young men can differentiate fewer species and no longer possess the skills of making most traps. However, they are equipped with more powerful guns than their forefathers. A spotting scope is an added feature to some guns. Commercial poisons and glue

now replace natural substances.

The reliance on wildlife for protein seems to be insignificant today. Most men indicated that hunting was a leisure activity. The women considered it a “waste of time”. The majority of the women prefer that the men spend more time in the fields rather than hunting. Only those who do not cultivate their own fields such as the poor drug addicts seem to depend on wildlife significantly for food. These households killed mainly smaller wild species such as birds and rodents. Other uses that still can be found today include ornamental pets, traditional medicines and trade.

Demands for wildlife trade come mainly from the lowlands. Popular target species are barking deer, wild pig, bear, jungle monitor, parakeets, doves and large cats. Other species reportedly sold are civets, pangolin and macaque.

In the past few decades, the Hmong in many communities have set rules against killing certain species. From the interviews in several villages, gibbons appears to be the most favourite species that the Hmong have explicitly try to protect. The rule however does not seem to be affective, as the species was reported to be disappearing from most areas.

Strong rules were imposed by a community leader in Naan and the village was able to conserve sambar deer and gibbon for over a decade. However, after a change in leadership, the rules disintegrated, leading to the elimination of both species. The lack of support from adjacent communities and the authorities contributed to the failure of local management. In other communities rules against killing gibbons existed but did not seem to be taken very seriously by every one in the communities. The gibbons are extirpated in most areas.

Most people interviewed claimed that recent cash crop cultivation did not allow them to hunt as often as they used to. However, despite the hunting reduction, the pressure on wildlife is still high. All species were reported to be declining including those most resilient such as wild boar and barking deer. There were also reports of hunting of species that were not usually hunting targets in the past. This may partly be a result of diminishing diversity. As many species are disappearing, hunting pressure mounts on the remaining species. Thus, we see a gradual disappearance of wildlife usually in relation to their size and popularity as food. There may also be important trophic level impacts, as the prey availability becomes

compromised for species at higher trophic levels.

10.7 Approach to Wildlife Conservation in the Context of Hmong Communities

Economic change may indirectly lessen the time and inclination of the Hmong to hunt, but since the people view hunting as a leisure activity, it will be difficult to rely on economic solutions alone for conservation. Many Hmong agree in principle with the conservation of wildlife as they express sadness about the young generations not being able to see wild species. However, among those who articulate the value of conserving, many still actively hunt. The problem reflects those plaguing most common, open-access resources, of “if I don’t take them, somebody else will anyway”.

Indigenous attempts to conserve wild species had been laudable in the case of Naan village. But, it relied heavily on the integrity of the leadership in the village. For community leaders to carry out penalties without creating significant rift in the village, the leader must be able to solicit significant cooperation from community members. This type of leader in a Hmong village is becoming rare. In many communities, younger men are now in charge because of their education and their ability to deal with lowland administrators. Both the headmen in Naan and Hod for example are in their early 30s. In reality, these men may not yet be able to gain total respect and acceptance from members of the communities. Today’s Hmong communities are also larger than in the past, making it more difficult to govern or to control activities such as hunting which is carried out by individuals in the forest. Moreover, indigenous conservation only protects a few selective species. Conservation of species not traditionally appreciated by the people will have to be carried out by outsiders.

The following are suggestions regarding wildlife conservation in the Hmong communities that conservation managers may consider based on what has been learned from this study. Most suggestions are not new but since they are still relevant in relationship to the Hmong, they are worth repeating here.

A) *Communication and Education*. A long-term approach to conservation among the Hmong relies on systematic investment in communication and education. There are several levels of communication that are important when dealing with highland communities. First, the leader of the communities must be convinced that it is to the benefit of the community and the next generation that wild species are not completely gone from the forest. The conservation officers should solicit the leaders' knowledge on the best approach to carry out conservation and base their conservation design on that knowledge. When some understanding about local conditions have been established, conservation officers should not leave it to the leader to carry out the difficult task by himself. The officers should also communicate to the villagers directly together with the village leaders to demonstrate support from the government. It is likely that the villagers will not like the interventions by the officers but it is crucial to treat the people respectfully. The Hmong are proud people and if given respect, communication can go a long way. Along with enforcement, an education program should be implemented over a long period. This follow-up program should be designed by professionals and include visual instruments such as video presentation instead of just speech. These visual aids and programs can be produced for use in many protected areas simultaneously. This type of approach had been used successfully in the family planning campaigns in the past.

