STATUS AND DISTRIBUTION OF MALAYAN SUN BEAR (*HELARCTOS MALAYANUS*) IN NORTH-EASTERN STATES, INDIA

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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 South-East 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 and Meijaard, 1997) and the upper Chitwan District in Nepal (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 the 1990s. The Sun bear is now found in South-East Asia from Burma (Maynmar), eastward through Laos, Thailand, Cambodia, Vietnam, Indonesia, Malaysia and Brunei (Servheen, 1999) and India (Chauhan and Jagdish Singh, 2005a). But information on the status, distribution, ecology, behaviour and ranging pattern of Sun bear has been lacking. The paper presents the available information on status and distribution of this species, population threats and gives recommendations for conservation and management of this species in the country.

Study Area

In North-East India, the study has been conducted in the states of Arunachal Pradesh, Nagaland, Manipur and Mizoram. Arunachal Pradesh shares international boundaries with Bhutan, China, Myanmar to West, North-East, North and East respectively and the state has boundaries with Assam and Nagaland. Nagaland is another mountainous state. The Naga hills are the most prominent physiographic feature of this state. The state is bound in the North by Assam and Arunachal Pradesh. The average elevation

varies from 250 m to 3,000 m amsl. Nagaland supports a fascinating combination of flora and fauna. Manipur lies between longitudes 93.03°E and 94.78°E and 23.80°N and 25.68°N. Manipur has a geographical area of 22,327 km². Ninety per cent of its geographical area is covered by hills and the remaining area is a small valley. The state shares borders with Myanmar, Nagaland, Cachar District of Assam and Mizoram. There are five districts, namely, Senapati, Tamenglong, Churchandpur, Chandel and Ukhrul. Manipur is exceedingly rich in natural resources with a vast and varied fauna heritage. Mizoram is situated between 92° 15' and 93° 29' E longitudes and 21° 57' and 24° 30' N latitudes, bordering Myanmar in the East and South, Bangladesh in the West, and Tripura, Manipur and Assam in the North. The main forest types in these states are Tropical semi-evergreen forest, Tropical moist deciduous forest, Sub-tropical wet hill forest, wet temperate forest, moist temperate forest, sub-alpine forest, moist alpine forest and bamboo forests.

Methods

The study was conducted in the states of Arunachal Pradesh, Nagaland, Manipur and Mizoram during 2002-2008. Information on status and distribution of Sun bear was collected in well designed questionnaire formats through survey of different villages. People were interviewed and information on the status, distribution, direct and indirect sightings, habitats, human-Sun bear conflicts, non-timber forest produce collection by the villagers and hunting activities was collected in the questionnaire formats, and cross checked with the data of the Forest Department. During village survey, some of the people involved in hunting and sale of bear body parts were directly interviewed and information on nature and extent of illegal trade taking place in the state was collected. Secondary data on occurrence of Sun bear was also collected from the forest department range offices. Discussions were also held with the forest officials and protected area managers in this regard.

Results

Status and distribution : From the surveys conducted so far in the Arunachal Pradesh, Nagaland, Manipur and Mizoram states, Sun bear showed patchy distribution. In some areas adjoining Myanmar, Sun bears were reported to be sighted a few times by villagers and indirect signs were also recorded. The status and distribution of Sun bears depend on the extent of availability of lowland forest habitats and biotic pressures. 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.

Co-existence of sloth bear with Sun bear has also been reported in some areas but this needs to be confirmed. In Arunachal Pradesh, direct and indirect evidences of Sun bear in some parts of the Namdapha Tiger Reserve were reported. There is probability of occurrence of Sun bears in Mouling National Park (NP), Mehao Wildlife Sanctuary (WLS), Dibang WLS and Kamlang WLS. Occurrence of Sun bears is also confirmed in Fakim WLS and Intanki WLS in Nagaland. In Mizoram, evidences of Sun bear presence have been found in Thorangtlang WLS, Sairep Reserve Forest and Khawnglung WLS in Lunglei District and Ngengpui

WLS and Phawngpui NP in Lawngtlai District. In Aizawl and Serchhip districts, Sun bear has been found to occur in the vicinity of Tawi WLS (Table 1, Fig. 1). There were also evidences of Sun bear occurrence in Murlen WLS and Dampa Tiger Reserve in Mizoram.

Presence of Sun bears has been confirmed in the Chandel and Ukhrul districts of Manipur, 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. Out of 264 respondents, 17.4% confirmed the presence of Sun bear by direct sighting, 34.8% by indirect evidences, 10.2 % by both direct sighting and indirect evidences and 37.6% could not tell about its presence or absence. A few cubs were kept in villages. Sun bear relative abundance seemed to be higher in Chandel forests than Ukhrul District.

