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TRADE IN MUSK AND BEAR BILE IN INDIA

A TRAFFIC-India Study in the areas of Sikkim, Darjeeling Gorkha Hill Council and Arunachal Pradesh

Field Investigator:
Sunil Subba

Facilitated by:
Dr. Ravikant Avasthe
Soumen Dey

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Proximity to the Bay of Bengal and direct exposure to the south – west monsoon makes this region the most humid in the entire Himalayas. The annual mean rainfall ranges 2000 – 5000 mm in majority of its inner valleys except the extreme north where the rains are scanty. Administratively, the state is divided in to four districts: North, East, West and South. The North is the largest district. Total population is around 4.5 lakhs. The merger with India drastically altered the scenario in this state in terms of the pace of development. The state has well developed infra – structure, with a good network of roads. The majority populace consists of four ethnic groups: Bhutia(s), Lepcha(s), Nepalese and Limbu(s).

Sikkim still has vast chunks of reasonably well protected forests. The forest types vary from the subtropical semi-deciduous and tropical wet forests (up to 900m amsl) to sub-alpine vegetation (3800 to 4500m amsl) and beyond, the high altitude desert (4500 to 5500m amsl). The verticality in the mountains is a very special feature of Sikkim. A land expanse of 110 km north-south and 67 km east-west it reveals almost all the eco-regions, hot climes of the sub-tropics to the exceedingly cold, windy and inhospitable alpine deserts. Such variations are conducive habitats of almost 150 odd species of mammals, some of them are endemic and some exclusive to the region. They include Snow leopard (*Uncia uncia*), Red Panda (*Ailurus fulgens*), Shapi or Eastern Himalayan Tahr (*Hemitragus jemlahicus schaferi*), Clouded leopard (*Neofelis nebulosa*), Musk deer (*Moschus moschiferus*), Great Tibetan sheep (*Ovis ammon hodgsonii*), Tibetan Wild Ass (*Equus kiang polydon*), Tibetan fox (*Vulpes ferrilatus*), Himalayan Black Bear (*Selenarctos thibetanus*), Tibetan lynx and unconfirmed reports of Brown Bear among others. More than 690 species of butterflies (Haribal 1992) and almost 600 species of avifauna (Ali 1989) are additional dimensions of the diversity. This area harbours an interesting array of lesser

cats and smaller mammals. All this and many more in the small land mass, where almost 40 per cent of the area is very rough terrain of steep to very steep sloping rocky mountains snow clad for over half the year and thus, absolutely uninhabitable for any life form. Exclude this area from the total geographic area one will see the competition for space and survival, especially in view of the ever-increasing human population. Cramped for space, the wildlife fight their battle against all odds, and in comes the poaching business, easy way to make money – not actually easy it must be for the poachers keeping in mind the terrain we are talking about.

The three sub – divisions of the Darjeeling Gorkha Hill Council (DGHC), Darjeeling Sadar, Kalimpong and Kurseong cover a total geographic area of 2417.3 sq. km. This area shares similarity with Sikkim in the uniqueness of climate, forest types (vegetation) and fauna to name a few. The ethnic composition of the people also isn't different.

Arunachal Pradesh became a state of the Indian union on 20 February 1987. Before that it was, called the Northeast Frontier Agency of India, later becoming a Union Territory. Situated on the north eastern corner of India, Arunachal Pradesh is a part of the Eastern Himalayan Ranges located between 26.28 to 29.30 (degree sign) N Latitude and 91.30 to 97.30 (degree sign) E Longitudes. The state is bounded on the west by Bhutan, Tibet (China) in the north and north east, Myanmar on the east and the Indian states of Assam and Nagaland in the south and southeast. Occupying an area of 83,743 sq.km, it consists of submountain and mountainous ranges sloping to the plain of Assam. The recorded forest area in Arunachal Pradesh is 51,540 sq.km, which constitute 62% of the total geographic area. The forests are broadly classified as Tropical, Sub-tropical, Conferous, Temperate and Alpine types.

The Tropical forests (990m-1000m) found in the foothills bordering Assam, carry *Dipterocarpus macrocarpus*, *Shorea assamica*, *Messua ferrea*, *Terminalia myriocarpa* etc. The Sub-tropical forests (1000-16000m) are mostly mixed type of Schima, Ficus, Prunus, Rhododendron etc. The Conifers (1000-3000m) are normally found mixed with broad leaved species of Quercus, Castanopsis, Betula, Alnus and Rhododendron. The Sub-alpine forests (3500-4000m) are dominated by conifers and Rhododendrons, Salix and Berberis thicket. The Alpine vegetation (4000-5000m) is made up of dwarf and shrubby Rhododendron, Saxifraga, Cotoneaster etc. The diverse forest types provide habitat to a diversity of wild fauna including Musk deer, Snow Leopard, Black Bear, Tiger, Takin, Blyth's Tragopan etc.

