Chapter 2 The Status of Bears in India
2.1 The Status of Brown Bears in India

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In India, the brown bear (*Ursus arctos*) is largely confined to the rolling uplands and alpine meadows above timberline in the Himalaya, ecologically separated from the forest dwelling Asiatic black bear (Schaller 1977). But in the northwestern Himalaya, the brown bear is also reported to occur in subalpine forests (Sathyakumar 2001).

In this paper, I review the distribution and relative abundance of the brown bear in Himalaya (the Himalayan brown bear) in India based on review of existing literature, results of recent field surveys, a questionnaire survey, expert knowledge, and a few interviews with field researchers, forest and wildlife managers, and staff of the Forest and Wildlife Departments in northern India. I compare the results of this survey with the results of a similar survey carried out in 1994-95 (Sathyakumar 2001) and make an assessment of changes in the status of the Himalayan brown bear in the India during the last decade. I provide an estimate of potential Himalayan brown bear distribution range and its population in India.

Methods

In 2005, a questionnaire was developed and sent to the managers of Protected Area (PA, i.e., National Park and Wildlife Sanctuary) that had either reported presence of the Himalayan brown bear in the past or that was located within the distribution range of the Himalayan brown bear in India. The questionnaire requested details on bear sightings or sign (feces, feeding/resting signs, tracks) in the PAs and adjacent areas (Forest Divisions, catchment areas), qualitative relative abundance of bears (unknown, rare, fairly common, common, very common, abundant), past and present relative abundance, population, habitat threats and their extent and magnitude, bear-human conflicts, and bear conservation and management. The questionnaire was sent to all the managers of PAs (n = 30) that are located in the Himalayan brown bear distribution range in India, *viz.*, Jammu and Kashmir, Himachal Pradesh, Uttaranchal, and Sikkim. Informal interviews were held with a few field researchers and PA managers to validate and enhance the available information. An approximate distribution range map for the Himalayan brown was prepared based on rule-based modelling using a GIS and refined from expert knowledge and questionnaire responses. The rule-based model works on basis of Boolean logic, which relies on well-established available knowledge and prescribes the area to be either suitable (1) or unsuitable (0). Altitude range (3,000 to 4,500m) that is potentially used by the brown bear during summer was used in the model; Arc/Info was used to develop the distribution map.

Results

Distribution

In India, the Himalayan brown bear occurs in very low densities in the subalpine and alpine regions (between 3,000 and 5,000m) in the Greater Himalayas and in some parts of the trans-Himalayan regions. Brown bears are largely confined to the northwestern and western Himalayan ranges (Fig.2.1.1) in Jammu and Kashmir, Himachal Pradesh, and Uttaranchal (Table 2.1.1). Very little information exists on the past and present status of Himalayan brown bear in India.

Jammu and Kashmir: The Himalayan brown bear is reported to occur in 8 PAs (Table 2.1.2). It is also reported to occur in suitable undisturbed alpine areas in the Forest Divisions (FD) of Lidder, Sindh (Bacha MS, Department of Wildlife Protection, Jammu and Kashmir State, personal communication 2005), Marwa, Kistwar, Poonch and Badhruwa (Kitchloo NA, Department of Wildlife Protection, Jammu and Kashmir State, personal communication 2006) and in the Zanskar and Suru Valleys in Ladakh - the Trans-Himalayan region that occurs north of the main Himalayan range (Sathyakumar 2002). It is reported as 'rare' throughout the state except for a few localities where it is reported to be 'fairly common' during spring or summer seasons such as Zanskar Valley in Ladakh (Sathyakumar 2002).

Himachal Pradesh: The Himalayan brown bear is present in 10 PAs in Himachal Pradesh and in some water-

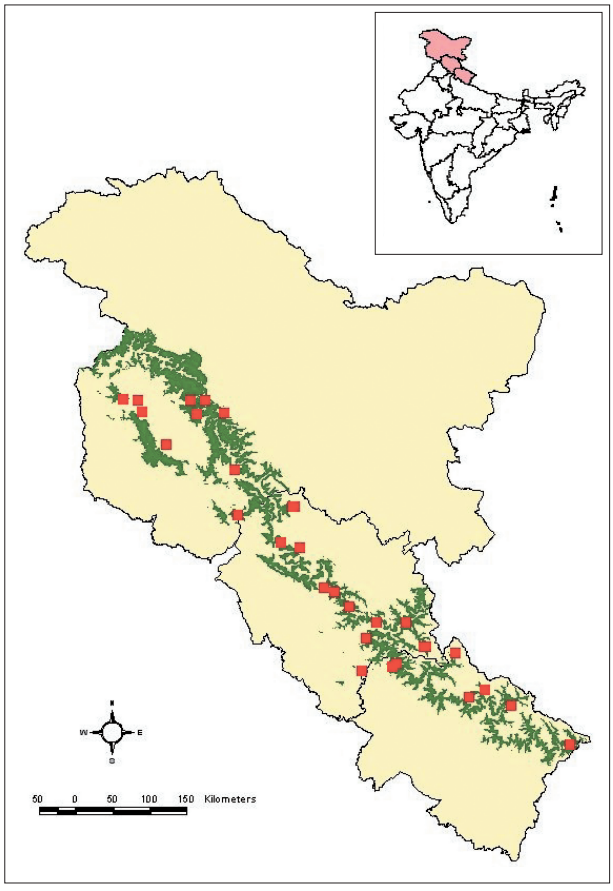

Fig.2.1.1: Himalayan brown bear distribution in the Western Himalayan region of India (Jammu and Kashmir, Himachal Pradesh and Uttaranchal States). ■ indicate Protected Areas.

sheds outside PAs (Table 2.1.2). Outside of PAs, it is reported to occur in Malana Valley, Hamta Pass, Solang Valley Bara Bangal, Parbati valley, Ropa Valley, Kaksthal, Manali, Pooh and Lingti and Ensa Valleys (Lahul and Spiti). It is reported to be "fairly common" in Bara Bangal, Ropa (Kinnaur District), and Ensa (in Spiti) valleys (Sathyakumar 2001).

Uttaranchal: The Himalayan brown bear populations in Uttaranchal are present in and near the Nanda Devi NP and Biosphere Reserve (BR) (Lamba 1987), Kedarnath WS (Sathyakumar 1994), Valley of Flowers NP, Govind WS, Askot WS, and in alpine regions of Yamunotri, Gangotri, Badrinath, Mana, Almora, and Pithoragarh. Himalayan brown bears are rare in Kedarnath WS (Sathyakumar 1994, 2001), Nanda Devi NP & Govind NP & WS (Table 2.1.2) and their relative abundance in other areas is not known.

Sikkim: The brown bear was reported as 'present' in the upper reaches of Kanchendzonga NP and in suitable undisturbed alpine areas in Sikkim (Gee 1967; Sathyakumar 2001). However, with the exception of two unconfirmed reports, there have been no recent confirmed reports of the brown bear in Sikkim. The 2005 survey results indicate that brown bear is not present in the PAs of Sikkim (Gut Lepcha, Department of Forests, Environment and Wildlife Management, Government of Sikkim, personal communication 2005).

Habitat and population estimates

The potential Himalayan brown bear habitat in India was grossly under-estimated as 4,300 km^2 in 1995 (Sathyakumar 2001). During the 2005 survey, a distribution range map for the Himalayan bear in India was developed using rule-based model (altitude range limits of the species) in the GIS and the recent information on the presence/absence of this species in India (Fig.2.1.1). The potential Himalayan brown bear distribution range in India is estimated to be about 36,800 km^2 of which 28,000 km^2 is in the northwestern and western Himalayan region (the southern side of the Greater Himalaya) and 8,800 km^2 is in the trans-Himalayan region of Ladakh (Sathyakumar and Qureshi 2003).

Because no population or density estimates are available for the brown bear in India, an average density of 1

Table 2.1.1: Himalayan brown bear distribution in Protected Areas (PA) and other localities in India, 2006.

State	PAs	Other localities	Elevation (m)	Status
Jammu & Kashmir	8	>10	3000-4500 (GH) 3000-5500 (TH)	rare
Himachal Pradesh	10	>10	3000-4500	rare
Uttaranchal	5	>15	3000-4500	rare
Total	23	35	3000-5500	rare

TH - Trans Himalaya; GH - Greater Himalaya

Table 2.1.2: Himalayan brown bear populations and their past and present relative abundance in Indian Protected Areas based on questionnaire responses, recent surveys and interviews.

State Protected Area (Area in km^2)	Relative Abundance		
	Past (Year)	1990s (Year)	2005
Jammu and Kashmir			
Dachigam NP (171)	rare (1989)	rare (1999)	rare
Gulmarg WS (139)	unknown	unknown (?)	rare
Hirapora WS (115)	unknown	unknown (1995)	rare
Kistwar NP (400)	unknown	unknown (1995)	rare
Lachipora WS (96)	unknown	unknown (1995)	rare
Limber WS (44)	unknown	unknown (1995)	rare
Overa-Aru WS (511)	unknown	rare (1991)	rare
Thajwas (Baltal) WS (211)	unknown	unknown (?)	rare
Himachal Pradesh			
Gamgul Siahbehi WS (109)	unknown	unknown (1995)	rare
Great Himalayan NP (755)	fairly common (?)	rare (1998)	fairly common
Kais (14)	fairly common (?)	fairly common (1994)	rare
Kanawar WS (54)	rare (?)	rare (1994)	rare
Kugti WS (379)	fairly common (?)	common (1993)	fairly common
Lippa Asrang WS (349)	unknown	unknown (1995)	rare
Rupi Bhaba WS (738)	rare (?)	rare (1994)	rare
Sangla (R/Chitkul)WS (650)	rare (?)	rare (1994)	rare
Sechu Tuan Nala WS (103)	unknown	unknown (1995)	rare
Tundah WS (64)	fairly common (?)	fairly common (1993)	unknown
Uttaranchal			
Askot WS (600)	unknown	unknown (1995)	unknown
Govind NP and WS (953)	rare (1988)	rare (1992)	rare
Kedarnath WS (975)	unknown (1981)	rare (1991)	rare
Nanda Devi BR (5150)	rare(1983)	unknown (1993)	rare
Valley of Flowers NP (88)	unknown	unknown (1995)	unknown

WS - Wildlife Sanctuary; NP - National Park; BR - Biosphere Reserve; CR - Conservation Reserve

bear/50 or 75 km^2 was used to estimate the population of brown bear in India, resulting in an estimate of about 500-750 individuals.

Conservation problems

Population threats

Himalayan brown bears in India are threatened largely due to poaching (retaliatory killings) by migratory graziers and local villagers to reduce livestock depredation. In Himachal Pradesh, migratory graziers (gaddis and bakkarwals) often kill bears to reduce livestock depredation (Sathyakumar 2001). In Zanskar and Suru Valleys, Ladakh, brown bear-human conflicts are fairly common during summer, and local villagers resort to retaliatory killings when livestock losses are severe (Sathyakumar 2002). However, poaching for skins or trophies is rare.

