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The Ministry of Environment and Forests Government of India

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NATIONAL BEAR CONSERVATION **AND WELFARE ACTION PLAN 2012**

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The Ministry of Environment and Forests Government of India

NATIONAL BEAR CONSERVATION AND WELFARE ACTION PLAN 2012

Editors:

S. Sathyakumar, Rahul Kaul, NVK Ashraf, Aniruddha Mookerjee and Vivek Menon

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Conservation Partners:

WSPA

IFAW

November 2012









जयंती नटराजन Jayanthi Natarajan





राज्य मंत्री (स्वतंत्र प्रभार)
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Message

India is home to four of the eight species of bears in the world and these four species exist across 26 states in India. This indicates the wider range the bears occupy and resilience this life form exhibits among all the wild animals. In the face of increasing pressures of population on bear habitat in India, we face an urgent need to look at long-term conservation for these species. In this context, the 21st International Conference on Bear Research and Management being held in New Delhi will be very relevant for planning action on conservation of bears.

I am happy to note that the Ministry of Environment and Forests is bringing out the National Bear Conservation Action Plan, which plans for the conservation and management of four species of Bears from 26 states across India. I am sure that this document, which is a result of intensive field work, consultative meetings and workshops will be helpful in providing effective measures for ensuring conservation of bears in the wild.

I am delighted that this action plan is released at an international conference hosted by India that further puts the spotlight on the urgent need for bear conservation in India.

(Jayanthi Natarajan)





सचिव भारत सरकार पर्यावरण एवं वन मंत्रालय Secretary Government of India Ministry of Environment and Forests

Message

It gives me great pleasure that the MoEF, Government of India is hosting the 21st International Conference on Bear Research and Management in New Delhi.

Four species of bears range across 26 states of our country in India and this makes it more important to take a serious note of the need for conservation of bears that have always been an integral part of the wilderness and biodiversity value of the forests.

It is in this context that the Wildlife Institute of India and Wildlife Trust of India initiated the field work and consultative meetings in all the states that went into the development of the State Action Plans for bear conservation. Compilation of an integrated action plan for the conservation and welfare of bears in India is the outcome of these efforts. The state forest departments have been instrumental in following through on the work that has gone into preparation of this pioneering document.

I am delighted that this action plan is being released at an opportune time during the IBA 2012 in New Delhi that brings to forefront the issues related to conservation of bears in India.

(T. Chatterjee)



PREFACE

Bears have been an integral part of the life in India for centuries. Their co-existence alongside humans is a testimony to culture, mythology, literature, and popular imagination. Bears have been revered as Gods, feared as adversaries, used for performances, kept as pets, hunted for sport and meat, and killed in retaliation to protect crops and livestock.

Over the years habitat loss, fragmentation and degradation due to rapid development, and natural resource dependency of local communities has been slowly taking its toll on the species. Although bear parts have been minimally used in some traditional Indian medicine systems, the growing demand in the international market, the live cub trade and the increasing frequency of conflict with humans has led to declining wild bear populations in India.

The IUCN/SSC Bear Action Plan (1999) had compiled information on the distribution, status, threats and conservation actions for the Himalayan brown bear, Asiatic black bear and Sloth bear. In 2006, a similar but improved effort was made for all the bear species of India in a document, "Understanding Asian Bears for their Future," published by the Japan Bear Network. These plans were successful in collating large swathes of information on the distribution, status, and habitat of species or groups of species, and in identifying the gaps in knowledge and conservation priorities. However, their relevance to practical conservation action was often unclear.

There was, thus, an urgent need to develop an action plan through an inclusive participatory process that would lead to a broad ownership which would improve the prospects of its implementation and, therefore, the sustained conservation of the species. Given this mandate by the Ministry of Environment and Forests of the Government of India, we adopted the guidelines provided by the IUCN/SSC (2008) "Strategic Planning for Species Conservation: An Overview" that included Status Review. Vision for saving the species, objectives that needed to be met to achieve the Goals, and Actions that would accomplish those Objectives.

In preparing this logical framework we adopted the felt need approach as suggested by the ministry and carried out field surveys and consultations in 26 bear range states across India. The approach and methodology are presented in Chapter 2.0 and the National Conservation and Welfare Action Plan along with conservation actions are presented in Chapter 3.0. An overview of the status of captive bears in India, the relevance of community participation in bear conservation, rehabilitation of the bear dancing community of kalandars, rehabilitation of orphaned bears back into the wild and conservation education are discussed in Chapters 4.0 and 5.0. The state plans are presented individually for the 26 bear range states in Chapter 6.0.