Objectives:

1. to ascertain areas for collection of musk and bear bile and the modus operandi of the primary collectors;
2. to identify the trade routes, inter-mediatory traders and prices; and
3. to assess the volume of trade.

Methodology:

Surveys were scheduled from October 1998 onwards but the actual work began only in December 1998. Most surveys were carried out through trekking, gathering of information though guided by the structured format / questionnaire it was not strictly adhered to, mainly because of the low literacy levels and to relegate any suspicion towards the field investigator to the backseat.

SIKKIM AND DGHC

The report is presented in the form of areas surveyed covering Khangchendzonga National Park, Lachung – Yumthang area in Sikkim and Kalimpong area, Singali La National Park, and Siliguri-Hasimara-Jaigaon stretch of the DGHC.

Khangchendzonga National Park and its Buffer Zone (West Sikkim)

Endangered species: Musk deer, Snow leopard and Himalayan Black bear.

Threatened species: Blue sheep and Goral

Khangchendzonga National Park (KNP) spread over an area of 1784 sq. km. has tremendous biological diversity arising from the temperate to alpine climatic variations. The remoteness and inaccessibility of the difficult terrain makes many of the faunal species susceptible to poaching. As in many tribal states, poaching (hunting and gathering) was a way of life for the tribals of Sikkim also for many years. Adding to this was the influx of hunters from trans-boundary especially from Nepal. Subsistence farming is the seasonal occupation of the people living in these areas while in the off-season hunting goes on. Prime habitats in the area is damaged by the nomadic grazers with herds of yak, cattle and sheep during the spring season, when they spend months inside the forests despite the Government of Sikkim having banned all such activities. Species preferred by the hunters are Musk deer, Himalayan Black bear, Goral, Blue sheep and occasionally even the Snow leopard.

REPORTED AREAS & SITES OF
MUSK DEER & BLACK BEAR POACHING & TRADE

Not to Scale

a) Species: Musk deer (*Moschus moschiferus*)

Poaching techniques used:

(i) Country-made guns
(ii) Hunting with dogs
(iii) Traps
(iv) Spears and, bow and arrows
(v) Snares
(vi) Shola (a local term for ambush)

According to Mr. Singya Temba Bhutia, a local medicine practitioner and a highly skilled ex-hunter, the musk and the bear bile are used in traditional Tibetan drugs to cure different diseases.

Local medicinal uses:

(i) Anti – dote
(ii) To cure tuberculosis
(iii) Blood also used as medicine for anaemia
(iv) Extract poison from the snakebite – the paste must be applied around the bite and massage down from the bite spot.

According to the locals, they believe that two kinds of Musk deer exist in Sikkim:

(a) Sunauli – found in the high altitudes and secrete about 2 – 3 tolas of musk.
(b) Rupauli – found in the lower altitudes and secrete about 5 tolas of musk.

There is a price difference between the two, Sunauli is considered more valuable, and thus, commands a higher price than that of Rupauli. The locals also believe that even under heavy snowfall the Sunauli Musk deer does

not descend to lower altitudes instead prefers staying inside caves feeding on lichens and mosses.

Hunting purpose:

(i) Adventure
(ii) Commercial
(iii) Medicinal
(iv) Consumption of meat

Poaching pressure areas:

1. HMI Base Camp	50% trans-boundary hunters 20% locals
2. Goecha La / Yong – Dzo – Drak	30% trans-boundary hunters 20% migrant Nepalese labourers
3. Lam Pokhari	35% trans-boundary hunters 20% migrant Nepalese labourers 10% local tribes
4. Dzongri	50% trans-boundary hunters 15% local tribes
5. Kasturi range (Kasturi, Lapdang, Kargi, Gangap)	20% trans-boundary hunters 40% migrant Nepalese labourers 5% local tribes

POACHING PRESSURE AREA, KANCHENJUNGA NATIONAL PARK, WEST SIKKIM

Poaching pressure on species:

- 60% Musk deer
- 30% Himalayan Black bear
- 10% others

Techniques and tools used:

- 80% gun (muzzle loading)
- 20% hunting dogs (Thakel)

Thakel (local Nepalese term for a trap): In this trap hunting dogs are used to chase the animal to the corner of a rock and eventually killed by spears and arrows.

Trade routes:

The products both the musk and the bile land up in Tashiding and Rabong in the hands of the local traders believed to be more than 5 in Tashiding and 2 – 3 in Rabong. Yuksom has 5 to 8% commercial poachers in this trade. From Rabong, Yuksom and Tashiding the

products are traded in Kalimpong. A Bhutanese lama (monk) from Tashiding is believed to be involved in this trade. 90 per cent of the products are smuggled out to Kalimpong and 10 per cent retained for medicinal purposes.

Prices in the local market:

Rs. 4,500 – 5,500/- per tola (1 tola = 12.5 grams)

Most vulnerable area:

Kasturi range is the worst affected area inside the Khangchendzonga National Park. In this poaching has reached an alarming stage with serious long term impacts on the Musk deer. Inadequate patrolling in the area because of the very difficult terrain makes this range a haven for the poachers.

