

**ENVIRONMENTAL IMPACT ASSESSMENT
(SPECIAL INVESTIGATION)
ON
HYDROPOWER DEVELOPMENT OF
AYEYAWADY RIVER BASIN ABOVE MYITKYINA,
KACHIN STATE, MYANMAR**

Biodiversity And Nature Conservation Association (BANCA)



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Yangon

MYANMAR

The Report
on
the Status of Wildlife Trade in
Kachin State, Northern Part of Myanmar

1. Introduction

Myanmar is one of the biologically richest regions in the world as a result of its wide range of physical conditions in a tropical region, covering a total land area of 676,577 square kilometers and it harbours many rare, endangered and endemic species. Being an agricultural-based country, about 80% of the population residing in rural areas, depending very much upon forest resources such for their livelihood (NCEA, 1997). There are 251 known mammal species, 1056 species of birds, 360 species of reptiles and 11,800 species of flora including 1200 tree species are found in Myanmar (Tin Tun, 2009).

Most wildlife sanctuaries / parks in Myanmar are just paper parks and ineffective. Hunting, fishing, and willful disturbance to any animal in a sanctuary and similar activity in a reserved forest without a license was prohibited. But most existing protected areas are understaffed and poorly managed and in general have suffered years of agricultural encroachment, settlement and excessive logging. Wildlife is presently being threatened as a result of habitat loss, hunting and poaching.

Myanmar has been affected in the various situations of economic growth, which leads to cause environmental disturbances. Increasing population and economic pressures have compounded the exploitation of the natural resources from many angles. Major threats on decreasing wildlife and their habitats were due to deforestation, forest fire, timber cutting, flooding, landslides, thunderstorms and other human-related impacts. One of them, wildlife trade is the major threat to sustainable development of wildlife conservation at the present and it may cause endangered and rare wildlife species to be extinct in the future.

Myanmar had to contend with the illegal smuggling of the major and important wildlife species to some extent and Kachin State is no exception. The trade brings benefits through employment and income for rural communities, the business sector and national economies but can also pose serious conservation threats. To minimize risk and maximize benefits in future, it is essential that there is a greater emphasis on multidisciplinary analysis of wildlife trade issues and development of adaptive responses focused on clear conservation and socio-economic goals and the motivating factors.

1.1. Globally threatened species in Myanmar

A significant number of the plant and animal species that occur in Myanmar has been assessed as globally threatened, following the global threat criteria of The World Conservation Union (IUCN) / Species Survival Commission (SSC) (1994). However, in the Indo-Myanmar Hotspot, comprehensive global threat assessments are only available for mammals, birds, amphibians, and some groups of reptiles. The following table shows the number of globally threatened species in Myanmar estimated in 2005 (BirdLife International, 2005).

Table 1. Summary of globally threatened species in Myanmar

Taxonomic Group	Global Threat Status			
	Critically Endangered	Endangered	Vulnerable	Total
Mammals	4	9	26	39
Birds	4	8	33	45
Reptiles	4	10	7	21
Invertebrates	0	0	1	1
Plants	13	12	13	38
Total	25	39	80	144

Source: Myanmar: Investment Opportunities in Biodiversity Conservation, 2005

2. Institutional and Legal Framework

2.1. CITES

Concerned by the impacts of commercial trade on wildlife populations, governments of 80 countries together in 1973 to draw up the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The treaty which came into force in 1975, aims to regulate and monitor the trade in species whose survival is or could soon be jeopardized by international trade. CITES has established a world-wide system of controls on international trade in threatened wildlife and wildlife products by stipulating that government permits are required for such trade.

CITES provides protection in two main categories:

2.1.1. Most Endangered Species

Appendix I: Includes all species threatened with extinction which are or may be affected by trade. It prohibits commercial trade in wild-collected species in danger of extinction.

2.1.2. Other Species at Serious Risk

Appendix II: a) Includes all species which although not necessarily currently threatened with extinction may become so unless trade is subject to strict regulation; and b) Other species which must be subject to regulation in order that trade in certain specimens of species referred to in sub-paragraph a) above may be brought under effective control, i.e. species similar in appearance.

Appendix III: All species which any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation. The cooperation of other Parties, is therefore, needed.

The Convention currently covers some 30,000 plant and animal species and has 144 member countries, few of which achieve high standards of implementation and enforcement. Myanmar became a member country in 1997.

2.2. IUCN

IUCN – is a union of sovereign states, government agencies, and non government agencies. IUCN has three basic conservation objectives: (i) to secure the conservation of nature, and especially of biological diversity, as an essential foundation of the future; (ii) to ensure that where the earth's natural resources are used this is done in a wise, equitable and sustainable way; and (iii) to guide the development of human communities towards ways of life that are both of good quality and in enduring

harmony with other components of the biosphere IUCN has its South East Asia regional headquarters in Bangkok, Thailand. No national IUCN office has been established in Myanmar.

The 1996 IUCN Red List of Threatened Animals comprises a total number of 5,205 threatened species (mammals: 1,096; birds: 253; amphibians: 124; fishes: 734; and invertebrates: 1,891). The Red List identifies eight categories that enable the classification of almost every species or subspecies in the world as follows:

2.2.1. Extinct (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died.

2.2.2. Extinct in the Wild (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as naturalized population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), and throughout its historical range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

2.2.3. Critically Endangered (CR)

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria.

2.2.4. Endangered (EN)

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria.

2.2.5. Vulnerable (VU)

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing high risk of extinction in the wild in the medium-term future, as defined by any of the criteria.

2.2.6. Lower Risk (LR)

A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:

- (a) Conservation dependent (CD). Taxa which are the focus of a continuing taxon-specific or habitat-specific program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.
- (b) Near threatened (NT). Taxa which do not qualify for conservation dependent, but which are close to qualifying for Vulnerable.
- (c) Least concern (LC). Taxa which do not qualify for conservation dependent or near threatened.

2.2.7. Data Deficient (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may well be studied, and its biology well known, but appropriate data on abundance, and/or distribution is lacking. Data Deficient is therefore not a category of threat or Lower Risk. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

2.2.8. Not Evaluated (NE)

A taxon is Not Evaluated when it has not been assessed against the criteria

2.3. WWF

WWF- World Wide Fund For Nature (known as World Wildlife Fund in Canada and the USA) is an international NGO which pledges to conserve nature by preserving the variety of life on earth, ensuring sustainable use of natural resources, and reducing wasteful exploitation and consumption of those resources. WWF has an office in Bangkok; no WWF office in Myanmar has been opened.

2.4. TRAFFIC

TRAFFIC is a joint program of WWF and IUCN. TRAFFIC was founded in the 1970s largely to assist in the implementation of the then newly adopted CITES, TRAFFIC's work on CITES-related issues remains at the core of the Network's activities at national, regional and international levels. However, TRAFFIC's program now aims to address wildlife trade issues in a wider context, including attention to major commercial sectors such as fisheries and timber trade and a wide range of key regional and local issues, such as the trade in songbirds in Southeast Asia. TRAFFIC East Asia monitors implementation of new regulations in wildlife trade to determine their effectiveness, particularly with regard to ivory, tiger bone, turtle shell, and reptile skins and rhinoceros horn.

2.5. Myanmar

The new Myanmar Forestry Policy was formulated in 1995 to update the Old Colonial Indian Forest Policy formulated in 1894. The new Forest Policy aims at, inter alia; a balanced and complimentary land use, gazette 30% of the total land area as reserved forest and 5% as protected area system. A new Forest Law was enacted in 1992. The law includes regulations and procedures relating to conservation, wildlife, sustained yield of forest products, and protection of forest land.

The Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law of 1994 is more specific than the Forest Law on wildlife, wild plants and protected areas. Seven categories of protected areas have been defined under Myanmar legislation. The new wildlife legislation includes protection of threatened and endangered species and has issued guidelines for the control and regulation of local and international trade activities (SEATEC INTERNATIONAL, 1999).

2.5. Myanmar threat categories

These categories relate specially to the threat to survival of the species in Myanmar, in accordance with the Protection of Wild Animals, Wild Plants, and Conservation of Natural Areas Act 15(A), 1994. Species are afforded varying degrees of protection according to their designation.

2.5.1. Completely Protected (CP)

Completely Protected species may not be hunted except for scientific purposes under a special license.

2.5.2. Protected (P)

Protected species may be hunted but only with special permission.

2.5.3. Seasonally Protected (SP)

Seasonally Protected species are subject to traditional subsistence hunting by rural communities only during the (i.e. non-breeding) season. Mammalian species are protected during the period from 15 June to 30 September. Avian species are protected during the period from 15 March to 30 September (FD, 2003).

2.6. Survey of wildlife management organization in Kachin State

Wildlife Conservation Society (WCS) is one of the active wildlife conservation organizations in Myanmar. WCS carried out a lot of conservation activities in Kachin State and their activities are described in Table 2.

Table 2. List of Survey Projects initiated by Wildlife Conservation Society (WCS)

No.	Project Title	Location	Duration	Team members	Remarks
1.	Study of Putao area	Putao District, Kachin State	March, 1996.	Dr. Alan Rabinowitz, WCS U Saw Tun Khaing, WCS U Thet Tun, FD.	1. Feasibility of Hkakabo-razi Expedition was studied. 2. Existence of blue sheep in Myanmar side was discovered.
2.	Khakaborazi Biological Expedition	Khakaborazi National Park, Kachin State	2 March – 12 April 1997.	Dr. Alan Rabinowitz, WCS U Saw Tun Khaing, WCS U Khin Mg Zaw, FD U Mg Mg Kyaw, FD. U Saw Lwin, MFA member. U Zin Oo, FD U Hla Tun, FD U Nyo Tun, Yangon University U Aung Win, Yangon University U Myo Khin, Yangon University U San Aye, Survey Dept: U Than Kyaw, Survey Dept: Major Kai Khan Moong, Ministry of Defence U Myat Soe, FD. U Win Kyi, Outsider.	1. Existence of blue sheep in Myanmar side was confirmed. Black barking deer and new species leaf deer (Phet-gyi) were discovered. 2. Flora and Fauna were recorded along the expedition route. 3. Khakaborazi National Park was established on 10.11.98 as a result of this expedition.

