

# Conservation status of Sun bear (*Helarctos malayanus*) in Nagaland State, North-East India

Janmejy Sethy<sup>1\*</sup> & N.P.S. Chauhan<sup>2</sup>

<sup>1,2</sup> Wildlife Institute of India, P.O. Box 18, Chandrabani, Dehradun, 248001

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## ABSTRACT

We carried out survey in a total 16 villages locating in and around the different protected areas in Nagaland. Out of 265 respondent 69 (28.2%) respondents confirmed the presence of sun bear by direct sighting and indirect evidences in 2 PAs of Nagaland. Overall status of sun bear was found to be low and rare in and around Pas. In the Nagaland states, human population is constantly on the increase and as a result, there are increasing biotic pressure on protected areas and reserve forests. The potential tropical rainforest habitats of sun bear should be well protected and management action for improvement these habitats should be taken up on priority. Livestock grazing should be restricted in forest areas. Presence of sun bears has been confirmed in the Itanki and Fakim National Parks of Nagaland, but it showed patchy distribution. Both direct and indirect evidences (scats, claw marks and foot prints) of sun bears were observed by inhabitants of these areas. Sun bears were reported to be sighted and indirect evidences were seen by inhabitants of villages. Public education and awareness programmes towards conservation and natural history of sun bear must be initiated by the forest department. Study on ecology and management of sun bear is also very necessary for formulation of action plan for mitigation of human-sun bear conflict and long term conservation of the species.

**Key words:** Malayan sun bear, conservation, status, Nagaland, India

## INTRODUCTION

The Malayan sun bear (*Helarctos malayanus*) is the smallest in size and least known bear species. Sun bear is one of the most neglected large mammals in India. This is the only tropical bear species inhabiting lowland tropical rain forests throughout much of Southeast Asia (Servheen, 1999). Due to increase in human populations, loss, degradation and fragmentation of forests, sun bear populations have sharply declined to low levels in most of its range. They were found in the forest of Laos, Thailand, Myanmar, Bangladesh, Kampuchea, Southern China, Vietnam, Peninsular Malaysia and the islands of Sumatra and Borneo (Servheen, 1993). There were also reports of occurrence of sun bears on the island of Java (Greve, 1892; Cuvier, 1834 & Fishcher, 1829). In India, the historic distribution of sun bear was in the tropical rainforest habitats in the north-eastern region (Cowan, 1972; Gee, 1967; Higgins, 1932 & Prater, 1980). Even there were reports of its occurrence in this region during sixties and seventies. Sun bears were also reported to occur in places like eastern Tibet and Sichuan, China (Lydekker, 1906 & Meijaard, 1997) and the upper Chitwan district in India (Wroughton, 1916). Thereafter, sun bear population rapidly declined, and its occurrence became doubtful in this region. In most of these areas, the species was reported to be extinct. According to the report of Servheen (1999), there were no sun bears in India in 1990s. The sun bear is now found in Southeast Asia from Burma, eastward through Laos, Thailand, Cambodia, Vietnam, Indonesia, Malaysia, and Brunei (Servheen, 1999) and India (Chauhan & Jagdish Singh, 2005a). But information on the status,

distribution, ecology, behaviour and ranging pattern of sun bear has been lacking.

In India, the historic distribution of Malayan sun bears in the low land tropical forest habitats of Arunachal Pradesh, Mizoram, Manipur, Assam, Meghalaya and Nagaland (Higgins, 1932; Blanford, 1891; Pocock, 1941; Choudhry, 1989, 1992; Gee, 1967, 1937; Kashmira Kakoti, pers. comm., 2008; Chauhan & Singh, 2006; Chauhan & Lalthunpui, 2009; Chauhan & Sethy, 2011; Sethy & Chauhan, 2011; Hinton & Lindsay, 1926; Wright pers. comm., 1987; Forest Department of Mizoram, 2001, 2009 & Kohima Zoo, 1996). In 1996-97, a Sun Bear was photographed in a camera trap in Namdapha (Karanth & Nichols, 2000). In 2005, sun bears were captured in camera trap in Namdapha national park (Datta unpublished).