Communities involved:

- 60 % Gurung(s)
- 30 % Subba(s)
- 10 % Bhutia(s) and Lepcha(s)

b) Species: Himalayan Black Bear (*Selenarctos thibetanus*)

Worst affected areas:

(i) Lethang	80 % poaching
(ii) Rathong valley	40-50 % poaching
(iii) Gunsa	50-60 % poaching

Less affected areas:

(a) Tshokha

(b) Bakkhim
(c) Shola – dara
(d) Bhaktang
(e) Nidalay
(f) Pao – Hungri
(g) Shachen
(h) Jam Tongs
(i) Chumathang
(j) Paha khola
(k) Shilap
(l) Tung kung
(m) Sya – lagyap
(n) Chung

Tools and techniques used:

(i) Guns (muskets)	50 %
(ii) Jhapalo trap	30 %
(iii) Others	10 %

Jhapalo: In Sikkim, bears are also often killed by a local method namely, "jhapalo". This primitive process involves skill and manpower. A 'jhapalo' is a triangular trap. More than 300kg stones and other heavy objects are kept atop the trap. Only one ground support is in place in front angle of the trap. One head of an ox is hung on the inner side of the base of the angle, which is connected to the support by a rope in the front. The bear is lured to the trap by the meat and when it touches the ox head, the support collapses triggering entire setup to crash, instantly killing the bear. In the event of the bear showing signs of survival, it is killed with the help of sharp objects. The tribes even practice the technique of poisoning the meat with common rat poison to kill the bear.

Bear bile (local traditional medicinal uses)

(i) Fever (malaria)	prophylactic
(ii) Injury or wounds	applied as paste
(iii)Liver damage	prophylactic

600 to 800 grams of raw bile can be extracted from a single Himalayan Black bear in this part of Sikkim. When dried, it weighs 10 to 13 tolas (120 - 150 gms.).

Communities involved: Almost all tribes

It was recorded that every 3 – 4 years cases of bears destroying crops especially those of maize during harvest season were reported. 60 per cent bears are poached for commercial purposes, Kalimpong being the main market and the rest 40 per cent kept for local medicinal uses. The tribes still practice traditional medicines, considered a part of their culture.

Prices:

Rs. 2,200 – 3,500/- per tola

Present status:

Poaching and hunting is believed to have decreased considerably in recent times. The reasons being that people are engaged in some sort of work while there has been an increase in the awareness levels too. It was pointed out that the closure of the Rathong Chu Hydel Project, where several hundred migrant labourers employed were involved in poaching/hunting besides habitat destruction has come as a blessing for the wild animals in the area.

Lachung – Yumthang – Chungthang area

Lachung is located on the northeast axis in the Chungthang sub-division in North Sikkim at an altitude of 2,600 m above mean sea level. The ethnic people of the area are mostly Buddhists by religion and early migrants from Tibet. Lachung is located about 105 km from Gangtok, the Lachungpa(s) being simple people depending on yaks and some agriculture for their livelihood. The yak herds are maintained nomadic moving to the higher altitudes during summers and returning to the lower areas just before the onset of snowfall. The Lachungpa(s) employ migrant Nepalese workers (mostly Nepalese and Sherpa(s)) as yak herders, only about 20 per cent are locals. The Yumthang valley is very rich both in flora and fauna with conifers as the dominating tree species.

Before the Yumthang valley is the Singba Rhododendron Sanctuary encompassing an area of 43 sq. km. This area is blessed with about 36 species of rhododendrons amongst which is also the endemic *Rhododendron niveum*. Serow, Goral, Blood pheasant, Hill partridge are reported from here along with highly endangered Spotted linsang and Tiger civet. Much of the valuable rhododendron

LACHUNG & YUM THANG

and other species such as the silver fir (*Abies densa*) are illegally logged for use as firewood and timber. For major duration of the year this part of North Sikkim remains cut off due to one or the other kind of natural calamity. Such a situation provides conditions conducive to illegal felling and poaching. Musk deer, Goral, Bears and Blue sheep are the most vulnerable species.

Techniques used:

(i) Snares	65%
(ii) Traps	20%
(iii) Hunting dogs	10%
(iv) Country – made guns	05%

Purpose:

1. Commercial	75%
2. Medicinal purposes	20%
3. Meat consumption	05%

Primary purpose:

1. Yak herders	70%
2. Illegal loggers	20%
3. Medicinal plant collectors	10%

Community involvement:

1. Migrant Nepalese labour (Sherpas and Nepalese)	80%
2. Locals	20%

Marketing:

Though unconfirmed, 03 local traders are reportedly based in Lachung and 02 in Chungthang. The main market is in Kalimpong (about 60 per cent), Kathmandu (about 20 per cent) and medicinal purposes (about 20 per cent). Others involved in the trade are the labourers from the GREF (General Road and Engineering Force) mostly Nepalese and Sherpas engaged in the road construction and maintenance work.