No.	Project Title	Location	Duration	Team members	Remarks
3.	Naung Mung Biological Expedition	Naung Mung area, Kachin State	24 April – 17 May, 1998	Dr. Alan Rabinowitz, WCS Ms. Salisa, WCS U Saw Tun Khaing, WCS U Saw Lwin, MFA member U Kyaw Nyunt, MFA member U Thein Aung, FD U Than Myint, WCS U Min Thein, FD U Myat Soe, FD U Tha Nyo, WCS U Win Kyi, Outsider	1. The existence of leaf deer (<i>Muntiacus putaoensis</i>) was confirmed and study on its distribution was made. 2. Study on mammals, avifauna, orchids, hunting and wildlife trade, butterfly collection and shifting cultivation was made. 3. The trip report with the recommendations was put up to the Ministry of Forestry.
4.	Hkakaborazi National Park Expedition	Hkakaborazi National Park	14 Jan: - 2 Feb: 2000.	Dr. Alan Rabinowitz, WCS Mr. Steve Winter, WCS U Saw Tun Khaing, WCS U Thein Aung, FD. U Saw Lwin, MFA member U Than Myint, WCS U Myat Soe, FD U Myint Kyaw, FD U Tun Shaung, Photographer U Win Kyi, Outsider U Kyi Shwin, WCS	The trip was aborted due to bad weather.
5.	Hponkanrazi Wildlife Sanctuary Expedition	Hponkanrazi Wildlife Sanctuary	Dec 2000 – Jan 2001	Dr. Gorge Schaller WCS U Saw Tun Khaing WCS U Than Myint, WCS U Thein Aung, FD. U Than Zaw WCS	
6.	Wildlife Trade and Hunting Survey Project in Naung Mung area	Naung Mung area	July 2002 – June 2003	Dr. Madhu Rao WCS U Than Myint WCS U Than Zaw WCS U Saw Htun WCS U Myint Kyaw FD	Wildlife Trade and Hunting Survey Project in Naung Mung area
7.	Northern Forest Complex Survey Project in Hkakaborazi National Park	Hkakaborazi National Park	July 2003 – June 2004	Dr. Madhu Rao WCS U Than Myint WCS U Than Zaw WCS U Saw Htun WCS U San Nai Dee FD	
8.	Northern Forest Complex Survey Project in Hponkanrazi Wildlife Sanctuary	Hponkanrazi Wildlife Sanctuary	July 2004 – June 2005	Dr. Madhu Rao WCS U Than Myint WCS U Than Zaw WCS U Saw Htun WCS U Yon Nai Hti Na FD	

3. Background of the Study Area

3.1. Kachin State

Kachin State is the northern most state in Myanmar, made up of the former Bhamo and Myitkyina Districts. It has common boundaries with India, China, Shan State and Sagaing Division. It lies between 23° 45' north and 28° 31' north latitudes and 95° 55' east and 98° 45' east longitudes. It has an area of 34,379 square miles. There are eighteen townships and 691 village tracts. Myitkyina is the capital of the Kachin State which is 467 feet above sea level (Lasi Bawk Naw, 2007).

Kachin State occupies the northern mountain zone and is therefore mountainous throughout, with the exception of river valleys. The general height of mountains range is from 3000 feet to over 9000 feet, with peaks usually rising above 11,000 feet. Dense forests are remarkably recognizable in the environs of the Kachin State and are home for many biological hotspots. The mountains are covered with various types of forests ranging from evergreen forest through temperate coniferous forests and temperate scrub to alpine meadows. The southern lowland regions are covered with tropical deciduous forests containing important stands of teak and other hardwoods (Olson and Dinerstein, 1998)

The native indigenous people are: Rawang, Jingpaw, Lisu, Lachid, Lawngwaw, Zaiwa, Tai Lay, Tai Mongsa, Tai Hkamti, Tai Lung and Tai Laing. There are also other nationalities such as Myanmar, Kayin, Kadu, Kanan, Chinese and Indians living in the state (Lasi Bawk Naw, 2007).

Among them, Lisus are very famous as skillful hunters. They are skilled in searching rare and very valuable natural resources. They are very brave. They are not afraid to rush into harsh-weathered regions. They are ready to confront any ferocious animals.

Compared to other states and divisions of our country, Kachin State has long been known as a country of extensive forests and biologically richest regions and also famous for the wealth of abundant valuable natural resources. Moreover, Kachin State has five protected areas: **Hkakaborazi National Park, Hponkanrazi Wildlife Sanctuary, Hukaung Tiger Reserve, Bumphabum Wildlife Sanctuary and Pidaung Wildlife Sanctuary**. Within these protected areas, there are globally threatened wildlife species such as Tiger, Asian Elephant, Gaur, Red Panda, Musk Deer and Takin etc (FD and WCS (Myanmar Program), 2004)).

This area faces a number of significant threats to biodiversity including dredging for gold, pollution from gold mining, disturbance to sandbars, degradation of forests due to excessive extraction of timber, rattan and bamboo, hunting for wildlife trade, mining, agricultural conversion, human settlement, large-scale conversion of forests to commercial plantations, and over-exploitation of non-timber forest products (NTFPs).

Wildlife and its product play a very important role for the livelihood of local people. These resources have been utilized by local people as early as the beginning of human history to meet their needs for food and fur, medicines, transportation, sports and pets. Both traditional Kachin medicines and traditional Chinese medicine (TCM) have a long history and are very popular. Variation in culture has promoted use of these natural resources in different ways. In the previous times, local people have exploited natural resources in traditional mode sustainably. In all these years, wildlife species were never under such severe threat.

But over the past few years, trade in wildlife and its products in this region have dramatically increased and as a result there is serious decline in wildlife populations due to human over-utilization, increasing rate of population growth and unsustainable nature of development of economy.

Traditionally, hunting was a valued occupation for Kachin, with animal trophies garnering respect for male hunters among their local communities. This traditional practice has become a conservation problem, as killing wildlife has been made easier due to readily available arms supplied by armed ethnic groups, and because there are highly attractive market prices for such products at the Myanmar-China border. After the degradation of habitat, trade and commerce in wildlife is the major factor responsible for the decline of wildlife species all over the world (Thaung, 2007).

3.2. Illegal logging and wildlife trade in Kachin State

Globally, wildlife trade is the serious conservation problem and is the second largest illegal trade in volume, and comes only next to narcotics and is followed by arms and ammunition (Wildlife Enforcement Network, 2009). The scale of the illegal wildlife trade is alarming. Due to the nature of illicit trade, it is hard to obtain exact figures, but some experts estimate the value of the illegal wildlife trade at 10-20 billion US dollars annually (Wildlife Enforcement Network, 2009). While arrests and interceptions are on the rise, in actual situation, it comprises only a small fraction of these underground criminal enterprises. It's the most serious threat to a number of endangered and vulnerable species.

The illegal wildlife trade affects all Southeast Asian nations. The rich biodiversities of Indonesia, Malaysia and Myanmar are particularly targeted. A significant proportion of wildlife trafficked through Southeast Asia is purchased by wealthy consumers outside the region, particularly in China, Europe and United States (Wildlife Enforcement Network, 2009).

Kachin state is one of the global hotspots for the poaching, trafficking and consumption of illegal wildlife parts and products. The region's high biodiversity, increasing affluence and accessible transport links lead to illegal trade in protected species and attractive option for the criminals. The scale of illegal trade in wildlife and its products is expanding and threatening sustainable use of natural resources to fulfill the demands of the increased human population and the demand for economic development in and outside the region. Illegal trade in natural and harvested timber and endangered species has devastating impacts.

Increasingly known as the "World's Factory", China's demand for wood products is growing each year. Unable to meet this demand from domestic wood resources since its 1998 logging ban, China has witness a rapid growth in wood imports and is now the second largest wood importer in the world. China mainly imports raw materials or crude products such as logs, timber and wood pulp and exports finished products like paper, laminated board, wooden furniture and other processed wood products. This allows China to derive most of the benefits through added values of wood products. The continuous growth of world demand for timber, including growth in China is stimulating the illegal timber trade in neighboring countries (TRAFFIC China, 2007).

Global Witness (2005) recently reported considerable unease about the scale of illegal forest activities in Kachin State. Kahrl et al. (2004) analyzed the China-Myanmar timber trade and its implications for forests and livelihoods in Myanmar's Kachin State and Yunnan Province of China. They found that China's demand for timber was underlying cause for the unsustainable harvest of valuable forests in Kachin State.

Therefore, illegal logging is one of the big issues in Kachin State. There were no opportunities to estimate the magnitude of logging in there.

A considerable amount of wildlife and its products are entering China from across the borders. The masses of demand come from the Chinese traditional culture of using wildlife for food and medicine. A rising appetite for wildlife and increasing use in TCM are fueling an increase in the illegal exports of endangered animals to China's Markets. Increased volume of illegal trade in several species found in the region has placed them on the list of endangered, threatened and vulnerable species. Formerly, no systematic surveys of wildlife trade have been conducted in this area. This paper reviews the general status of illegal wildlife trade and suggested points for future actions.

4. Project Design and Methodology

4.1. Goal

This research project is aimed to provide information on current status of wildlife trade in Kachin State for the **Environmental Impact Assessment: Special Investigation for Hydropower Development of Ayeyawady River Basin above Myitkyina.**

4.2. Objectives of the current study

The main objectives of the current study are:

- To study the status of wildlife species, wildlife trade and trade routes in the Kachin State and other trade flows
- To evaluate the impacts of wildlife trade on endangered wildlife populations
- To examine the biological and economic importance of wildlife to local communities
- To recommend appropriate conservation measures

4.3. Participants

Wildlife trade survey team is comprised of 2 members only, Daw Saw Mon Theint (EC member and Research Scientist of BANCA) and Daw Sabai Min (Member, BANCA).

4.4. Study sites

The study sites for this research cover the following areas where wildlife trade was commonly practiced with a connection of trade routes: (1) Myitkyina, (2) Putao, (3) Pannandin, (4) Wynmaw, (5) Laiza, (6) Bamaw, (7) Lweje, (8) Pangwa, (9) Kangfang, (10) Hpimaw, (11) Chipwi, (12) Kambaiti (13) Myitson area and (14) Muse. Among them, Laiza, Lweje, Pangwa, Kangfang, Hpimaw, Kambaiti and Muse are situated in China-Myanmar border. The map of the study sites is shown in Figure 1.

