

HUNTING AND WILDLIFE USE IN SOME HMONG COMMUNITIES IN NORTHERN THAILAND

Waranoot Tungittiplakorn¹ and Philip Dearden²

ABSTRACT

We undertook detailed interviews in two Hmong villages over the course of a nine-month field season to assess how hunting activities had changed since cash cropping became a major part of the Hmong economy. We also undertook supplementary interviews in a larger number of Hmong villages throughout northern Thailand. Residents of all villages described marked reductions in wildlife populations with a quite consistent order of extirpation. For most villages only the species most resistant to hunting still remain in the vicinity. The use of various species by the Hmong is discussed. Some species such as monitor lizards and snakes, not traditionally eaten by the Hmong but eaten by lowland Thais, are now consumed. Recent reductions in hunting are attributed to cash cropping and reduced species availability. However, the wildlife trade still flourishes in most villages.

Keywords: hunting survey, Hmong, protected areas, wildlife decline

INTRODUCTION

“The Hmong have always been passionate hunters. Superb marksmen with either crossbow or flintlock, the Hmong of Southeast Asia considered nearly everything from mice to elephants fair game, though the most prized quarry were deer, elephant, wild pig and rhinoceros. Because of their passion for hunting and their skill as hunters, all game close to the village quickly disappeared and with it the sounds one normally associates with the forest. Nights in an established village were therefore uncommonly quiet.” (QUINCY 1995. *Hmong: History of a People*)

Highland peoples in SE Asia have always had a strong reliance on forest products, including wildlife, as part of their livelihood strategies (SHROCK *ET AL.*, 1970; WALKER, 1975). However, over the last four decades, many areas in the highlands have come under pressure from mounting populations and reduced forest areas, making continuation of the traditional swidden systems impossible (COOPER, 1984). As a result of these pressures, and additional ones such as opium replacement programs, many communities have become increasingly engaged in cash cropping. This project focuses on the Hmong people in Northern Thailand to increase understanding of the changes that have occurred in hunting behaviour as a result of cash cropping. In particular, we were interested in which species remained in the area, which ones were hunted, and for what purposes.

¹Department of Geography, University of Victoria, Victoria, BC, Canada V8W 3P5

²Current affiliation: The Development Fund, Oslo, Norway

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Historically the Hmong, like other ethnic groups in the Highlands, have depended heavily on forest products (KEEN, 1972). Although wildlife has played an important role as a dietary supplement in hard times, even historically it seems as if hunting for the Hmong was as much a cultural and social activity as a contribution to a subsistence economy (SAVINA, 1930; BERNATZIK, 1970). Nevertheless, hunting was an important activity, and Bernatzik describes one hunter who killed more than 20 elephants, 2 rhinoceros and an uncountable number of deer and buffalo in the 1930s. Through wildlife trading he was able to accumulate considerable wealth and maintain three wives.

In contrast to some other groups (e.g. STEINMETZ & MATHER, 1996) the Hmong apparently make few attempts to manage hunting activities for conservation purposes. BERNATZIK (1970: 461), for example, stated that "everything that comes within shooting range of the hunter, male animals as well as females, gravid animals as well as the young, is shot". Originally this hunting was mainly done by crossbow which was almost as accurate as the muzzle loader, and quicker to load and quieter (COOPER, 1984). With the advent of World War II, however, more modern weapons became available and wildlife populations were reduced significantly (KUNSTADTER & KUNSTADTER, 1992). The same reduction was reported in Laos as a result of arming the Hmong in the Vietnam War to resist communist attacks (JOHNSON, 1985).

With better weaponry, increased human populations, and declining forest cover, animal populations in northern Thailand have declined rapidly since the 1970s (BRUVER, 1973; HINTON, 1975; ROUND, 1984; ELLIOTT *ET AL.*, 1989). At the same time, opium suppression programs were initiated and cash cropping started to get a foothold (JUDD, 1988; RENARD *ET AL.*, 1988; DEARDEN, 1995). By 1987, 186 of the 230 Hmong villages recorded in North Thailand were growing cash crops (TUNGITTIPLAKORN, 1998). Some authors have suggested that this adoption may lead to further declines in forest habitat and wildlife in the Highlands (e.g. DEARDEN, 1996; RERKASEM & RERKASEM, 1995). We were interested in assessing Hmong perceptions of the changes in hunting activities and wildlife populations over the last few decades. The specific identities of the villages where we undertook the interviews cannot be revealed as part of the condition of the research permit issued by our research institution. The general characteristics of the villages are given below.