Present status:

The population of the Musk deer has reportedly decreased considerably in the recent years (census data is not available), the main reasons cited by the locals and others being poaching and habitat destruction. Despite the presence of State Forest Department and the Indian army, considerable poaching is reportedly going on inside the Yumthang valley and beyond.

Singali La National Park

Spread over an area of 108.77 sqkm, Singali La National Park (SNP) is located between 27° 1' N and 27° 13' N latitude and 88° 7' E and 88° 51' E longitude in an altitude range of 2400 to 3650 m amsl. It has Nepal on its west, Sikkim on the north and Bengal on the east and south. This is a pocket where we also have the habitat of the Red panda (*Ailurus fulgens*) and the Himalayan Black Bear (*Salenarctos thibetanus*) apart from a rich diversity in flora and fauna. The SNP is divided into 04 beats (blocks) for better management and conservation of the park. Hence, the information on the SNP is presented separately on each of the 04 beats.

SINGALILA NATIONAL PARK

Not to Scale

1. Gairibas Beat

This Beat has more than 80 per cent area covered with thickly vegetated forest. Healthy population of the Himalayan Black bear and Red Panda is reported along with being one of the most vulnerable areas to poaching. The poaching threat comes from the local villages. As compared to 5 years ago, around 30 per cent poaching is still on, mostly for commercial values.

Species: Himalayan Black bear (*Selenarctos thibetanus*)

Tribes involved: 90% Rai(s)

Market:
- 70% Kalimpong
- 30% Nepal

Route:

The bile collector comes to the villages after every 3 months. Local traders based in Rimbik.

Techniques used:
- 50% Jhapalo (traps)
- 15% Dozen (vernacular) used with guns
- 15 % spears
- 15% gun

Villages:
- Dhodray
- Bara Halta
- Phokthey
- Chotta Halta

They mostly poach when the bear is in hibernation inside the hollow of the trees during the months December-January and May-July.

Prices:

Rs. 3000/- to 3500/- per tola (Prices vary with the quality of the bile)

2. Sandakphu Beat

This beat has 60 per cent thickly vegetated forest with abundant Rhododendron and the different conifers such as the Himalayan Yew, Larch, Spruce, Hemlock, Silver fir, and oaks in the alpine parts. There is also plenty of bamboo making it the right kind of habitat of the Himalayan Black bear, Red Panda, wild boars, Barking deer, Himalayan tahr, and squirrels and numerous birds.

Level of poaching: 30%

Tribes involved:
- 60% Rai(s)
- 30% Sherpa(s)

Techniques used:
- 50% Jhapalo
- 15% Dozen
- 10% Machan
- 10% spears
- 15% guns

Bile used as:
- 70% commercial
- 30%medicinal purposes

Form of trade: Cash

ROAD MAP OF SANDAKPHU REGION

Not to Scale

Villages involved:
- Bara Halta
- Phokthey
- Dara Gagaon

Market:
- 70% Kalimpong
- 30% Nepal

Route:

The bile collector comes to the villages every 03 . months. Local traders based in Rimbik.

Season:

December to January and mid-May to July.

Prices:

Rs. 3000/- to 3500/- per tola (prices vary with the quality).

3. Sabarkum Beat

This beat has around 80 per cent area under densely vegetated forests, which vary from temperate to alpine. The situation is quite alarming though the chances of sighting a Himalayan Black bear or a Red panda are around 40 per cent. Here almost 60 per cent area is still undisturbed. One point of interest was that about 90 acres of forest inside the National Park was publicly auctioned to the local contractors for commercial logging.

Level of poaching: 20%

Tribes involved:
- 60% Rai(s)
- 40% Sherpa(s)

Techniques used:
- 60% traps
- 20% guns
- 20% spears

Uses:
- 80% commercial
- 20% local medicine

Form of trade:
- 90% cash
- 10% barter

Traders:
- 70% locals
- 30% bile collectors

Route:
- 70%·Kalimpong
- 30% Nepal

Prices:

Rs. 3000/- to 3200/- per tola (prices vary with the quality of the bile)

4. Phalut Beat

This beat has one international boundary each with Nepal and state of Sikkim. The altitude range inside this beat

ranges from 2600 to 3650m amsl with a relatively secure habitat for a plethora of biological diversity. Almost 70 per cent of the area is covered with dense forest with suitable habitats for again both the Himalayan Black bear and the Red panda. Poaching can still be labeled as a long term threat to the area from the locals and also the Trans-boundary poachers. This beat, importantly, has one of the most vital road networks leading to Nepal.