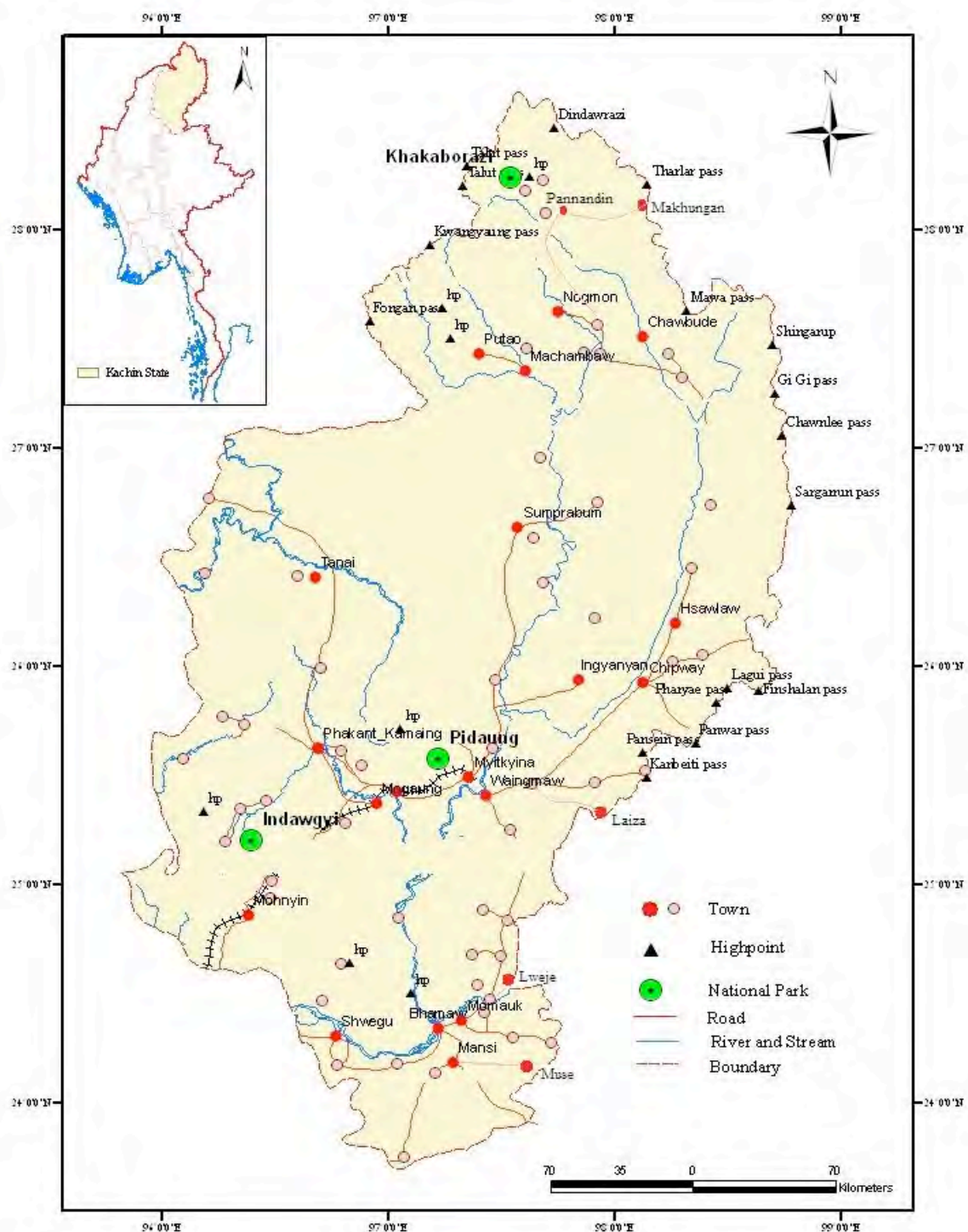


Figure 1. Map of the study sites

4.5. Itinerary

From	To	Study site	Remarks
20.1.09	5.2.09	Myitkyina	Market surveys, interview surveys with local people, small scale sellers and middleman traders and old data collection
6.2.09	4.3.09	Putao and Pannandin	Market surveys, villages surveys, interviewed with local dwellers, hunters and middleman traders in and around the Putao District and Pannandin area and old recorded data collection
6.3.09	8.3.09	Laiza	Market survey in major wildlife trade market on the border with China
11.3.09	18.3.09	Bamaw and Lweje	One of the source and trade routes on the border with China
23.3.09	8.4.09	Kangfang, Hpimaw, Pangwa, Chipwi	Investigation of trade routes on the border with China
18.4.09	19.4.09	Wynmaw	Market survey
20.4.09	22.4.09	Kambaiti	Investigation of trade route on the border with China
23.4.09	20.5.09	Myitkyina, Myitson area and Laiza	Market survey and villages surveys
13.7.09	20.7.09	Muse	Market survey in major wildlife trade market on the border with China

4.6. Methodology

The project design was based mainly on field studies using questionnaire surveys with local people and direct observations. To assess hunting and wildlife trade patterns, four sets of questionnaires were used (Appendix 1 to 4). Information such as average time taken for hunting efforts, favourite season for hunting, types and number of weapons used, distance to hunting sites, prey species captured, prices of wildlife parts sold, destination of wildlife trade routes, main occupation and alternative sources of income are collected.

Field investigations and collection of data were carried out in the study area during the months of January to May in 2009 and July, 2009, respectively.

Data concerning the wildlife trade were collected both from respondents and market places. In the field work stage, the focus was made on trade through direct observation and meetings with the respondents and middleman traders who were available to be interviewed and directly discussed with.

Structured interviews with villagers, hunters, small-scale dealers, middleman-traders and traders were made during the field study. As part of these interviews, groups of

villagers were shown drawings and photographs (sometimes photocopies) of wildlife species. These pictures included species likely to be of importance in village subsistence economies (such as wild pigs, muntjacs, sambar and pangolins) and all international Red Data Book species. Villagers were also asked what species were (a) most frequently eaten (b) preferred for food (c) crop pests and livestock predators and also being discussed on the recent trends in wildlife population levels in their hunting and gathering areas.

In addition, inquired information about wildlife trade in each study area, identified trade routes and sources, data collection and data analysis, collection and compilation of old data and compilation of observations on wildlife trade in Kachin State were also conducted. Moreover, market survey and village survey for each study site were also carried out.

5. Results

Based on the field observation, it is found that a number of species in the study area has been severely threatened, mainly because of commercial trade pressures. A total of 28 wildlife species were recorded during the survey period. Out of the total recorded species, 25 species were listed as globally threatened according to IUCN and MWPL. Traded wildlife species and their traded parts observed during this study are described in Table 3 and summary of traded wildlife species, estimated retail values of their traded parts and their conservation status are presented in Table 4.

Table 3. Traded wildlife species and their traded parts

No.	Species	Traded as
1	Guar	Horns and skulls, meat
2	Takin	Horns and skulls, meat
3	Sambar	Whole antlers, other ingredients for traditional medicines, meat
4	Chinese Serow	Body parts (horns, head, forelegs, etc) for traditional medicine, meat
5	Red Goral	Body parts (horns, head, forelegs, oil, etc.) for traditional medicine, meat
6	Asiatic Black Bear	Live animals, claws, paws, teeth, skin, oil, gall bladder, bile, meat
7	Clouded- leopard	Skin, bones, teeth, claws, ingredients for traditional medicines & as living animals
8	Small Indian Civet	Skin, bones, parts and derivatives & as living animals
9	Asian Golden Cat	Skin, bones, teeth, claws, ingredients for traditional medicines & as living animals
10	Leopard Cat	Skin, bones, teeth, claws, ingredients for traditional medicines & as living animals
11	Porcupine	Stomach, quills
12	Chinese Pangolin	Live animals, frozen whole animals, scales, leather, foetus, meat
13	Eurasian Wild Pig	Fangs, meat
14	Macaque Spp.	Parts and derivatives for traditional medicine, meat
15	Hoolock Gibbon	Live animal, meat, skulls, parts for medicine
16	Asian Elephant	Live animals, tusks or worked ivory, skin, skull and other bones, teeth, hair, trophies
17	Tiger	As whole body parts
18	Great Hornbill	Casques and live birds

Table 4. Traded wildlife species, prices of their traded parts and their conservation status observed in the current study

No.	Common Name	Scientific Name	Location of Observation	Price(Kyat)	IUCN Status	CITES Status	MWPL Status
1	Guar	<i>Bos gaurus</i>	PTO, MKN, LZ, PW	30,000 (Decorated Horns), 7,000/viss(Meat)	VU	Appendix II	CP
2	Takin	<i>Budorcas taxicolor</i>	PTO, MKN, LZ	30,000 (Decorated Horns)	VU	Appendix II	CP
3	Sambar	<i>Cervus unicolor</i>	PTO, MKN, LZ	60,000-100,000 (Decorated antlers),	NT	-	P

				4,500/viss(Meat)			
4	Chinese Serow	<i>Capricornis milneedwardsi</i>	PTO, MKN, LZ, LJ	5,000(Big horns), 3,000 (Small horns)	NT	-	-
5	Red Goral	<i>Nemorhaedus baileyi</i>	PTO, MKN, LZ	10,000 (A pair of horns),	VU	Appendix I	CP
6	Asiatic Black Bear	<i>Ursus thibetanus</i>	PTO, MKN, LZ	100,000/part in counting hundredths of a viss (Gallbladder-yellow), 80,000-black	VU	Appendix I	P
7	Clouded- leopard	<i>Neofelis nebulosa</i>	PTO, MKN, LZ	30,000(Skin)	VU	Appendix I	CP
8	Small Indian Civet	<i>Viverricula indica</i>	PTO, MKN, LZ	15,000(Skin)	LC	Appendix III	CP
9	Asian Golden Cat	<i>Catopuma temminckii</i>	PTO, MKN, LZ	20,000(Skin)	VU	Appendix I	CP
10	Leopard Cat	<i>Prionailurus bengalensis</i>	PTO, MKN, LZ	20,000(Skin)	LC	Appendix II	P
11	Yellow-throated Marten	<i>Martes flavigula</i>	PTO, MKN, LZ	10,000(Skin)	LC	Appendix III	P
12	East Asian Porcupine	<i>Hystrix brachyura</i>	PTO, MKN, LZ	3,000-6,000/stomach, 200/each quill	LC	-	-
13	Chinese Pangolin	<i>Manis Pentadactyla</i>	PTO, MKN, LZ	100,000/viss (Skin)	EN	Appendix II	CP
14	Eurasian Wild Pig	<i>Sus scrofa</i>	PTO, MKN, LZ	15,000 (a pair of tusk)	-	-	-
No.	Common Name	Scientific Name	Location of Observation	Price(Kyat)	IUCN Status	CITES Status	MWPL Status
15	Stump-Tailed Macaque	<i>Macaca arctoides</i>	PTO, MKN, LZ	10,000 (Skull with brain)	VU	-	P
16	Rhesus macaque	<i>Macaca mulatta</i>	PTO, MKN, LZ	10,000 (Skull with brain)	VU	Appendix II	P
17	Assamese macaque	<i>Macaca assamensis</i>	PTO, MKN, LZ	10,000 (Skull with brain)	VU	Appendix II	P
18	Hoolock Gibbon	<i>Hoolock hoolock</i>	PTO, MKN, LZ, HM	15,000 (Skull with brain)	EN	Appendix I	CP
19	Asian Elephant	<i>Elephas maximus</i>	MKN, LZ, KF, HM	30,000(Molar), 2,000/1squ inches(Skin)	EN	Appendix I	CP
20	Tiger	<i>Panthera tigris</i>	MKN, LZ	400,000 (canine), 50,000-80,000(penis)	EN	Appendix I	CP
21	Black Musk-deer	<i>Moschus fuscus</i>	PTO	50,000/g(Musk sac)	EN	Appendix I	CP
22	Red Panda	<i>Ailurus fulgens</i>	PTO, MKN,	10,000 (Skin)	VU	Appendix I	CP
23	Red Giant Flying Squirrel	<i>Petaurista petaurista</i>	PTO	3,000/stomach	-	-	-
24	Leaf Muntjac	<i>Muntiacus putaoensis</i>	PTO	4,000/viss (Meat)	-	-	-
25	Red Muntjac	<i>Muntiacus muntjak</i>	PTO, MKN, LZ	3,500/viss (Meat), 2,000 (Skin)	LC	-	SP
26	Great Hornbill	<i>Buceros bicornis</i>	PTO, LZ	10,000-15,000 (Decorated Bill)	NT	Appendix I	CP
27	Rufous-necked Hornbill	<i>Aceros nipalensis</i>	PTO	10,000-15,000 (Decorated Bill)	VU	Appendix I	CP

28	Wreathed Hornbill	<i>Rhyticeros undulatus</i>	PTO	10,000-15,000 (Decorated Bill)	-	-	CP
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NOTE : PTO-Putao, MKN-Myitkyina, LZ-Laiza, LJ-Lweje, PW-Panwar, KF-Kangfang, HM-Hpimaw
Conversion: 1 Viss = 1.6 kg

5.1. Myitkyina and Environs

5.1.1. Market Surveys

According to the market survey, it was observed that body parts of wildlife are used for medicinal purposes. Around and within the Myoma Market in Myitkyina, five shops were recorded as traditional medicine shops, where parts of wild animal species were especially sold as traditional medicine. It was found that there were nine traded species. Photographic records of wildlife parts from market survey are given in **Photo 1 to Photo 12**.