STUDY AREAS

Two villages were selected for more in-depth study. We looked for villages that were in close proximity to protected areas. The first village, Blue Hmong, was discovered during a reconnaissance survey of Hmong villages close to protected areas in the North. It is in Hod Province and is an enclave village, totally surrounded by park lands at an elevation of 1,200 m a.s.l. in hill evergreen forests. It was established in 1960 and has a population of 303.

Opium, maize and rice were grown by the villagers until raids by Thai authorities during the mid 1980s to destroy the opium crop encouraged the villagers to consider alternative crops. Some families had relatives in a village elsewhere which was becoming quite prosperous through cabbage cultivation, and males from several families went to learn how this was done while the families stayed behind. The migrants returned to start cabbage cultivation but experienced difficulties due to the relative inaccessibility to markets.

In the late 1980s a lowland Thai worker at a nearby watershed management station brought some flower seedlings for the local villagers to grow. This proved successful and the villagers turned from cabbage to carnation cultivation, which was more profitable.

Another village was selected mainly on the recommendation of an experienced researcher who had studied many Hmong villages. This Blue Hmong village was close to a forest reserve in Nan province and had a reputation for wildlife conservation that we were anxious to investigate in more detail. Located at 1,300 m a.s.l. this village was also in lower montane evergreen forest but differed from the other village in being much longer established (since 1900) and having a larger population (1,349).

Cash crops (other than opium, which has significantly different characteristics from the other cash crops) came first to Nan village in the mid 1970s. A logging road made the village more accessible and returning migrants from other Hmong villages brought with them the practice of growing maize for sale to lowland merchants. By the mid-1980s, maize had been supplanted by cabbage, the most popular cash crop in the highlands, and by 1990 all villagers had switched to that crop.

METHODS

Most of the data were collected from fieldwork over a nine-month period between January and September 1996 in the two Hmong villages described above. During this period one of the authors lived in both villages alternately and was able to question the villagers both formally and informally on a wide variety of topics related to their livelihoods. The villages were accessed by hitch-hiking on Hmong trucks returning from market. Not only did this means allow for a lot of informal data collection whilst bumping along in the back of a crowded truck, but it also assisted in maintaining good relations with the Hmong. Arriving in a village in a large four-wheel drive vehicle can immediately arouse suspicions. Hmong research assistants also helped gain acceptance in the villages as did the rudimentary Hmong language skills of one of the researchers. However, most interviewing was undertaken by one of the researchers using the northern Thai dialect.

The main focus of the study was on the changing relationship between the Hmong and wildlife. However, during interviews a wide range of questions were posed regarding livelihood issues and adoption of cash crops. This provided a broader appreciation of the situation and also served to reduce the sensitivity of the interviews toward illegal activities such as hunting in protected areas. All interviews were anonymous. Four main rounds of interviews were completed in each village. The first, with all the family, focused on cash cropping. Subsequent rounds focused exclusively on wildlife, with the men, women and children interviewed separately. We were interested in the different view points of these groups and found people to be more communicative when interviewed with their group rather than all together.

Species identification was a problem. Using information from the Mahidol University Biodiversity Database, LEKAGUL & MCNEELY (1988), and expert interviews, lists of expected species were generated for each area. Photos of mammals, some reptiles and amphibians and *A Guide to the Birds of Thailand* by LEKAGUL & ROUND (1991) were used during interviews. Even so, species identification problems remained, both in terms of the participants' abilities to identify the species and then to ensure accurate translation to Thai

and formal scientific names. In the end, due to the length of interviews, individual bird species were not pursued unless the respondent thought that it was important. Similarly, bats, squirrels, rodents, frogs and snakes were not identified to the species level. Even with mammals, regrouping had to take place to family level for difficult-to-identify species such as civets. An attempt to differentiate between species of monkeys was abandoned after many different and conflicting names and descriptions were received.

One group that was difficult to identify was the macaques (Genus *Macaca*). The folk categorization 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 behaviour rather than 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) pigtail macaque (*Macaca nemestrina*). The last one is found only in Nan. Two of the four species, Assamese and pigtail 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 *lab dlaaj*, which are said to have larger bodies and darker colouring. From the villagers’ descriptions and picture identifications, no conclusive verification of *lab dlaaj* could be made. Some large male individuals of stump-tailed and pigtail macaques could both be classified as *lab dlaaj*.