Bear-Human conflicts

One of the serious limiting factors for Himalayan brown bear conservation in India is the response of people to bear-human conflicts. Reports of livestock killing by Himalayan brown bears and occasional attacks on humans are fairly common in the north western and trans-Himalayan regions. For instance, in some villages of Zanskar Valley, and Ladakh, where brown bear-human conflicts were reported as 'high', about 38% of livestock depredations were due to brown bears and there were substantial losses due to other large carnivores such as snow leopard, wolf and feral dogs. In Zanskar, there were reports of a Himalayan brown bear attack on two villagers and a case of retaliatory killing of brown bear by villagers when livestock depredations were high (Sathyakumar 2002). Reasons for such high livestock depredation by brown bears and other large carnivores were: (1) unsupervised grazing of livestock in the higher slopes, (2) livestock grazing supervised by children near villages, and (3) poor or no search effort

by villagers to locate missing livestock which were presumed to be killed by bears and other large carnivores. There are also reports of brown bear raiding maize fields and horticultural lands near villages in some parts of the northwestern Himalaya.

Habitat threats

Based on the 2005 estimate, the potential Himalayan brown bear distribution range in India is about 36,800 km^2 of which, <10% is protected under the existing PAs in India. In India, Himalayan brown bear habitat loss is largely due to projects such as infrastructure development, road building, and other human activities. Habitat degradation is due to unsustainable use of alpine regions such as livestock grazing, medicinal plant extraction and other human use.

Management

The Himalayan brown bear is listed as "Vulnerable" in the Red Data Book (International Union for Conservation of Nature and Natural Resources IUCN 2006) but not listed as "threatened" in the 1996 Red List of Threatened Animals (IUCN 1996). It is also listed on Appendix I of CITES (GOI 1992) and on Schedule I of the Indian Wildlife (Protection) Act (1972) as amended in 2003. Wildlife species that are listed in Schedule I of the Indian Wildlife (Protection) Act are considered to be "endangered species" and are accorded highest protection. The number of PAs in India has risen from 131 in 1975 to 597 as of December 2005, and there are proposals for new and modified PAs, largely Conservation Reserves and Community Reserves.

Recommendations

The recently (2003) amended Indian Wild Life (Protection) Act, 1972 offers options for creation of new categories of PAs, such as Conservation Reserves and Community Reserves. The State Government may declare an area that has wildlife habitats and species and that is located adjacent to a PA or that links two PAs as a 'Conservation Reserve' in consultation with the local communities for wildlife conservation. Similarly, the State Government may declare any private or community land that has wildlife habitats and species and that is located adjacent to a PA or that links two PAs as a 'Community Reserve'. Many important Himalayan brown bear habitats or populations that occur outside the PA network but form corridors or links to existing population units could be protected with the help of local communities and through creation of Conservation and Community Reserves. Over 70% of the PAs containing bear populations are <500 km^2 and suffer from human and livestock pressures from within and outside. Identifying sub-alpine and alpine habitats adjacent to PAs and corridors between PAs is crucial. The Jammu and Kashmir Government has created 10 Conservation Reserves recently. Such efforts have to be taken up in Himachal Pradesh also.

To control poaching and smuggling, there is a requirement for additional well trained wildlife staff to protect and manage PAs in India. Adequate facilities, incentives, remote-area allowances, equipment, and motivation are required for wildlife staff in all areas. Wildlife awareness programmes for the Indian Army, border police personnel, and the general public are needed. The Government should regulate all development activities, such as dam and road construction, by ensuring completion of Environmental Impact Assessment studies prior to project approval (Sathyakumar 2001).

Status surveys should be conducted for Himalayan brown bears in most parts of its distribution range in the Greater Himalaya. Monitoring of Himalayan brown bear populations based on direct and indirect evidences in PAs has to be initiated.

Scientific research on the ecology of Himalayan brown bear is necessary, as information on food and feeding habits, habitat utilisation, bear-human conflicts and movement patterns are crucial for the long-term conservation and management of this species in India.

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Japan Bear Network

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JBN
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2.2 The Status of Asiatic Black Bears in India

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The Himalayan region and the hills of northeast India cover approximately 5,91,800 km^2 (18%) of India's geographical area and supports one of the largest populations of the Asiatic black bear (*Ursus thibetanus*) in Asia. The distribution of the Asiatic black bears in India is contiguous with Nepal (eastward from Uttaranchal to Sikkim) and Bhutan (eastward from Sikkim to Arunachal Pradesh).

This report presents information on the distribution and relative abundance of the Asiatic black bear in India based on a review of existing literature, results from recent field surveys, results of questionnaire surveys carried out in 1994-95 and 2005, and expert knowledge. An assessment of change in the status of the Asiatic black bear within Protected Areas (PAs) is made based on a comparison between 1994-95 survey results (Sathyakumar 2001) and results of the 2005 survey (Sathyakumar and Choudhury 2005).

Status

Conservation status

The Asiatic Black Bear is listed as "Vulnerable" in the Red Data Book (IUCN 2006). It is also listed on Appendix I of CITES and on Schedule I of the Indian Wildlife (Protection) Act in 1972 as amended in 2003. The Forest Conservation Act (1980) and the National Wildlife Action Plan (1983) afford protection to the habitats of this species. The number of PAs in India has risen from 131 in 1975 to 597 as of December 2005 and there are proposals for new and modified PAs, consisting largely of Conservation Reserves and Community Reserves (Sathyakumar and Choudhury 2005).

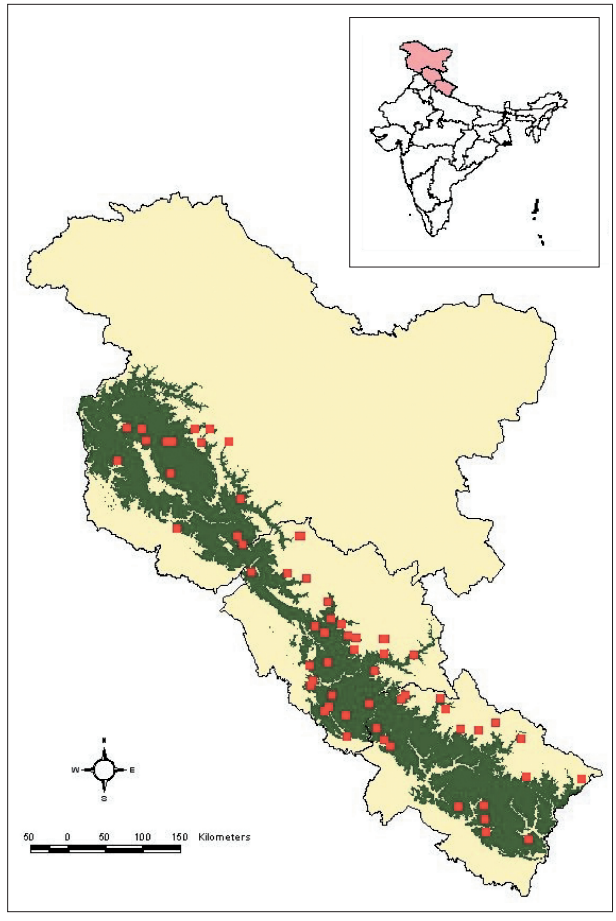

Fig.2.2.1: Asiatic black bear distribution in the Western Himalayan region of India (Sathyakumar and Choudhury 2005). Jammu and Kashmir, Himachal Pradesh and Uttaranchal States. ■ indicate Protected Areas.

Current distribution

Currently, Asiatic black bears are distributed throughout the Indian Himalayan ranges in the northwest (Jammu and Kashmir; Himachal Pradesh), west (Himachal Pradesh and Uttaranchal) (Fig.2.2.1), central (Sikkim and northern West Bengal) and east (Arunachal Pradesh) (Fig.2.2.2). In the western and northwestern Himalaya, Asiatic black bears inhabit forested hills ranging from 1,200 m to 3,300 m, and in the eastern and northeastern Indian Himalaya ranging from 70 m to 4,300 m (Prater 1980; Sathyakumar and Choudhury 2005). Its Himalayan range overlaps with that of the sloth bear (*Melursus urinus*) below 1,200 m and of the brown bear (*Ursus arctos*) above 3,000 m. In northeast India, Asiatic black bear range overlaps that of both the sloth and the sun bear (*U. malayanus*) (Choudhury 1982, 1997a, b).

Results of the 2005 survey revealed that Asiatic black bears occur in 83 PAs (Table 2.2.1), and 98 Forest Divisions (FDs), Reserved Forests (RFs), and Forested Valleys (FVs). Protected Areas (PAs) include National Park, Wildlife Sanctuary, Conservation Reserve and Community Reserve.

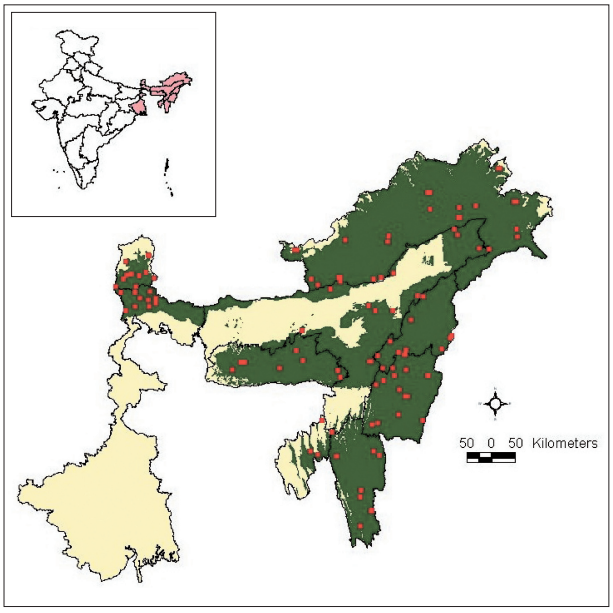

Fig.2.2.2: Asiatic black bear distribution in the Eastern Himalayan region of India (Sathyakumar and Choudhury 2005). West Bengal, Sikkim, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Manipur, Nagalan and Tripura States. ■ indicate Protected Areas.

Jammu and Kashmir: The Asiatic black bear is reported to occur in 16 PAs and 20 FDs, RFs and FVs. Survey respondents reported the status of Asiatic black bears as 'fairly common'. The best known populations of Asiatic black bears in India are in this state (Table 2.2.2) (Sathyakumar and Choudhury 2005). The Asiatic black bear is also reported from the Banihal CR, Sumchan Saphare WS, and proposed PAs Pir Panjal NP, Ghambiar Mongtu WS, Dhera-ki-Gali WS, Ans River WS, and Nowshera WS. It is also reported from over 20 other areas including FDs in Lidder (Pahalgam), Naranaga, Sindh, Wangat, Anatnag, and Reserved Forests (RF) in Gugnar, Bianoi, Pir Panjal, Zaberwan, Bandipora, and Kahai (Bacha MS, Dept of Wildlife Protection, Jammu and Kashmir, personal communication 2005). In the Jammu region, Asiatic black bears are reported to occur in the FDs of Marwa, Rambandh, Batote, Doda, Badhruwa, Kistwar, Poonch, Rajouri, Nowshera, Reasa, Mahor, Udhampur, Jammu, Ramnagar and Bilwar (Sathyakumar and Choudhury 2005).

