

STATUS AND MANAGEMENT OF ASIATIC BLACK BEAR AND HIMALAYAN BROWN BEAR IN INDIA

SAMBANDAM SATHYAKUMAR, Wildlife Institute of India, Post Box #18, Chandrabani, Dehra Dun 248 001, India, email: ssk@wii.gov.in

Abstract: I review the current status of Asiatic black bear (*Ursus thibetanus*) and Himalayan brown bear (*Ursus arctos*) in India based on a questionnaire, interviews, and a literature survey. The Himalayan region and the hills of northeastern India probably support one of the largest populations of Asiatic black bear in Asia. Asiatic black bears live in forested mountain habitats (1,200–3,300 m) in the states of Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Arunachal Pradesh, Sikkim, West Bengal, Mizoram, Meghalaya, and Tripura. Asiatic black bears were reported to occur in 53 protected areas (PAs) and in 62 other localities, but their population status is not known. The potential range of Asiatic black bear habitat in India is estimated to be about 14,500 km², of which <5% is in PAs. Asiatic black bear numbers are decreasing in many areas due to (1) large-scale habitat degradation, (2) poaching for gall bladder and skins, and (3) control to reduce crop depredation. Very little information exists on the relative abundance of Himalayan brown bear (*Ursus arctos isabellinus*) in India. The Himalayan brown bear occurs in very low densities in the subalpine and alpine regions (>3,300 m) of the Greater and Trans-Himalayan regions in India and has been reported in the states of Jammu and Kashmir, Himachal Pradesh, and Uttaranchal. They are reported to occur in 23 PAs and in 18 other localities. Their potential habitat range in India is estimated at 4,300 km², of which very little is protected. Questionnaire results indicate that there has been a marginal decline in Asiatic black bear relative abundance, but information for brown bear is insufficient to elucidate a trend. The long-term conservation of both species in India depends on adequately protecting the species and their habitats, reducing habitat degradation, strictly controlling poaching and illegal trade of gall bladder and skin, and in reducing bear–human conflicts.

Ursus 12:21–30

Key words: Asiatic black bear, conservation status, distribution, Himalaya, Himalayan brown bear, protected areas, relative abundance, *Ursus arctos*, *Ursus thibetanus*

Of the 8 species of bears in the world, 4 occur in India: the sloth bear (*Melursus ursinus*), the Asiatic black bear, Himalayan brown bear, and the sun bear (*Helarctos malayanus*). In Servheen's (1990) review of the status and conservation of the bears of the world, he found scant information on Asiatic black bear and Himalayan brown bear in India. Even basic information such as presence and absence does not exist for many areas in the distributional range of these species in India.

The Asiatic black bear has been reported to be continuously distributed through southern and eastern Asia from westward through Pakistan and Afghanistan to Baluchistan Province of Iran; east to Indo-China through much of China, Korea, and Japan, with an isolated population in Taiwan (Cowan 1970, Servheen 1990, Mallon 1991). Schaller (1977) reported a wide distribution for Asiatic black bear from Russia and Korea to Indo-China and from the forests of the Himalayas below an altitude of 3,750 m west as far as Afghanistan and Iran. The Himalayan region and the hills of northeastern India cover 591,800 km² (18%) of India (G.B. Pant Institute for Himalayan Environment and Development 1993) and probably support one of the largest populations of Asiatic black bear.

The Asian range of brown bear extends from Turkey, Iran, and Afghanistan to Pakistan and along the Himalayas of India, Nepal, and Bhutan, then north and east through the mountains of central Asia, Tibet, northern China, and Mongolia to Russia. The Himalayan brown bear is largely confined to the rolling uplands and alpine meadows above timberline, ecologically separated from forest dwelling black bear (Schaller 1977). But in the northwestern

Himalayas, the Himalayan brown bear is reported to occur in the subalpine forests.

This paper reviews the distribution and relative abundance of the Asiatic black bear and Himalayan brown bear in India. Results are based on a review of available literature, a questionnaire, and interviews with scientists, researchers, forest and wildlife managers, and staff of the Forest Departments in northern and northeastern India.

METHODS

In 1994, a questionnaire was developed and sent to scientists and land managers who were then working or who had worked for at least 2 years in the range of Asiatic black bear, the Himalayan brown bear, or both. The questionnaire requested details on: bear sightings or sign (feces, feeding or resting signs, tracks) in different localities (National Park, Wildlife Sanctuary, Biosphere Reserve, Forest Division); relative abundance of bears (very rare, rare, fairly common, common, or abundant); past and present relative abundance; population and habitat threats and their extent and magnitude; bear–human conflicts; conservation and management; and the season or month and the duration of time spent by the respondent in bear habitat.