Some villagers in Nan 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 20–30 individuals, (possibly rhesus or pigtail macaques). The other type is *lab tus hawj* that is said to have disappeared 40 years ago. In the Hmong taxonomy (as with the Thai’s), slow loris (Lorisidae) 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 latter name stems from the loris covering its face when seeing humans.

The folk taxonomy of bears also differs 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 also have three categories of bear: “buffalo bear”, “dog bear”, and “hook bear”. These refer to Asiatic black bear (*Ursus thibetanus*), Malayan sunbear (*Ursus malayanus*) and binturong (*Arctictis binturong*) respectively. Although the Hmong recognize the bear-like appearance of the binturong, they do not confuse it with bears 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*. The two smaller bears recognized by the Hmong are both possibly the Malayan sunbear.

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 nkhawb* and *maad leeg tsws*. However, pinpointing which species each name refers to was difficult. Part of the problem was the limited

number of photographs we 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 many Hmong are concerned; they are all nocturnal, and frequently steal domestic fowl.

Respondents were asked whether each species was seen in the surrounding area, when they were last seen, the number of animals, locations of sightings, and details of past and present hunting and use. Women were not able to answer most of these questions but were also questioned regarding household meat sources both past and present. In conducting these interviews the results showed lower hunting returns reported by the women than the men. This discrepancy suggested a need for separate interviews with the children, which also revealed some discrepancies which will be discussed in greater detail later. Interviews were mostly undertaken in households and lasted anywhere from 30 minutes to 2 hours. This location provided opportunities to observe wildlife trophies, which stimulated further wildlife questions.

Additional interviews were also carried out with village leaders, Hmong middlemen, hunters, vegetable distributors and casual Hmong contacts at market places. Participant observation was also undertaken in both agricultural and hunting activities. The latter included an unsuccessful group hunt with dogs for deer and was particularly illuminating for the enthusiasm generated amongst the men in the village. Due to gender difference it was not considered appropriate for the researcher to participate in solo hunting trips with the men.

Visits were also made for casual interviews on cash cropping and wildlife to other Hmong villages in northern Thailand in Om Koi, Pai, and Chiang Dao. Interviews were also undertaken with government officials both around the target villages and elsewhere. However, all results presented here are based on the two main villages unless noted otherwise.

WILDLIFE EXTIRPATION SEQUENCE

None of the villages where interviews were undertaken were in areas where an intact fauna remained, even though they were selected due to their proximity to protected areas. However, older hunters were able to categorise the relative order of disappearance of wildlife in a consistent fashion (Table 1), and give some insight into how various species were used. Some of these extirpations were primarily the result of over-hunting; others were compounded by increased habitat fragmentation. There is often a synergistic relationship between these two causes that is difficult to tease apart (TURNER & CORLETT, 1996; CULLEN *ET AL.*, 2000; PATTANAVIBOOL & DEARDEN, 2002). Loss of prey can also be important, especially for large carnivores.

The first species to be extirpated were the large, valuable, and relatively easy-to-hunt animals such as elephants and bovinds. All these had disappeared long ago from our interview villages, just as they have from most of the rest of northern Thailand (BRUVER, 1973; SRI, 1984). These were followed by the larger cats, deer, and large birds such as hornbills. Tigers (*Panthera tigris*) were extirpated from both areas some 15 to 25 years ago. The last leopard (*Panthera pardus*) was shot in the Hod village in 1988 and the species had been extirpated in Nan long before. Sambar (*Cervus unicolor*) and the other large deer were also

Table 1. Order of wildlife species extirpation mentioned in interviews.

Order of disappearance	Species
Tier I	Bovids: banteng, gaur Elephant
Tier II	Large cats: leopard and tiger Larger deer: sambar Large birds: hornbills and others
Tier III	Medium cats: clouded leopard, Asian golden cat, fishing cat Primates: langur, stump-tailed macaques, white-handed gibbon Bears: Asiatic black bear, Malayan sun bear Binturong
Tier IV	Slow loris, serow Asiatic jackal, wild dog Small cats: leopard cat, marbled cat, jungle cat
Tier V	Macaques: Assamese, pig-tailed, rhesus Wild pig Barking deer
Tier VI	Civets, linsang, badgers Pangolin, jungle monitor lizard Brush-tail porcupine Squirrels

extirpated, although sambar persisted in Nan under an exceptional village wildlife hunting regulation promulgated by the village headman until 1994.