Results of the 2005 survey have added a substantial amount of information on the status of Asiatic black bears in this state. Eight PAs and 5 newly created CRs not previously known to have Asiatic black bears reported their presence in 2005. Survey respondents reported that feeding sign and scat were commonly encountered in these areas as well as a high incidence of bear-human conflict. Sabarwal (1989) reported a density of 1.3-1.8 bears/km^2 in the Lower Dachigam area of Dachigam NP, likely due to a high abundance of fruit during 1988-89. Bear encounter rates along transects for the same period were 0-3.5 bears/km, and 25-40 bears were estimated to use Lower Dachigam from late June through October (particularly in early September). The status of this species did not change in 10 PAs during the last decade. Marginal population increases were reported in three PAs and marginal decreases reported in three PAs (Table 2.2.2) (Sathyakumar and Choudhury 2005).

Himachal Pradesh: Asiatic black bear in Himachal Pradesh are present in and around 21 PAs (Table 2.2.2) (Sathyakumar 2001). Outside of PAs, Asiatic black bears are reported to occur in an additional 25 areas outside PAs, including forested areas of Pangi (Chenab catchment) and Bharmaur valleys (Ravi catchment) in

Table 2.2.1: Asiatic black bear distribution in Protected Areas (PA), Forest Divisions (FD) and Reserved Forests (RF) in India, 2006. (Source: Sathyakumar 2001; Sathyakumar and Choudhury 2005).

State	PAs	FDs & RFs	Elevation (m)	Status
Jammu and Kashmir	16	>20	1,000-3,300	fairly common
Himachal Pradesh	21	>25	1,000-3,300	fairly common
Uttaranchal	10	>15	1,000-3,300	fairly common
West Benbal (northern)	4	>1	200 - 3,000	rare
Sikkim	3	>2	300up	rare
Arunachal Pradesh	9	>10	100up	common
Assam	7	>15	70 - 1,900	rare
Meghalaya	3	>4	80 - 1,500	very rare
Mizoram	6	>2	100-2,100	very rare
Tripura	1	>1	200-1,000	occasional
Manipur	1	>2	150-2,900	rare
Nagaland	1	>1	120-3,800	fairly common
Total	82	>98		

Table 2.2.2: Asiatic black bear populations and their past and present relative abundance in Indian Protected Areas based on questionnaire responses, recent surveys and interviews. (Source: Sathyakumar 2001; Sathyakumar and Choudhury 2005).

State	Relative Abundance		
Protected Area (Area in km^2)	Past (Year)	1990s (Year)	2005
Jammu and Kashmir			
Ajas CR (48)	unknown	fairly common (?)	fairly common
Bran-Harwan CR (19)	unknown	fairly common (?)	fairly common
City Forest (Salim Ali) NP (10)	unknown	fairly common (?)	fairly common
Dachigam NP (171)	abundant (1969)	very common (?)	common
Gulmarg WS (139)	unknown	fairly common (?)	fairly common
Hirapora WS (115)	unknown	fairly common (?)	rare
Khiram-Shikargarh-Panyar-Khangund CR (118)	unknown	fairly common (?)	fairly common
Khrew-Khonmoh CR (117)	unknown	fairly common (?)	fairly common
Kistwar NP (400)	unknown	unknown (1995)	fairly common
Lachipora WS (96)	fairly common (1986)	fairly common (?)	fairly common
Limber WS (44)	fairly common (1986)	fairly common (?)	fairly common
Naganari CR (22)	unknown	fairly common (?)	fairly common
Overa-Aru WS (511)	very common (1990)	fairly common (1991)	fairly common
Rajparian (Daksum) WS (49)	unknown	common (?)	fairly common
Thajwas (Baltal) WS (211)	unknown	fairly common (?)	rare
Wangat CR (59)	unknown	fairly common (?)	common
Himachal Pradesh			
Bandli WS (41)	unknown	unknown (1995)	rare
Chail WS (109)	unknown	unknown (1995)	fairly common
Churdar WS (66)	unknown	unknown (1995)	unknown
Daranghati WS (167)	unknown	fairly common (1994)	unknown
Gamgul Siahbehi WS (109)	rare (1991)	unknown (1994)	fairly common
Great Himalayan NP (755)	unknown	fairly common (1994)	fairly common
Kias WS (14)	fairly common (?)	fairly common (1994)	fairly common
Kalatop-Khajjiar WS (69)	rare (1991)	fairly common (1994)	fairly common
Kanawar WS (61)	fairly common (?)	fairly common (1994)	common
Khokhan WS (14)	unknown	unknown (1995)	common
Kugti WS (379)	fairly common (1992)	fairly common (1993)	fairly common
Lippa Asrang WS (349)	unknown	common (1993)	unknown
Majhatal WS (58)	unknown	unknown (1995)	fairly common
Manali WS (32)	common (1987)	rare (1991)	rare
Nargu WS (278)	unknown	unknown (1995)	fairly common
Rupi Bhaba WS (738)	very common (1992)	common (1994)	fairly common
Sangla (R/Chitkul)WS (650)	common (?)	very common (1994)	unknown
Sechu Tuan Nala WS (103)	unknown	unknown (1995)	unknown
Shikari Devi WS (72)	unknown	rare (1994)	fairly common
Talra WS (40)	unknown	unknown (1995)	unknown
Tundah WS (64)	common (1992)	very common (1993)	unknown

WS - Wildlife Sanctuary; NP - National Park; CR - Conservation Reserve

Chamba District; Dhaula Dhar range (Beas catchment), Bara Bangal, Chota Bangal, and Bir in Kangra District; Parbati valley, Pandrabis, Bashleo Pass (Sutlej catchment), and Solang and Jagatsukh valleys in Kullu District; upper catchments of Bata and Giri in Solan and Shimla Districts; catchments of Sutlej and Yamuna, Pandrabis, Shimla ridge, Karsog, Shali, Kandyali, Hatu, and Moral Kanda areas in Simla District, the Ropa valley, and Kalpa and Kaksthal areas in the Kinnaur District (Sathyakumar 2001).

Vinod and Sathyakumar (1999) conducted surveys between 1996 and 1999, and reported Asiatic black bear encounter rates along transects ranging from 0.01 to 0.02 bears/km and scat encounter rates of 0.10 scats/km in the Great Himalayan NP. The status of Asiatic black bears in Himachal Pradesh has remained largely unchanged or has marginally improved between the 1995 and 2005 surveys (Sathyakumar and Choudhury 2005). Survey respondents reported bear-human conflicts to be high around PAs in this state. Chauhan

Table 2.2.2 (Cont'd): Asiatic black bear populations and their past and present relative abundance in Indian Protected Areas based on questionnaire responses, recent surveys and interviews. (Source: Sathyakumar 2001; Sathyakumar and Choudhury 2005).

State Protected Area (Area in km^2)	Relative Abundance		
	Past (Year)	1990s (Year)	2005
Uttaranchal			
Askot WS (600)	fairly common (1988)	rare (1994)	fairly common
Corbett NP (521) & TR	unknown	rare (1993)	rare
Govind NP & WS (953)	fairly common (1988)	rare (1992)	common
Kedarnath WS (975)	fairly common (1981)	fairly common (1994)	common
Mussorie WS (11)	unknown	very common (?)	common
Nanda Devi NP (625)	fairly common (1983)	rare (1993)	fairly common
Nanda Devi BR (5150)	fairly common (1983)	fairly common (1993)	fairly common
Rajaji NP (820)	unknown	unknown	rare
Valley of Flowers NP (88)	unknown	fairly common (1995)	fairly common
West Bengal			
Buxa TR (759)	unknown	rare (1999)	rare
Mahananda WS (158)	unknown	unknown (1995)	rare
Neora NP (88)	unknown	common (1999)	fairly common
Singalila NP (79)	unknown	rare (1999)	fairly common
Sikkim			
Fambong LhoWS (52)	unknown	unknown (1995)	rare
Khangchendzonga NP (1,784)	unknown	common (1999)	fairly common
Pangolakha NP(128)	unknown	common (1999)	rare
Arunachal Pradesh			
Dibang WS (4,149)	unknown	common (1999)	fairly common
Eagle' s Nest WS (217)	unknown	common (1999)	fairly common
Itanagar WS (140)	unknown	fairly common (1995)	fairly common
Kamlang WS (783)	unknown	fairly common (1994)	fairly common
Kane WS (55)	unknown	rare (1991)	rare
Mehao WS (282)	unknown	common (1999)	fairly common
Mouling NP (483)	unknown	common (1999)	fairly common
Namdapha NP & TR (4,985)	rare (1990)	rare (1996)	fairly common
Pakke WS (862)	unknown	common (1999)	fairly common
Sessa Orchid Sanctuary (100)	unknown	common (1999)	fairly common
Taley Valley WS (425)	unknown	unknown (1994)	fairly common
Assam			
Barail WS (326)	common (1986)	fairly common (1996)	fairly common
East Karbi Anglong WS (222)	common (1989)	fairly common (1996)	fairly common
Marat Longri WS (451)	rare (1989)	rare (1992)	very rare
Manas NP (500)	rare (1985)	rare (1995)	very rare
Nameri NP (200)	rare (1985)	rare (1998)	very rare
North Karbi Anglong WS (96)	fairly common (1984)	rare (1999)	rare
Sonai-Rupai WS (220)	rare (1985)	rare (1998)	very rare

WS - Wildlife Sanctuary; NP - National Park; CR - Conservation Reserve

(2003), based on an assessment of wildlife-human conflicts at Great Himalayan NP during 1989-98, reported that 26% of livestock depredation was by Asiatic black and Himalayan brown bears, and these occurred primarily in alpine rangelands (58%) where livestock grazing is generally unsupervised, with depredation occurring largely during the month of September (41%).

Uttaranchal: Asiatic black bears are present in and around 11 PAs (Table 2.2.2). Bears are also reported in 15 areas outside PAs including FDs of Tons, Uttarkashi, Tehri, Badrinath, Pithoragarh, Narendra Nagar, Chak-

Table 2.2.2 (Cont'd): Asiatic black bear populations and their past and present relative abundance in Indian Protected Areas based on questionnaire responses, recent surveys and interviews. (Sathyakumar 2001; Sathyakumar and Choudhury 2005).

State Protected Area (Area in km²)	Relative Abundance		
	Past (Year)	1990s (Year)	2005
Meghalaya			
Balphakram NP (220)	unknown	unknown (1995)	very rare
Nokrek NP & BR (80)	unknown	unknown (1995)	occasional
Nongkhyllem WS (29)	unknown	rare (?)	occasional
Mizoram			
Dampa WS (500)	unknown	unknown (1995)	rare
Lengteng WS (60)	unknown	unknown (1995)	rare
Murlen NP (100)	unknown	unknown (1995)	rare
Ngengpui WS (110)	unknown	common (1999)	rare
Phawngpui NP (50)	unknown	common (1999)	rare
Tripura			
Trishna WS (195)	unknown	unknown (1995)	???
Manipur			
Kailam WS (188)	unknown	unknown (1995)	very rare
Nagaland			
Fakim WS (6)	unknown	unknown (1995)	fairly common

WS - Wildlife Sanctuary; NP - National Park; CR - Conservation Reserve

rata, Ram Nagar, Almora, Bageshwar, Nainital, and Kedarnath Wildlife Division. Bears have also been reported in the Yamunotri and Gangotri valleys, and the upper catchments of Ram Ganga, Ladhiya valley and in some parts of the Tarai FD (Sathyakumar 1993, 1994, 2001).