One of the key groups that will determine the success of wildlife conservation in the long run is the children. For the Hmong, it does not take long for the education to produce a result because the children enter the adult world very quickly. Regular **friendly** visits to schools by park officials could serve as a good start toward that goal. However, it is important to recognize that these are not traditional roles for the RFD officials. It is therefore very important that the officials are fully supported by special training to carry out these programs.

B) *Enforcement*. As seen in the case of Naan, local people alone often cannot effectively deal with enforcement of open-access resources. Even with strong local institutions, the inability to exclude outsiders will erode the effectiveness of the efforts. Also, if the leadership is corrupt, even a previously successful institution can crumble. This stark reality articulates the

need for co-management rather than community management in the case of the Hmong. Enforcement by outsiders helps village leaders in their job. It is difficult for leaders to punish their fellow villagers for breaking wildlife conservation rules as these were not traditionally viewed as unlawful activities.

However, preoccupation with local management may distract us from the glaring deficiency of the public sector's role in protecting the resources. If wildlife traders, corrupt leaders and influential hunters are allowed to carry out their activities freely, the law will be viewed with contempt by the villagers and tragedy of the commons as seen in Naan will be the outcome.

Having said that, the difficult task of the RFD officials must also be appreciated. Many officers have been hurt or killed while trying to enforce the law. When the culprits are influential individuals, the cases sometimes are dropped and the officials' efforts were in vain or their career jeopardized or sometimes their lives threatened. Such factors discourage officials to confront the law breakers. This study cannot offer solutions to these problems which are broader than just a problem in the RFD. But they lead to the conviction that communication and education are perhaps the most viable step to conservation goals in the long run.

C). *Gun control*. Some Hmong in Chiang Dao reported that they no longer had guns to use for hunting as they had given them to the wildlife sanctuary officers (and the police) a few years ago. This evidence led to a consideration about gun control in the highlands as another measure toward conservation of wildlife. According to my Hmong research assistant, Miv Yaaj, this measure is not a hundred percent effective since the Hmong normally give up old guns that they no longer use to the authorities and keep their modern guns. One Karen man we interviewed also said that he hid his gun in the forests when the RFD came to the village. However, some families in Chiang Dao did give up their guns completely. It might be useful for the RFD to study how effective gun control is and the best approach in carrying it out. It is expected that villagers will resist giving up their costly modern guns. After all, they are private property. National park law does not allow guns inside the boundary of a park.

However, most settlements are outside the park boundaries (being excluded from the jurisdiction even though they may be enclaves), therefore, unless the officers encounter the gun carriers in the forest inside the park boundary, they cannot confiscate the guns. In order to have a significant impact, gun control will have to be made within the village settlement.

Another approach might be considered since so far the total ban on guns had not been successful. Charging yearly fees to households that own guns may be a disincentive to some people. The more powerful the gun, the higher the fee. This policy should be coupled with the offer to buy back old guns at a low price. This will gradually eliminate older guns in families that do not think it is worth keeping the gun. This scheme focuses not only violators but rewards those who do not own guns in a concrete way.

D) *Incentives*. Those who are active in conserving wildlife should be recognized by the government. For example, villagers who cooperate by giving up their guns should receive a certificate to honour their actions. The RFD may consider using incentives that are of interest to the villagers. For example, cooperation with the RFD may benefit in scholarships for children, or other services depending on consultation with local leaders and the villagers. The only caution for this approach is that it must be done together with other long-term programs to cultivate conservation attitudes otherwise, the connection between benefits and conservation may be lost in the process.

Another incentive that links economic benefits to conservation is ecotourism. However, this type of incentive needs to be explored on a case by case basis. Not all Hmong villages can turn into ecotourist destinations and tourism is a volatile industry.

E) *Focussing on the exceptional hunters*. This recommendation is geared toward researchers on wildlife biology. Researchers may consider utilizing the knowledge of the village hunters. Not only is it a short cut to valuable data, it also is an opportunity to influence the behaviours of these important group of people.