The third tier of extirpated animals reported (Table 1) includes the medium sized cats, larger macaques, langurs, gibbons, binturongs and bears. A Nan villager had a photograph of a clouded leopard (*Neofelis nebulosa*) that he had shot in 1994, and an Asian golden cat (*Catopuma temmincki*) was sighted in the same year, but both are now thought to be extirpated. Langurs (*Trachypithecus phayrei*) were extirpated from the Nan village in the late 1970s and from Hod in the early 1980s. In both villages macaques were at one time abundant and constituted a significant threat to crops. Troops of up to 100 used to feed on rice and corn when they were the main crops. Larger macaques such as the stump-tailed (*Macaca arctoides*) were extirpated in the late 1970s; pig-tails (*M. nemestrina*) survived until recently around both villages. One was shot during field work in Nan, and a troop of 10 that were seen in Hod in 1996 lost a reported 7 to 8 individuals to hunting. Sometimes the people killed females and kept or sold the dependent young as pets. During the survey, one household in Nan kept two small pig-tailed macaques.

Gibbons are also an interesting case. Apparently the Hmong in Laos believe that a solitary gibbon should not be killed, as it may be a forest spirit (JOHNSON, 1985). This belief is unknown amongst the Thai Hmong, and gibbons were shot and captured as any other animal. Gibbons (*Hylobates lar*) have now been extirpated from most areas in northern Thailand, including the interview villages. The last ones in the Nan village area were extirpated in 1994. However, villagers in all communities expressed sorrow over their absence, making gibbons an interesting proposition for re-introduction programs in these areas. When questioned about their feelings towards gibbons, villagers mentioned three factors. First, gibbons do not destroy crops. Second, unlike monkeys, they do not have tails, which makes them more like humans than other primates. People also mentioned that, when shot, a gibbon will touch its wound and cry like a human. Third, the people miss the evocative calls of this "singing ape" (RAEMAEEKERS & RAEMAEEKERS, 1990) resonating through the forest.

Both bear species were hunted by the Hmong. The Malayan sun bear (*Ursus malayanus*) has recently been extirpated, with the last one seen in the Nan village in 1993. An Asiatic black bear (*Ursus thibetanus*) was killed in Nan in 1995, and is now extirpated. They still occur in the vicinity of the Hod village. All villagers mentioned the value of the gall bladders for medicinal purposes, and they themselves believe that when roasted gall bladders will cure leprosy, measles, lung disease, and fever. Bear bones are sold to lowland pharmacies.

Next in line are species such as wild dogs and small cats that are not traditional sources of meat. These are hunted as the main remaining predators and are considered to be pests. It is likely that these predators have been extirpated in recent years from Hod and Nan. A pack of wild dogs (*Cuon alpinus*) was poisoned in 1995 because they attacked buffalo calves in Nan. Another species, the slow loris (*Nycticebus coucang*) is affected by increasing forest fragmentation, lack of mature forests, and burning. Lorises still occur around both villages, but in low numbers. One was shot by teenagers in Nan during our field work. The meat is reportedly not good to eat.

Serow (*Naemorhedus sumatraensis*) are able to persist for a relatively long time due to the difficulties of hunting them in inaccessible terrain. Their meat is strong smelling and usually given to the Karen although some Hmong believe that serow parts have medicinal value. In the Hod village, the last serow was being actively pursued by hunters during our field work, in clear violation of the protected area and wildlife conservation regulations.

The species that are most resistant to hunting pressure are wild pig (*Sus scrofa*), barking deer (*Muntiacus muntjak*) and rhesus monkey (*Macaca mulatta*), on the fifth tier (Table 1), but these were also reported to be greatly reduced in numbers in our interviews. The wild pig is one of the most intensely hunted species, with the meat being consumed domestically. Barking deer are also heavily hunted, usually in group drives. The meat is often sold.

On the last tier are animals that still can be found in most areas. Some, such as porcupines, are highly sought after, with two species, the Malayan (*Hystrix brachyura*) and the bush-tailed (*Atherurus macrourus*), being easily distinguished by the Hmong. The latter is the most popular, as the meat is tasty and different parts of the animal have medicinal values. The quills are roasted, powdered and eaten by nursing mothers to increase lactation. The guts are believed to cure stomach ache, or when preserved in whisky, to be effective against back pain.