### Study area

Nagaland is another mountainous state of north-east India. The Naga hills are the most prominent physiographic feature of this state. Nagaland is bound in the north by Assam and Arunachal Pradesh. Myanmar is to the east; in the west is Assam; while to the south is Manipur. The average elevation varies from 250m to 3000m. Nagaland supports a fascinating combination of flora and fauna aided by very heavy rains. The forest types occur in the state are Tropical wet evergreen forest, Upper Assam valley tropical evergreen forest, Cane and Bamboo forests, semi evergreen forests, Cachar tropical semi-evergreen forest, moist deciduous forest, secondary moist mixed deciduous forest, sub tropical hill forest and wet temperate forest. There are eight districts in Nagaland covering an area of 13464 km<sup>2</sup>.

\*Corresponding Author's E-mail: [beekiwild@gmail.com](mailto:beekiwild@gmail.com)

Agriculture is the main occupation of the people in the state. There are four protected areas in Nagaland state including Fakim National Park and Itanki National Park.

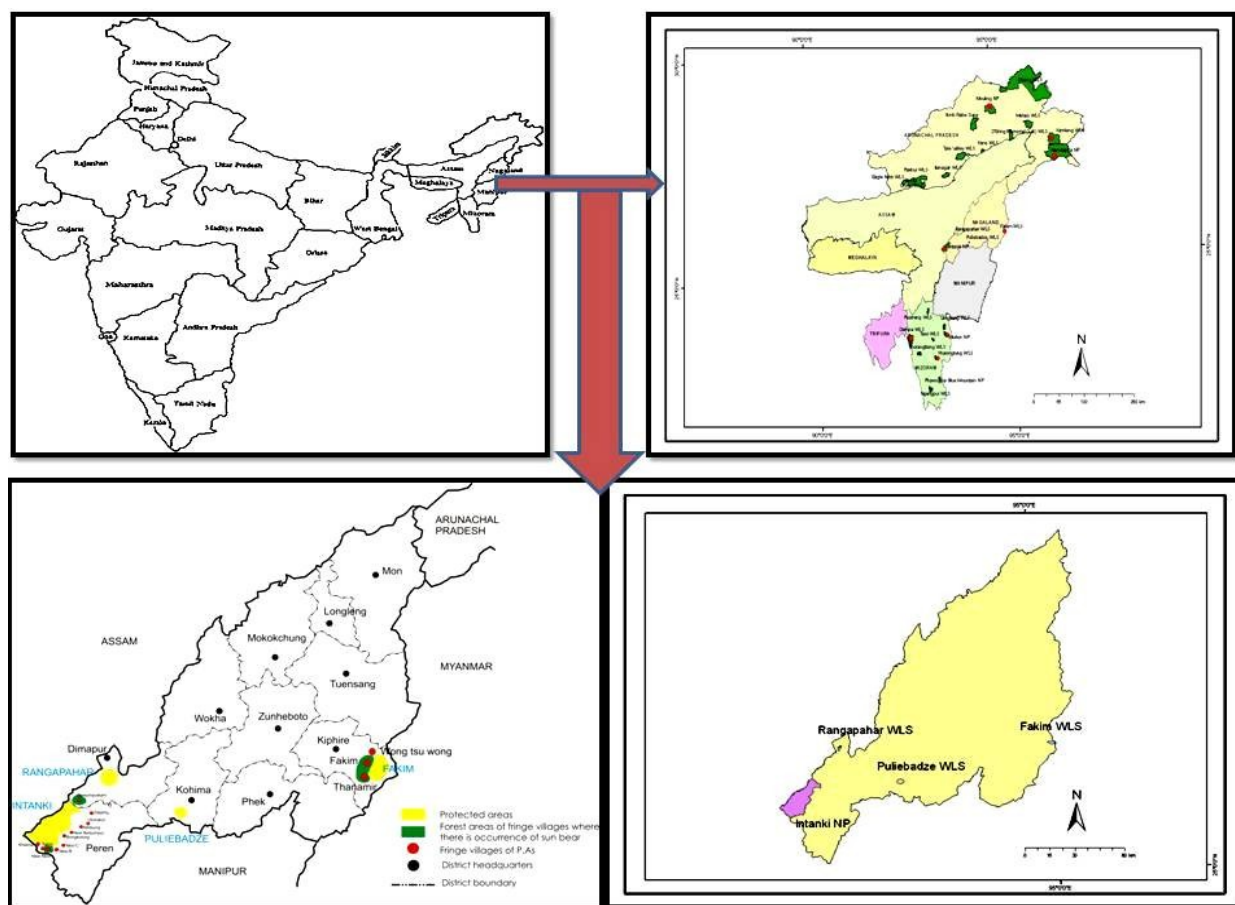
Nagaland is one of the eight North-Eastern Hill states in India, located between 25°10'N and 27°4'N Latitude and 93°15'E and 95°20'E Longitude with a total geographical area of 16,579 km in the northern extension of the Arakan Yoma ranges. The state shares a long international border with Myanmar in the East and is bounded by state of Assam in the west and north, Arunachal Pradesh the North and Manipur in the south. Currently Nagaland has 11 districts, namely, Kohima, Dimapur, Kiphre, Longleng, Mokokchung, Mon, Peren, Phek, Tuensang, Wokha and Zunheboto, 114 sub-districts, 26 towns and 1428 villages. Physiographically, the state has vast undulating terrain and mountainous landscapes that include high hill slopes, hilly dissected terrains, denudational hill slopes, undulating upland, and narrow valleys with presence of perennial streams and moisture supporting rich biodiversity.