Two copies of the questionnaire, one for Asiatic black bear and one for Himalayan brown bear, were sent to 55 scientists and land managers, of which 39 (71%) were returned. All returned questionnaires provided some information on Asiatic black bear, but only 20% contained information on brown bear. Informal interviews were held

with 23 scientists and land managers to validate and enhance the available information. Information on the relative abundance of both species in PAs was regularly updated whenever additional knowledge became available. An approximate distribution map for both species was prepared by mapping the upper and lower altitudinal limits of the species' occurrence and later refined from questionnaire information.

RESULTS

Asiatic Black Bear: Distribution and Relative Abundance

In India, the Asiatic black bear inhabits forested hills ranging from 1,200 m to 3,300 m (Prater 1980). Its range overlaps with that of the sloth bear below 1,200 m and the Himalayan brown bear above 3,000 m. The Asiatic black bear is distributed throughout the Himalayan ranges (Fig. 1) in the northwest (Jammu and Kashmir, Himachal Pradesh), west (Himachal Pradesh and Uttaranchal), central (Sikkim and northern West Bengal) and east (Arunachal Pradesh). The species is also present in some hills of other northeastern states of India. Asiatic black bear distribution in the Indian subcontinent is contiguous with Nepal (eastward from Uttaranchal to Sikkim) and Bhutan (eastward from Sikkim to Arunachal Pradesh).

At present, the Asiatic black bear is continuously distributed in North India, all along the Himalayas and hills of northeastern India between 1,200m and 3,300m. This is largely due to the black bear's use of plantations, or-

chards, cultivated areas, scrublands, and even villages to move between forested areas. There are few estimates of Asiatic black bear populations or densities in India.

Much information on the distribution and relative abundance of Asiatic black bear in India is from the network of protected areas (PA), major valleys and catchments, Reserved Forests (RF), and Forest Divisions (FD) (Table 1). This information is summarized below by state.

Jammu and Kashmir.—The best known populations of Asiatic black bear in India are in this state. The Dachigam National Park (NP), Overa Wildlife Sanctuary (WS), Overa-Aru WS, Limber-Lachipora WS, and Kistwar NP have an Asiatic black bear population. Survey respondents also reported Asiatic black bears in Pahalgam and Pinjore Punjab FD, Naranag-Wangat FD, and Tral, Shikargarh, Shar, and Dakrum areas in Islamabad District.

Saberwal (1989) reported Asiatic black bear density estimates of 1.3–1.8 bears/km² in Lower Dachigam during high fruit abundance. Encounter rates ranged from 0 to 3.5 bears/km walked. Twenty-five to 40 bears were estimated to use Lower Dachigam in early September, and probably late June through October (times of high fruit abundance). Manjrekar (1989) had >250 Asiatic black bear sightings in 140 days of study in Dachigam NP. The total Asiatic black bear population for Dachigam may be about 50 (A.J.T. Johnsingh, Wildlife Institute of India, Dehra Dun, Uttaranchal, India, personal communication, 1995). Schaller (1977) reported that Asiatic black bears were abundant in Dachigam in 1969. According to J.V. Gruisen (TRAFFIC-India, New Delhi, India, personal