Surveys between 1995 and 2005 revealed that the population status of Asiatic black bears in Uttaranchal has marginally improved or marginally declined (Sathyakumar and Choudhury 2005). For example, the status of Asiatic black bears has improved during a 10 year period in Nanda Devi NP from no sightings or evidence in 1993, to1 sighting and 4 scats in 2003 (Sathyakumar 2004). Encounter rates of Asiatic black bears along transects in this park ranged from 0 to 0.66 scats/km. In Valley of Flowers NP and the buffer zones of Nanda Devi BR, 28 individuals (including 5 females with cubs) were sighted during a 1-month period (November-December 2005). Encounter rates along transects ranged from 0 to 0.4 bear scats/km in Valley of Flowers NP during surveys conducted in the autumn of 2005. In Rajaji NP, Asiatic black bear ranges overlapped with those of sloth bear and were reported to be 'rare' (Table 2.2.2). In Rajaji NP, Asiatic black bears were photographed at remote camera traps on 10 occasions out of 900 trap nights (Sathyakumar and Choudhury 2005).

West Bengal: The status of Asiatic black bears in West Bengal has not changed during the last decade. Survey respondents reported that black bears occur in and around 4 PAs in the northern part (Table 2.2.2) and in forested areas of Darjeeling, Kalimpong Hills, Kolbang, Rehit and Pankasari RFs. The current status of Asiatic black bears in Senchal WS is unknown but they have been reported to occur in this PA. The status of bear populations did not change in 1 PA during the last decade, but showed marginal increase in 2 PAs (Table 2.2.2) and marginal decline in 1 PA (Sathyakumar and Choudhury 2005).

Sikkim: The Asiatic black bear is reported in 3 PAs. Sathyakumar (2001) reported that bears occur in suitable undisturbed forested areas between 1,200 and 3,000 m elevations in Sikkim. Status has improved in 1 PA (Table 2.2.2) and declined in 2 PAs (Sathyakumar and Choudhury 2005).

Arunachal Pradesh: With > 80% of its geographical area under forest cover, Arunachal Pradesh has a nearly continuous distribution of Asiatic black bears, but these populations are serious threatened by poaching Black bears are reported to be 'fairly common', occurring in suitable undisturbed habitats throughout Arunachal Pradesh (Sathyakumar 2001). They are reported to oc-

cur in 11 PAs in this state (Table 2.2.2) (Choudhury 2003; Katti et al. 1990; Choudhury 2003). Asiatic black bears have also been reported to occur in other areas such as Hot spring, Ditchu (Lohit District), Taley Valley RF, Anini Social FD, and Siang districts. Information on relative abundance of this species in the mid-1990s, and the 2005 survey indicated a marginal decline in relative abundance. A survey of animal use by people revealed that in 2 villages of Lower Dibang Valley district alone, at least 52 bears were killed in a single year (Choudhury and Rengma 2005). Its status has not changed in 3 PAs during the last decade (Table 2.2.2), but showed marginal increase in 2 PAs and decline in 6 PAs (Sathyakumar and Choudhury 2005).

Assam: Asiatic black bears occur throughout the hills of Assam and have also been reported to occur in plains areas (Choudhury 1997a). During the1994-95 survey (Sathyakumar 2001), Assam state was not considered for survey as it was believed that this state did not hold any black bears, although a few individuals were thought to inhabit areas along the border with Arunachal Pradesh. During the 2005 survey, we gathered information on the presence of Asiatic black bears in 7 PAs (Table 2.2.2). Bears outside of PAs are also fairly common in the forested areas of Karbi Anglong district (Choudhury 1993) and North Cachar Hills district. The status of black bears has not changed in 2 PAs (Table 2.2.2) during the last decade, but showed marginal increase in 1 PA and decline in 4 PAs (Sathyakumar and Choudhury 2005).

Mizoram and Meghalaya: Asiatic black bear distribution extends into the states of Mizoram and Meghalaya, where it is reported to occur in 5 PAs and 3 PAs respectively (Table 2.2.2). However, survey respondents reported the species as 'rare' in these areas. They are also reported as 'rare' in the Garo, Khasi, and Jaintia Hills, Saipung RF and Narpuh RF areas; occurring only in suitable undisturbed forest in these areas. The status of the species in Mizoram and Meghalaya has marginally increased in 2 PAs during the last decade (Table 2.2.2), but showed decline in 6 PAs (Sathyakumar and Choudhury 2005).

Tripura, Manipur and Nagaland: According to survey respondents, the hill ranges in Tripura contain small scattered populations. They are reported in Trishna WS and in Kailashahar FD, Manu, Kanchanpur FD, Longthorai RF, and Deo RF although their status is not known. Manipur, Mizoram, Nagaland and Arunachal Pradesh are the only four states in India where the distribution ranges of Asiatic black bear and sun bear overlap. In Manipur, black bears are found throughout hilly areas (Choudhury 1992). Bears are reported to occur in Kailam WS, and Kangpokpi-Tamenglong Protected Forest. In Nagaland, the Asiatic black bear is reported as 'fairly common' in Fakim WS, and is well distributed across the state (Sathyakumar and Choudhury 2005). A survey of patterns of animal use by humans revealed that large numbers of black bear are killed every year. A small sample (n = 15 persons) in Phesama village revealed harvesting at least 52 bears in their lifetime (Choudhury and Rengma 2005). The status of the species in Tripura has not changed during the last decade, but marginally improved in Manipur and Nagaland (Sathyakumar and Choudhury 2005).

Habitat and population estimates across India

Potential Asiatic black bear habitat in India was estimated as 14,500 km^2 in 1995 (Sathyakumar 2001). More recently Sathyakumar and Choudhury (2005) developed a distribution range map for the Asiatic black bear in India using a rule-based GIS model based on forest cover, altitude range limits of the species and the recent information on the presence/absence of this species in India (Fig.2.2.1 and 2.2.2). Using this model, potential Asiatic black bear distribution range was estimated to be approximately 269,350 km^2 (Sathyakumar and Choudhury 2005; 71,445 km^2 in the Western Himalayan region and 191,445 in the Eastern Himalayan region and North east Hills). Density estimates were 10/100 km^2 (Dachigam NP), 6/100 km^2 (some areas in Arunachal Pradesh) and 3/100 km^2 (most of the distribution range). Based on these density estimates, Sathyakumar and Choudhury (2005) used densities of 1/30 and 1/35 km^2 to extrapolate an estimated Asiatic black bear population in India of approximately 6,750 - 9,000.

Changes in relative abundance

Prior to the 1994-95 survey, there was no information on the relative abundance of Asiatic black bear in PAs (Sathyakumar 2001). In the 2005 surveys, 24 PAs reported marginal increases, 30 reported no change, 28 reported declines, and 21 new PAs reported presence of this species for the first time. Although reports of the species in other areas (outside PAs) increased from 53 to 98 localities, the population seems to have declined in most areas (Sathyakumar and Choudhury 2005).

Human-bear interactions

Conflicts with humans

One of the most serious limiting factors for Asiatic black bear conservation in India is the response of people to human-black bear conflict. Reports to the Forest

and Wildlife Department of Asiatic black bears killing livestock and attacking humans are common, largely in the north western and western Himalayan region. For example, in Uttaranchal, Asiatic black bears accounted for 28.5% of 540 attacks on humans by large carnivores between 1991 and 2001. Of these attacks, 9% resulted in a human fatality (Chauhan 2004). In the Great Himalayan NP, 350 of 1348 (26%) incidents of livestock predation during 1989-98 were by Asiatic black or Himalayan brown bears (Chauhan 2003). In Arunachal Pradesh, Asatic black bears cause damage to maize, which is a major crop for many hill tribe people. Possible reasons for the increased incidence of reported livestock predation and attacks on humans by Asatic black bears are: (1) shrinking habitat due to extension of agricultural lands, other human encroachment, and habitat degradation which have lead to increased use of agricultural lands by bears, (2) increasing human and livestock population in and around PAs and forested areas, and increased dependence on forests by humans leading to increased frequency of bear-human encounters, (3) unsupervised livestock grazing, and (4) increased awareness among local people regarding compensation paid by the government for damage caused by wildlife, leading to an increase in the proportion of incidents reported (Sathyakumar and Choudhury 2005). As a result, any increase in black bear populations in the recent past is very unlikely with the exception of a very few undisturbed areas (Sathyakumar 2001).

Poaching

Asiatic Black bear populations in India are largely threatened due to poaching for gall bladder and skin. Although the former is believed to be of medicinal value, the latter is for trophy or ornamental purposes. Many Chinese medicine texts recommend Asiatic black bears as source for medicinal bile. Although bears are protected in India, it is difficult to prosecute in poaching cases because of lack of *prima facie* evidence in the courts. Poaching and illegal trade across international borders is thought to be widespread. India has long boundaries with Pakistan, China, Nepal, Bhutan, Bangladesh and Myanmar, much of which is remote, rugged mountainous terrain, making it difficult to police the borders and control cross-border trade.

Growing demand for bear products in Asia has led to serious impacts on bear populations in India. In Arunachal Pradesh and other northeastern states, indigenous people hunt black bear for its skin and meat. For example, the "Nishi" (earlier known as Daffla) people wear bear skins on the back of their neck and use them in making dao (knife) holders. All huts of indigenous people have a display of wild animal skulls and skins, many including parts from Asiatic black bears.

Habitat degradation

Based on the 2005 estimate, the potential Asiatic black bear distribution range in India is about 270,000 km^2 of which <10% is protected under the existing network of PAs (National Wildlife Database, Wildlife Institute of India, Dehra Dun 2005). Throughout India, there are major threats to Asiatic black bear habitats. Habitat degradation is largely due to development projects and human dependence on forests for fuel wood and fodder, as well as the extraction of other forest products such as montane bamboo (*Arundinaria falcata, Chimnobambusa jaunsarensis, Thamnocalamus falconeri, T. spathiflorus*). In Arunachal Pradesh and Sikkim, habitat loss is mainly due to development activities. In the northeast states, *jhum* (shifting cultivation) has led to serious impacts on Asiatic black bear habitat. In Meghalaya, about 95% of the land is privately owned and the state government does not have a mandate to protect wildlife or their habitats in these areas (Sathyakumar and Choudhury 2005).