Sun bears were reported to be sighted and indirect evidences were observed in the forest areas adjoining to villages: New Tusom, Mapum Siroy hill, Siroy, Tolloi, New Wahong, Yangoudokpi, Ramphei, Skipe Kugua, Sambui Kopuhaphung, Khankhui, Chamu Kholaphu, Phungyar Phungyar, Kachai, Ngainga and Konkan Thana in Ukhrul District (Table 2). Occurrence of Sun bear was reported to be high in New Tusom, Mapum Siroy hill, Siroy, Tolloi, Sambui Kopuhaphung and Chamu Kholaphu forest areas, and occurrence was rare in rest of the villages. In Chandel District, Sun bear was reported to be present in the forest areas adjoining the Khonomphai, Yangoubung, T. Yangnom, Langol Khunou, Langol Khamlang, New Shijang, Chasan Tengnoupal, New Maipi, Kampang Khullen, Machi, Machi Uyuiphi, Kambang Khunou, Narum Mangkot, Lamphoupasna, Kwatha, Kwatha Maru, Kwatha

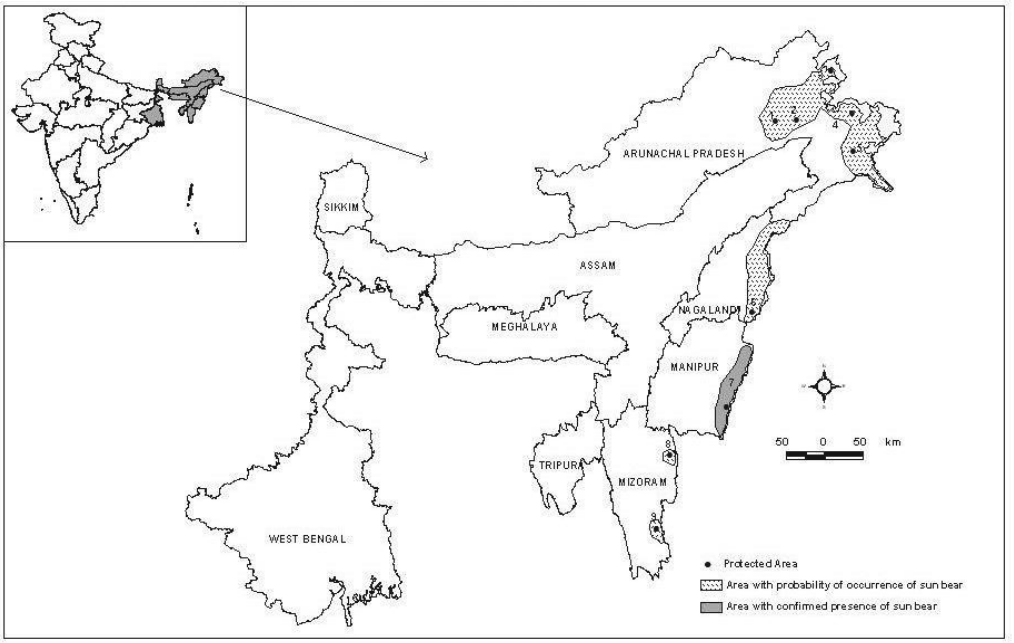
Table 1

Protected area with confirmed or probability of occurrence of Malayan Sun bear in North-eastern states.

Sl. No.	State	Protected area	Area (km^2)
1	Arunachal Pradesh	Mouling NP	483.0
2		Mehao WS	281.5
3		Dibang WS	4,149.0
4		Kamlang WS	783.0
5		Namdapha NP*	1,985.2
6	Nagaland	Fakim WS*	6.4
7		Intanki NP*	202.2
8	Manipur	Yangoupokpi Lokchao WS*	184.8
9	Mizoram	Murlen NP*	200.0
10		Phawngpui Blue Mountain NP*	50.0

*PA with confirmed occurrence

Fig. 1



Occurrence of Sun bear in North-eastern states of India

Warkhong, Kwatha Lamnamung, Kwatha Khongangpokpi, Maipi Mongsang, T. Bongmol, Maojang and Chajang villages (Table 2). Occurrence of Sun bear was reported to be high in Kampang Khullen, Machi Uyuiphi, Kambang Khunou, Kwatha, Kwatha Warkhong, Kwatha Lamnamung and Kwatha Khongangpokpi forest areas, and in rest of the village forest areas, its occurrence was rare.

While surveying forest areas and villages, the respondents observed 87 specimens (hunted bear or natural death) of Sun bear and Black bear, 91 gall bladders, 68 skins, 69 bones, 87 nails and 22 jaws in the Ukhrul and Chandel districts during the last 7-8 years. 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. Poaching for illegal trade of bear body parts was very 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 Ukhrul and Chandel districts of Manipur.