Out of the total recorded species, 8 species were listed under threat categories. Among the total recorded species, 3 were completely protected, 2 were normally protected, 1 seasonally protected and 3 were unprotected by Myanmar Wildlife Protective Law (MWPL) (1994). In addition, 4 species were listed on CITES appendices I (CITES, 2009) respectively, and 3 endangered species, 2 vulnerable species and 1 lower risk near threatened species were recorded with IUCN Red List (2008) (**Table 5**).

5.1.2. Utilization of wild animals in the markets

Wild animal species are sold as traditional medicine, food and souvenir in the markets. Mammal species were traded as the most common species in the use of traditional medicine, souvenir and food.

5.1.3. Usage in traditional medicine

Wildlife products are sold mainly at the traditional medicine shops. Skulls of macaque, bear, palm civet, Asiatic jackal and pythons were sold for the preparation of ointment for treatment of skin inflammation. Skulls with brain of Gibbon were sold for curing of headaches. Skins and sole of Asiatic elephant and skins of pythons were sold to prepare ointment treating skin disease (example; scabies). Scales of pangolin were sold for the preparation of smallpox ointment, prevention and treatment of breast cancer and for curing convulsions in children. Skeletons of elephant and python were sold to be used in the preparation of ointment for treating rheumatism. Antlers of barking deer and sambar were sold to be used in the medicine curing piles and breast cancer. Horns of goral were sold for heart and liver ailment. Tusks of wild pig were sold to be used in treating tooth ache. Quills of Malaysian porcupine were sold for personal charms to protect from ghosts and evil spirit. Stomachs of porcupine were sold to be used in the medicine curing gastric disease. Penises and bones of tiger were used for wildlife based aphrodisiacs and carapace of yellow tortoise and Asian leaf turtle were sold for treating urinary disease. Gall bladders of bears were used in traditional Asian medicines and bear's paws were sold to supply a demand for exotic cuisine.

Table 5. Parts of traded animal used for medicinal purposes in Myitkyina and Environs

No.	Common Name	Scientific Name	Parts used	Conservation status
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				IUCN	CITES	MWPL
1	Chinese Serow	<i>Capricornis milneedwardsi</i>	Hooves, Horns, Tongue, Oil	LR/NT	-	-
2	Asian Elephant	<i>Elephas maximus</i>	Skin, Molar teeth	EN	Appendix I	CP
3	Red Muntjac	<i>Muntiacus muntjak</i>	Antlers	-	-	SP
4	Tiger	<i>Panthera tigris</i>	Genital organ, Bones, Canine	EN	Appendix I	CP
5	Hoolock Gibbon	<i>Hoolock hoolock</i>	Head with brain, Skull, Bones	EN	Appendix I	CP
6	Asiatic Black Bear	<i>Ursus thibetanus</i>	Paws, Oil, Skull, Canine, Gallbladder	VU	Appendix I	P
7	Sambar	<i>Cervus unicolor</i>	Legs, Antlers	-	-	P
8	Porcupine	<i>Hystrix brachyura</i>	Stomach, Intestine, Quills	VU	-	-
9	Eurasian Wild Pig	<i>Sus scrofa</i>	Tusks	-	-	-



Photo 1: Canines teeth of Tiger (Myitkyina)



Photo 2: Tiger's bones on sale (Myitkyina)



Photo 3: A pair of bear's paws (Myitkyina)



Photo 4: Canines teeth of bear (Myitkyina)

Photo 5: Gall bladders of bear (Myitkyina)



Photo 6: Head of gibbon on sale (Myitkyina)



Photo 7: Radius and ulna of gibbon on sale



Photo 8: Skins of elephant (Myitkyina)



Photo 9: Tusks of wild pig used in hatbands



Photo 10: Horns of serow (Myitkyina)



Photo 11: Assorted wildlife parts on sale

Photo 12: Interviewing with seller

5.2. Putao, Pannandin and Environs

5.2.1. Market Surveys

There are two distinct markets in Putao Township.

(a) Myoma Market

(b) Airport Market

Myoma Market lies in the center of Putao and Airport market lies near the Putao Airport. Interview was carried out during field survey in the study areas by using questionnaires with the concerned persons such as traders or any wildlife enterprises.

According to the market surveys, it was observed that there was difference between Myoma market and Airport market in Putao. In the last four years, Myoma market was a very popular market for wildlife trade. But now it is not popular for wildlife trade due to the intervention of Nature and Wildlife Conservation Division, Forestry Department, Ministry of Forestry with the active participation of Wildlife Conservation Society (Myanmar Program). Therefore, at the moment Myoma market is just selling bushmeat only. Although wildlife products are being sold at the airport market, they are not openly displayed. Moreover, in the secretive trade, traders only deal with regular customers and they do not believe in strangers.



Photo 13: Market survey in Putao

Photo 14: Interviewing with shopkeeper in Putao

5.2.2. Village Surveys

To meet the objectives of the surveys, 20 villages within or around Putao, Machanbaw and Pannandim townships were designated as survey sites. All scientific data collections were mainly focused in those villages. Data collection activities included questionnaire-based interview surveys on wildlife trade, hunting patterns, economic importance of wildlife and socioeconomic condition of local communities. According to the field observation, wildlife trade activities in these areas were gradually decreased compared to the last decade due to the conservation activities of NWCD and WCS. In these areas, illegal hunting of rare and endangered species of wild animals were strictly prohibited and confiscated. However, very few villagers claimed they had old stocks of wildlife products available for sale upon inquiry. Hence, illegal hunting and illegal

wildlife trade are still dynamic in these areas, with enforcement directly affecting the volume of illegal trade.



Photo 15: Questionnaires-based interview surveys in Htangar village

Photo 16: Hunter and hunted skins of leopard cat and small indian civet

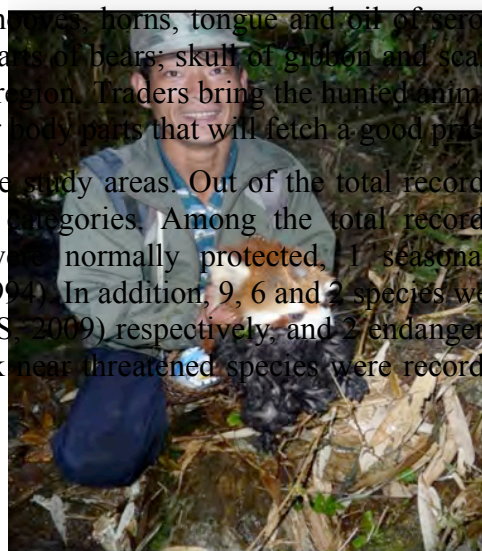
5.2.3. Questionnaires-based interview surveys on hunting and wildlife trade patterns

A total of 120 households in the survey areas were selected to conduct questionnaire-based interviews during the study period. According to the village surveys, it was found that the majority of hunters are Lisu tribe. They always used sharp swords, crossbows, poisonous arrows and sometimes they used guns to hunt their prey.

Hunting occurred throughout the year, but the majority was from June to January. From the month of February to May, most of them were engaged in *Taungya* (slash and burn) activities, and hence their main occupation has to be regarded as hunting. Winter season is the best season for hunting. According to the results obtained from general hunting interviews, it was found that a number of hunted species have decreased compared to five years ago. Other large mammals such as bear, takin, guar, sambar, and some cat species were already rare species because of over hunting activities during the previous times. The above mentioned species are already at critically lower numbers in this region. Therefore, a number of species may be acutely threatened mainly by hunting and commercial trade pressures. It may be assumed that this finding shows the future population number of aforementioned species could be affected.

The hunters kept the valuable wildlife skins and body parts during the hunting periods and traded their goods at border markets via middleman or themselves. Apart from that it was also observed that some of the local residents sold out the wildlife parts, particularly of bones and canines teeth of tigers that they received from their ancestors as heritage long time ago due to the high prices they could fetch today. Most of the hunted wildlife parts were sold during the Christmastime and particularly during Chinese New Year's eve as they fetch soaring profits in exchange for their household needs. Skins and bones of cat species; skins, horns, tongue and oil of serow; antlers and skins of muntjac; the whole body parts of bears; skull of gibbon and scales of pangolin are the mainly traded goods in this region. Traders bring the hunted animals into town markets to sell the meat and any other body parts that will fetch a good price.

Twenty six hunted species were recorded in the study areas. Out of the total recorded species, 23 species were listed under threat categories. Among the total recorded species, 13 were completely protected, 7 were normally protected, 1 seasonally protected and 4 were unprotected by MWPL (1994). In addition, 9, 6 and 2 species were listed on CITES appendices I, II and III (CITES 2009) respectively, and 2 endangered species, 12 vulnerable species and 3 lower risk near threatened species were recorded



with IUCN Red List (2008) (**Table 6**). Thus, hunting and wildlife trade are critical threats to biodiversity in tropical forests throughout the study area. Photographic records of wildlife parts observed during the market survey and village survey are shown in **Photo 17 to Photo 30**.