Recommendations

The recently (2003) amended Indian Wild Life (Protection) Act of 1972 offers options for creation of new categories of PAs such as Conservation Reserves and Community Reserves. Crucial Asiatic black bear populations that occur outside the PA network but form corridors to existing population units could be protected through creation of Conservation and Community Reserves and by community participation. Over 70% of the PAs with bear populations are <500 km^2 and suffer from human and livestock pressures from within and outside. Identifying forested areas adjacent to PAs and forest corridors between PAs is crucial. The Jammu and Kashmir Government has recently created 10 Conservation Reserves. Such efforts have to be taken up in other states, particularly in the northeast Indian States.

To control poaching and smuggling, additional well-trained wildlife staff to protect and manage PAs are needed. Adequate facilities, incentives, remote area allowances, equipment and motivation are required for wildlife staff in all areas. Wildlife awareness programmes for the Indian Army, border police personnel, and the general public are needed. The Government should regulate all development activities, such as dam and road construction, in Sikkim and Arunachal Pradesh by ensuring completion of Environmental Impact Assessment studies prior to project approval. Additionally the short cycle of *jhum* (shifting cultivation) in northeastern states needs to be replaced with longer cycles (Sathyakumar 2001).

Status surveys should be conducted for Asiatic black

bear in most parts of Sikkim, West Bengal, Arunachal Pradesh, and other northeastern hill states. Monitoring of Asiatic black bear and populations based on direct and indirect evidence in PAs should be initiated.

Scientific research on the ecology of Asiatic black bears is necessary, because information on food and feeding habits, habitat utilisation, bear-human conflicts and ranging patterns are crucial for the long-term conservation and management of this species in India.

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2.3 The Status of Malayan Sun Bears in India

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In India, the Malayan sun bear (*Ursus malayanus*) is found in the north-eastern hilly region, and it is known as sun shaom in the local language of Manipur state. Until the year 2002, there were no reports of its occurrence in this region. Thus, information on the status, distribution, ecology, behaviour and ranging pattern of sun bears has been lacking. Only recently, based on reports of the forest department, field surveys and scientific reports of Chauhan and Jagdish Singh (2005b), the occurrence of sun bear has been confirmed in this part of the country.

Status

Distribution

The sun bear is the least known bear species, and one of the most neglected large mammals in India. The lack of information on the status and distribution and ecology of the sun bear in Northeastern states is a serious limitation for conservation of the species.

Sun bears are found in tropical rain forests. The main forest types are tropical semi-evergreen forest, tropical moist deciduous forest, sub-tropical wet hill forest, bamboo forest, wet temperate forest, and moist temperate forest. The status and distribution of sun bears depends on the extent and availability of lowland forest habitats and the presence or absence of human beings and cattle. Due to interspersion of human habitation with degraded and fragmented lowland forest habitats and heavy resource competition, sun bear populations have become fragmented and isolated. As lowland forests have been converted into agricultural areas, plantations and human settlement, most suitable sun bear habitats have been eliminated.

In India, the historic distribution of sun bears was in the tropical rainforest in the northeastern region (Higgins 1932; Gee 1967; Cowan 1972; Prater 1980). There were reports of its occurrence in north-eastern hilly region during the 1960s and 1970s. Thereafter, the sun bear population rapidly declined, and its occurrence became doubtful in this region. According to the report of Servheen (1999), there were no sun bears in India in the 1990s.

Recently, reports of sun bear occurrence have become once again from the northeastern states of Arunachal Pradesh, Nagaland, Manipur and Mizoram. Coexistence of sloth bear with sun bear has also been reported in some areas, but this needs to be confirmed. There have been one sun bear photographed using a camera trap in Arunachal Pradesh in India. Sun bears probably occur in Mouling NP, Mehao WS, Dibang WS, Kamlang WS, Namdapha NP in Arunachal Pradesh; Fakim WS in Nagaland; Murlen NP and Phawngpui Blue Mountain NP in Mizoram and in surrounding forest areas along the Mynmaar border (Table 2.3.1, Fig. 2.3.1). Our recent survey on the status and distribution of sun bears in Manipur (Chauhan and Jagdish Singh 2005b; WII-NWDB 2006) confirmed the presence of sun bears in the Chandel and Ukhrul districts along the boarder of Myanmar but suggested that distribution was patchy.

Both direct and indirect evidence of sun bears (scats, claw marks and foot prints) were observed by inhabitants of these areas. Out of 264 interviewed respondents, 17 % confirmed presence of sun bears by direct sighting, 34.8 % by indirect evidences, 10 % by both direct sighting and indirect evidences and 38 % could not tell about its presence or absence (Chauhan and Jagdish Singh 2005b). A few cubs were kept in villages. Sun bear relative abundance seemed to be higher in Chandel than Ukhrul.

Sun bears were reported to be sighted and indirect evidences were observed from the vicinity and forest areas of 15 villages in Ukhrul district (Table 2.3.2) (Chauhan and Jagdish Singh 2005b).

In Chandel district, the sun bear was reported to be present in the forest areas adjoining the 23 villages (Table 2.3.2).

While visiting forest areas and in the vicinity of these villages, the respondents observed 87 carcasses (hunted bears or natural death), 91 gall bladders, 68 skins, 69 bones, 87 nails and 22 jaws of sun bear in the Ukhrul and Chandel districts during the past 7-8 years (Chauhan and Jagdish Singh 2005b). Many people in these villages were reported to be involved in illegal hunting of bears and other wild animals, and sale of the body parts. The extent of poaching for illegal trade of bear body parts was very high. Hunting of sun bears for food, sale of body parts and sale of young ones captured when the mothers were killed has reached an alarming level throughout its range in Ukhrul and Chan-

Table 2.3.1: Protected area with confirmed or supposed occurrence of Malayan sun bears in North-eastern states.

	No.	Protected area	Area (km²)
Arunachal Pradesh	1	Mouling NP	483
	2	Mehao WS	281.5
	3	Dibang WS	4,149
	4	Kamlang WS	783
	5	Namdapha NP	1,985.2
Nagaland	6	Fakim WS	6.4
Manipur	7	Yangoupokpi Lokchao WS*	184.8
Mizoram	8	Murlen NP	200
	9	Phawngpui Blue Mountain NP	50

*PA: occurrence confirmed, PA: occurrence supposed
"No." coincide with the numbers in Fig. 2.3.1.

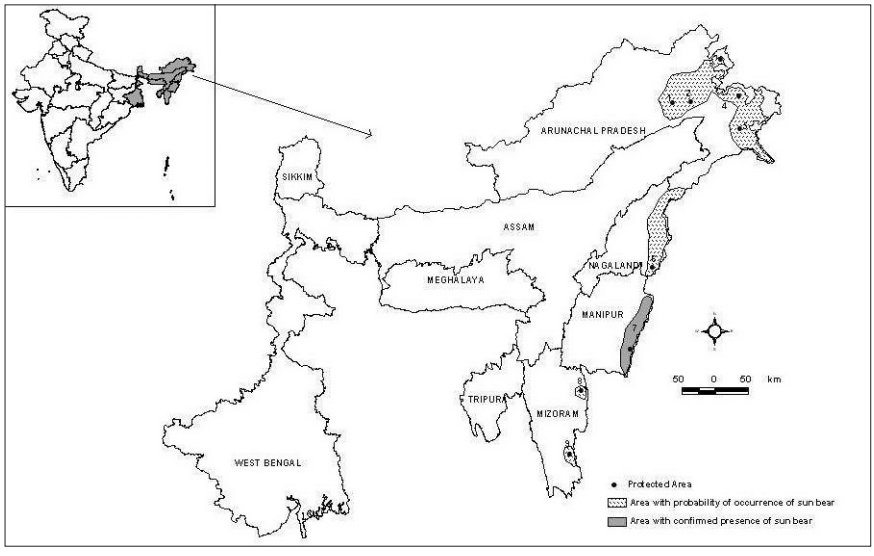

Fig.2.3.1: Occurrence of sun bears in North eastern states of India. The numbers in the figure indicate the protected areas where Malayan sun bears occur (see Table 2.3.1).

del districts of Manipur.

Direct and indirect evidences of sun bears in some parts of the Namdapha Tiger reserve, Arunachal Pradesh were reported (Chauhan and Jagdish Singh 2005b). A systematic survey on sun bear distribution and ecology is important in the state of Arunachal Pradesh.

Bears in captivity

As 2006 there were two adult sun bears in the Imphal zoo in Manipur. A sub-adult sun bear was recently brought to the Aizawl zoo in Mizoram, but it died after few days (Personal communication from Chief Wildlife Wardens).

Legal status

According to the IUCN (2006) criteria, the sun bear is listed as 'Data Deficient', and CITES Listing is on Appendix I. The sun bear is protected under Schedule I of the Indian Wildlife (Protection) Act 1972 (Amended in 2003). Despite this, illegal trade for body parts takes place in India. Sun bear parts and cubs are seen openly for sale in many areas in Manipur, where there are also reports of killing some crop depredating sun bears.

Population threats

In India, sun bear populations are severely threatened due to loss, degradation and fragmentation of habitats, poaching for trade in body parts, by keeping them as pets in villages, and by human-sun bear conflicts.

Table 2.3.2: Occurrence of Malayan sun bears 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

Poaching of sun bears is a critical problem in their areas of occurrence. Trade of bear parts 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. In Manipur, inhabitants suffer from both economic loss due to crop damage (rice, maize, sweet potato, pulses, oilseeds, sugarcane, plum, and pumpkin) and human injuries from sun bears. There are reports of some retaliatory killing of crop depredating sun bears in Chandel and Ukhrul districts. Control on poaching will require proper intelligence network and greater enforcement 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 and Servheen 1991). Market economies and opening of borders now allow free trade of bears and parts of bears, accelerating killing of bears. Likewise, gall bladder from sun bear in India is reported to be illegally exported to Singapore, Bangkok and Hong Kong (Survey data of Manipur, India).

Habitat threats

In North-eastern states in India, 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 development 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 (Chauhan and Jagdish 2005b). Bears invade agricultural crop fieldsand attack on people when encountered suddenly.

Human-bear interactions

Human-sun bear interactions include crop depredation by sun bears and retaliatory killing of bear by aggrieved people, poaching of bears for trade in body parts, meat consumption, sale of cubs, human injuries by bears and impacts of human activities or non timber forest pro-

duce collection on bears and habitats.

Sun bears are known as fierce animals when surprised in the forest. Local people stated that the sun bear attack on humans and inflict serious wounds if surprised (Chauhan and Jagdish Singh 2005a). We documented 95 human injury cases in Ukhrul and Chandel districts during 1990-2002 (Chauhan and Jagdish Singh 2005a). Victims were primarily males (98%). Injuries were caused to face, nose, eyes, neck, hands and legs. Bear attacks were recorded in all the seasons, but most cases occurred during autumn and winter. Most (66%) cases occurred in forests, followed by crop fields and near villages. 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 incidents occurred during morning, evening and night time. There are no records of human-caused mortality.

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

Very little management of sun bears is conducted in India. No habitat management exists for sun bears anywhere in India. There are some efforts by the forest department to check poaching and deforestation. But due to remoteness of these areas and law and order problems caused by militants, management of wildlife areas is difficult. Management of this species is made more difficult by lack of knowledge on the impacts of human activities on the sun bear habitats, ecology, behaviour, food habits, activity pattern and conflicts.