villages. Following this, questionnaire surveys with photographs of sun bear, Asiatic black bear and sloth bear will be carried out in Nagaland, covering different villages located in and around protected areas and other managed forests to collect information on the distribution of sun bear in different seasons. Village houses will also be surveyed to look for bear trophies or body parts. The status of sun bear and their conservation, the people's attitudes towards wildlife were also assessed.

## RESULT

### *Status and distribution*

To date there has been no in-depth study of sun bear distribution conducted in Nagaland state, India. However recently, we conducted a survey on the status and distribution of sun bears in the state of North-Eastern region of India (Chauhan & Sethy, 2011 and Sethy & Chauhan, 2011). Now the presence of sun bears has been confirmed but it showed patchy distribution in the Itanki and



Map 1. Showing the study areas.

## METHODOLOGY

A basic premise was that the survey should comprise the entire the state population of sun bears. A questionnaire with field investigations was utilized. The questionnaire was based on the assumption that people who engaged in outdoor activities had some idea of the sun bear distributions and abundance in their particular areas. Questionnaires were therefore distributed to the

Fakim National parks. In villages situated in the vicinity of these two national parks, sun bears were reported to be sighted a few times by villagers, and indirect signs were also recorded. Due to conversion of lowland forests in to agricultural areas, plantations and human habitation, and heavy resource competition, most of the suitable sun bear habitats got degraded and fragmented. Presence of sun bears has been confirmed in the Itanki and Fakim National parks of Nagaland, but it showed patchy

distribution (Table 1, Map 2). Both direct and indirect evidences (scats, claw marks and foot prints) of sun bears were observed by inhabitants of these areas. Out of 245 interviewed respondents, 69 (28.2%) confirmed presence of sun bear, 21 (8.2%) reported probable occurrence, and 155 (63.3%) did not have any information (Figure 1). Sun bears were reported to be sighted and indirect evidences were seen by inhabitants of villages: Beisumpuikam, NewnKio, Salim, Khelma, NKio’B, Nkio’C, Bongkolong, New Beisumpui, Ahthibung, Olchakot and Saijang in the vicinity of Itanki National Park. Whereas in the vicinity of Fakim National park, sun bears were reported by inhabitants of villages: Thannamir, Fakim, Wong tsu wong, Noxen and Pinkin. There were no reports of occurrence of sun bear in Puliebadze and Rangapahar Wildlife Sanctuaries. As yet, there has been no attempt to estimate the total population of the sun bear.