Species that are now targeted for the wildlife trade, such as the pangolin (*Manis javanica*) and monitor (*Varanus bengalensis*), are becoming increasingly rare. Traditionally the Hmong do not eat monitor lizards, and they are sold to lowland Thai or Karen who consider them a delicacy. Some younger Hmong have now started eating them. A similar situation has developed with snakes; traditionally the Hmong do not eat snakes (JOHNSON, 1985), but some younger men, influenced by outside beliefs, have begun to eat them. Turtles may be following a similar pattern. One old man in Mae Hong Son insisted that traditionally Hmong did not eat turtles; however, they are now widely consumed, usually when captured opportunistically while fishing. Edible species include yellow tortoise (*Indotestudo elongata*), paddy field turtle (*Malayemis subtrijuga*), snapper tortoise (*Platysternum megacephalum peguense*) and Siamese box terrapin (*Cuora amboiensis*). It is believed that turtles provide immunity against mushroom toxicity. Hog badgers (*Arctonyx collaris*) are also a new food species being eaten by younger Hmong.

Squirrels (*Sciuridae*) are a common food item amongst the Hmong and are an important source of protein for poor families. Squirrels are easy targets and are often hunted by children with slingshots. According to BERNATZIK (1970), there is a taboo against eating black squirrels (*Ratufa bicolor*) but this does not seem to be recognized today. Flying squirrels (*Petauristinae*) are also hunted but not as extensively due to their nocturnal habits and bitter tasting flesh. However, small silver flying squirrels (*Hylopetes phayeri* or *H. alboniger*?) are worth 50 baht each for traditional pharmaceutical purposes.

Other species at this tier, such as the civets, are hunted mainly as pest species that attack domestic fowl. The Hmong do not usually eat these animals due to their strong scent. Some younger people now eat civets but usually they are discarded or given to Karen or Akha labourers.

CURRENT HUNTING PRACTICES

All men now hunt by gun, although children still use slingshots for squirrels and birds. Muzzle-loading rifles are still the most common weapons, and can be purchased from Hmong gunsmiths for 5000–6000 baht. However, both shotguns and .22 calibre rifles are becoming more popular, although they cost more (10,000 baht) and ammunition is expensive. A few keen hunters now also have rifle scopes. Other tools include a bamboo device (*raaj dlib kauv*) which imitates the sound of a calf and is used to attract adult deer; dogs for tracking; fire; spears for squirrels; and slingshots.

Although many different kinds of traps had been used in the past (e.g. see GARRETT, 1929), only a few older men in the villages still knew how to make them. In one village a 46-year old man picked up some bamboo sticks and made six 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 the traps. Men interviewed in Nan claimed that traps have not been used for the past 20 years. Likewise, the men in Chiang Dao also attested that there were too few animals to use traps effectively. Traps for large animals have vanished. A few small traps are still in use and can be grouped into six main types:

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

a string loop catches hold of the animal's neck. Another type snatches the bird's 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 were 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) shoots forward and pierces the animal when disturbed. This type was used to trap animals near rice fields and was commonly used for catching large animals such as deer, wild boar and monkeys in Nan 20 years ago. Today they are used for porcupines only.
3. **Falling weight** (*ntxab cuab koob* or *cuab koob*). This trap comprises a bait, a trigger, and a heavy object such as a log or stone, and is used to capture mice, squirrels and birds. It is not common among the Hmong. None of the young men knew how to make it, although some said they had 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 46-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, and most teenage boys learn to make it to catch green pigeons and parakeets. Wooden sticks are dipped in a gluey substance made of various plants such as from the root of *Mussaenda parva*. The hunters place the sticks on tree branches where birds like to perch. The birds are caught by the glue and the hunters 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 which is placed where birds often pass. When the decoy birds call, curious wild birds approach the decoy and get caught by the net. Some villagers mentioned that they occasionally place nets in their fruit orchard to catch bats, but it is an uncommon 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-triggering gun trap**. By attaching a snare to the trigger of a gun, the Hmong hunter can set a trap that will shoot animals remotely. This was previously a common method for catching wild cats. Today it is occasionally used to shoot jungle fowl.