Photo 17: With Lisu hunters in Putao

Photo 18: Lisu hunter with red panda (alive)

Table 6. Hunted Species in Putao District

No.	Common name	Scientific name	Conservation status		
			IUCN	CITES	MWPL
1	Chinese Serow	<i>Capricornis milneedwardsi</i>	LR/NT	-	-
2	Red Muntjac	<i>Muntiacus muntjak</i>	-	-	SP
3	Red Goral	<i>Nemorhaedus cranbrookii</i>	VU	Appendix I	CP
4	Black Musk-deer	<i>Moschus fuscus</i>	EN	Appendix I	CP
5	Red Panda	<i>Ailurus fulgens</i>	VU	Appendix I	CP
6	Eurasian Wild Pig	<i>Sus scrofa</i>	-	-	-
7	Stump-Tailed Macaque	<i>Macaca arctoides</i>	VU	-	P
8	Rhesus macaque	<i>Macaca mulatta</i>	VU	Appendix II	P
9	Assamese macaque	<i>Macaca assamensis</i>	VU	Appendix II	P
10	Hoolock Gibbon	<i>Hoolock hoolock</i>	EN	Appendix I	CP
11	Sambar	<i>Cervus unicolor</i>	-	-	P
12	Guar	<i>Bos gaurus</i>	VU	Appendix	CP



				II	
13	Takin	<i>Budorcas taxicolor</i>	VU	Appendix II	CP
14	Asiatic Black Bear	<i>Ursus thibetanus</i>	VU	Appendix I	P
15	Yellow-throated Marten	<i>Martes strigidorsa</i>	-	Appendix III	P
16	Red Giant Flying Squirrel	<i>Petaurista petaurista</i>	-	-	-
17	Leaf Muntjac	<i>Muntiacus putaoensis</i>	-	-	-
18	Asian Golden Cat	<i>Catopuma temminckii</i>	VU	Appendix I	CP
19	Small Indian Civet	<i>Viverricula indica</i>	-	Appendix III	CP
20	Leopard Cat	<i>Felis bengalensis</i>	-	Appendix II	P
21	Clouded- leopard	<i>Neofelis nebulosa</i>	VU	Appendix I	CP
22	Porcupine	<i>Hystrix brachyura</i>	VU	-	-
23	Chinese Pangolin	<i>Manis Pentadactyla</i>	LR/N T	Appendix II	CP
24	Great Hornbill	<i>Buceros bicornis</i>	LR/N T	Appendix I	CP
25	Rufous-necked Hornbill	<i>Aceros nipalensis</i>	VU	Appendix I	CP
26	Wreathed Hornbill	<i>Rhyticeros undulatus</i>	-	-	CP



Photo 19: Fresh and dry meet of sambar on sale (Putao Myoma Market)

Photo 20: Skin of black musk deer (Pannandim)

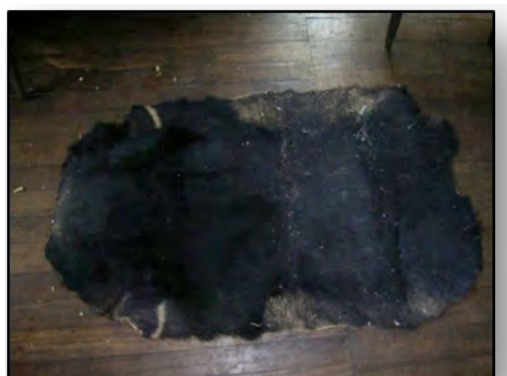


Photo 21: Skin of Asiantic black bear



Photo 22: Asian Golden Cat Skin



Photo 23: Fresh skin of red muntjac



Photo 24: Chinese serow skin (Putao)



Photo 25: Leopard Cat Skin (Phetmar)



Photo 26: Small Indian Civet Skin
(Upper-Shangaung)



Photo 27: Head of gibbon on sale (Putao)



Photo 28: Stomach of porcupine (Putao)



Photo 29: Gall bladder of boa (Putao)



Photo 30: Head of rufous-necked hornbill

5.3. Bushmeat consumption in study area

Hunting is a typical livelihood practice in Kachin State. With the population increasing, such practices have a serious impact on the future prospects for many threatened species. Eating wild animals has long been a tradition in Kachin State. Bushmeat (wildlife species used for meat), provides an affordable source of animal protein as well as income generating opportunities, especially among the rural poor. Normally bushmeat is preferred over domestic sources of meat by local people. Nevertheless, the demand of Chinese workers from various development projects involved in the study area transformed the consumption stage from local to commercial scale rendering more threat for the existing wildlife. However, bushmeat is only consumed near its place of origin and not traded elsewhere. The customers believed that wildlife was nourishing and had curative value. According to the field study, gaur, serow, goral, sambar, red muntjac, leaf muntjac, wild pig, porcupine, pangolin and gibbon species were mainly consumed as wild meat in all the study sites. All of these species were sold in local markets and traded with other villages. The prices of wild meat were varied depending on location and availability (Table 4) (Photo 31 to Photo 34).



Photo 31: Fresh meat of serow

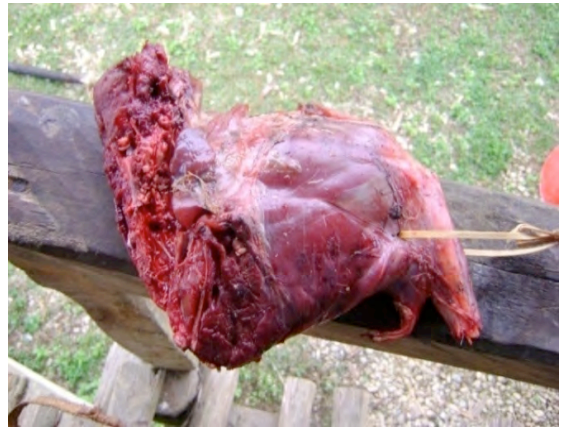


Photo 32: Fresh meat of red muntjac sale in Ratbot village (On the way of Pannandim)



5.4. Illegal logging and wildlife trade activity in border area of Kachin State

5.4.1. Laiza (Myanmar-China border market)

Laiza is a major wildlife trade market on the border with China but the wildlife trade here has never been monitored. According to the open discussions with local people and hunters and middleman, there is high demand for live animals, carcasses, canines, skulls, claws, horns, trophies, pieces of skin and various types of wildlife parts. According to salespeople, the majority of these wildlife goods come from the areas governed by the armed ethnic groups of Kachin State and also from Putao District.

During the survey time, large numbers of wildlife parts such as heads of gibbon, bills of hornbill, skins and molar teeth of elephant, bones of cat species, oil, skull, canine and gallbladder of bear, horns and antlers of various types of wildlife species were openly displayed for sale but difficult to obtain relevant data and volume involved in trade. This situation is due to the fact that traders only want to deal with intimate customers and were highly cautious of strangers. In addition, they are quite reluctant to allow taking of any photographs concerned with their business.

The most dominant species found in Laiza market was pangolin carcasses and scales. Pangolins are poached for their meat, consumed as food and their scales were used in traditional Chinese medicine across the region. Pangolins are completely protected animals in Myanmar and they are currently protected by Appendix II of CITES.

Over the course of the investigation, the survey team found that, traders or even small stall-holders in Laiza market are in direct contact with the Chinese buyers. Moreover, they are totally supported and covered by ethnic armed groups. Though, they were constrained to give any information to the survey team, there is a lot of evidence to indicate that the trade in wildlife products occurs at a very large scale in this border market.

5.4.1.1. Market Surveys

According to the market survey, it was observed that 6 shops were recorded for trading, especially parts of 21 traded wild animal species. Out of the total recorded species, 20 species were listed under threat categories. Among total recorded species, 11 were completely protected, seven were normally protected and two were unprotected by MWPL (1994). In addition, 18, 6 and 2 species were listed on CITES appendices I, II and III (CITES, 2009) respectively, and 3 endangered species, 10 vulnerable species and 3 lower risk near threatened species were recorded with IUCN Red List (2008). The detail recorded species list, their conservation status and estimated retail value of traded wildlife parts are presented in Table 4 and 7, respectively. Photographic records of these wildlife parts from market survey are described in **Photo 35 to Photo 46**.

Table.7. List of traded species and their status observed in Laiza border trade market

No.	Common Name	Scientific Name	Conservation status
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			IUCN	CITES	MWPL
1	Guar	<i>Bos gaurus</i>	VU	Appendix II	CP
2	Takin	<i>Budorcas taxicolor</i>	VU	Appendix II	CP
3	Sambar	<i>Cervus unicolor</i>	-	-	P
4	Chinese Serow	<i>Capricornis milneedwardsi</i>	LR/NT	-	-
5	Red Goral	<i>Nemorhaedus baileyi</i>	VU	Appendix I	CP
6	Asiatic Black Bear	<i>Ursus thibetanus</i>	VU	Appendix I	P
7	Clouded- leopard	<i>Neofelis nebulosa</i>	VU	Appendix I	CP
8	Small Indian Civet	<i>Viverricula indica</i>		Appendix III	CP
9	Asian Golden Cat	<i>Catopuma temminckii</i>	VU	Appendix I	CP
10	Leopard Cat	<i>Prionailurus bengalensis</i>	-	Appendix II	P
11	Yellow-throated Marten	<i>Martes flavigula</i>	-	Appendix III	P
12	Porcupine	<i>Hystrix brachyura</i>	VU	-	-
13	Chinese Pangolin	<i>Manis Pentadactyla</i>	LR/NT	Appendix II	CP
No.	Common Name	Scientific Name	Conservation status		
			IUCN	CITES	MWPL
14	Eurasian Wild Pig	<i>Sus scrofa</i>	-	-	-
15	Stump-Tailed Macaque	<i>Macaca arctoides</i>	VU	-	P
16	Rhesus macaque	<i>Macaca mulatta</i>	VU	Appendix II	P
17	Assamese macaque	<i>Macaca assamensis</i>	VU	Appendix II	P
18	Hoolock Gibbon	<i>Hoolock hoolock</i>	EN	Appendix I	CP
19	Asian Elephant	<i>Elephas maximus</i>	EN	Appendix I	CP
20	Tiger	<i>Panthera tigris</i>	EN	Appendix I	CP
21	Great Hornbill	<i>Buceros bicornis</i>	LR/NT	Appendix I	CP



Photo 35: A snap shot describing trade in Laiza



Photo 36: Horns and antlers of wildlife



Photo 37: Various types of wildlife parts



Photo 38: Bills of Hornbill on sale in Laiza



Photo 39: Heads of gibbons on sale in Laiza

Photo 40: Dried skins of pangolin displayed at a stall in Laiza



Photo 41: Very fresh skin of pangolin drying in Laiza market

Photo 42: Wildlife products such as antlers, tiger's bones, bear's canines, claws and

elephant's skins were displayed on sale



Photo 43: Penis of tiger on sale in Laiza



Photo 44: Gall bladders of guar and quills



Photo 45: Skins of Clouded leopard on sale



Photo 46: Collection of available information

5.4.2. Makonkhen

Makhonkhen is one of the border trade markets. Villages around Panandim and upper parts of Kachin State are very convenient to reach this border market to trade their wildlife products rather than trading at nearest market in Putao, due to the transportation barriers of the hilly region.

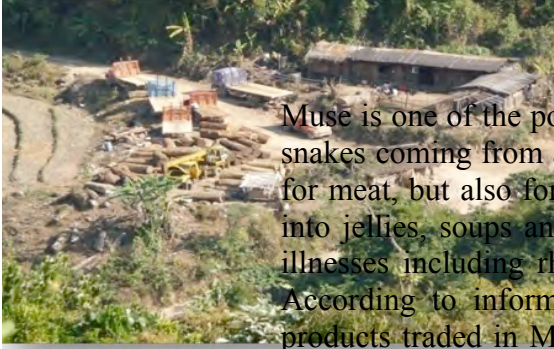
5.4.3. Lweje

Lweje is one of the border areas. According to the information from local people and middle men, Lweje sometimes stood up a trade route depending on the seizure situation. During the survey, some wildlife parts such as skins, horns and hoofs of serow; horns and oil of goral and stomach of porcupine were displayed for sale in Sinlum reserved forest area.

5.4.4. Kangfang, Hpimaw and Panwar

According to the current study, illegal logging / timber and non-timber forest products (NTFPs) like bamboo, rattan and charcoal export to China were very significant in the border areas of Kangfang, Hpimaw and Panwar, compared to wildlife trading. Upper part of the Kangfang area, illegal logging camps and unsustainable extraction of logs were clearly seen in this study. It appeared that the rate of deforestation caused by uncontrolled logging is a very significant problem in Kachin State. The transportation of illegal logs and NTFPs across the border at Kangfang and Hpimaw was recorded during the survey (Photo 47. to Photo 55).