Some parks in Thailand have hired local hunters as forest guards with different degrees of success. The Hmong are independent people and it is not clear that this type of job

opportunity is attractive to most Hmong. It is also difficult to envision Hmong hunters arresting their fellow Hmong (particularly of the same villages). However, there is a possibility of higher assimilation to the Thai culture among some Hmong and hiring Hmong people as conservation officers in the future may have a positive impact on attitudes towards conservation efforts within the Hmong society.

F) Stronger Campaigns and Enforcement in the lowlands. Wildlife trade is an important influence to hunting in the highlands. On-going campaigns (particularly through television advertisement during soap operas) should be done to educate the consumers. Punishments against restaurants and markets that provide wildlife should also be done on a regular basis.

In the case of the Hmong, hunting is rooted in a cultural tradition rather than in necessity. Hunting has been an important feature in the Hmong culture for centuries and conservation efforts must response to this fact. Today's population of wildlife in the Thai highlands is so low that even small amount of hunting may possibly extirpate some species. Therefore, theoretically, drastic reduction of hunting is needed. However, this is not an easy task, and this study cannot propose a quick solution to this problem. It only shed light on the fact that economic improvement only offers weak contributions to wildlife conservation in the case of the Hmong.

Conservation will have to be strengthened through education and effective communication. Investment in the new generation of Hmong children for positive change in attitudes is vital. Since Hmong children participate in the adult world very early, the results can also be reached more rapidly than in other societies. Short term policies include continued enforcement and gun control. Particular attention should be given to keen hunters. Regular contacts between conservation officers and the communities will probably reduce hunting, and if done appropriately, can decrease the level of conflicts between the two. The case of sambar deer in Naan was an example of how the government overlooked local efforts. If the conservation agency had moved in to strengthen the conservation of sambar appropriately such as given support and recognition to the headman and convinced other communities

around the area to respect the rule set by the Naan village, the deer conservation effort might have been more effective.

The Hmong people may have contributed to the extirpation of wild life. Yet, biodiversity conservation still depend on their cooperation. At the end of the day, the local people, not the park managers alone, can ensure the survival of other species that share their environment. Conservation agencies should make an effort not to let past negative experiences clouded their perspective. Antagonistic attitudes toward the Hmong only add to the weakness of conservation and augments negative perceptions toward protected areas. Unfortunately, the job of the RFD tends to cause acrimonious attitudes among local people. The Hmong were not happy with the reforestation projects that had taken away their swidden fields. They are also afraid of being arrested by the RFD for hunting and clearing the forests. It is difficult to reconcile conservation differences under these circumstances. Perhaps more communication as suggested above could improve the situation.

It is important to stress that many Hmong do not agree with the wholesale extermination of wildlife or even the overuse of the forest. Quite a few people interviewed mentioned that they would like to see wildlife being preserved for the next generation. However, as with the population in the lowland in general, conservation has not entered into people's daily decision making. As long as the mainstream society gives little value to biodiversity, it is difficult to expect the Hmong or any other highland groups to conserve the resources for the whole nation.