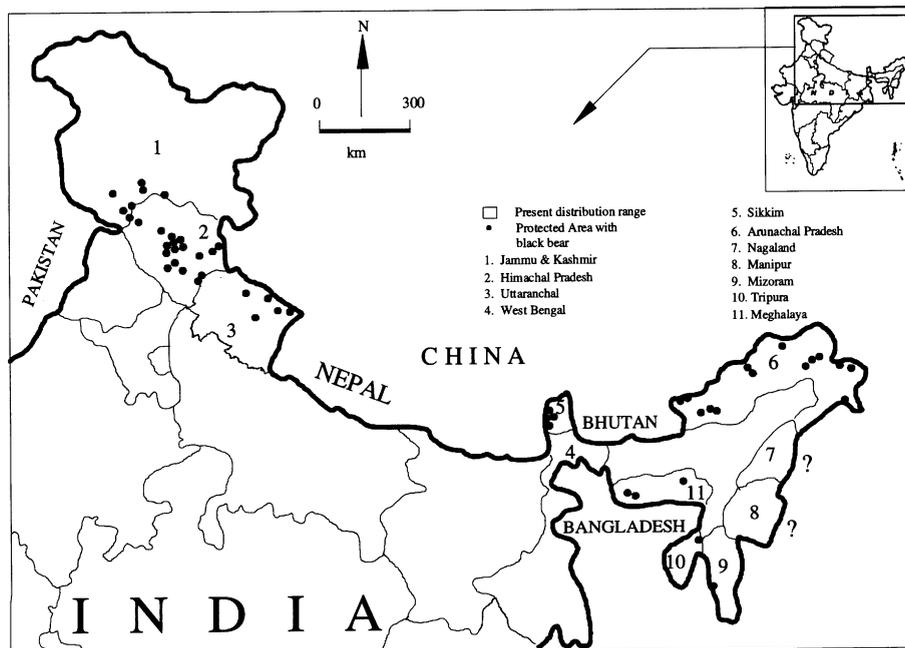


Fig. 1 Approximate distribution of Asiatic black bear in India and protected areas of black bear populations, 1999.

communication, 1995), at least 7 Asiatic black bears could be sighted in a day in Dachigam NP during 1981–1982. The relative abundance of Asiatic black bear in Dachigam at present is not known, but the NP has been unprotected for several years.

In Overa WS, based on yearly spring and summer observations from 1985 to 1991, T. Price (University of San Diego, California, USA, personal communication, 1995) reported that the Asiatic black bear population seemed to be decreasing because females with cubs were sighted in 1985–86, no cubs were sighted during 1987–90, and he saw no bears in 1991. It appears that they were breeding well in 1985–87 and may not have bred in 1988–91.

Though the Asiatic black bear is reported to occur in Kistwar NP, its relative abundance is not known. In other PAs and FDs, Asiatic black bear populations are either decreasing or information on their relative status is not available.

Himachal Pradesh.—Asiatic black bears in Himachal Pradesh are present in and near 21 PAs (Singh et al. 1990, Gaston and Garson 1992, Green 1993). They were re-

ported by survey respondents to be “fairly common” in Great Himalayan NP, Rupi Bhaba WS, Tundah WS, Kugti WS, Dharangati WS, Sangla WS, Kanawar WS, Kalatop-Khajjiar WS, and Kais WS.

Outside of PAs, Asiatic black bears occur in the forested areas of Pangi (Chenab catchment) and Bharmaur valleys (Ravi catchment in 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; and the Ropa valley, and Kalpa and Kaksthal areas in Kinnaur District (S. Pandey, Wildlife Institute of India, Dehra Dun, Uttaranchal, India, personal communication, 1995).

Asiatic black bears were reported to be “common” in the forested areas of Dhaula Dhar range, Chota Bangal, Parbati Valley, Bashleo Pass, and Kalpa areas. The spe-

Table 1. Asiatic black bear populations and their past and 1999 relative abundance in Indian protected areas based on questionnaire responses and interviews.

State	Protected area ^a (Area)	Relative abundance		
		Past (year)	Recent (year)	1999
Jammu and Kashmir				
	Dachigam NP (141 km ²)	abundant (1969)	unknown (1995)	common
	Kistwar NP (400 km ²)	unknown	unknown (1995)	unknown
	Limber-Lachipora WS (106 km ²)	fairly common (1986)	unknown (1994)	unknown
	Overa WS and Overa-Aru WS (457 km ²)	very common (1990)	fairly common (1991)	unknown
Himachal Pradesh				
	Bandli WS (41 km ²)	unknown	unknown (1995)	unknown
	Chail WS (46 km ²)	unknown	unknown (1995)	fairly common
	Churdar WS (56 km ²)	unknown	unknown (1995)	unknown
	Daranghati WS (42 km ²)	unknown	fairly common (1994)	fairly common
	Gangul Siahbehi WS (109 km ²)	rare (1991)	unknown (1994)	unknown
	Great Himalayan NP (620 km ²)	unknown	fairly common (1994)	fairly common
	Kais WS (14 km ²)	fairly common (?)	fairly common (1994)	fairly common
	Kalatop-Khajjiar WS (69 km ²)	rare (1991)	fairly common (1994)	fairly common
	Kanawar WS (54 km ²)	fairly common	fairly common (1994)	fairly common
	Khokhan WS (14 km ²)	unknown	unknown (1995)	unknown
	Kugti WS (379 km ²)	fairly common (1992)	fairly common (1993)	common
	Lippa Asrang WS (31 km ²)	unknown	common (1993)	common
	Majhatal WS (92 km ²)	unknown	unknown (1995)	fairly common
	Manali WS (30 km ²)	common (1987)	rare (1991)	rare
	Nargu WS (278 km ²)	unknown	unknown (1995)	unknown
	Rupi Bhaba WS (125 km ²)	very common (1992)	common (1994)	common
	Sangla WS (650 km ²)	common (?)	very common (1994)	common
	Sechu Tuan Nala WS (103 km ²)	unknown	unknown (1995)	unknown
	Shikari Devi WS (214 km ²)	unknown	rare (1994)	rare
	Talra WS (26 km ²)	unknown	unknown (1995)	unknown
	Tundah WS (64 km ²)	common (1992)	very common (1993)	very common
Uttaranchal				
	Askot WS (600 km ²)	fairly common (1988)	rare (1994)	rare
	Corbett NP (521 km ²)	unknown	rare (1993)	rare
	Govind WS (953 km ²)	fairly common (1988)	rare (1992)	rare
	Kedamath WS (975 km ²)	fairly common (1981)	fairly common (1994)	fairly common
	Nanda Devi BR (2,237 km ²)	fairly common (1983)	fairly common (1993)	fairly common
	Valley of Flowers NP (88 km ²)	unknown	fairly common (1995)	fairly common