5.4.5. Muse



Muse is one of the popular wildlife markets and mainly traded in freshwater turtles and snakes coming from all over Myanmar. Freshwater turtles and snakes are sold not only for meat, but also for medicinal purposes and tonic products, for which they are made into jellies, soups and pills. It is believed that turtles and snakes can cure a range of illnesses including rheumatism, heart ailments and cancer, while increasing lifespan. According to informants in Muse, wildlife trades are still active. The sources of products traded in Muse mainly come via Mandalay region. It was heard that there is also rare bird and live animals trade and market for zoo exhibits. The most exported birds in this area were Pheasant, parrots and hill mynas but no evidences were available. However, the number of species found during survey conducted for this study was significantly lower. There is a large discrepancy between quantities quoted on questionnaire interviewed and quantities inferred from direct observations. This may have been due to traders who were often reluctant to disclose precise information to the survey team.

Photo 47: A logging camp in the study area (Kangfang)



Photo 49: Using cable logging



Photo 48: The logging camp and Chinese workers



Photo 50: A pile of logs(Kangfang)



Photo 51: Ready for transportation

Photo 52: Passing Border Bridge (Kangfang to China)



Photo 53: Illegal plywood for transportation to China



Photo 54: Wooden slabs to make parquet (Kangfang-China)



Photo 55: Carrying of Charcoal bags (Hpimaw to China)

5.5. Source and demand network for the wildlife trade

Wildlife parts observed from the village-level brokers were bought from the hunters living in villages and nearby. According to the field investigation, some Chinese traders from the border area send their resident collectors to the villages to buy wildlife products. Some of these species were sold to the local markets and other villages. Some

species were bought by brokers or middle men from other divisions and states. They traded these animals to the international markets (border markets) through urban markets centers in Myintkyina and Mandalay. At international level trade, some wild animals were traded to the border markets such as Makonkhen, Kangfang, Hpimaw, Pangwa, Laiza, Kambaiti, Lweje and Muse which passed through urban centers (Figure 2).

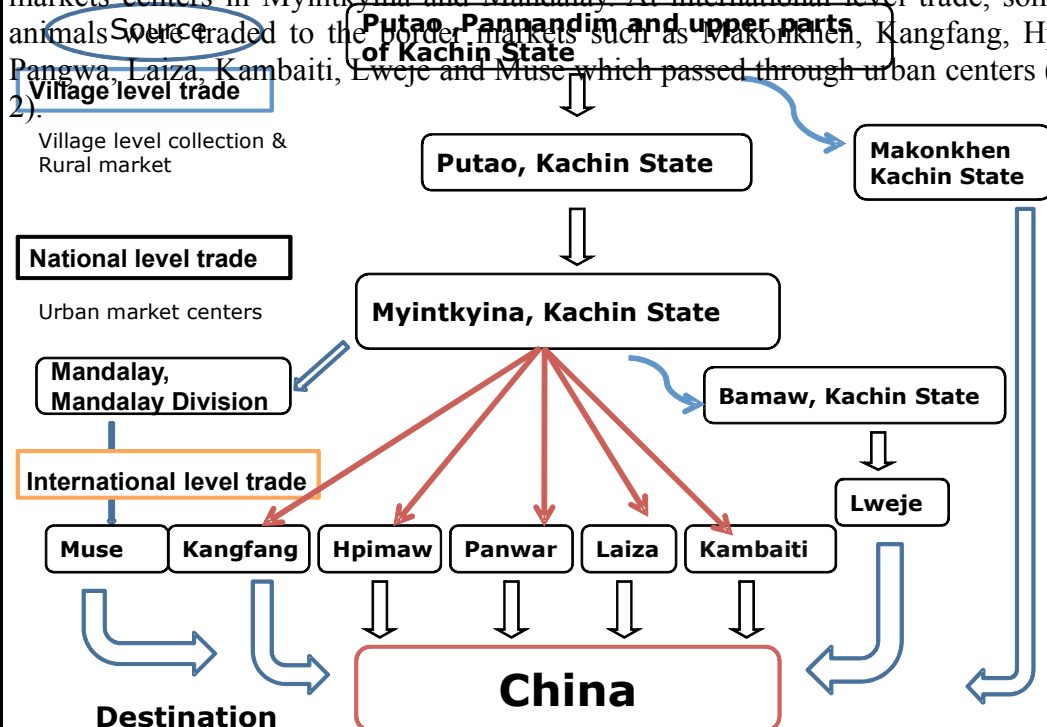


Figure 2. Diagrammatic representation of source and demand network for the wildlife trade in the Kachin State

5.6. Major trade routes of wildlife trade in Kachin State

Makonkhen, Kangfang, Hpimaw, Pangwa, Laiza, Kambaiti, Lweje and Muse were known as the final destination for wildlife traders. However, trade routes are occasionally changed so as to evade from wildlife checkpoints and also depending on the sale value of the wildlife products, such as tiger parts etc. Based on the current study, 8 trade routes are being in use for international trade from the source to China (Figure 3).

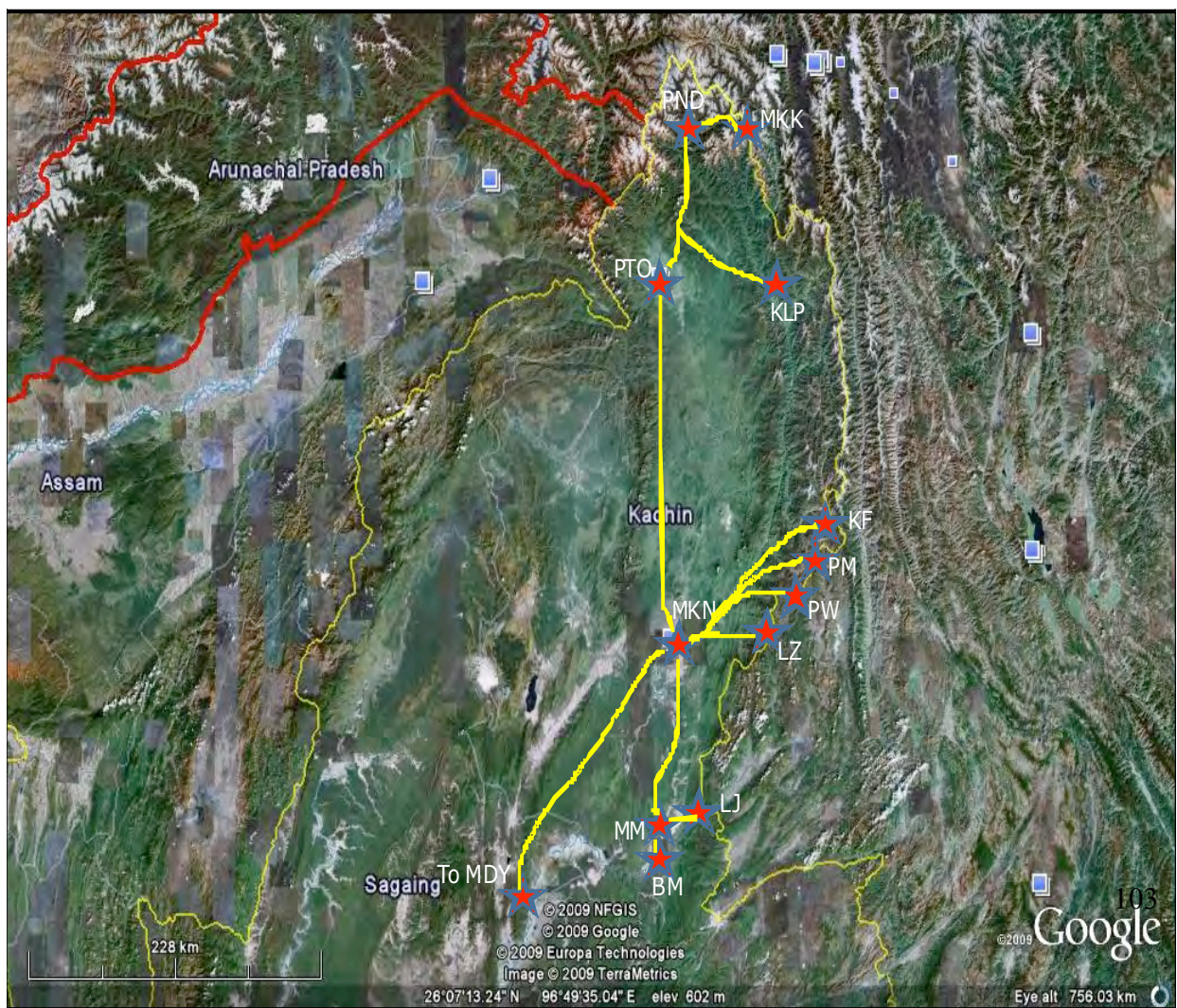


Figure 3. Map of trade route observed in the study area

6. Discussions

Illegal wildlife trade is the biggest ecological disaster in the Kachin State. Hunting is a very traditional occupation for local tribes. Hunting of wildlife for sale or trade is the overwhelming threat to the future survival of many wildlife species, particularly large mammals. Hunters were targeting particular species whose parts were valued by traders and helped maintain a thriving trade in wildlife parts to cities like Putao, Myintkyina and across the border markets of Myanmar- China.

The income derived from illegal wildlife poaching and trading is often vital for sustaining the livelihoods of impoverished hunters and traders. Some observers say small-scale hunters and traders have few alternatives for generating subsistence-level incomes. Additionally, some indigenous people may consider hunting certain animals, as a fundamental part of their culture, religion or tradition. These considerations may differentiate poor hunters and traders engaged in wildlife trade purely for profit only. Moreover, the nature of hill-tribes is very friendly with their wildlife environment. Without any other job opportunities, many hill dwellers exploit natural resources for their survival and are not quite concerned primarily about their livelihoods or sustainable development.

Another factor is the perceived low risk of capture or penalties associated with wildlife trafficking. Such a perception can be the consequence of limited enforcement capabilities or willingness to punish such illegal behavior. In addition, wildlife trade may be considered less risky than other high-valued black markets and the penalties associated with wildlife crimes tend to be substantially less severe than with other trafficking crimes.

Based on the findings of this study, the following factors should be considered in developing a management plan to achieve effective conservation in Kachin State. A total of 28 species were recorded during the field survey. Among them, the highest numbers of recorded species were observed from Putao District followed by Laiza (China border area) and Myintkyina environs respectively. Among the total recorded species, 15 were completely protected, 7 were normally protected, 1 seasonally protected and 5 were unprotected by MWPL (1994). In addition, 11, 6 and 2 species were listed in CITES appendices I, II and III (CITES, 2009) respectively, and 4 endangered species, 12 vulnerable species and 3 lower risk near threatened species were recorded with IUCN Red List (2008). Therefore, out of the total recorded species, 25 species were listed under threat categories.