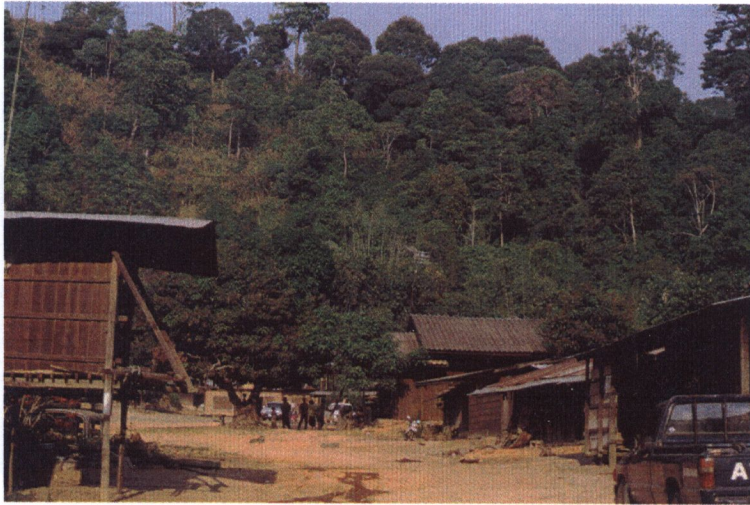


Plate 1
Entrance to a Hmong
village



Plate 2
Hmong fields

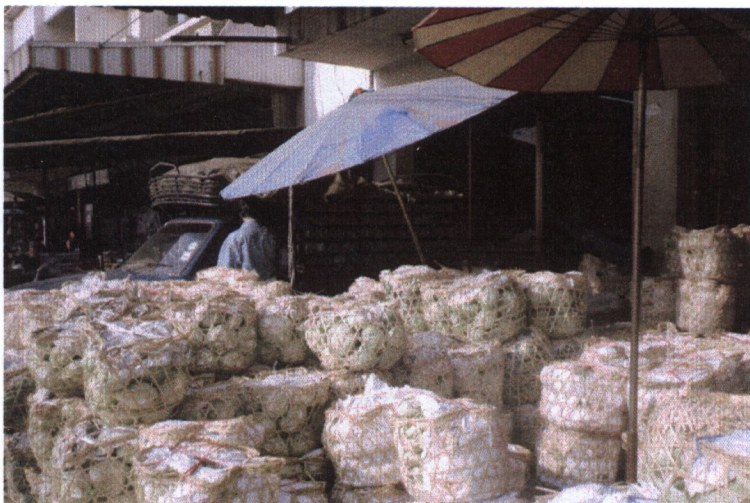


Plate 3
Hmong cabbage at the
distributor



Plate 4
Hmong middleman
collecting flowers from
Karen farmers

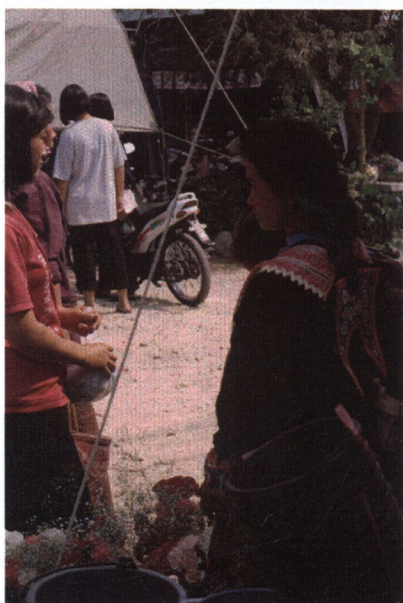


Plate 5
Hmong women retailing
flowers at a lowland market



Plate 6
Increased mobility from
using trucks



Plate 7
Junior hunter



Plate 8
Crossbow

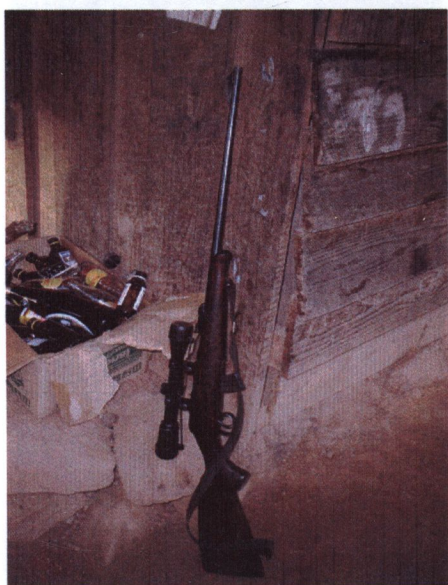


Plate 9
Modern gun

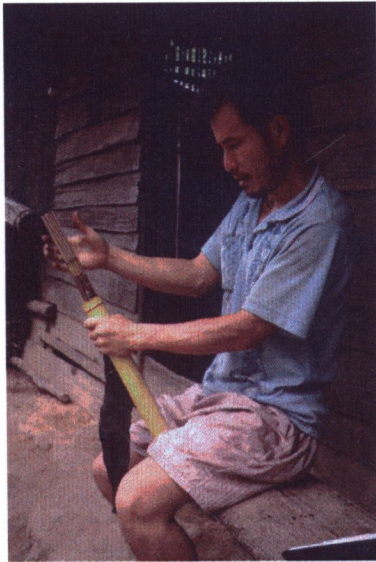


Plate 10
and
Plate 11
Making glue traps kept in