Bears in captivity : There were two adult Sun bear in the Imphal zoo in Manipur. About two years back, a sub-adult Sun bear was brought in the zoo at Aizawl, Mizoram, but it died after few days (personal communication with Chief Wildlife Wardens).

Legal status : Sun bear is protected under Schedule I of the Indian Wildlife (Protection) Act 1972 (Amended in 2003,

Table 2

Occurrence of Malayan Sun bear in forests adjacent to villages of Ukhrul and Chandel districts, Manipur State.

Village in Ukhrul District	Sightings (High/Rare)	Village in Chandel District	Sightings (High/Rare)
New Tusom	High	Khonomphai	Rare
Mapum, Siroy hill	High	Yangoubung	Rare
Siroy	High	T. Yangnom	Rare
Tolloi	Rare	Langol Khunou	Rare
New Wahong	Rare	Langol Khamlang	Rare
Yangoudokpi	Rare	New Shijang	Rare
Ramphei	Rare	Chasan Tengnoupal	Rare
Skipe Kugua	Rare	New Maipi	Rare
Sambui Kopuhaphung	High	Kampang Khullen	High
Khankhui	Rare	Machi	Rare
Chamu Kholaphu	High	Machi Uyuiphi	High
Phungyar Phungyar	Rare	Kambang Khunou	High
Kachai	Rare	Narum Mangkot	Rare
Ngainga	Rare	Lamphoupasna	Rare
Konkan Thana	Rare	Kwatha	High
		Kwatha Maru	Rare
		Kwatha Warkhong	High
		Kwatha Lamnamung	High
		Kwatha Khongangpokpi	High
		Maipi Mongsang	Rare
		T. Bongmol	Rare
		Maojang	Rare
		Chajang K.	Rare

Anon., 2005). Despite, the illegal trade for bear body parts is taking place without any check. Though the legal protection and legislation prohibits killing of these bears for trade purpose, Sun bear parts and cubs are seen openly for sale in many areas in Mizoram and Manipur. There are also reports of killing some crop depredating Sun bears in these states. According to the IUCN (2006) criteria, the Sun bear is listed as 'Data Deficient' CITES Listing: Appendix I.

Conservation problems

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 villages 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. There were reports of some retaliatory killing of crop depredating Sun bears in Chandel and Ukhrul districts. These threats have been seriously impacting Sun bear populations. It is likely that the existing Sun populations have become fragmented and isolated, and may ultimately lead to extinction. Control on poaching will require proper intelligence network and greater enforcement efforts.

In many areas of Sun bear range such as Myanmar, Laos, Cambodia, and Vietnam, poaching of bears for sale or for food is unregulated and increasing (Mills and Servheen, 1991). Market economies and opening of borders now allow free trade of bears and parts of bears, thereby accelerating 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 Manipur, India).

Habitat threats : In the North-eastern states, Sun bear populations are severely affected due to increasing human population and continuous loss of habitat. Habitat degradation and fragmentation resulted from overgrazing, extraction of non-timber forest produce, illicit cutting 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. Consequent to habitat degradation and in search of food, straying of Sun bears from forest areas into human habitation and crop fields is reported from Chandel and Ukhrul districts of Manipur (Chauhan and Jagdish, 2005b). 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 Arunachal Pradesh, Nagaland, Mizoram and Manipur.

Sun bears are known as fierce animals when surprised in the forest. We conducted a study on the human-Sun bear conflict in Chandel and Ukhrul districts of Manipur State in India during 2004-2005 (Chauhan and Jagdish Singh, 2005b) and there were reports of Sun bears straying out of forests and invading agricultural crop fields located close to forests and causing extensive damage to rice, maize, sweet potato, pulses, oilseeds and sugarcane crops. Local people stated that the Sun bear attack on humans and inflict serious wounds if surprised.

In total 95 human injury cases were caused by Sun bear in Ukhrul and Chandel districts during 1990-2002 (Chauhan and Jagdish Singh, 2005b). Males were mainly attacked (97.7%) and female victims were only 2 (2.3%). Injuries were caused to face, nose, eyes, neck, hand and legs. Bear attacks were recorded in all the seasons, but maximum cases occurred during autumn and winter months. Most cases i.e. 63 (66.3%) cases occurred in forests, followed by 14 (14.7%) cases in crop fields and 18 (19%) cases in the vicinity of villages. These victims were involved in cattle grazing, farming or crop protection or moving in forests or vicinity of villages or non-timber forest produce collection. Most of these incidences occurred during morning, evening and night time. People living in these areas are generally poor and can not afford crop losses. Some retaliatory chasing and killing of bears by aggrieved people was also reported by the villagers in these forest divisions.