The results of the interviews on current hunting practices are shown in Tables 2, 3 and 4 for the villages in Nan, Hod and Chiang Dao, respectively. Although the last village was not one of the main study sites, useful data were collected on wildlife use through interviews. All respondent groups noted a decline in hunting intensity since cash cropping began, with the opportunity costs of hunting time being the most important factor. Only 7 of 26 hunters hunted mainly for food; the remainder hunted for recreation. Men were interested most in the larger animals and tended to forget how many smaller animals they had killed. The children, on the other hand, reported hunting higher numbers of small animals. Children used slingshots, while men preferred not to waste expensive ammunition on small animals.

Table 2. Approximate numbers of animals hunted in the Nan village. n.a.: not available. Source: Interviews 1996.

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	n.a.	59+	61	52
Jungle fowl (<i>Gallus gallus</i>)	n.a.	14	31	22
Squirrels (<i>Sciuridae</i>)	33	59	26	41
Porcupines (<i>Hystricidae</i>)	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	n.a.	5	8	6
Hog badger (<i>Arctonyx collaris</i>)	2	1	6	4
Civets/linseng/small wild cats (<i>Viverridae</i> and <i>Felidae</i>)	1	4	11	10
Macaques (<i>Macaca</i> sp.)	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>Naemohedus sumatraensis</i>)	2	1	1	1
Bears (<i>Ursidae</i>)	1	0	0	0

In general, the women were more reluctant to discuss wildlife use. This could reflect just a general lack of enthusiasm, or a reluctance to implicate their husbands in illegal activity. These differences help explain some of the discrepancies between the figures in the tables.

We were also interested in learning about hunting intensity and whether only one or a few men did most of the hunting, with the vast majority only taking an occasional animal from time to time. In individual interviews we asked 10 hunters in the Nan village and 11 in the Hod village about their lifetime kills. The tables are not presented here, partly because we are not overly confident about the memories of older hunters concerning the

Table 3. Approximate numbers of animals hunted in the Hod village. n.a., not available. Source: Interviews 1996.

Wildlife	Reported by men (N=26) Jun–July 1996	Reported by women (N=22) Jun–July 1996	Reported by school children (N=15)	
			Jan–Aug 1996	1995
Parakeets (<i>Psittacula</i> spp.)	17–27	n.a.	n.a.	n.a.
Spotted dove (<i>Streptopelia chinensis</i>)	43–53* (>100/village)			
Partridges (<i>Arborophila</i> spp.)	21–31			
Jungle fowl (<i>Gallus gallus</i>)	32–42		33	
Unspecified birds	119–125	104	108	
Squirrels (<i>Sciuridae</i>)	115–125	104	108	
Porcupines (<i>Hystricidae</i>)	8	9	15	
Malayan pangolin (<i>Manis javanica</i>)	1	n.a.	8	
Monitor lizard (<i>Varanus bengalensis</i>)	1	9	4	
Turtles	3	5	13	10
Hog badger (<i>Arctonyx collaris</i>)	3	1	5	n.a.
Civets/linseng/small wild cats (<i>Viverridae</i> and <i>Felidae</i>)	3	1	2	7
Macaques (<i>Macaca</i> sp.)	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.

* Estimated by one hunter.

** the highest estimation of one hunter

numbers of each species killed. However, the procedure did reveal that, as expected, one or two enthusiastic hunters were responsible for most of the take. Almost all hunters reported killing barking deer and wild pig. Large numbers of macaques were also reported, particularly in Nan. Only few hunters, however, had killed bear, gibbons and other rarer species.

Table 4. Approximate numbers of animals hunted in the Chiang Dao village. hh, household. Source: Interviews 1996. n.a., not available.