bamboo cylinders

Plate 12
A rat trap



Plate 13
The children's contribution
to dinner



Plate 14
Yellow-throated marten
killed by teenagers

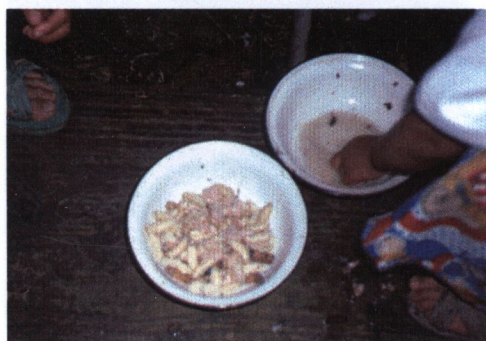
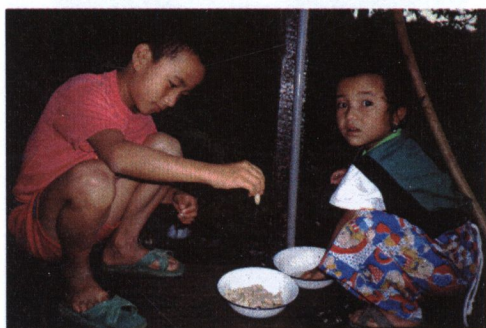


Plate 15
and
Plate 16
Snacking on grubs



Plate 17
The tail of another marten

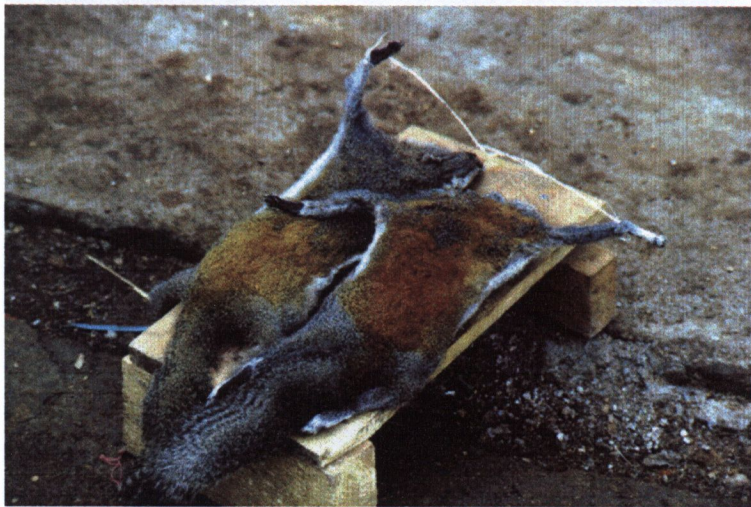


Plate 18
Dried squirrels



Plate 19
Yellow tortoise



Plate 20
Jungle fowl used as a decoy



Plate 21
Pet parakeets

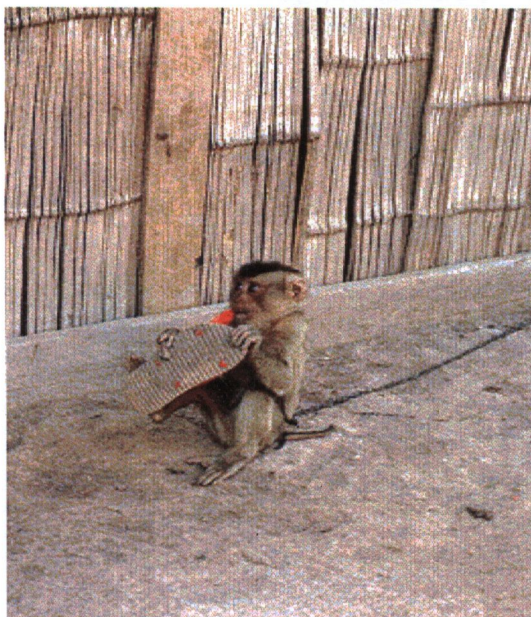


Plate 22
A pet macaque

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