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 range of distribution is being collected from these states. 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. For wildlife protection, there are some efforts by the forest department to check poaching and deforestation. But due to remoteness of these areas and militancy and law and order problem, management of wildlife areas is difficult. Further due to lack of knowledge about the impacts of human activities on the Sun bear habitats, ecology, behaviour, food habits, activity pattern and conflict aspect, management of this species is difficult. The existing Sun bear populations in India require proper management attention on high priority. There is an urgent need to conduct systematic surveys to know the status and population estimates and evaluate threats in order to formulate conservation strategies for Sun bears.

Public education and awareness : 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 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.

Conservation recommendations

1. Systematic survey of the status and distribution of Sun bear in the remaining range in the North-eastern states, namely, Arunachal Pradesh, Nagaland, Mizoram and Assam, 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. A study on habitat use pattern of Sun bear is essentially required. The availability of suitable habitats can be mapped on general landuse maps so that necessary steps could be taken to protect and restore such habitats for conservation of Sun bear populations.
3. 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.
4. 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.
5. 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.
6. 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.
7. Selected forest patches away from potential bear areas are required to be delineated where local people can be allowed for regulated extraction of fuelwood 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.
8. 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.
9. A study on assessment of nature and extent of human-Sun bear conflict and circumstances is essentially required to develop mitigation strategies.
10. 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.
11. 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 endeavours.

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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SUMMARY

Sun bear is the least known bear species and one of the most neglected large mammals in India. No information is available on its status, distribution, ecology and population threats from India. The surveys were conducted in the North-eastern region during 2002-2008 and information on status and distribution of Sun bear was collected in well designed questionnaire formats. In Arunachal Pradesh, direct and indirect evidences of Sun bear confirmed its presence in Namdapha Tiger Reserve and Murlen National Park and probability of its occurrence is shown in few protected areas. They are also present in Fakim WLS and Intanki WLS in Nagaland. In Mizoram, Sun bears occur in many protected areas including Dampa Tiger Reserve. Presence of Sun bears has been confirmed in the Chandel and Ukhrul districts of Manipur, but it showed patchy distribution. The paper presents its legal status and discusses conservation problems like population threats, habitat threats and human-bear interactions. Recommendations for conservation and management of Sun bear have also been made.

Key words **: Malayan Sun bear (*Helarctos malayanus*), Status and distribution, North-eastern states, India.**

उत्तरपूर्वी राज्यों, भारत में मलयी धूप ऋक्ष (*हेलार्कटोस मलयानुस*) की स्थिति और वितरण

एन०पी०एस० चौहान व लालथनपुइया

सारांश

धूप ऋक्ष अल्पतम ज्ञात ऋक्ष या भालू जातियों में आता है और भारत में यह सबसे ज्यादा उपेक्षित बड़े स्तनियों में से है। इसकी वर्तमान स्थिति, वितरण, पारिस्थिकी और इसकी संख्या के संकटों की कोई जानकारी उपलब्ध नहीं है। हमने 2002–2008 के दौरान उत्तरपूर्वी क्षेत्रों में सर्वेक्षण करके धूप ऋक्ष की वर्तमान स्थिति और वितरण के बार में प्रश्नावलियों द्वारा भी जानकारी इकट्ठा की है। अरुणाचल प्रदेश में, प्रत्यक्ष और परोक्ष साक्ष्यों से, इसके नामडाफा बाघ संरक्षित क्षेत्र और मुरलेन राष्ट्रीय उपवन में होने की पुष्टि होती है तथा कुछ रक्षित किए

क्षेत्रों में भी इसके मिलने की संभवनाएं हैं। ये फाकिम वन्यप्राणि अभयारण्य, और इण्टांकी वन्यप्राणि अभयारण्य, नागालैण्ड में भी मिलते हैं। मिजोरम में धूप ऋक्ष वहां के बहुत से रक्षित क्षेत्रों में, जिसमें डांपा बाघ संरक्षित क्षेत्र शामिल है, मिलते हैं। मणिपुर के चन्देल और उखरुल जिलों में धूप ऋक्ष मिलने की पुष्टि हुई है, परन्तु इसका वितरण वहां छोटे–छोटे टुकड़ों में ही है। इस अभिपत्र में इसकी कानूनी स्थिति बताई गई है तथा संरक्षण की समस्याओं, जैसे इसकी संख्या घटाने वाले संकट, प्राकृतावास के संकट और मानव ऋक्ष अन्तक्रियाओं का विवेचन भी किया गया है। धूप ऋक्षों का संरक्षण और प्रबन्ध करने की सिफारिशें भी प्रस्तुत की गई हैं।

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