Table 1. (continued)

State	Relative abundance		
	Past (year)	Recent (year)	1999
Protected area ^a (Area)			
West Bengal			
Buxa TR (759 km ²)	unknown	unknown (1995)	rare
Neora NP (88 km ²)	unknown	unknown (1995)	common
Mahananda WS (39 km ²)	unknown	unknown (1995)	unknown
Singalila NP (78 km ²)	unknown	unknown (1995)	rare
Sikkim			
Fambong WS ^b (51 km ²)	unknown	unknown (1995)	unknown
Khangchendzonga NP (1,784 km ²)	unknown	unknown (1995)	common
Pangola NP ^b (108 km ²)	unknown	unknown (1995)	common
Arunachal Pradesh			
Dibang Valley WS and NP ^b (4,149 km ²)	unknown	unknown (1995)	common
Eagle's Nest WS (217 km ²)	unknown	unknown (1995)	common
Mehao WS (282 km ²)	unknown	unknown (1995)	common
Mouling NP (483 km ²)	unknown	unknown (1995)	common
Namdapha NP (1,985 km ²)	rare (1990)	rare (1996)	rare
Pakhui WS and NP ^b (852 km ²)	unknown	unknown (1995)	common
Palin WS ^b (250 km ²)	unknown	unknown (1995)	common
Sessa Orchid WS (100 km ²)	unknown	unknown (1995)	common
Tale Valley WS (25 km ²)	unknown	unknown (1995)	unknown
Tawang WS ^b and NP ^b (300 km ²)	unknown	unknown (1995)	very common
Walong WS ^b and NP ^b (300 km ²)	unknown	unknown (1995)	very common
Meghalaya			
Balphakram NP (220 km ²)	unknown	unknown (1995)	rare
Nokrek BR (80 km ²)	unknown	unknown (1995)	unknown
Nongkhylliem WS (29 km ²)	unknown	unknown (1995)	rare
Mizoram			
Dampa WS and NP ^b (580 km ²)	unknown	unknown (1995)	rare
Ngenpui WS (150 km ²)	unknown	unknown (1995)	rare
Tripura			
Rowa WS (1 km ²)	unknown	unknown (1995)	unknown
Tishna WS (195 km ²)	unknown	unknown (1995)	common

^aWS: Wildlife Sanctuary; NP: National Park; BR: Biosphere Reserve; TR: Tiger Reserve

^bProposed PA.

cies was once abundant in Shimla Ridge and Moral Kanda but has become very rare in the recent past (S. Pandey, Wildlife Institute of India, Dehra Dun, Uttaranchal, India, personal communication, 1995). Questionnaire respondents reported it to be "rare" or becoming rarer in PAs such as Shikari Devi WS, and Manali WS, and its relative abundance is not known in the rest of the PAs and other areas.

Uttaranchal.—Asiatic black bears are present in and near PAs such as Nanda Devi NP and Biosphere Reserve (BR; S. Sathyakumar, 1993, Status of mammals in Nanda Devi National Park, Wildlife Institute of India, Dehra Dun, Uttaranchal, India), and Kedarnath WS, (Sathyakumar 1994), Valley of Flowers NP (R.C. Tewari, 1993, Black bear depredation problems in Chamoli Garhwal, Uttar Pradesh Forest Department, Gopeshwar, Uttaranchal, India), Govind WS (unpublished data 1992), and Askot WS (G.S. Rawat and S. Sathyakumar, 1998, Status of mammals, birds and their habitats in Panchchuli Region, Kumaun Himalaya, Wildlife Institute of India, Dehra Dun, Uttaranchal, India). The Asiatic black bear is also reported from Yamunotri and Gangotri valleys, forested areas in and around Mussourie, Chakrata, Uttar Kashi, Tehri, Bura Kedar, Bageshwar, Dharamghar, and Binsar, the upper

catchments of Ram Ganga, Ladhiya Valley, and in parts of Pithoragarh District. The species has been reported from Corbett NP (J.V. Gruisen, TRAFFIC-India, New Delhi, India, personal communication, 1995) and along the River Ganges in Chilla, Rajaji NP (A.J.T. Johnsingh, Wildlife Institute of India, Dehra Dun, India, personal communication, 1995). Asiatic black bears were reported to be common in and near Nanda Devi BR (Lamba 1987, Tewari 1993 unpublished report), Kedarnath WS (Green 1985, Sathyakumar 1994), and Valley of Flowers NP (Tewari 1993 unpublished report).