Wildlife	Amount estimated by two men Jan–Oct 1996	Amount reported by school children (N=10)	
		Jan–Oct 1996	1995
Birds, unspecified.	n.a.	123	122
Parakeets (<i>Psittacula</i>)	n.a.	2	
Jungle fowl (<i>Gallus gallus</i>)	30; (10/hh/yr*)	19	32
Squirrels (<i>Sciuridae</i>)	n.a.	186+; (10+/hh/yr*)	
Flying squirrels (<i>Petauristigae</i>)	n.a.	20	
Porcupines (<i>Hystriidae</i>)	n.a.	13	13
Malayan pangolin (<i>Manis javanica</i>)	3	10	6
Monitor lizard (<i>Varanus bengalensis</i>)	50	11	4
Turtles	n.a.	18	17
Hog badger (<i>Arctonyx collaris</i>)	n.a.	2	
Civets/linsang (<i>Viverridae</i>)	20–30	9	15
Jungle cats (<i>Felidae</i>)	2–3	10	0
Macaques (<i>Macaca</i>)	1	0	4 (4 in 1994)
Slow loris (<i>Nycticebus coucang</i>)	n.a.	0	1 (2 in 1994)
Wild boar (<i>Sus scrofa</i>)	2–3/yr	6	8
Barking deer (<i>Muntiacus muntjak</i>)	20+	10+	10+
Serow (<i>Naemorhedus sumatraensis</i>)	5	4	5 (in 1994)
Bears (<i>Ursidae</i>)	1	3	22
Binturong (<i>Arctictis binturong</i>)	n.a.	1	1 (1 in 1993)
Gibbon (<i>Hylobates lar</i>)	n.a.	0	2