Level of poaching: 40%

Techniques used:
- 60% traps
- 40% guns

Uses:
- 80% commercial
- 20% medicine

Form of trade: Cash

Market:
- 50% Nepal
- 30% Kalimpong
- 20% local traders

Prices:

Rs. 2800/- to 3000/- per tola (prices vary with the quality of the bile)

Poaching situation around the Singali la National Park

The poaching in the buffer zone around the SNP possesses

long term threat to the survival of the Himalayan Black bear. Poaching considered to be at low levels presently is still estimated to be at around 30 per cent. It is sought after mostly for commercial purposes and the poaching is common during December-January and mid-May to July. During the cropping season of May to July, the bears raid the farms and fall easy prey to the poachers. And also when they hibernate during December-January inside the hollow of trees, the holes are sealed, trapping the bear within. The hunters use spears, stones and other things to kill the trapped bear. Females, which give birth inside the tree hollows during December-January also, are easy targets. Most hunters in this area are Rai's, who follow a religious custom of hunting once a year to please the jungle gods. 70 per cent bile is for commercial use and 30 per cent as tribal medicines. Every year about 8 – 10 Himalayan Black bears are killed in this park and about 100 to 150 tolas of bear bile traded.

Villages involved:
- 50% Chotta hatta
- 20% Dhodrey
- 20% Bara hatta
- 10% others

Market:
- 25% Nepal
- 25% Kalimpong
- 50% local traders (eventually taken to Kalimpong)

Prices:

Rs. 2800/- to 3000/- for high quality bile.

Possible traders in Rimbik bazar:

- Shri Ramesh Sharma (alias Bihari)
- Shri D. N. Pradhan
- Shri Mingma Sherpa (from Pasupati bazar, Nepal). He is the bile collector visiting the area every 3 to 4 months for collections.

Kalimpong area

Kalimpong is a sub-division of the Darjeeling district in North Bengal, is a small hilly town. Earlier, when the Silk-trade Route to Lhasa was open, this town was a major trade centre for the Tibetans and the locals. About 10 to 15 per cent of this sub-division is covered with dense forests particularly in the Lava area and Neora Valley National Park.

Musk and Bear Bile Trade

Kalimpong is a very important link in all the illegal trade in wildlife, functioning almost as the nucleus for all the products originating in the Sikkim Himalayas, more so for the musk and bear bile. 60 per cent of all the musk in Kalimpong comes from Sikkim and 40 per cent from Bhutan. The situation for bear bile is slightly different with Sikkim and Bhutan accounting for 35 per cent each and Lava range in Kalimpong sub-division 30 per cent.

Three identified traders in the area:

1. Dhupwala Bhutia (Tibetan)
   Near gas dealer
   Rishi Road
   10th Mile

POSSIBLE TRADE ROUTE IN KALIMPONG

Every year nearly 30 to 40 tolas of musk and 70 to 80 tolas of bile are traded by him. Commanding price Rs. 2,000/- to 3,000/- per tola for musk and Rs. 1,000/- to 1,200/- per tola for the bear bile (again the prices vary with the quality). The bear bile available in the market is of two distinct qualities.

2. Marwari (real name not known, but is popularly known as Marwari)
   Watch Repairing Centre
   Hat Bazar
   Kalimpong

   It was found that annually he traded in about 20 to 30 tolas of musk with the prices varying from Rs.2,200/- to 3,500/- per tola and in 30 to 40 tolas of bear bile, of which the costs ranged from Rs. 1,200/- to 1,500/- per tola.

3. Sunil (alias Punjabi)
   Motor parts shop,
   R C Mintri Road,
   Dhaura Dara
   Kalimpong

   He is considered to be the biggest trader in the wildlife products in the Kalimong area, especially in bear bile.

Destination of the product:

60 per cent of all the product heads to Calcutta, taken to the trading parties there. And the remaining 40 per cent has its destination in Kathmandu

Lava Range in Kalimpong Sub-Division

The Lava range is covered with dense mixed forest and has habittas suitable for the Himalayan Black bear and many other species of mammals and birds. At present threat to these comes from illegal felling and poaching. The areas that were surveyed included the following under the Lava range reserved forest in the Kalimpong Sub-Division.

1. Rissum
2. Pakthang
3. Lava
4. Saihur
5. Khampang

Animals poached: Himalayan Black bear, Dear especially the Barking deer and other mammals and birds.

HIMALAYAN BLACK BEAR POACHING AREA
KALIMPONG (LAVA RANGE)

Not to Scale

Community involvement:

- 70% Singsha-ba (Tibetan and Sherpa mixed tribe)
- 30% Nepalese

Techniques used:

- 70% gun (muzzle loading and double barrel)
- 30% traps

Active season: May to July

Destination: 100% to Kalimpong

Siliguri, Hasimara and Jaigaon

Siliguri in the DGHC is a busy, commercial town serving as the vital link for the entire Northeast India. Its location is such that three international boundaries are very close and hence, it has acquired the status of nucleus for all the trade in wildlife. It appeared that there is constant flow of musk and bear bile from Sikkim, Kalimpong and Bhutan. With easy access to the international markets of Nepal and Bangladesh, Siliguri is a strategic trade centre, in products other than musk and bear bile also.