West Bengal and Sikkim.—Rodgers and Panwar (1988) define the central Himalayan region in India as northern West Bengal and Sikkim. Survey respondents reported Asiatic black bear in the forested areas of Darjeeling, Kalimpong Hills, and in and near 4 PAs in West Bengal: Buxa TR, Singalila NP, Neora NP, and Mahananda WS.

In Sikkim, the Asiatic black bear is present in Khangchendzonga NP, Pangola NP, Tolung WS, Yaksom, Rathong Valley, Lepcha Reserve, and in suitable undisturbed forested areas between 1,200 and 3,000 m elevation. Of these, Dzongiri, Pangola, and Lepcha areas have Asiatic black bear in higher relative abundance (G. Tiwari, New Delhi, India, personal communication 1995).

Arunachal Pradesh.—With >80% of its area under forest cover, Arunachal Pradesh has a nearly continuous distribution of Asiatic black bear, but there are serious threats from hunting and poaching. This species is reported to be present in suitable undisturbed habitats throughout Arunachal Pradesh, but this state has yet to be scientifically explored.

The Asiatic black bear is reported to be present in 14 PAs in this state. Its presence has been confirmed in and near PAs such as Mehao WS (Katti et al. 1990), Dibang Valley WS, Eagle's Nest WS, Tale Valley WS, Namdapha NP, and in Hot Spring, Ditchu (Lohit District), Tale Valley, Anini Social FD, Mayodia Pass, and Siang (P. Singh, Wildlife Institute of India, Dehra Dun, India, personal communication, 1996). It is very likely that PAs such as Pakhui WS, Sessa Orchid WS, Walong WS and NP, and the proposed Palin WS have Asiatic black bear due to their border with PAs or forested areas in reported bear range. Information on the relative abundance of this species in this state in the past and present is not available. However, hunting pressure from indigenous people and extensive habitat degradation are serious concerns at present.

Mizoram, Meghalaya, and Tripura.—The Asiatic black bear distribution extends into Mizoram, Meghalaya, and Tripura and may also occur in the adjacent states of Manipur and Nagaland, although there are as yet no confirmed records. In Mizoram, Asiatic black bears are present in Dampa WS (Green 1993), and were reported as present in Murlen NP and WS and in suitable undisturbed forested areas in the Mizo Hills. In Meghalaya, it is present in and around Balphakram NP, Nokrek BR (Green 1993) and in suitable undisturbed forested areas

in the Garo, Khasi, and Jaintia hills. It is also reported to be present in Nongkhyllem WS, Saipung RF, and Narpah RF areas. Asiatic black bear populations in this state are seriously threatened due to poaching and the shortening of *jhumming* (shifting cultivation) cycles (A.C. Williams, Wildlife Institute of India, Dehra Dun, India, personal communication, 1996).

According to respondents, the hill ranges in Tripura hold small scattered populations of Asiatic black bear due to the contiguity of hill ranges of Mizoram. Respondents also indicated that it is present in Kailashahar FD, Manu, Kanchanpur FD, Longthorai RF, and Deo RF and probably present in Trishna WS and Rowa WS.

Himalayan Brown Bear: Distribution and Status

The Himalayan brown bear occurs in very low densities in the subalpine and alpine regions (3,000–5,000 m) in the Greater Himalayas and in some parts of trans-Himalayan regions in India. Populations of Himalayan brown bear are largely confined to the northwestern and western Himalayan ranges in India (Fig. 2) and are represented in the states of Jammu and Kashmir, Himachal Pradesh, and Uttaranchal. Very little information exists on the past and present relative abundance of Himalayan brown bear in India (Table 2).

Jammu and Kashmir.—Dachigam NP, Overa WS, Overa-Aru WS, Limber-Lachipora WS, and Kistwar NP have populations of Himalayan brown bear (Green 1993). It is also reported to occur in suitable undisturbed alpine areas of this state and in a few areas north of the main Himalayan range (trans-Himalaya) such as Zanskar valley (Mallon 1991; S.P. Sinha, Wildlife Institute of India, Dehra Dun, India, personal communication, 1995).