During the course of data collection, it became evident that the bear as a species has not gained much policy attention even though its spread across the nation is wider than other more charismatic species. The very fact that it is found in 26 out of 32 states qualifies it to be considered an appropriate umbrella species. However, our major challenge was the lack of information about

bears as the species was never on states' conservation agenda. The only exceptions were states confronted with human-bear conflict and therefore those that needed strategies to deal with this issue. Thus despite the enthusiasm to create specific plans what tended to emerge were generic suggestions. However, there are enough species and area specific interventions suggested here to make a significant beginning. There is an urgent need to sense this in greater detail in the next phase.

This is the first comprehensive state-specific attempt to produce action plans for bear species in India which is expected to evolve over time to include new learnings from its implementation. The release of this Action Plan during the 21st International Conference on Bear Research and Management, New Delhi, marks a singular change in the way India has looked at its species.

Editors

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A publication such as this would have not been possible without the cooperation, participation, and support from various institutions and individuals. We thank the following institutions/individuals who helped us in the preparation and publication of the National Bear Conservation and Welfare Action Plan.

The Ministry of Environment and Forests, Government of India, State Wildlife and Forest Departments of 26 Bear Range States of India, viz., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, and West Bengal for their active support and cooperation.

At the Ministry of Environment and Forests, Mr. S.S.Garbyal, Additional Director General of Forests (Wildlife), his predecessor, Dr. Jagdish Kishwan, Dr. S.K. Khanduri, Inspector General of Forests (Wildlife), Mr. Prabhat Tyagi Joint Director (Wildlife), Dr. B.S. Bonal, Member Secretary, Central Zoo Authority and the Principal Chief Conservators of Forests (Wildlife) and Chief Wildlife Wardens of the 26 bear range states, protected area and field managers are all thanked for their active participation during the consultations.

At the Wildlife Institute of India, Dehradun, we thank Mr. P.R. Sinha, Director, Dr. V. B. Mathur, Dean, for providing the necessary facilities and cooperation. Mr. Qamar Qureshi, Scientist & Incharge Computer & GIS Cell, Mr. Ninad Shastri and Ms. Samhita Bose are thanked for their help in the preparation of bear distribution maps.

This plan would not have been possible without the support of our conservation partner - World Society for Protection of Animals (WSPA), providing the necessary financial assistance for a majority of the state plans leading to the National plan.

We are also thankful to the International Fund for Animal welfare (IFAW) for providing financial and technical support for the northern India state plans contributing to the National plan

We thank all the authors for contributing their respective chapters and working with the editorial team to get this compilation into a final shape.

At the Wildlife Trust of India, we wish to thank the efforts put in by the Heads and members of the teams that carried out the field consultations in the different States and for help in data analysis and report writing. Dr. Sandeep Kr Tiwari and Dr. Prajna Panda, are thanked for their efforts in execution of the field consultations, state and national meetings, and the compilation of the action plan. While Dr. Krishnendu Mondal had painstaking worked through the drafts of the compilation, Ms. Rupa Gandhi Chaudhury and her team worked on the layout and design, and both done under pressure of publication deadline. We also thanks Ms Smitha Bodhankar and Ms Shreya Chandola for their inputs into maps and Mr Dibyendu K. Mandal and Ms Pragya Chaube for their logistical support. We thank all of them for their untiring efforts.

Editors

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THE NATIONAL BEAR CONSERVATION AND WELFARE ACTION PLAN EXECUTIVE SUMMARY

Since the publication of the IUCN/SSC Bear Action Plan (1999) that included country reports for the Himalayan brown bear, Asiatic black bear, and the Sloth bear in India, there has been substantial increase in the information on the bears in India particularly on status, distribution, and conflicts. While the growing demand for bear parts in the international market, retaliatory killings and live cub trade have led to declining wild bear populations, rapid development has led to habitat loss and degradation. Bear management issues in India range from protecting bears and their habitats to managing the increased incidences of bearhuman interactions and dealing with local communities who depend on bear habitats for their livelihood. There was a need to develop an action plan that would cater to region/state issues through participatory processes which would ensure ownership and improve prospects for implementation and ultimately lead to sustained conservation successes. Following the IUCN guidelines "Strategic Planning for Species Conservation: An Overview" (2008), the National Bear Conservation and Welfare Action Plan was developed. Field surveys and consultations were carried out in 26 bear range states of India during 2011-12 followed by a national level consultation.