Siliguri constitutes nearly 60 per cent of the market of musk and bear bileand also an important market for Rhino horns, tiger and leopard skin and bones, turtles, birds and the like. It is believed that these products come from as far as Assam and Arunachal Pradesh. Hasimara and Jaigaon are located in West Bengal 'Dooars' very close to the border with Bhutan. The land use is mainly in form of tea plantations. Both the towns play an important role in the illegal trade in the wildlife products originating from Bhutan and neighbouring states. The traders lay more emphasis on tiger and rhino due to proximity to the national parks and wildlife sanctuaries in the area.

Bear bile

Trade centre: Siliguri

Volume of trade: About 5000 to 7000 grams annually

Market:
- 25% Sikkim
- 30% Bhutan
- 25% Kalimpong
- 20% Darjeeling

Prices:

Rs. 2200/- to 3500/- per tola (depending on the quality of the bile)

Final destination:
- 50% Kathmandu
- 25% Calcutta
- 25% Bangladesh

Traders:

1. Dinesh Shrestha, at Salbari (a small town nearby Siliguri).
2. Rampura Travels, near Balurghat Transport.
3. Sanmer Rai, (actually a middle man), Pradhan Nagar.

Musk

Volume of trade: About 3000 to 5000 grams annually

Market:
- 30 - 40% Sikkim
- 25 - 35% Bhutan
- 20 - 25% Arunachal Pradesh

Prices:

Rs. 4500/- to 5500/- per tola

Traders:

1. Dinesh Shrestha, Salbari. According to him nearly 1 kg. pure Musk was traded in 1998.
2. Rampura Travels, near Balurghat Transport.
3. Sanmer Rai, Pradhan Nagar.

Bear bile and Musk

Trade centre: Hasimara and Jaigaon

Though trade per se is not very evident in these towns, but insiders maintain that it is still on though the focus has shifted to tiger and rhino. Of the total volume of wildlife trade, musk and bear bile occupies a 30 - 40 per cent share. Most products reportedly come in from Kalimpong, Bhutan and about 5 per cent from Arunachal Pradesh. Bear bile commands a price of Rs. 2000 to 3200 and musk Rs. 4000 to 5000 per tola.

Final destination:

- 40% Kathmandu
- 30% Siliguri
- 20% Calcutta
- 10% Bangladesh

Of the important traders based in Jaigaon, Ratiram Sharma control about 50 to 60 per cent of the total market around the area. He has a well organized network in Kalimpong, Bhutan, Assam and Siliguri.

Summary and Conclusion

Musk

The population of the Musk deer in the existing pockets in Sikkim was found to be shrinking and the situation assessed can at the least be described as 'alarming'. This could be a

bold statement in the absence of proper census which has not been possible by any agency in view of the imposing terrain, yet the rarity of sightings indirectly pointed towards diminishing population trends. The immediate and long term threat came in from random and large scale poaching in its range. Most of the Musk deer habitat is extremely vulnerable to poaching and the main threat comes from the trans-boundary hunters. It could not be determined if proper census and seizure records were maintained on the Nepal side of the border, still it was felt that the deer was being slaughtered on a regular basis.

Guns are the main weapons with traps being not far behind. Given the poor economic condition of the people in the region, poaching has assumed the status of lucrative business. Added to this is the easy access to the international markets, which encourage poaching by people who reside close to the international borders.

The other major threat surfaced in the form of cattle/yak grazers/shepherds. Though statutorily banned by the Government of Sikkim, this age old tradition of 'goths' involving nomadic grazing wherein large herds of cattle, yak and/or sheep graze in the forest areas, frequently in the protected areas (PAs), continues for months with no fear of the law. The terrain forbids any law-enforcing agency to make frequent visits, this provided ample opportunity to these wandering grazers to indulge in habitat destruction (particularly for energy requirements) and poaching. This holds good for both, Musk deer and the Himalayan Black bear. They mostly used dogs to trap the deer, seldom using the gun. More than half the cattle grazers were migrant Nepalese, hired by the locals. Though there appeared to be definite pointers towards the involvement of the local tribes in the trade and also poaching of the Musk deer, it however,

could not be substantiated, in the absence of photographic evidence of any kind.

Majority of the products was for commercial purpose and small quantities for traditional medicine practice. There were unconfirmed reports, serious in nature, of the Chinese army bartering musk on the borders for valuables, and essential commodities.

According to the prevailing trends in Sikkim-North Bengal approximately 30 - 40 Musk deer are killed each year, males, females and juveniles included. The gravity of the situation is such that in a season 40 to 50 per cent of the deer killed comprise females and juveniles. This perhaps could be identified closely with the rapid depletion of this species. Unfortunately, hunting is a kind of routine in many parts of the protected areas and habitats falling outside the PAs aided by the difficult terrain and inability of the State Forest Department to monitor the situation through intense patrolling and stringent enforcement of the law.