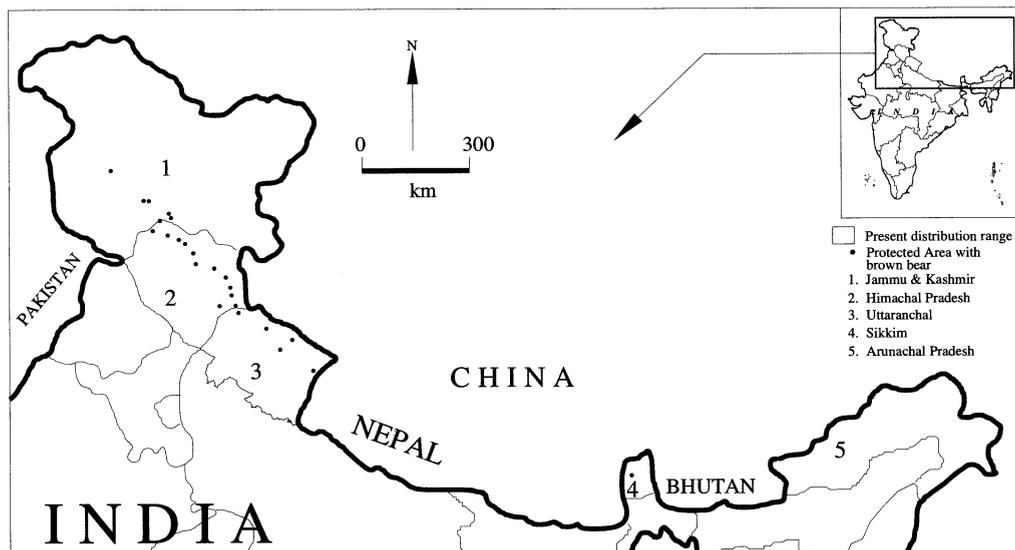


Fig. 2. Approximate distribution map of the Himalayan brown bear in India and protected areas with brown bear populations, 1999.

Table 2. Protected Areas in India with Himalayan brown bear populations and their past and 1999 relative abundance.

State	Protected area ^a (Area)	Relative abundance		
		Past (year)	Recent (year)	1999
Jammu and Kashmir	Dachigam NP (141 km ²)	rare (1989)	unknown (1995)	rare
	Kistwar NP (400 km ²)	unknown	unknown (1995)	unknown
	Limber-Lachipora WS (106 km ²)	unknown	unknown (1995)	unknown
	Overa WS and Overa-Aru WS (457 km ²)	rare (1991)	unknown (1995)	unknown
Himachal Pradesh	Daranghati WS (42 km ²)	unknown	fairly common (1994)	fairly common
	Gangul Stahbehi WS (109 km ²)	unknown	unknown (1995)	unknown
	Great Himalayan NP (620 km ²)	fairly common (?)	rare (1998)	rare
	Kais WS (14 km ²)	fairly common (?)	fairly common (1994)	fairly common
	Kalatop-Khajjiar WS (69 km ²)	unknown	unknown (1994)	rare
	Kanawar WS (54 km ²)	rare (?)	rare (1994)	rare
	Kugti WS (379 km ²)	fairly common (1992)	common (1993)	common
	Lippa Asrang WS (31 km ²)	unknown	unknown (1995)	unknown
	Sangla WS (650 km ²)	rare (?)	rare (1994)	rare
	Rupi Bhaba WS (125 km ²)	rare (?)	rare (1994)	rare
	Sechu Tuan Nala WS (103 km ²)	unknown	unknown (1995)	unknown
Tandah WS (64 km ²)	unknown	unknown (1995)	unknown	
	fairly common (1992)	fairly common (1993)	fairly common	
Uttaranchal	Askot WS (600 km ²)	unknown	unknown (1995)	rare
	Govind WS (953 km ²)	rare (1988)	rare (1992)	rare
	Kedarnath WS (975 km ²)	unknown (1981)	rare (1991)	rare
	Nanda Devi BR (2,237 km ²)	rare (1983)	unknown (1993)	unknown
	Valley of Flowers NP (88 km ²)	unknown	unknown (1995)	unknown
Sikkim	Khangchendzonga NP (1784 km ²) ^b	unknown	unknown	unknown

^aWS: Wildlife Sanctuary; N: National Park; TR: Tiger Reserve

^b*Ursus arctos pruinus*

Himachal Pradesh.—The Himalayan brown bear is present in 13 PAs in Himachal Pradesh (Singh et al. 1990, Green 1993) and in some watersheds outside PAs. Survey respondents reported it to be “fairly common” in Great Himalayan NP, Kais WS, Tandah WS, and Kugti WS. It is “rare” in PAs such as Kanawar WS, Sangla WS, and Ruppi Bhaba WS.