Based on the above finding, the overall percentage of traded wildlife species in Kachin State can be calculated for various categories as per world conservation status (Figure 6 to 8). For example, the recorded number of endangered species, consisting in the current trade activity, is only 4 species; whilst in terms of IUCN status it has been representing 14% of the study area. Based on trade across borders and domestic trades

in the study areas, in terms of CITES categories., 41% of species can be listed as CITES Appendix I, 22% in Appendix II and 7% in Appendix III. In addition to that, 53% of the species under study were found to be in the category of completely protected wildlife species of MWPL. Detailed breakdown of the list of species and number of wildlife parts recorded in market surveys and village surveys are shown in Table 7 and Table 8, respectively. Based on the data expressed in these tables, the following histograms, Figure 9 and 10 can be drawn to carry out the current status of wildlife trade sources and hunted levels in the study areas. According to the current findings, it can be clearly seen that the largest quantities of wildlife products were mainly traded in Laiza border market via Myitkyina and Putao markets and hunting activities are highest in Khaunglanphu area than the others due to the lack of law enforcements, trade inspection and lax borders crossings.

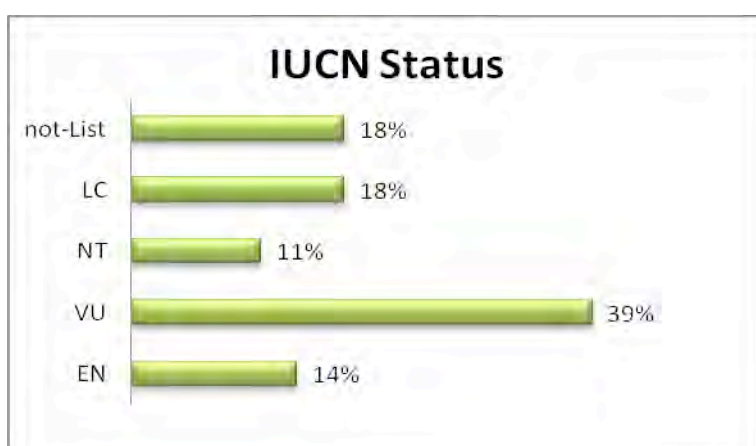


Figure 6. Percentage of traded species in IUCN status

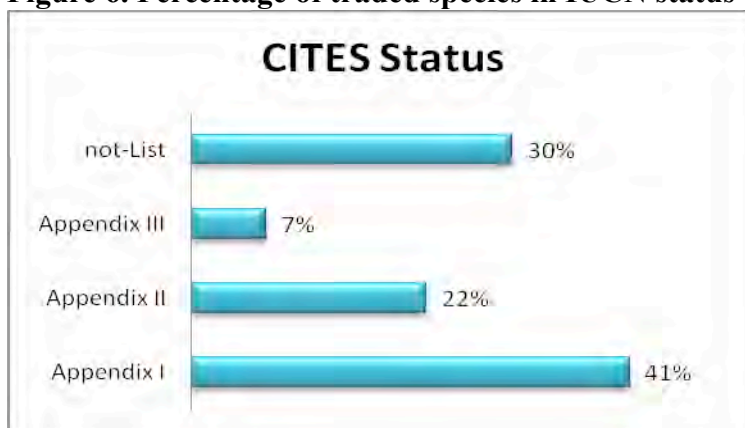


Figure 7. Percentage of traded species in CITES status

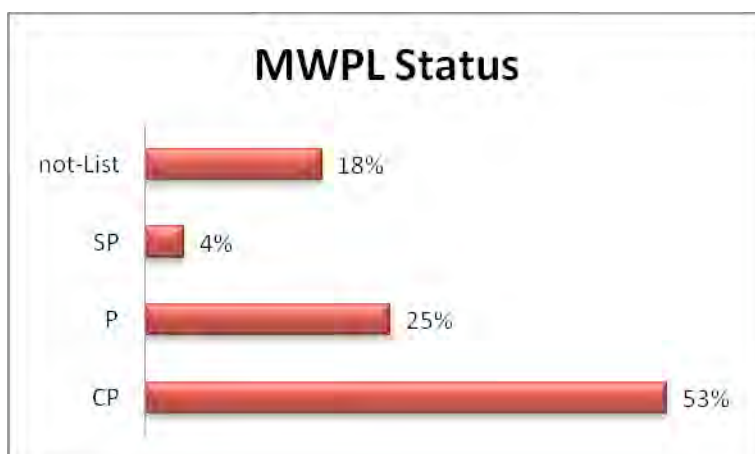


Figure 8. Percentage of traded species in MWPL status

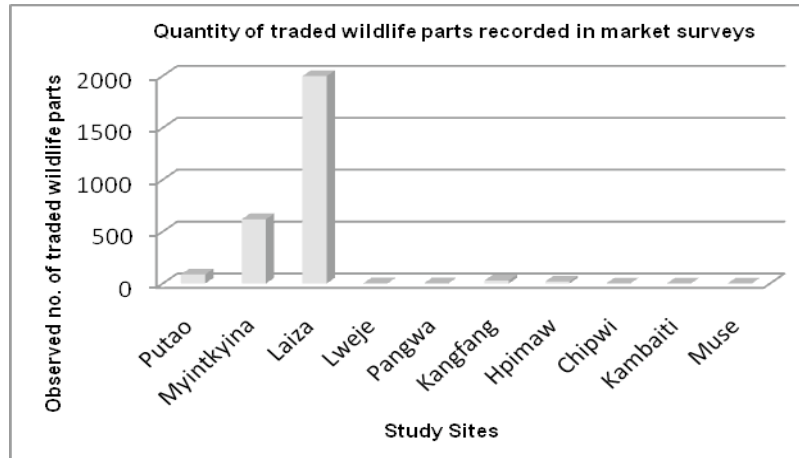


Figure 9. Quantity of traded wildlife parts recorded in market survey

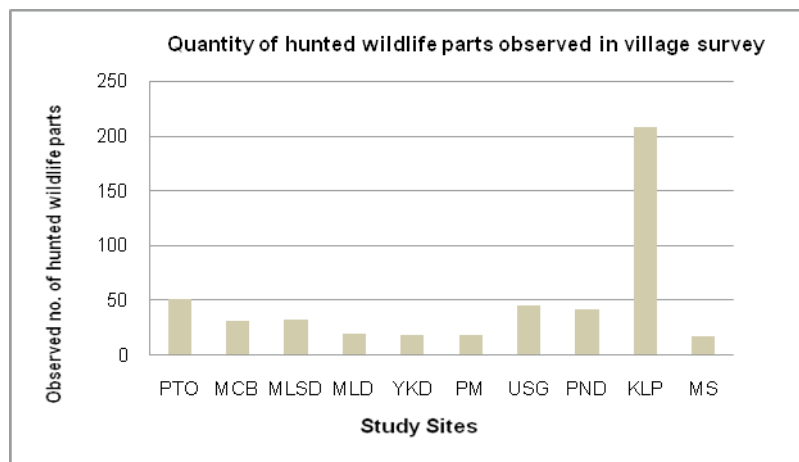


Figure 10. Quantity of hunted wildlife parts recorded in village survey

It will be difficult to assess the effects of illegal trade in wildlife and its products on the biodiversity of Kachin State as information available on wildlife trade is far from sufficient. But wildlife trade has become an important factor affecting survival of many wild species and their habitats. For example, the musk from the musk deer is used as an ingredient in more than 300 commercial TCMs. At the same time, the musk is much in demand in the international market for its use in cosmetics and perfumery. A considerable amount of this musk is taken from the wild. The illegal trade is threatening the survival of musk deer (*Moschus spp.*). This species was earlier found abundantly in most northern parts of the Kachin State, whereas its population has been dwindling currently because of excessive poaching. If this situation continues, the musk deer species could become extinct in Kachin and other Himalayan countries during the

forthcoming decade. The Asiatic black bear is another example. Trade in bears and bear parts is the most immediate threat to the Asiatic black bear's survival. The species has been devastated by poachers, who sell its gall bladders for use in traditional Asian medicines and market its paws to supply a demand for exotic cuisine. In some regions of Southeast Asia, these bears are also captured for use as performing animals in zoos and circus. Without proper protection, the Asiatic black bear is at risk of extinction throughout its range due to these threats. It is currently protected by Appendix I of CITES. Furthermore, a considerable amount of pangolin spp. (EN species listed in IUCN and Myanmar Completely Protected Species) is already critical, and has become a focus of conservation. Thus, the decline of wildlife resources in recent decades is partially due to unsustainable extraction of natural ingredients for medicinal uses.

Table.6. Quantity of traded wildlife parts recorded in market surveys

No.	Common Name	Scientific Name	Observed Parts	Markets Surveyed									
				PTO	MKN	LZ	LJ	PW	KF	HM	CP	KBT	M
1	Chinese Serow	<i>Capricornis milneedwardsi</i>	Skins, horns, hoofs, tongs	7	36	8	4	-	-	-	-	-	-
2	Red Muntjac	<i>Muntiacus muntjak</i>	Skins, antlers, meat	10	213	-	-	-	-	-	-	-	-
3	Red Goral	<i>Nemorhaedus cranbrookii</i>	Skins, horns	2	-	-	2	-	-	-	-	-	-
4	Black Musk-deer	<i>Moschus fuscus</i>	Skins, musk	1	-	-	-	-	-	-	-	-	-
5	Red Panda	<i>Ailurus fulgens</i>	Skins	1	1	-	-	-	-	-	-	-	-
6	Eurasian Wild Pig	<i>Sus scrofa</i>	Tusks, meat	50	150	50	-	-	-	-	-	-	-
7	Macaque, Gibbon	<i>Macaque spp., Hoolock hoolock</i>	Skins, skulls, meat	-	12	64	-	-	-	2	-	-	-
8	Sambar	<i>Cervus unicolor</i>	Antlers	2	11	38	-	-	-	-	-	-	-
9	Guar	<i>Bos gaurus</i>	Horns, meat	1	-	19	-	1	-	-	-	-	-
10	Takin	<i>Budorcas taxicolor</i>	Horns		-	6	-	-	-	-	-	-	-

11	Asiatic Black Bear	<i>Ursus thibetanus</i>	Skins, gall bladder, canines, oil	1	14	48	-	-	-	-	-	-	-
12	Yellow-throated Marten	<i>Martes flavigula</i>	Skins	1	-	-	-	-	-	-	-	-	-
13	Asian Golden Cat	<i>Catopuma temminckii</i>	Skins	-	-	1	-	-	-	-	-	-	-
14	Small Indian Civet	<i>Viverricula indica</i>	Skins	-	-	2	-	-	-	-	-	-	-
14	Leopard Cat	<i>Prionailurus bengalensis</i>	Skins	-	-	5	-	-	-	-	-	-	-
16	Clouded-leopard	<i>Neofelis nebulosa</i>	Skins	-	-	3	-	-	-	-	-	-	-
17	Porcupine	<i>Hystrix brachyura</i>	Stomach, quill	7	27	151 2	-	-	-	-	-	-	-
18	Chinese Pangolin	<i>Manis Pentadactyla</i>	Skins, scales	-	-	23	-	-	-	-	-	-	-
19	Great Hornbill	<i>Buceros bicornis</i>	Bills, feather	4	-	16	-	-	-	-	-	-	-
20	Asian Elephant	<i>Elephas maximus</i>	Skin parts, molars teeth	-	150	203	-	-	30	20	-	-	-
21	Tiger	<i>Panthera tigris</i>	Canines, bones	1	5	-	-	-	-	-	-	-	-