Sadly, in the prime habitat within Sikkim, the situation is alarming for the musk deer. Amongst the various methods being used for poaching, trapping with the help of hunting dogs topped the list in Sikkim (50 - 60 per cent) followed by guns (20 per cent) and snares (20 - 30 per cent). While in the DGHC the range for Musk deer does not exist, hence all the musk that comes out in to the market adjoining Sikkim-DGHC perhaps has its origin either in Sikkim or Bhutan. The active season for poaching is in two periods April to mid-June and mid-September to mid-November. The trade is in local weights and measures called 'tolas', where one 'tola' is approximately 12.5 grams. The price of one 'tola' of musk at Siliguri ranges from Rs. 4,000 to Rs. 5,500 (which is Rs.

300 to 450 per gram) in actual terms equivalent to the precious metal 'gold'. In the main trade centre of Siliguri the total volume of trade is in the range of 3000 to 5000 grams. Apart from commercial trade, musk is also used in local traditional drugs for purposes as shown:

Musk in traditional drugs:

Symptom	Used as
1. Anti-dote	Prophylactic or applied locally as a paste
2. Tuberculosis	Prophylactic
3. Anemia	Blood of the deer is consumed (?)
4. Snake bite	Paste of the musk is applied around the wound and massaged down the bite spot.

Bear bile

The source of the bear bile is the Himalayan Black Bear (*Selenarctos thibetanus*) which has its range in Sikkim, DGHC and also the neighbouring country Bhutan. Investigations in the areas revealed the serious finding of the Himalayan Black bear being precariously placed in the wild. This species is faced with a real threat throughout its habitat in these areas. Though it may possess the capacity to strengthen its population in the wild, the grave threat comes in the form of poaching.

The techniques and tools are still primitive (most preferred ones), yet they are effective. Frequent forays of the bears into

the villages, particularly during harvest season of crops such as maize, suggest a few things such as; their natural habitats are disturbed/destroyed or they have a liking for the corn cobs!! Such visits are not always beneficial to the bears, reports suggest 50 to 60 per cent of the adventurers get killed. In Sikkim and Darjeeling, the threat of poachers has another dimension in the form of cross-border hunters, as in the case of the Musk deer. Patrolling by the Forest Department, is not at all easy given the kind of terrain that we are talking about, hence, it is 'inadequate' to say the least, making the trans-boundary areas (TBAs) literally a 'hunting haven'. Nearly 60 to 70 per cent poaching happens in the TBAs, mostly with the help of guns and occasionally traps.

In Darjeeling and Kalimpong areas 30 to 40 per cent bears are killed while hibernating inside the hollow of the trees. Most of the bile is dried and sold to the middleman or collector (as they are known locally) for a lucrative price and some retained for traditional medicine purposes. The ethnic communities of these areas believe that a hunt once a year will please the forest Gods! And this has been a tradition for centuries. According to the local hunters, they have classified the Himalayan Black bear into 2 sub-species:

1. Sunauli – This bear is identified by the golden or yellowish teeth and commands a higher price.
2. Rupauli – The colour of the teeth is less yellowish or golden and attracts lower market value.

One of the local techniques to prove the authenticity of the bear bile is by the piercing of a hot needle through the bile. If the needle turns golden, it is considered genuine. Bear hunting is usually organized during the months December to January and mid May to July. Each year 15 to 20 bears are

killed. About 3000 to 4000 grams dried bear bile is traded each year. The prices at Siliguri range from Rs. 175 to 300 per gram dried bile. The main markets for bear bile are Kalimpong and Siliguri, while 20 to 30 per cent product crosses over to Pashupatinagar, Nepal proximal to Darjeeling. According to traders based in Kalimpong and Siliguri, the prices and the market witness frequent fluctuation.

The uses of bear bile in traditional medicine:

Symptoms	Used as
1. Fever (malaria)	Prophylactic
2. Malfunction of the liver	Prophylactic
3. Poisoning	Prophylactic
4. External injury	Applied as a paste

Most of the products are smuggled out of the habitat range to reach Kalimpong, Siliguri and Nepal. Ruthless persecution of both Musk deer and the Himalayan Black bear has reduced their population and is pushing the animals to the very brink of their survival capacities. They are extremely threatened now. Measures aimed at curbing poaching, improving the intelligence network and law enforcement must be accorded topmost priority.

ARUNACHAL PRADESH

Musk deer (*Moschus moschiferus*) and Black Bear (*Selenarctos thibetanus*) are known to occur above 2500 m MSL in the thickets of birch, Juniper and Rhododendron forests. Now an endangered animal, the musk deer was so abundantly found throughout the Himalayas over a century back that the total quantity of musk exported from India indicated an annual killing of about 4500 bucks.Varieties known as Tonguin and Yunan musk are Tibetan and Chinese and are most valued, Assam and Nepal musk less valued and Carburdine or Russian least valued. In Sanskrit literature three varieties are described as Kamrupa, Nepal and Kashmira. (Pandey, Arunachal Forest News, Vol.7 No.1-2, 1989)

Based on information provided by villagers close to Itanagar in January 2000, there are two kinds of musk deer locally called Liae and Hizi and the bear bile is locally called Aphi.