Recent field surveys and consultations revealed that there were minor changes in the distribution of Himalayan brown bear and Asiatic black bear and some enhancement in the knowledge of distribution ranges of sun and sloth bears in India. The potential brown bear distribution range (~36,000 km2) in 3 northern states would support ~300 bears, and

the potential black bear distribution range (~270,000 km2) covering 12 states in the Himalaya and northeast hills would support about 5,400 to 6,750 black bears. Sun bear is now patchily distributed in the six northeastern states with a potential distribution range of about 12,000km2. The sloth bear is the most widely but patchily distributed bear species in India found in 19 states and the potential distribution range (~400,000 km2) would support over 20,000 sloth bears. India has ~ 800 bears in zoos, captive facilities, and rescue centres, mostly sloth and some black bears.

In India, bears are threatened due to poaching for bear parts, and retaliatory killings to reduce crop/livestock depredation. The black and sun bear is also hunted for consumption in some parts of northeast India. Habitat loss, degradation and fragmentation are largely due to development projects, encroachment, and human dependence on forests for fuel wood, fodder and other forest products. In the northeast Indian states, jhum (shifting cultivation) and conversion to commercial plantations has led to serious impacts on black and sun bear habitats. Most of the bear habitats also suffer anthropogenic pressures and many bear habitats that occur outside the PA network but form corridors or links to protected bear populations remain unprotected. With the exception of a few studies, scientific information on bears in India is still wanting. Apart from a few wildlife managers and frontline staff, most of the field managers and staff require capacity building. Other stakeholders require sensitization and training in order to help protection of black bear, its habitat, and in reducing black bearhuman conflicts. Existing levels of awareness and education are insufficient to strengthen conservation of black bear and other wildlife species or their habitats. Despite an array of policies and legislation, conservation efforts for bears and their habitat have faced limitations due to want of site specific policies or flexibility in adaptation of existing policies.

All the bears of India are listed in Appendix I of CITES (GoI 1992), and in Schedule I & II (ABB) of the Indian Wildlife (Protection) Act as amended in 2003 (GOI 1972, 2003) thereby assuring highest degree of legal protection in India. The consolidation of the PA network through creation of protected areas (PA) including new categories such as Conservation Reserve and Community Reserve, rationalization of PA boundaries, stricter regulations for forest and environmental clearances, have contributed significantly to the protection to bear and its habitats. Management of bears in zoos and rescue centres is now improving with better facilities and technical inputs from national and international agencies, including orphan bear rehabilitation and welfare.

Some of the recommendations proposed by stake holders to control poaching/hunting of bears included: (i) strengthening existing network of informers and various law enforcing agencies, including monitoring of wildlife crimes at Inter-State check posts and international border; (ii) creating awareness and using local communities to curb bear hunting/poaching for consumption or the illegal trade in bear parts in some state of northeast India; (iii) Develop a process for awards/incentives to wildlife staff/ informers who help in wildlife protection or in curbing the illegal trade in bear parts; and (iv) Conduct surveys/studies to assess the illegal trade in bear parts.

To reduce bear-human interactions, the following were recommended: (i) awareness creation on bear behavior and the philosophy of co-existence in addition to strengthening of indigenous conflict reduction measures to reduce crop and livestock depredation by bears; (ii) strengthening the conflict management teams with equipment, training, and capacity building and improvement in the current mechanism of assessment of economic losses of crop /livestock depredation by bear & other wildlife.

For bear habitat management the recommendations were to: (i) continue protection to bear habitats and prevent habitat loss due to conversion for agriculture/horticulture and developmental projects; (ii) restore degraded bear habitats through existing government programs with the support of local communities; and (iii) identify critical bear habitats and corridors outside PA network and manage them as Community or Conservation Reserves with approval and support from local communities.

Under Research and Monitoring, the recommendations were to: (i) confirm presence/absence of bears in gap areas by camera trapping / genetic studies, and sign surveys along with periodic monitoring; (ii) estimate bear populations using non-invasive methods; (iii) investigate bear-human interactions, food habits, ecology, and movement and ranging patterns of bears using GPS/ satellite telemetry; and (iv) enhance technical inputs for implementation of research, management and conservation plans through specialized institutions/experts in the concerned field.