NOTE : PTO-Putao, MKN-Myitkyina, LZ-Laiza, LJ-Lweje, PW-Panwar, KF-Kangfang, HM-Hpimaw, CP-Chibwe, KBT-Kambaiti, M-Muse

Table.7. Quantity of hunted wildlife parts recorded in village surveys

No	Common Name	Scientific Name	Observed Parts	Study sites									
				PTO	MCB	MLSD	MLD	YKD	PM	USG	PND	KLP	MS
1	Chinese Serow	<i>Capricornis milneedwardsi</i>	Skins, horns, hoofs,	-	-	-	-	-	-	-	3	52	-
2	Red Muntjac	<i>Muntiacus muntjak</i>	Skins, antlers, meat	5	10	6	10	10	6	10	1	52	3
3	Red Goral	<i>Nemorhaedus cranbrooki</i>	Skins, horns	-	-	-	-	-	-	-	1	-	-
4	Black Musk-deer	<i>Moschus fuscus</i>	Skins, musk	-	-	-	-	-	-	-	1	-	-
5	Red Panda	<i>Ailurus fulgens</i>	Skins	-	-	-	-	-	-	-	1	-	-
6	Eurasian Wild Pig	<i>Sus scrofa</i>	Tusks, meat	4	9	5	5	2	5	9	4	34	3
7	Macaque, Gibbon	<i>Macaque spp., Hoolock hoolock</i>	Skins, skulls, meat	5	10	15	5	5	5	22	21	61	5
8	Sambar	<i>Cervus unicolor</i>	Antlers	-	-	-	-	-	1	-	-	-	1
9	Guar	<i>Bos gaurus</i>	Horns, meat	-	-	1	-	-	-	-	-	-	-
10	Takin	<i>Budorcas taxicolor</i>	Horns	-	1	1	-	-	-	1	1	3	-
11	Asiatic Black Bear	<i>Ursus thibetanus</i>	Skins, gall bladder,	1	-	1	-	-	-	-	6	2	-

			canines, oil										
12	Yellow-throated Marten	<i>Martes flavigula</i>	Skins	1	-	-	-	-	-	-	-	1	-
13	Red Giant Flying Squirrel	<i>Petaurista petaurista</i>	Skins, stomach	-	-	-	-	-	1	-	-	-	-
14	Leaf Muntjac	<i>Muntiacus putaoensis</i>	Skulls	2	1	1	-	-	1	2	1	-	-
15	Tiger	<i>Panthera tigris</i>	Canines, bones	-	1	-	-	-	-	-	-	1	-
16	Asian Golden Cat	<i>Catopuma temminckii</i>	Skins	1	-	-	-	1	-	-	-	-	-
17	Small Indian Civet	<i>Viverricula indica</i>	Skins	-	-	-	-	-	-	1	1	-	1
18	Leopard Cat	<i>Prionailurus bengalensis</i>	Skins	-	-	-	-	1	-	-	-	1	-
19	Clouded-leopard	<i>Neofelis nebulosa</i>	Skins	1	-	3	-	-	-	-	1	-	-
20	Porcupine	<i>Hystrix brachyura</i>	Stomach, quill	30	-	-	-	-	-	-	-	1	2
21	Chinese Pangolin	<i>Manis Pentadactyla</i>	Skins, scales	1	-	-	-	-	-	-	-	-	3
TOTAL				51	32	33	20	19	19	45	42	208	18

NOTE: PTO-Putao, MCB-Machanbaw, MLSD-Mularshidee, MLD-Mulardee, YKD-Yawkyawdee, PM-Pyetmar, USG-UpperShangaung, PND-Panandim, KLP-Khaunglanphu, MS-Myitson

7. Conclusion

There are many relevant factors indicating the rapid depletion of natural resources in Kachin State. One was the low morale or disempowerment of much of the population, stemming from local and broader issues including corruption and abuse of power. A second issue concerns the complicated governance situation among the different ethnic armed groups. High unemployment rates and associated social welfare issues are expressed as a third important issue relevant to conservation. There are many underlying causes for high unemployment among the local people. Based on the field observations, many Chinese labors are gradually replacing the local workers in all of large scale development construction activities. Influential people with large-scale business activities are controlling not only the wildlife trade but also other booming trades in the study area, thereby leaving fewer opportunities for local people with small-scale ones.

China's high market demand is a fourth issue for the rapid deterioration of forest resources in Kachin State. Although there are strict regulations on their collection, effective law enforcement is too weak to stop illegal wildlife collection, transportation and market demand of these wildlife species.

According to the field surveys, it was observed that various parts of wildlife are mainly used for ingredients of traditional medicines, collectors' trophies, decorations and luxury items. Live animals are sold as pets or fresh food, while others are killed-often just for obtaining a single body part such as gall bladder of bears- and also traded for zoo exhibits.

Because the lax law enforcement, low penalties, limited awareness of the problem among the civil population, weak border controls and the perception of high profit and low risk contribute to large-scale commercial logging and illegal smuggling of wildlife and its products in this area, these practices are still very active. Investigations have found that illegal wildlife dealers utilize well-established and highly organized cross-border networks. Kachin State is rich in natural resources. Its location near resource hungry China and its rule by people in need of hard currency has resulted in the unsustainable exploitation of its natural resources.

Effective measures in controlling illegal wildlife trade cannot be undertaken in the absence of trade related information such as the number of species, names of species, their volume in trade, illegal routes in trade, countries involved in trade, demand and distribution of wildlife and its products in the markets, impact of illegal trade on species survival and sustainable use of wildlife and its habitats. Thus, lack of information on trade in wildlife and its impacts has hampered efforts of governments in the region to conserve their rich biodiversity.

8. Recommendations

The following recommendations are made following this study:

- Information gathered during monitoring activities should be passed on to the relevant authorities. Enforcement agencies in Myanmar as well as its neighboring countries should be encouraged to act upon information given to them and be encouraged to take further actions against the illegal trade.
- Implementation of national legislation needs to be reviewed and weaknesses addressed. TRAFFIC who is in a good position to begin dialogue with the CITES Management Authority in Myanmar, has to explore the needs of the country to improve its legislation, and enforcement thereof, relating to wildlife conservation and trade in wildlife and their products.
- Authorities in China should be made aware of the fact that wildlife trade continues to be smuggled into China for sale there. The China enforcement agencies should be encouraged to increase efforts to prevent wildlife from being smuggled into China from Myanmar through activities such as increased checks at border markets.
- Most importantly, national laws should be enforced, and markets openly selling protected wildlife should be closed down. Those found violating the national legislation should be prosecuted to the full extent of the law.

- In order to reduce illegal international trade of wildlife and other protected wildlife, Myanmar should be encouraged to work closely in partnership with China, Thailand and other relevant countries, as international co-operation is essential to enforce CITES effectively and to put an end to the illegal international trade.
- Authorities in airports and other points of international border crossings should be more vigilant to prevent parts and derivatives of protected wildlife from being carried across Myanmar's borders. Myanmar should ensure that staff based at these checkpoints is sufficiently trained in CITES implementation, enforcement and identification of species parts.
- Regular and systematic monitoring of the markets in Myanmar should continue to be carried out by government authorities assisted by NGOs for the enforcement efforts as well as to detect changing trends and dynamics in the trade.
- Myanmar, as a Party to CITES, should enforce effective enactment of existing wildlife laws or revise its legislation in compliance with new CITES legislation.

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Appendix 1

Investigation of hunting, catching and purchasing

Investigator:

Time:

Sites:

Units:

Species name	Hunting number		Catching number		Purchasing						Remark
	Adult	Juv.	Adult	Juv.	Live	Price	Body	Price	Fur	Price	
Chinese Serow											
Red Muntjac											
Red Goral											
Black Musk-deer											
Red Panda											
Eurasian Wild Pig											
Macaque, Gibbon											

Sambar											
Guar											
Takin											
Asiatic Black Bear											
Sun Bear											
Yellow-throated Marten											
Red Giant Flying Squirrel											
Leaf Muntjac											
Tiger											
Asian Golden Cat											
Small Indian Civet											
Leopard Cat											
Clouded- leopard											
Porcupine											
Chinese Pangolin											

Appendix 2

Investigation of distributing center of wild animal and its production

Investigator:

Time:

Name:

Species name	Type	Quantity	Price	Source	Remark
Chinese Serow	Skins,Horns,Hoofs,Toungs				
Red Muntjac	Skins,Antlers,meat				
Red Goral	Skins,Horns				
Black Musk-deer	Skins,Musk				
Red Panda	Skins				
Eurasian Wild Pig	Tusks,Meat				
Macaque, Gibbon	Skins,Skulls,Meat				
Sambar	Antlers				

Guar	Horns,Meat				
Takin	Horns				
Asiatic Black Bear	Skins,gallbladder,Canines,fat				
Yellow-throated Marten	Skins				
Asian Golden Cat	Skins				
Small Indian Civet	Skins				
Leopard Cat	Skins				
Clouded- leopard	Skins				
Porcupine	Stomach,Quill				
Chinese Pangolin	Skins,Skills				
Great Hornbill	Bills,Feather				
Asian Elephant	Skin parts,Molars				
Tiger	Canines,bones				

Appendix 3

General Hunting Interview

Location (Town/village):.....	Interviewer:.....
Date:.....	Interviewee:.....
Position: N:.....	Religion:.....
E:.....	

1. How often do you hunt? (e.g., once a week, once a month, twice a year, once a fortnight, etc.) _____
2. Average time taken for hunting (days or hours) _____
3. What is your most favorite season for hunting? _____
4. Number of people accompanied with you _____
5. Do you hunt in daytime or nighttime, or both? _____
6. What kinds of weapons do you use for hunting? _____

Spear [] dogs [] Blowpipe [] Flint gun [] Trap []
 Crossbow [] Jaw trap [] Snare [] Other: _____

7. What kinds of animals do you normally get now? _____
8. What kinds of animals have you hunted before? _____
9. In each hunt, how many animals do you usually get? _____
10. What is your assessment on the abundance of wildlife in the forests compared to the last five years?

11. What are your purposes for hunting? (for sport, subsistence, trade, pest control, etc.):

12. Your main occupation:
 i) Hunting () ii) Farming () iii) Other ()
13. Please rank the following occupations in terms of economic significance for household income (From the most significance to the least significance):
 i) Hunting () ii) Shifting Cultivation () iii) Forest products collection () iv) Other ()
14. Have you ever sold the meat or any part of the animal you hunt?
 No: [] Yes []

Name of wildlife sold	Part of wildlife sold	Use of wildlife/ parts	Current Price (Kyats)	Barter/Exchange with what commodity?	To who sold? (neighbour, trader etc.)	Destination- trade route/ Origin of trader

15. Your usual hunting area: _____
16. How far your usual hunting area is from the village?

17. Are the hunting areas divided on the basic of individual or community or ethnic groups or they have no boundary?

18. Is wild meat served for a meal in your house today? Yesterday? Yes..... No.....
 If Yes, Species _____; Cost/kg _____;
 How obtained? _____
19.
 Comments: _____