**Table 1.** Occurrence of Malayan sun bear in forests adjacent to villages of Intanki and Fakim national parks.

Period/ Year	Protected area	Village reported oc- currence
2008-2010	Intanki NP	Beisumpuikam
		New NKio
		Salim
		Khelma
		NKio’ B
		Nkio’ C
		Bongkolong
		New Beisumpui
		Ahthibung
	Fakim NP	Olchakot
		Saijang
		Thannamir
		Fakim
		Wong tsu wong
		Noxen
		Pinkin

During the study periods, we could find sun bears appeared to be distributed discontinuously within the areas i.e. Fakim (extant), rarely found in Thannamir an Wong tsu wong and low in Noxen and Pinkin. Whereas in the vicinity of Itanki National Park rarely reported in these area (Table 2)

Many of the people in these villages were reported to be involved in illegal hunting of bears and other wild animals, and sale of the body parts (Based on surveys). Poaching for illegal trade of bear body parts was high. Hunting of sun bear for food, sale of body parts and sale of young ones captured when the mothers were killed has reached to an alarming proportion throughout its range in Nagaland.

**population status:** Unknown

**Table 2.** Status of sun bear in Nagaland

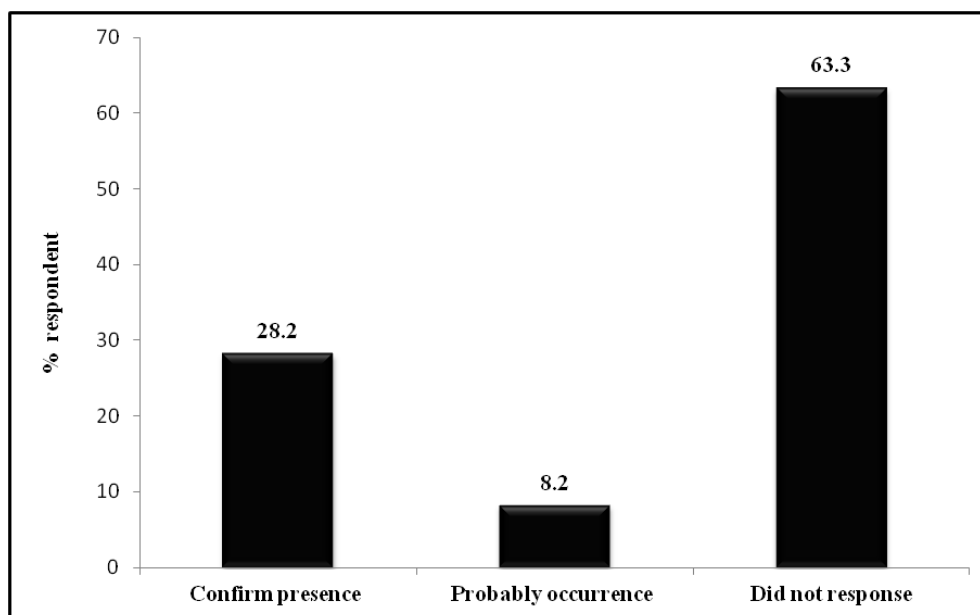
Village in In- tanki NP	Sight- ings (High/ Rare)	Village in Fakim NP	Sightings (High/ Rare)
Beisumpuikam	Rare	Thannamir	Rare
New nKio	Rare	Fakim	Extant
Salim	Rare	Wong tsu wong	Rare
Khelma	Rare	Noxen	Low
NKio’ B	Rare	Pinkin	Low
Nkio’ C	Rare	Thannamir	Rare
Bongkolong	Rare		
New Beisumpui	Rare		
Ahthibung	Rare		
Olchakot	Rare		
Saijang	Rare		