Outside of PAs, respondents reported Himalayan brown bears 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.

Uttaranchal.—The Himalayan brown bear populations in Uttaranchal are present in and near PAs such as Nanda Devi NP and BR (Lamba 1987), Kedarnath WS (Sathyakumar 1994; J. Ram, Kumaun University, Almora, India, personal communication, 1992), 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); their relative abundance in other areas is not known.

Sikkim.—The brown bear, possibly *U. a. pruinus*, is reported as present in the upper reaches of Kanchendzonga

NP and in suitable undisturbed alpine areas in Sikkim (G. Tiwari, New Delhi, India, personal communication, 1995). This subspecies is also reported in eastern Tibet and parts of northern China, eastern Nepal, and Mongolia (Gee 1967; D. Mallon, Derbyshire, United Kingdom, personal communication, 2000).

DISCUSSION

Conservation Problems

Population Threats.—Respondents reported that Asiatic black bear populations in India are largely threatened due to poaching for gall bladder and skins. While the former is believed to be of medicinal value, the latter is for trophy or ornamental purposes. Many Chinese medicine texts recommend Asiatic black bear and brown bear of Asia as source for medicinal bile. Although bears are protected in India, it has usually been difficult to prosecute the accused in poaching cases because of lack of *prima facie* evidence in the courts. Moreover, poaching and subsequent illegal trade across international borders is thought to be widespread. India has long boundaries with Pakistan, China, Nepal, Bhutan, Bangladesh, and Myanmar, much in remote, rugged mountainous terrain.

Thus, it is difficult to police the borders to control cross-border trade.

Growing demand for bear products in Asia have led to serious impacts on bear populations in India. According to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), between 1975 and 1993 about 1,307 kg of bear gall bladder were reported in international markets along with 11,667 kg, 44,219 units, 750 cartons, and 500 boxes of bear derivatives (Mills et al. 1995). For the same period, about 4,136 kg of gall bladder was also reported from Republic of Korea, representing another 68,933 bears (at 60 grams of bile/bear) killed for trade. The retail price of bear gall bladder in California, USA, is about US \$1,200–2,000/gm, and it is up to US \$500/gm in South Korea (Mills et al. 1995).

In Arunachal Pradesh and the northeastern states, indigenous people hunt black bear for its skin. For example, the “Nishi” indigenous people wear bear skin on the back of their neck and use them in making *dao* (knife holder). Huts of indigenous people often display wild animal skulls and skins, including many from Asiatic black bear.

Himalayan brown bears in India are threatened largely due to poaching to reduce predation on livestock. Migratory shepherds (*gaddis* and *bakkarwals*) in Himachal Pradesh often eliminate Himalayan brown bears to reduce livestock depredation. Poaching for skins or trophies is, however, very rare.

Human–Black Bear Interactions.—One of the serious limiting factors for Asiatic black bear conservation in India is the response of people to human–black bear conflicts. Reports of livestock killing by Asiatic black bear and attacks on humans to the Forest and Wildlife Department are common, largely in the north western and western Himalayan region. For example, in Chamba District of Himachal Pradesh, the number of Asiatic black bear attacks on humans has steadily increased from 10 in 1988–89 to 21 in 1991–92. For the same period, livestock killed by black bears also increased from 29 to 45 (P. Thapliyal, Forest Department, Himachal Pradesh, India, personal communication, 1995). Similarly, in Chamoli District of Uttarakhand, the number of such cases increased from 1 in 1990–91 to 16 in 1992–93 (Tewari 1993, unpublished report). Reasons for the increased incidence of reported cattle killing and attacks on humans by Asiatic black bear may be: (1) shrinking Asiatic black bear habitat due to extension of agricultural lands, human encroachment, and habitat degradation, leading to increased use of agricultural lands by bears; (2) increasing human population in and around PAs and forested areas and increasing dependency on forests for human needs, leading to increased frequency of bear–human encounters; and (3) increasing awareness among local people regarding compensation

paid by the government for damages to humans and livestock by wildlife, leading to an increase in the proportion of incidents reported. Any increase in black bear populations in the recent past is very unlikely, with the exception of a very few undisturbed areas.