Existing sun bear populations in India require proper management attention. There is an urgent need to conduct systematic surveys on population status and to 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. But there is little knowledge or concern about the status of sun bears in most countries within their range. This is mainly due to the fact that in Southeast Asia, wildlife conservation is focused on species of higher local and international concern such as tiger, elephant, and rhinos.

Through education and awareness programmes, conservation ethics can be inculcated among local people. Programmes on ecosystems, conservation, natural history of sun bears, bear habitats, feeding habits, behaviour, activity pattern, human-sun bear interaction and safety measures are important for local communities. Constitution of village committees would help in confidence building and creation of awareness among the people of the affected areas through the outreach programmes. This will greatly help conservation of sun bears in India, and safeguard the interest of the local communities.

Recommendations

(1) Systematic survey of the status and distribution of sun bear in the remaining range in Arunachal Pradesh, Nagaland, Mizoram and Assam needs to be carried on priority basis to develop a database on its presence and absence. Areas inhabited by bears should be identified and a sun bear distribution range map 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 bears is required. The availability of suitable habitats can be mapped on general landuse maps so that necessary steps can 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 extirpation the species. Strict punishment should be imposed on people involved in hunting of sun bears. Control of poaching will require proper intelligence network and greater enforcement efforts. Trade in bear parts and keeping them as pets should be thoroughly checked by making intelligence system very effective. Forest officials and staff should be properly trained and equipped in dealing with bear trade and related illegal activities.

(5) The sun bear inhabited areas with preferred habitats should be protected; management action for improvement these habitats should be a priority. Steps for restoration of degraded habitats through planting of fruiting species used by bears, and removing encroachment from forest land need to be planned and

undertaken.

(6) 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 the protected area network.

(7) Local people venture into forests any time of the day to collect non-timber forest product, which may be of bear interest also i.e. food plants. There should be restrictions on collection of these forest produce from the bear areas. Villagers should be discouraged from collecting bear food items..

(8) 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 implemented.

(9) People should be discouraged from using bear bile as medicine, meat for consumption, skull and bones as trophies, and other body parts for religious beliefs.

(10) A study on assessment of nature and the extent of human-sun bear conflicts and circumstances is required to develop mitigation strategies. Crop damage and attacks on people decreases local support for bear conservation.

(11) People should be alert and vigilant while in wildlife areas. To reduce crop depredation by sun bears, protection measures such as co-operative 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.

(12) People still possess the remnants of a conservation ethic. The education and awareness programmes about ecosystems, 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.

(13) Very limited information is available on the ecology of sun bears. Basic research on the sun bear should be the highest priority. Basic information on the status, distribution, ecology, food habits, activity pattern and conflict aspects of the sun bear is 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.

Acknowledgements

I am grateful to Mr. P.R. Sinha, Director, Wildlife Institute of India for his constant help and encouragement in preparation of this country report. I express my sincere thanks to all scientists, foresters, and researchers who have provided valuable information about the status of sun bears through questionnaires format and discussions. I thank the Chief Wildlife Wardens and officials of all the State Forest Departments in India. At the Wildlife Institute of India, Mr. J.S. Kathayat helped me in the retreival of information from the National Wildlife Database. My special thanks are to Mr. Jagdish Singh, Researcher, for successfully completing the study on sun bears in Manipur, compilation of survey data, preparation of distribution maps and help in writing the country report.

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Japan Bear Network

Japan Bear Network

JBN
Japan Bear Network

2.4 The Status of Sloth Bears in India

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Sloth bears (*Melursus ursinus*) have a variety of local names in India, such as bhalu and reech (Hindi), richwa (Bhojpuri), asval (Marathi), puni karadi (Malyalam), and elugu bunti (Telgu). Sloth bears were once very common throughout the Indian Peninsula (Brander 1982). During the 1940s and 1950s, many naturalists noticed a sharp decline in sloth bear sightings in the wild, as well as of dancing bears on the streets (Photo 2.4.1) (Seshadri 1969; Krishnan 1972; Singh 1973). This decline was related to loss of forests, and degradation and fragmentation of habitats.

At present, the population within protected areas is comparatively stable, whereas the population outside protected areas is declining. This decline is mainly because of increasing threats by human activities. Thus, this species is designated as an endangered species.

Status

Distribution

Sloth bears inhabit a wide variety of habitats in India; forests with rocky outcrops, grassland and scrubland are frequently used (Akhtar 2004; Akhtar et al. 2000, 2002, 2004b; Balakrishnan and Easa 1986; Gopal 1991; Gokula 1991; Gokula and Varadharajan 1995; Yoganand et al. 2005). Bear distribution and habitat use patterns have been greatly affected by increasing human activities.

Photo by Jagdish Singh RK and Chauhan NPS

Photo 2.4.1: A sloth bear kept in a charmer's house and is used for road side show.

Table 2.4.1 presents a list of national parks and wildlife sanctuaries occupied by sloth bears, based on surveys conducted during 1990-2005, information from the State Forest Department, National Wildlife Database maintained at the Wildlife Institute of India (WII-NWDB 2006), and relevant books and scientific reports. Sloth bears are reported to occur in 174 protected areas (PAs), which include 46 national parks (NPs) and 128 wildlife sanctuaries (WLS) (Fig.2.4.1). They are also found in managed forests outside PAs (Fig.2.4.1).

In northern India, sloth bears are distributed from the lowlands of Nepal and the Siwalik hills, to the forested tracts up to southern region of India. Along the northern part, they overlap with the range of Asiatic black bears (*Ursus thibetanus*) in some areas. The two species coexist in some protected areas, such as Corbett NP, Rajaji NP and Kaziranga NP. In the east, sloth bear range extends through southern Bhutan, and into the North-eastern states of Assam, Mizoram and Arunachal Pradesh. In the northeastern region, sloth bear and Asiatic black bear ranges both overlap with the westernmost range of the Malayan sun bear (*Helarctos malayanus*) (Higgins 1932; Gee 1967; Servheen 1999). All three species coexist in some parts of this region (Choudhury 1993). Sloth bears are absent in Jammu and Kashmir, the Himalayan region of Himachal, and the northwestern deserts of Rajasthan (Fig. 2.4.1).

Uttaranchal, Uttar Pradesh, Rajasthan and Gujara: Along the Shiwalik foothills of Uttaranchal and Uttar Pradesh, sloth bears are common in Corbett, Rajaji and Dudhwa NPs and occasionally seen in Sonanadi, Chandraprabha and Katerniaghat WLSs. These 3 national parks and 6 wildlife sanctuaries with sloth bear populations encompass 3,700 km^2. In Rajasthan, sloth bears are found in 3 national parks and 14 wildlife sanctuaries. Sloth bears are very common in Ranthambhore NP and Jawahar Sagar, Kela Devi, Kumbhalgarh, Mount Abu, and Van Vihar WLSs. The total protected area occupied by sloth bears in Rajasthan encompasses 5,500 km^2. In Jessore and Ratanmahal WLSs in Gujarat, density of sloth bears is higher than any other protected area within its distribution range. Sloth bears are reported as common in Balaram Ambaji and Shool-

Table 2.4.1: List protected areas with sloth bear population and status in India.

State	Protected area	Area (km²)	Status	Bears/ 100km²
Uttaranchal	Corbett NP	520.80	CM	8
	Rajaji NP	820.00	CM	4
	Sonanadi WS	301.18	RR	3
Uttar Pradesh	Chandraprabha WS	78.00	UN	UN
	Dudhwa NP	490.00	VC	12
	Katerniaghat WS	400.69	CM	6
	Kishanpur WS	227.00	RR	UN
	National Chambal WS	635.00	UN	UN
	Ranipur WS	230.31	RR	4
Rajasthan	Bandh Baratha WS	192.76	UN	UN
	Bassi WS	152.90	RR	UN
	Bhensrodgarh WS	229.14	UN	UN
	Darrah NP	265.80	CM	6
	Jawahar Sagar WS	100.00	VC	18
	Kela Devi WS	676.38	VC	UN
	Kumbhalgarh WS	578.25	VC	15
	Mount Abu WS	288.84	VC	6
	National Chambal WS	280.00	UN	UN
	Phulwari Ki Nal WS	511.41	UN	UN
	Ramgarh Vishdhari WS	301.00	RR	5
	Ranthambhore NP	392.00	VC	9
	Sariska NP	492.00	RR	UN
	Sawai Man Singh WS	103.25	CM	6
	Sitamata WS	422.94	UN	UN
	Tadgarh Raoli WS	495.27	CM	5
	Van Vihar WS	59.93	VC	16
Gujarat	Balaram Ambaji WS	542.08	CM	7
	Jambogodha WS	130.38	UN	UN
	Jessore WS	180.66	VC	96
	Ratanmahal WS	55.65	VC	62
	Shoolpaneswar (Dhumkhal) WS	607.70	CM	5
Madhya Pradesh	Bagdara WS	478.00	CM	4
	Bandhavgarh NP	448.85	VC	18
	Bori WS	485.72	CM	7
	Fossil NP	0.27	RR	UN
	Kanha NP	940.00	CM	14
	Kheoni WS	122.70	UN	UN
	Panna NP	542.67	VC	15
	Madhav NP	375.22	RR	UN
	National Chambal WS	435.00	UN	UN
	Noradehi WS	1194.67	CM	6
	Pachmarhi WS	417.78	CM	12
	Palpur Kuno WS	344.68	RR	4
	Panpatha WS	245.84	CM	9
	Pench (Priyadarshini) NP	292.85	UN	UN
	Pench WS	118.47	RR	UN
	Phen WS	110.74	CM	7
	Ratapani WS	823.84	CM	8
	Sanjay NP	466.88	CM	12
	Sardarpur WS	348.12	UN	UN
	Satpura NP	585.17	CM	9
	Singhori WS	287.91	UN	UN
Chhattishgarh	Achanakmar WS	551.55	VC	15
	Badalkhol WS	104.45	CM	13
	Barnawapara WS	244.66	UN	UN
	Bhairamgarh WS	138.95	CM	10
	Gomardha WS	277.91	UN	UN
	Guru Ghasi Das (Sanjay) NP	1471.13	VC	15
	Indravati NP	1258.37	VC	9
	Kangerghati NP	200.00	UN	UN
	Pamed WS	262.12	CM	UN
	Semarsot WS	430.35	UN	UN
	Sitanadi WS	553.36	VC	17
	Tamorpingla WS	608.51	VC	18
	Udanti WS	247.60	VC	14