**CONSERVATION ISSUES**

**Population threats:** In India, sun bear populations are severely threatened due to loss, degradation and fragmentation of habitats; poaching for trade in body parts and live or dead bears and keeping them as pets in vil-lages and human-sun bear conflict. Poaching of sun bears is a critical problem in their areas of occurrence in north-eastern states. Trade of bear parts: gall bladder, meat, skin, claws and teeth, is severely affecting the existing sun bear populations. Gall bladder is believed to be of medicinal value. Bones, teeth and claws are also used by villagers as trophies or body ornaments to ward off evils from them, a superstitious belief. The villagers suffer from both economic loss due to crop damage (rice, maize, sweet potato, pulses, oilseeds and sugarcane, plum, pumpkin) and human injuries by sun bear. These threats have been seriously impacting sun bear populations. It is likely that the existing sun popu-lations have become fragmented and isolated, and may ultimately lead to extinction. Control on poaching will require proper intelligence network and greater enforce-ment efforts.

In many areas of sun bear range such as Burma, Laos, Cambodia, and Vietnam, poaching of bears for sale or for food is unregulated and increasing (Mills & Servheen, 1991 & Sethy & Chauhan, 2011). Market economies and opening of borders now allow free trade of bears and parts of bears, thereby accelerat-ing killing of bears. Likewise, gall bladder from areas of sun bear occurrence in India is reported to be illegally exported to Singapore, Bangkok and Hong Kong (Survey data of Arunachal Pradesh, Mizoram and Na-galand, India).

**Habitat threats:** In Nagaland state, sun bear populations are severely affected due to increasing hu-man population and continuous loss of habitat. Habitat degradation and fragmentation resulted from overgraz-ing, extraction of non-timber forest produce, illicit cut-ting and lopping of trees, fruit collection, plantations, expansion of agriculture and developmental activities has caused diminished supply of natural food to sun bears and consequently decline of their populations.



**Figure 1.** Occurrence of sun bear in Nagaland (Based on interviews).

Bears invade agricultural crop fields for their food requirement and attack on people due to sudden encounter.

**Human-bear interactions:** Human-sun bear interactions include crop depredation by sun bear and retaliatory killing of bear by aggrieved people, poaching of bears for trade in body parts, meat consumption, sale of cubs, human injuries by bear and impacts of human activities or non-timber forest produce collection on bears and habitats. Poaching of sun bears for illegal trade and sale of meat and body parts is ongoing unregulated in Nagaland.

Sun bears are known as fierce animals when surprised in the forest. We conducted a study on the human-sun bear conflict in Nagaland state in India during 2008-2010 (Chauhan & Sethy, 2011) and there were reports of sun bears straying out of forests and invading agricultural crop fields located close to forests and causing damage to rice, maize, sweet potato, pulses and oil-seeds.

## MANAGEMENT ISSUE

**Management:** Sun bear is found only in the north-eastern states in India, and very little management is practiced for protection of its populations. Information on status of sun bear and ecological aspects is being collected from Nagaland state. There are also no records of human-caused mortality and population estimates. No habitat management exists for sun bears in India. Sun bears are poached regularly for trade in body parts, and they are also killed by villagers in retaliation against crop damage.

In the Nagaland states, human population is constantly on the increase and as a result, there are increasing biotic pressure on protected areas and reserve forests. Recommendations for conservation of sun bear are as follows:

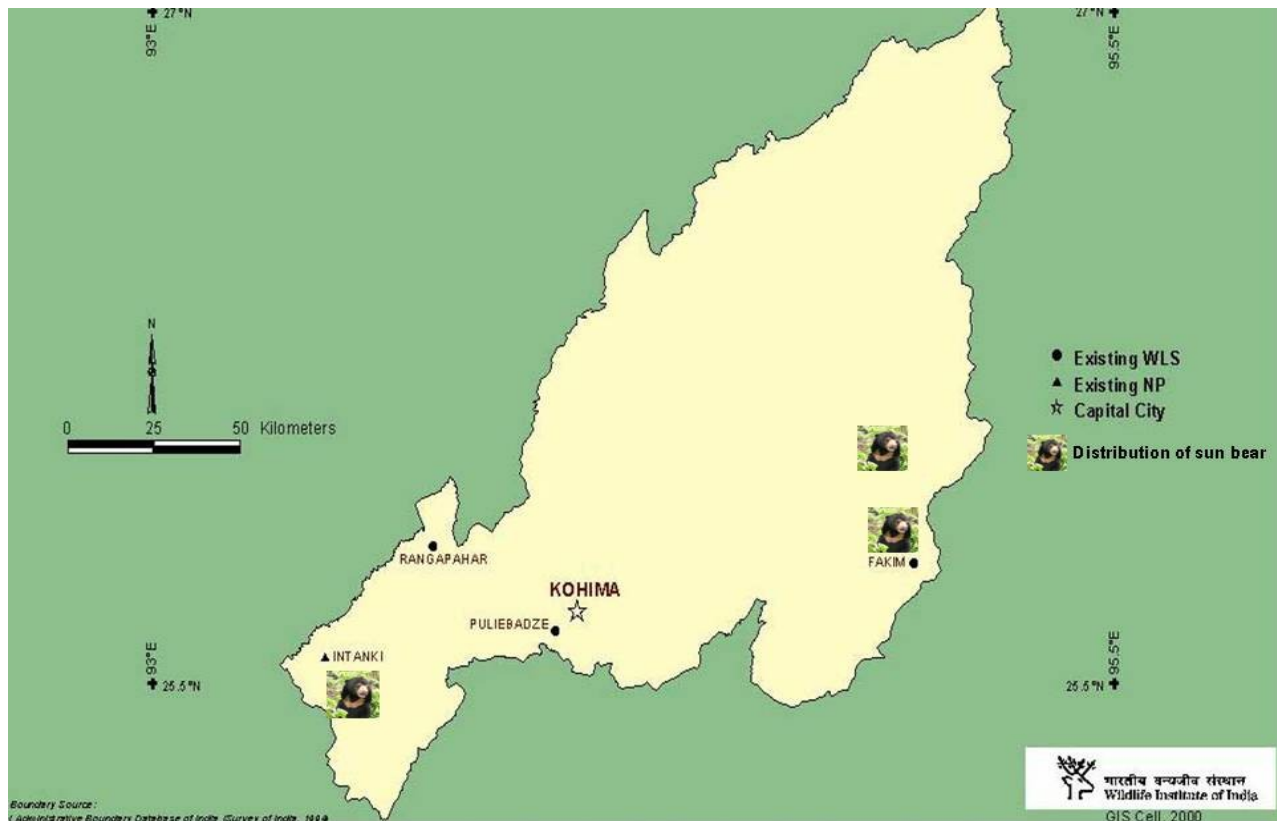
The potential tropical rainforest habitats of sun bear should be well protected and management action for improvement these habitats should be taken up on priority. Livestock grazing should be restricted in forest

areas. Mitigation of human-sun bear conflicts is important. People are required to be alert and vigilant moving in wildlife areas and restrict their activities. To reduce crop depredation by sun bear, protection measures such as cooperative crop guarding, use of live fences and wire fence, scaring sounds or frightening devices: scare-crows and dummies, or fire sticks and crackers especially during the crop maturation stages in areas frequently raided by bears are suggested.

There should be strict regulation on collection of sun bear food items from wilderness areas and non-timber minor forest produce. Public education and awareness with respect to species conservation, natural history and wildlife damage is important. Unless, these damage problems can be reduced, the local inhabitants will not support wildlife conservation.