Habitat Threats.—The potential Asiatic black bear and Himalayan brown bear habitat in India is estimated to be about 14,500 km² and 4,300 km², respectively, of which, in both cases, <5% is protected under the existing PAs (National Wildlife Database, Wildlife Institute of India, Dehra Dun, India, 1998). Throughout India, there are major threats to Asiatic black bear and Himalayan brown bear habitats. In Jammu and Kashmir, the political unrest and associated activity prevent effective habitat protection. In Himachal Pradesh and Uttarakhand, habitat degradation is largely a result of human dependency on forests for fuelwood and fodder, as well as the extraction of other forest products such as montane bamboo (*Arundinaria falcata*, *Chimnobambusa jaunsarensis*, *Thamnocalamus falconeri*, *T. spathiflorus*), and on alpine meadows for medicinal plant collection and extensive livestock grazing. In Arunachal Pradesh and Sikkim, habitat loss is mainly due to development activities. In the northeast states, *jhumming* 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 any mandate to protect wildlife or their habitats in these areas.

Management

Both bear species are listed as “vulnerable” in the Red Data Book (International Union for Conservation of Nature and Natural Resources [IUCN] 1974) but not listed as “threatened” in the 1996 Red List of Threatened Animals (IUCN 1996). Both are also listed on Appendix I of CITES (1992) and on Schedule I of the Indian Wildlife (Protection) Act (MoEF 1972) and its 1991 amendment. TRAFFIC-India monitors trade of this species and its products. Forest Departments have started paying compensation for humans injured or killed by black bear and livestock killed by bears.

One intent of the Forest Conservation Act 1980 (MoEF 1980) was to curb habitat loss due to deforestation. This act mandates a shift from commercially oriented forest management to conservation-oriented management. The National Wildlife Action Plan (MoEF 1983) was launched in 1983 to establish and manage a network of PAs and to restore habitat and protect wildlife in multiple-use areas.

The number of PAs in India has risen from 131 in 1975 to 566 as of 1 January 2000, and there are proposals for new and modified PAs, which would raise the number of PAs to 858. In total, this would protect and manage 187,192 km², which is 5.7% of India’s area (Rodgers et

al. 2000).

Changes in Relative Abundance of Asiatic Black Bear

Prior to this questionnaire (1994–95), there was no information on the relative abundance of Asiatic black bear in PAs. From this survey, information on the relative abundance of Asiatic black bear was available from 17 PAs, and as of 1999 was available for 44 PAs. An analysis of changes in the relative abundance of Asiatic black bear in these PAs as reported by respondents indicate lower abundance for 6 cases, higher abundance in 3 cases, and no change in 8 cases. The relative abundance of Asiatic black bears outside PAs is not known, but in general populations seem to be declining in most areas.

Changes in Relative Abundance of Himalayan Brown Bear

Prior to this questionnaire in 1994–95, there was no information on the relative abundance of Himalayan brown bears in PAs. From this survey, information on the relative abundance of Himalayan brown bear was available from only 12 PAs, and as of 1999 it was available for 14 PAs. However, there remains insufficient information to assess changes in the relative abundance of Himalayan brown bears in these PAs.

CONSERVATION RECOMMENDATIONS

The proposal for declaring new PAs and extending existing PAs in the Trans-Himalayan and Greater Himalayan regions of India should be executed by the State Forest and Wildlife Departments as soon as possible. Large PAs are needed to maintain viable populations of Asiatic black bear, Himalayan brown bear, and other larger mammals. Over 70% of the PAs with bear populations are <500 km² and suffer from human and livestock pressures from within and outside. Identifying forested areas adjacent to PAs and forest corridors between PAs is crucial. Examples of such areas are: Panthabis, Chota, and Bara Bangal areas in Himachal Pradesh; Reserved Forest areas adjacent to Kedarnath WS and Valley of Flowers NP; and forested areas adjacent to Sangla WS in Himachal Pradesh and Govind WS in Uttaranchal.

To control poaching and smuggling requires 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 programs for the Indian Army, border police personnel, and the general public are needed. The Government should regulate all developmental activities, such as dam and road construction in Sikkim and Arunachal Pradesh, by ensuring

completion of Environmental Impact Assessments prior to project approval. The short cycle of *jhumming* in north-eastern states needs to be replaced with longer cycles.

Status surveys should be conducted for Asiatic black bear and Himalayan brown bear in most parts of Sikkim, West Bengal, Arunachal Pradesh, and other northeastern states. Monitoring of Asiatic black bear and Himalayan brown bear populations based on direct and indirect evidence in PAs must be initiated.

Scientific research on the ecology of Asiatic black bear and Himalayan brown bear is necessary, as information on food and feeding habits, habitat utilisation, and ranging patterns are crucial for the long-term conservation and management of these 2 species in India.

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