Adulteration:

The musk as sold is often adulterated with dried blood, liver, asphaltum etc. The musk deer skin is filled with some substance tied and made to appear as a pod and then a little musk is rubbed to smell like musk. (Pandey, Arunachal Forest News, Vol.7 No.1-2, 1989)

Test for genuineness:

If of a light brown color, it may be considered as impure. If dark, homogenous, unctuous to touch and divided in many parts by a thin cuticle, it is of good quality. A grain of musk will distinctly scent millions of cubic feet of air without any

appreciable loss in weight, and its scent is not only more penetrating but more persistent than any other known substance. Pure musk does not dissolve in cold water but in boiling water to the extent of one half. Few grains put on burning piece of charcoal if melt and bubble the musk is pure, if hardens and cinder it is considered adulterated. (Pandey, Arunachal Forest News, Vol.7 No.1-2, 1989)

Illegal Trade:

At least two seizures as under point to a continuing trade:

Date	Place	Item	Weight (Kg)
15/08/93	Near Police Station Nanderdewa Arunachal Pradesh	Musk Pod	38
17/09/95	Gurung Basti Siliguri West Bengal	Musk Pod	0.083
26/11/96	Balokpong Arunachal Pradesh	Musk Pod	2 pods (4 tolas)

Origin of Musk

Place	District	Destination
Thingbu Taksing and	West Kameng	Mago-Twang- Tibet

Place	District	Destination
Nacho		Ziro - Tezpur
Mechuka		Tibet
Tuting		Tibet
Anini (Matun and Dri Valley)		Tibet
Wallong		Mynamar

Reported Commercial Centres

Place	District	Destination
Balukpong Tezpur Banderdewa Kimin		Rangia and Siliguri
Likhabali Ruksing Tinsukhia Jairampur		Dibrugarh

Hunting Methods and Seasons:

- Local Guns
- Snares/nooses
- Spear, bow and arrow, bow traps specially designed for deer

Uses:

Both these wildlife products are used for medicinal purposes. Musk pods have little local use as compared to bear bile, which is used for fever and liver disorders.

The main season for poaching for Bears is reported to be December-January and April-May during ripening of crops. Musk Deer poaching takes place in winters from December - January.

Bhutan and Nepal Connections:

Bhutan and Nepal plays an important role as trade routes out of North East. Towns of Kalimgpong, Siliguri and Jaigaon (Phuntsholing on the Bhutanese Side) seem to be the major Trade Centres. Historically, Bhutan has had poaching of Musk Deer within its own territory too. A traditional Community called Jhazey, Lhozeys were the Bhutanese Musk deer hunters and villages around Paro and Haa have had a long history of poaching. The traders would walk westwards from Paro through Himalayan passes and reach Chumu and Phari in Tibet or walk eastwards over the Melang Karching pass again into Tibet.

Prices:

A link between Indian and Bhutanese traders had been established as early as in the 1960s when Kalimgpong based traders were purchasing musk from Bhutan. In 1971-72 traders in Kalimpong were offering Bhutanese N.U. 600-700 per tola of Musk. By 1980, these prices had reached N.U. 2000 per tola. Currently price for musk Pod is Rs. 6000 per tola and for Bear Bile is Rs. 3000 - 4500 per piece.

Poaching which seemed to have peaked in Bhutan and adjoining areas in India during 70s and early 80s came down during late 80s but has gone up again in 90s. It is difficult to affix a reason for the same.

Trader Profile:

Most of the traders involved in Musk and bear bile trade are small time hotel owners and the dealers from Kathmandu, Indo Bhutan border and Delhi/Calcutta. Several middleman ranging from panwalas to petty forest contracters are reported to be active. Unconfirmed involvement of some lower functionaries of Army, Assam rifles and Forest department has also been reported, especially aiding transportation.

Kathmandu is perhaps most important trade centre in the subcontinent now. With a very porous Indo-Nepalese border the actual substance can cross at any number of points along the eastern border from Gorakhpur to Jaigaon. There are as yet unconfirmed reports of the owners of the Indo-Nepal Hong Kong syndicate themselves driving across the border legally but concealling the easily hideable commodity. This necessitates good intelligence and use of DRI (Directorate of Revenue Intelligence) to combat it. In Kathmandu localities of Thamel and Boudha are also important for illegal trade in Indian and Bhutanese musk and bear bile.

The findings gathered by this study indicates that apart from Calcutta which continues to be an important staging point even now, Paro and Kathmandu are the important exit points out of the subcontinent. On the Indian side Kalimgpong, Siliguri and Jaigaon assume great importance.