In most of the states, payment of compensation for human casualties by the state forest department is a good gesture. This would help develop understanding between affected people and forest department and help conserving wildlife. Compensation procedure for incidences should be simplified and payment should be made immediately. However, we believe compensation should be discouraged in protected areas. Reduction or even a complete ban on livestock grazing within forests will help replenish habitat and increase in wild animal population. Public education and awareness programmes towards conservation and natural history of sun bear must be initiated by the forest department. Study on ecology and management of sun bear is also very necessary for formulation of action plan for mitigation of human-sun bear conflict and long term conservation of the species.

**Public education and awareness:** Public education and awareness programmes towards conservation and natural history of sun bear must be initiated by the forest department. For wildlife conservation, involvement of local people, field managers, staff and their support is necessary. Through education and awareness programmes, conservation ethics can be inculcated among these local people. The education and awareness programmes about ecosystem, conservation, natural



**Map 2.** Distribution of sun bear in Nagaland state.

history of sun bear, bear habitats, feeding habits, behaviour, activity pattern, human-sun bear interaction and safety measures are important for the local community. This will greatly help conservation of sun bears in India, and safeguard the interest of the local communities.

### MANAGEMENT RECOMMENDATIONS

1. Systematic study on status and population ecology of sun bear needs to be carried on priority basis to develop a database on its presence and absence. Existing bear inhabited areas need to be identified and a realistic sun bear distribution range map needs to be developed. There is a need for site-specific application of methods to assess distribution, relative density and the impacts of biotic pressure on sun bear populations.
2. Factors leading to degradation and fragmentation of sun bear habitats should be identified in areas occupied by this species, and strategies should be developed to remove these threats. Cattle grazing, illicit cutting and lopping of trees should be completely banned in bear areas.
3. Poaching of sun bears for trade of bear parts is severely affecting the existing sun bear populations in the north-eastern states, and it may lead to extinction of this species from this country. Strict punishment should be imposed on people involved in hunting of sun bears. Control on poaching will require proper intelligence network and greater enforcement efforts. Trade in bear parts, dead or live sun bears and keeping them as pets should be thoroughly checked by making intelligence system very effective.
4. Conservation of sun bears should be accorded both International and National priority to deal with poaching for illegal trade of bear body parts. Using new provisions of Indian Wildlife (Protection) Act 1972, conservation and community reserves could be established by different states to protect sun bear populations both within and outside protected area network.
5. Local people venture into forests anytime of the day to collect non-timber forest produce, which may be of bear interest also i.e. food plants. There should be restriction on collection of these food plants from the bear areas.
6. Selected forest patches away from potential bear areas are required to be delineated where local people can be allowed for regulated extraction of fuel wood and lopping activity. Keeping in view the dependency of local people on forests and increasing demand for fuelwood and non-timber forest produce, afforestation activities in suitable areas need to be planned and taken up.
7. People should be educated and discouraged to use bear bile as medicine, meat for their consumption, skull and bones as trophies and other body parts for false religious beliefs.
8. A study on assessment of nature and extent of human-sun bear-black bear conflict and circumstances is essentially required to develop mitigation strategies.
9. People are required to be alert and vigilant moving in wildlife areas. To reduce crop depredation by sun bear, protection measures such as co-operative crop guarding, use of barriers, scaring sounds or frightening devices: scare-crows and dummies, or fire sticks and crackers especially during the crop maturation stage in areas frequently raided by bears are suggested.

10. People still possess the remnants of a conservation ethic. The education and awareness programmes about ecosystem, conservation, natural history of bears, habitats, feeding habits, behaviour, activity pattern, human-bear interaction and safety measures are important for the local community. Constitution of village committees would help in confidence building and awareness messages will help to gain community support for anti-poaching endeavors.
12. Very limited information is available on ecology of sun bear. Basic research on the sun bear should be the highest priority need for any bear species in India. Basic information on the status, distribution, ecology, food habits, activity pattern and conflict aspects of the sun bear is essentially required in India. Research on assessment of impacts of forestry practices, timber harvest and monoculture plantations on the sun bear habitats is also important. The study will greatly help in management and conservation of sun bears in India.

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