* estimated by one person

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

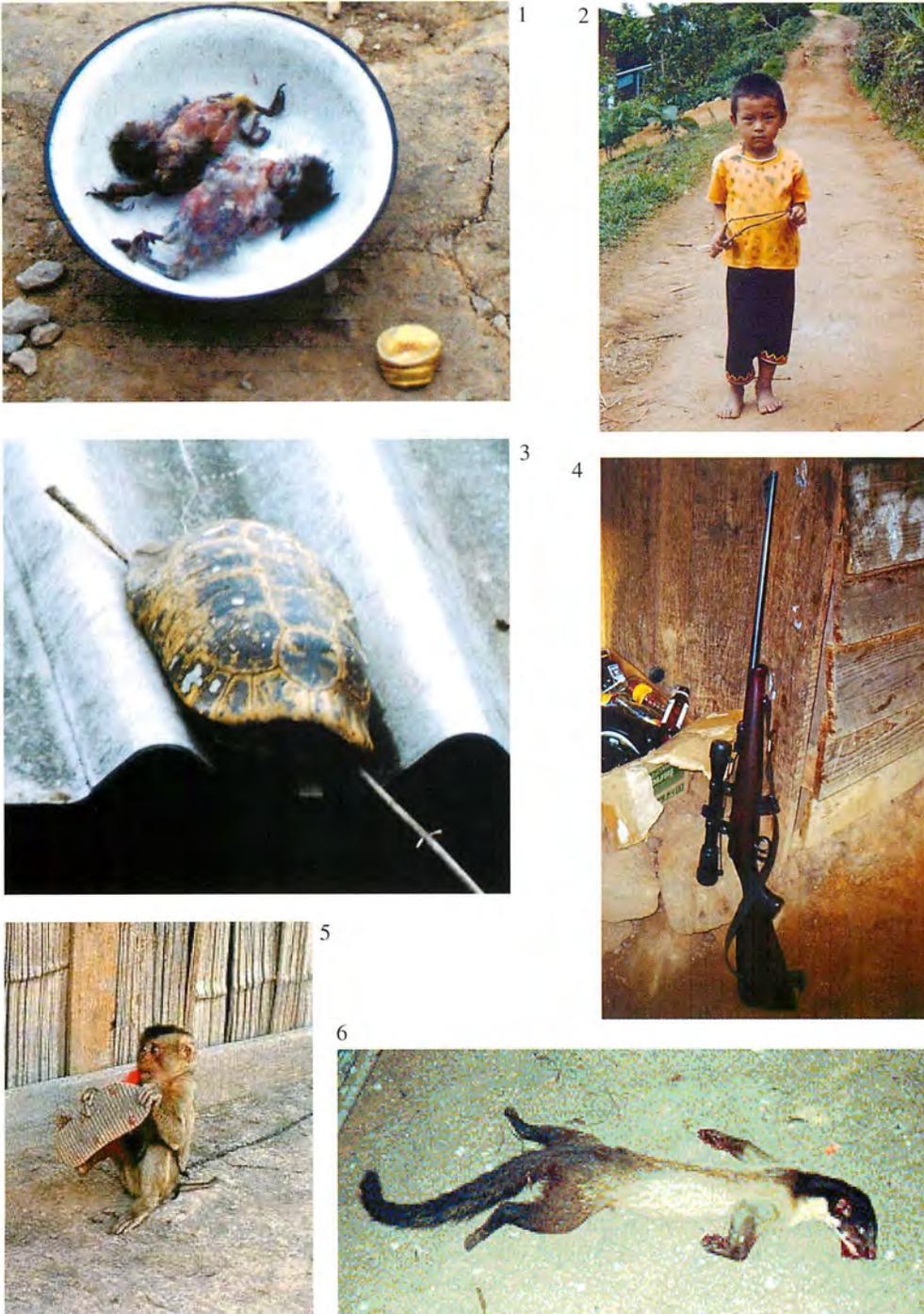


Figure 1-6. 1, Dead birds to be eaten; 2, Young Hmong hunter; 3, Turtle stored on roof; 4, Rifle used in hunting; 5, Captive young macaque (*Macaca nemestrina*); 6, Yellow-throated marten.

TRADE

Wildlife, both alive and dead, was traded in both of the main study villages and also in other Hmong villages where interviews were undertaken. In the Nan village trading was well established with two local lowland traders visiting the village every month during the dry season to purchase animals. Their presence was announced by a cooperative headman on the village loud-speaker system. Table 5 shows the wildlife trade reported in interviews in 1996, with prices. Interviews in other Hmong villages in the same year are shown in Table 6. Such trade is endemic in the region and can pose a significant threat to wildlife (SRIKOSAMATARA & SUTEETHORN, 1994). In addition, several ornamental birds are commonly caught and sold or kept alive as pets or decoys. Those we observed in 1996 are shown in Table 7.

CONCLUSIONS

Our findings confirm other studies both globally and in Thailand that have suggested that hunting has been an important contributor to wildlife declines over the last 30 years. The Hmong recognise a fairly definite order of extirpation. Older hunters remember most wildlife (up to the second tier) being available around their villages thirty years ago. Since that time, many species have been extirpated through a combination of hunting for various purposes and deforestation. Several species that were not previously hunted are hunted now, due to the growth in wildlife trade with lowland villages. However, overall hunting intensity is declining due to the expansion of cash cropping, the declining availability of wildlife species, and a growing lack of familiarity with and interest in the forest by young Hmong (TUNGITTIPLAKORN & DEARDEN, 2002). It remains to be seen whether these factors are sufficient to encourage an increase in wildlife populations and recolonisation of some areas over this next century.

Although this study has focussed only on a few villages of one ethnic group in northern Thailand, it does have some important implications for wildlife conservation. Three points are of main interest. The first is that wildlife declines have often been attributed solely to habitat destruction with little attention being given to the impacts of hunting, especially hunting by local people. However, over the last decade, many authors (e.g. REDFORD, 1992; FITZGIBBON *ET AL.*, 1995) have drawn attention to the significant impacts on wildlife that can result from hunting. This suggests that conservation scientists have to pay more attention to hunting if they are to fully understand the complex of factors causing species' declines. Second, hunting is not easy to study. Attention must be devoted not only to the ecological effects of hunting, but also to the social and economic context. Third, hunting within the protected area system of Thailand is still widespread. However, hunting pressures appear to be declining, and relatively few individuals are responsible for most kills. Conservation efforts might be most effective if concentrated on these individuals. One particular strategy that has paid dividends elsewhere is to employ enthusiastic hunters as park guards. Although there can be some dangers with this, in our experience, ex-poachers have also been found to be some of the most effective park guards when provided with a regular salary, responsibility and good equipment.

Table 5. Wildlife trade reported in the Nan village. Source: Interviews 1996.

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/linsang	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, 4000+
Spotted-neck dove	1996	50
Tiger	1986	3000

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Table 6. Wildlife Trade Reported in Some Hmong Villages. Source: Interviews 1996.

Place	Wildlife	Year	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 skin	1996	100/kg (150 each)
Mae Hong Son	Doves	in general	300–400 each
	Parakeets	in general	50–200 each

Table 7. Ornamental Birds commonly caught. Source: Interviews 1996.

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	<i>yeeb kub</i>
<i>Psittacula alexandri</i>	Alexandrine parakeet	<i>yeeb kub ab</i> or <i>ab ab</i>
<i>Psittacula cupatria</i>	Red-breasted 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	<i>qab qus</i>
<i>Gracula religiosa</i>	Hill myna	<i>lauv kub</i>

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