RR - Rare, CM - Common, VC - Very Common, UN - Unknown

State	Protected area	Area (km^2)	Status	Bears/ 100km^2
Bihar	Bhimbandh WS	681.99	CM	UN
	Valmiki NP	335.65	RR	UN
	Valmiki WS	544.67	UN	UN
	Kaimur WS	1342.00	CM	5
	Gautam Budha WS	259.50	UN	UN
	Rajgir WS	35.84	UN	UN
Jharkhand	Palamau WS	794.33	CM	UN
	Betla NP	231.67	CM	UN
	Dalma WS	193.22	CM	8
	Hazaribagh WS	186.25	RR	UN
	Koderma WS	177.35	RR	UN
	Palkot WS	183.18	UN	UN
	Topchanchi WS	8.75	UN	UN
West Bengal	Buxa NP	117.10	RR	UN
	Buxa WS	368.99	RR	UN
	Gorumara NP	79.45	RR	UN
	Jaldapara WS	216.51	CM	4
	Neora Valley NP	88.00	UN	UN
Assam	Barnodi WS	26.22	UN	UN
	DibruUNSaikhowa NP	340.00	UN	UN
	Karbi Anglong WS	317.81	RR	UN
	Kaziranga NP	858.98	CM	6
	Manas NP	500.00	UN	UN
	SonaiUNRupai WS	220.00	UN	UN
	Marat Longri WS	451.00	UN	UN
Arunachal Pradesh	Itanagar WS	140.30	UN	UN
	Namdapha NP	1985.23	UN	UN
	Pakhui WS	861.95	UN	UN
Mizoram	Dampa WS	500.00	UN	UN
	Murlen NP	100.00	UN	UN
Orissa	Baisipalli WS	168.35	UN	UN
	Chandaka Dampara WS	175.79	CM	6
	Karlapat WS	147.66	RR	UN
	Khalasuni WS	116.00	UN	UN
	Kotagad WS	399.50	RR	UN
	Kuldiha WS	272.75	UN	UN
	Satkosia Gorge WS	745.52	UN	UN
	Simlipal NP	845.70	CM	6
	Simlipal WS	1354.30	CM	7
Maharashtra	Andhari WS	509.27	UN	UN
	Bhamragarh WS	104.38	CM	UN
	Bor WS	61.00	RR	UN
	Chandoli WS	317.67	CM	7
	Chaprala WS	134.78	UN	UN
	Gautala WS	260.61	UN	UN
	Gugamal NP	361.28	CM	UN
	Katepurna WS	73.63	UN	UN
	Melghat WS	778.75	VC	12
	Nagzira WS	152.81	VC	13
	Nawegaon NP	133.88	CM	UN
	Painganga WS	324.62	UN	UN
	Pench NP	257.26	CM	UN
	Tadoba NP	116.55	VC	14
	Wan WS	211.00	UN	UN
	Yawal WS	177.52	CM	7
Goa	Cotigao WS	85.65	UN	UN
	Mollem NP	107.00	UN	UN
	Mollem WS	133.00	UN	UN
Andhra Pradesh	Eturnagaram WS	806.15	CM	UN
	Gundla Brahmeswaram WS	1194.00	UN	UN
	Kaundinya WS	356.70	UN	UN
	Kawal WS	893.00	CM	UN
	Kinnersani WS	656.00	RR	UN
	Lanja Madugu Sivaram WS	36.29	UN	UN
	NagarjunsagarUNSrisailam WS	3568.09	CM	9
	Pakhal WS	879.3	CM	UN
	Papikonda WS	591	CM	UN
	Pocharam WS	130	UN	UN

RR - Rare, CM - Common, VC - Very Common, UN - Unknown

State	Protected area	Area (km²)	Status	Bears/ 100km²
	Pranahita WS	136.02	RR	UN
	Sri Lankamalleswaram WS	464.42	UN	UN
	Sri Penusila Narasimha WS	1030.85	CM	UN
	Sri Venkateswara NP	353.62	RR	UN
	Sri Venkateswara WS	153.32	UN	UN
Karnataka	Adichunchanagiri WS	0.84	UN	UN
	Anshi NP	250	RR	UN
	Arabithittu WS	13.5	UN	UN
	Bandipur NP	874.2	CM	6
	Bannerghatta NP	104.27	RR	UN
	Bhadra WS	492.46	CM	UN
	Biligiri Rangaswamy Temple WS	539.52	CM	UN
	Brahmagiri WS	181.29	UN	UN
	Dandeli WS	843.16	VC	UN
	Doraji Bear WS	55.87	VC	UN
	KudremUNh NP	600.32	UN	UN
	Melkote Temple WS	49.82	UN	UN
	Mookambika WS	247	CM	UN
	Nugu WS	30.32	UN	UN
	Rajiv Gandhi (Nagarahole) NP	643.39	CM	UN
	Sharavathi Valley WS	431.23	CM	UN
	Shettihalli WS	395.6	CM	UN
	Someshwara WS	88.4	UN	UN
Tamil Nadu	Indira Gandhi (Annamalai) NP	117.1	CM	9
	Indira Gandhi (Annamalai) WS	841.49	CM	11
	Kalakad WS	223.58	CM	UN
	Mudumalai NP	103.23	CM	UN
	Mudumalai WS	217.76	UN	17
	Mundanthurai NP	567.38	CM	UN
Kerala	Chendurang WS	UN	UN	UN
	Chimmony WS	90	UN	UN
	Chinnar WS	90.44	RR	3
	Eravikulam NP	97	UN	UN
	Idukki WS	70	RR	UN
	Neyyar WS	128	RR	UN
	Parambikulam WS	285	CM	7
	Peppara WS	53	UN	UN
	Periyar NP	350	CM	6
	Periyar WS	777	CM	UN
	Silent Valley NP	89.52	VC	56
	Wayanad WS	344.44	CM	UN
		66,854.53		

RR - Rare, CM - Common, VC - Very Common, UN - Unknown

Sources: State Forest departments; Wildlife Institute of India - Survey Reports; Wildlife Institute of India - National Wildlife Database; Brander (1982); Prater (1980); Seshadri (1986); Israel and Sinclair (1987); Sahraia (1982).

paneswar WLSs.

Madhya Pradesh and Chattishgarh: In the states of Madhya Pradesh and Chattishgarh, sloth bears occur in 11 NPs and 23 WLSs. They are very common in Bandhavgarh, Panna and Guru Ghasi Das NPs, and Achanakmar, Sitanadi, Tamorpingla and Udanti WLSs. In Kanha, Satpura, Sanjay and Indravati NP, and Bagdara, Bori, Noradehi, Pachmarhi, Panpatha, Phen, Ratapani, Badalkhol, Bhairamgarh and Pamed WLSs, sloth bears are commonly seen in the forests. The total area of these national parks and wildlife sanctuaries covers 15,000 km^2.

Bihar and Jharkhand: Sloth bears are found in 5,000 km^2 of forests in 2 NPs and 11 WLSs in Bihar and Jharkhand. They are commonly sighted in Betla NP, Palamau, Dalma, Bhimbandh and Kaimur WLSs.

West Bengal, Assam, Arunachal Pradesh and Mizoram: Sloth bears are reported as common in Jaldapara WLS in West Bengal and Kaziranga NP in Assam. The protected area inhabited by sloth bears in these states is 3,600 km^2. It is reported as rare in Buxa NP, and in Gorumara and Karbi Anglong WLSs. The status of sloth bears in rest of protected areas in Assam is not known. There are reports of sloth bears in Arunachal Pradesh and Mizoram, but their status is unknown.

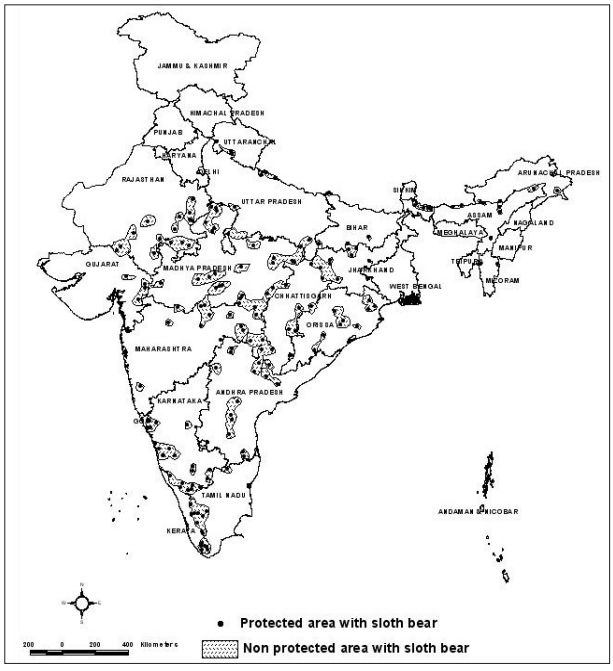

Fig.2.4.1: Distribution of sloth bears in India.

Orissa, Maharashtra and Goa: In Orissa, sloth bears are reported as common in Simlipal NP and Chandaka Dampara WLS, but also occur in 1 NP and 8 WLSs covering a total area of 4,200 km^2. Sloth bears are found in 4,300 km^2 of protected forests (5 NPs and 14 WLS) in Maharashtra and Goa. They reported as very common in Tadoba NP and in Melghat and Nagzira WLSs, but are rarely seen in Bor WLS.

Andhra Pradesh, Karnataka, Tamil Nadu and Kerala: A total of 11,000 km^2 of protected forests (2 NPs and 13 WLS) is occupied by sloth bears in Andhra Pradesh. They are commonly seen in Nagarjunsagar-Srisailam Tiger Reserve and Eturnagaram, Kawal, Pakhal, Papikonda, and Sri Penusila Narasimha WLSs. In Karnataka, it is very common in Dandeli and Doraji Bear WLSs. It is reported to occur in 5 NPS and 13 WLS, covering an area of 5,800 km^2 in the state. Sloth bears occur in 2,100 km^2 of protected area in Tamil Nadu. They are reported as common in Kalakad Mundanthurai Tiger Reserve, Mudumalai NP and Annamalai hills. Sloth bear range extends further into Kerala, where it occupies 2,400 km^2 of protected forests that include 3 NPs and 9 WLSs. They are commonly found in Parambikulam, Peppara, Periyar and Wayanad forests.

Surveys and ecological studies have indicated that sizable numbers of sloth bears also occur outside many protected areas. We have collected information on occurrence of sloth bears in Raigarh, North Bilaspur, Korea, Raipur North, Bastar Central, Durg, Kanker and Rajnandgaon forest divisions of Chattishgarh state; Balaghat North, Balaghat South, Jabalpur, Khandwa, Chindwara West, and Umaria forest divisions of Madhya Pradesh; Dhalbhum forest division of Bihar, and Kheojhar, Deogarh, Dhenkanal, Boudh, Angul, Baripada and Ghumsar North forest divisions of Orissa. There are also reports of sloth bear occurrence outside protected areas from Uttaranchal, Uttar Pradesh, Rajasthan, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala. According to the Forest Department, the total estimate for only Kanker, Jagdalpur, Sarguja, Bilaspur, Raipur and Durg circles was 4,250 sloth bears (Akhtar unpublished data).

Population estimates

Total forest cover in India is 770,000 km^2 (Forest Survey of India 2003), and numerous studies have been conducted on status, distribution and ecology of sloth bears. Rough population estimates are available from protected areas including national parks and sanctuaries, as well as managed forests outside PAs.

Fig.2.4.1 provide a tentative sloth bear distribution range map, based on survey data and information from the forest department and Wildlife Institute of India-National Wildlife Database (WII-NWDB 2006). In central India, a larger proportion of the sloth bear population occurs outside than inside PAs. Sloth bear populations have been estimated for various NPs and WLSs in India. For PAs, conversion of an average value of 12.1 bears/100 km^2 within 67,000 km^2 areas suggests about 8,110 sloth bears. This estimate is similar to that of the IUCN Action Plan 1999 (Garshelis et al. 1999a). Two sanctuaries, Jessore WLS and Ratanmahal WLS, established especially for sloth bears in Gujarat, have the highest reported densities; 96 and 62 bears/100 km^2, respectively. Silent Valley NP in Kerala has 56 bears/100 km^2. Desai et al. (1997) estimated 17 bears/100 km^2 in Mudumalai WLS. Sloth bear density estimates include Dudhwa NP (10 bears/100 km^2), Corbett NP (8 bears/100 km^2), Ranthumbhore NP (8 bears/100 km^2), Guru Ghasidas WLS (15 bears/100 km^2), Kanha NP (14 bears/100 km^2), Bandhavgarh NP (18 bears/100 km^2), Achanakmar WLS (12 bears/100 km^2), Tamorpingla WLS (18 bears/100 km^2), Udanti WLS (14 bears/100 km^2) and Sitanadi WLS (17 bears/100 km^2) was found to be considerably high (Akhtar et al. unpublished data). From these estimates, it appears that the sloth bear population is more or less stable in protected areas, which may be due to protection and wildlife management practices. But the sloth bear population is highly threatened and on decline in managed forests outside PAs.

Akhtar et al. (2004, 2004a unpublished data), Bargali (2004), and Chauhan et al. (2003) estimated sloth bear

density in areas outside protected areas in India. In unprotected habitat of North Bilaspur FD, density (23 bears/100 km^2) was higher than in PAs. Iswariah (1984) estimated a density of 12 sloth bears/100 km^2 outside protected area in Ramnagaram Taluk, Karnataka. From the figures collected by Akhtar et al. (unpublished data), areas outside PAs average 12 bears/100 km^2. Approximately 120,000 km^2 outside PAs is reported to be occupied by sloth bears. Because this is incomplete information, this figure may be low. Converting these densities to abundance results in an estimated 14,000 sloth bears outside PAs. Thus, a total population of sloth bear in India is more than 20,000.

Bears in captivity

There are about 272 sloth bears in captivity in India, of which 192 were in zoological parks and safaris, and 80 were in the bear rescue centre at Agra (Zoo Authority of India record of 2006; Seshamani and Satyanarayan 1997). Among captive bears in 38 zoos and safaris, there were 86 males, 88 females and 18 young. Of 80 bears in the rescue centre, 48 were males and 32 were females. There are probably an additional 100-150 dancing bears with charmers/kalanders in the country.

Legal status

Sloth bears are totally protected under Schedule I of the Indian Wildlife (Protection) Act 1972 (Anon 2005). They cannot be hunted, but can be killed in self defense or in special circumstances where they have caused significant damage. Trade for bear body parts and export is illegal. Sloth bears are listed as Vulnerable (A2cd); CITES listing: Appendix I.

Population threats

Sloth bear populations in India are largely threatened by poaching for gall bladder and other body parts: skin, male reproductive organs, bones, claws, teeth and meat. Gall bladder is believed to be of medicinal value, and is illegally exported to Singapore, Bangkok, Hong Kong, South Korea, Taiwan and Japan as indicated by records of TRAFFIC-India. Male reproductive organs are used as an aphrodisiac agent by local people. Bones, teeth and claws are used by villagers to ward off evil, a superstitious belief (Bargali 2004; Chauhan et al. 2003). In Chattishgarh and Madhya Pradesh, villagers illegally hunt for male bears for body parts. Bear body parts from an estimated 700-1,500 bears/yr were exported from India to Japan during the late 1970s through the 1980s (Servheen et al. 1999; Garshelis et al. 1999b). Poaching and trade in sloth bear parts is still very common in the state of Uttar Pradesh, Chattishgarh, Madhya Pradesh, Rajasthan, Orissa, West Bengal and the North-eastern states. Other important threats include trapping and removal of live bears, mainly cubs, from forests by charmers.

Habitat threats

There is continuous loss, degradation and fragmentation of forests and encroachment on forest land in India due to increase in the human population, cattle grazing, extraction of non-timber forest produce (NTFP), illicit cutting and lopping of trees, collecting honey and fruits (delicacies for bears), increasing monoculture plantations (e.g. teak and eucalyptus), expansion of agriculture, and other developmental projects. As a result, sloth bear habitats are severely affected; habitat loss and degradation poses a major threat to sloth bear populations especially outside PAs.

Human-bear interactions

Sloth bears are known for their aggressiveness. In Central India, sloth bears have a formidable reputation, and are considered one of the most fearsome of all the wild animals (Pillarisett 1993; Chauhan and Rajpurohit 1996). They are highly unpredictable in attacking people, especially when mothers are accompanied by cubs (Prater 1980; Pillarisett 1993). Human-sloth bear conflicts have been reported in most areas inhabited by sloth bears in India. Sloth bears cause extensive agricultural crop depredation (Laurie and Seidensticker 1977; Iswariah 1984; Sankar and Murthy 1995; Chauhan and Rajpurohit 1996). Krishna Raju et al. (1987) reported the occurrence of 20-30 mauling cases/yr by sloth bears in Andhra Pradesh. Human-sloth bear conflict has been reported from many parts of Madhya Pradesh and Chhattisgarh (Chauhan and Rajpurohit 1996; Chauhan et al. 1999, 2003; Rajpurphit and Krausman 2000; Bargali et al. 2005). NTFP collection by villagers was done especially early in morning and again in evening. Collection time coincided with the time when bears were foraging or returning to their den sites, thus resulting in increased human casualties. Most villages located close to den sites were affected by crop raiding and human casualties from bears. During the period April 1989 - March 1994, there were 607 human casualties caused by sloth bears in Madhya Pradesh. Of 151 cases, 103 occurred in forests, 34 in crop fields and the remaining 14 were in villages. In North Bilaspur FD, 395 human casualties occurred during 1991-2000. Men were attacked more frequently than women. Of 178 villages surveyed, 122 were affected (Bargali et al. 2005). In and around Panna National Park, 80 sloth bear attacks were reported in 30 villages during 1981 - 2000 (Yoganand et al. 2005). During April 1989-March 1995, 50 human casualties by sloth bears were reported in Bihar; 22 in Dalma WLS, and 11 in Palamau tiger reserve (Chauhan and Rajpurohit 1996). Sixty six human casu-

alties by sloth bears occurred during April 1990 March 1995 in Orissa.

Management

Using new provisions of the Indian Wildlife (Protection) Act 1972, conservation and community reserves can be established by states to protect sloth bear populations, both inside and outside the protected area network. In North Bilaspur FD, there are contiguous forest patches with few scattered villages and high concentration of sloth bears (Chauhan et al. 2003; Akhtar 2004; Bargali 2004). These areas should be considered by the state government for declaration as bear sanctuaries. In Gujarat, 3 wildlife sanctuaries have been established specially to protect sloth bears along the western edge of their range (Java 1991).

After the inception of Project Tiger in 1972, a network of protected areas was established for conservation of tigers in India. Sloth bears have also been protected as a consequence, including in Corbett, Dudhwa, and Ranthambore Tiger Reserves (TRs), along the northwestern range of the sloth bear; Kahna, Panna and Bandhavgarh TRs in the central range; Buxa and Manas TRs in the northeast of its range, and Bandipur and Periyar TRs in the southern part its range. These tiger areas with sloth bear populations constitute 4.22% of the total forest areas. But existing sloth bear populations in reserve forests outside protected areas require proper management attention.

Public education and awareness

For wildlife conservation, involvement of local people and their support is necessary. Through education and awareness programmes, conservation ethics can be inculcated among local people. Education and awareness programmes about ecosystems, conservation, natural history of bears, bear habitats, feeding habits, behaviour, activity patterns, human-bear interactions, and safety measures are important for the local community. Constitution of village committees would help in confidence building and creation of awareness among the people of the affected areas through the outreach programmes. This will greatly help conservation of sloth bear in India, and safeguard the interest of the local communities.

Recommendations

(1) We need to periodically monitor sloth bear populations across their range and update the database on status and distribution of sloth bears.

(2) Sloth bear habitats and corridors between bear population units should be quantified and mapped on land-use maps so that necessary steps can be taken to protect and restore such habitats. Management should be focused on large, discrete population units, rather than individual protected areas.

(3) Much of the sloth bear population in India survives outside the PA network. The existing inhabited areas need to be protected from human interference. Habitat restoration can be done through planting of species producing fruits that bears eat, removing encroachment from forest land and denning areas, checking mining activity and stone extraction from bear den sites, and controlling forest fires. Some large areas inhabited by sizeable populations of sloth bears can be protected through creation of bear sanctuaries or community and conservation reserves within the purview of Indian Wildlife (Protection) Act 1972.

(4) Poaching of sloth bears is a critical problem in some parts of the country, and is likely to seriously affect sloth bear populations. Controlling poaching will require proper intelligence network and greater enforcement efforts, as well as an educational programme to gain community support for anti-poaching endeavors.

(5) Trade of bear parts is severely affecting bear populations in India. People should be discouraged from using bear bile as medicine and body parts as aphrodisiac agents. Trade needs to be checked by making intelligence system effective. Forest officials and staff should be trained and equipped in dealing with bear trade and other illegal activities.

(6) Charmers trap and remove bear cubs from bear denning areas, severely affecting bear populations. Charmers are being encouraged to cease exhibiting dancing bears, and to transfer their bears to government custody in exchange for loans or other employment opportunities.

(7) Factors leading to degradation and fragmentation of sloth bear habitats should be identified on both an area- and state-wide scale, and strategies should be developed to remove these threats.

(8) Some forest patches away from potential bear areas are required to be delineated where regulated extraction of fuel wood and lopping activity is allowed, while still leaving fruiting trees of value to bears.

(9) Within bear areas, collection of forest products should be restricted. Villagers should be discouraged from collecting bear food items. Collection of NTFP from bear denning areas should be completely banned.

(10) In summer, bear habitats are severely impacted by frequent man-made fires. Effective management, by keeping vigil on fires, using preventive measures and adoptive strict punishment for culprits, must be practiced.
(11) Increasing human-sloth bear conflicts threatens to erode local support for bear conservation measures such as participation in protection strategy and community forestry programs. Mitigation of human-bear conflicts is a priority.
(12) To reduce damage by sloth bears, crops should be protected by using crackers, fires and other deterrents, especially during the vulnerable, maturation stage of crops. Changes in crop patterns may be useful. To avoid human casualties, people should move in groups and make noise, especially during morning and evening hours.
(13) Villagers still possess the remnants of a conservation ethic. The education and awareness programmes are important for the local community. Constitution of village committees would help in confidence building and creation of awareness among the residents of the affected areas through outreach programmes.

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