For capacity building, it was recommended that the wildlife personnel in all bear range divisions be trained in wildlife management and in the management of wildlife-human conflict along with members from local communities (Joint Forest Management and Ecodevelopment Committee). For the researchers of the State Forest/ Wildlife Department, training on field methods to conduct biodiversity assessments, ecological studies, and monitoring was recommended.

Under Conservation Education, enhancement of awareness of all stakeholders on bears, wildlife conservation, the philosophy of co-existence through appropriate communication materials, sensitization of judiciary, public representatives, officials of the Line Departments including military, Para-military forces on wildlife crimes and conservation were recommended.

The recommendations made under policy and legislation were: (i) allocation of funds for rewarding local communities who surrender their guns, and providing them with alternate means of sustenance using existing government programs, particularly for the northeast Indian States; (ii) allocation of funds

and grant of powers to disburse compensation amounts at the Forest / Wildlife Division Level for cases dealing with human injuries/deaths due to bears / other wildlife; (iii) development of a policy to strengthen Inter-State and Trans-boundary cooperation and collaboration for conservation of bears in the region; and (iv) Involving Corporate / Developmental Sectors in biodiversity conservation as part of their Corporate Social Responsibility.

Some of the above mentioned recommendations that are currently underway particularly with regard to community participation in bear conservation, rehabilitation of Kalandars, rehabilitation of orphaned bears back into the wild have been dealt with in the case studies. The National and State Bear Conservation and Welfare Action Plans would be supported through new initiatives or dove-tailed with the existing conservation programmes such as Project Tiger, Project Snow Leopard and others.

1.0

GENERAL INTRODUCTION TO THE BEARS OF INDIA

Bears are mammals that belong to the family Ursidae and are represented by eight living species that are widely distributed in a variety of habitats throughout the Northern Hemisphere and partially in the Southern Hemisphere. Bears are found on the continents of North America, South America, Europe, and Asia. Common characteristics of modern bears include a large body with stocky legs, a long snout, shaggy hair, plantigrade paws with five non-retractile claws, and a short tail. Although carnivores, bears are largely omnivorous with the exception of the polar bear that is mostly carnivorous and the giant panda that feeds almost entirely on bamboo (Mac Donald, 2001).

Bears are usually solitary with the exception of courting individuals and mothers with their cubs. They are generally diurnal, but may also be crepuscular or noctural, particularly in and around human habitations. Bears have excellent sense of smell and are good climbers and swimmers. Many bears of northern regions go into a period of dormancy during winters colloquially called 'hibernation' (Mac Donald, 2001).

Bears are good indicators of habitat quality as they occupy the position of an apex predator in a few ecosystems. They are unique in the sense that they could feed on plants, prey on other species, as well as scavenge dead animals. They play a critical role in influencing vegetation in their habitats as they are both seed destroyers as well as seed dispersers. Around the world, bears and humans have co-existed for centuries as evident from the references of bears in ancient art, culture, folklore, epics, religion, and literature.

Of the eight bear species of the world, four are distributed in India.

1.1 The Himalayan brown bear (*Ursus arctos isabellinus*)

Vernacular names: lal bhalu, bhura bhalu (Hindi), haput (Kashmiri), denmo (ladakhi)

The brown bear is widely distributed in the northern hemisphere of America, Europe and Asia. It is a large bear usually dark brown in colour, though it can vary from a light creamy shade through to dark forms. It has a distinctive hump on the shoulders, a slightly dished profile to the face, and long claws on the front paws

(http://www.bearbiology.com). Male brown bears weigh 130-400 kg and females weigh 80-230 kg (Prater, 1980; Roberts, 1997; Mano, 2006). Female brown bears reach sexual maturity at 3.5 to 7 years of age while males although sexually mature at a similar age would enter the breeding population around 8-10 years of age. Mating takes place from early May to the middle of July but implantation does not occur until about October or November. The young are born from about January to March. The litter size ranges from one to four, but two is most common. Cubs remain with their mothers usually for at least two-and-a-half years, so the most frequently a female can breed is every three years (http://www.bearbiology.com). In Asia, brown bear are distributed in Turkey, Iran, Afghanistan, Pakistan, India, Nepal, China, Mongolia, Russia and Japan (Mano, 2006; Sathyakumar, 2006b). The subspecies of brown bear found in India is the Himalayan brown bear *U.a.* isabellinus and they are distributed in the subalpine and alpine regions

of the Himalaya and in some parts of the Trans-Himalaya (Sathyakumar, 2006b). They largely feed on alpine vegetation but occasionally kill livestock, weak or wounded wild ungulates, small mammals or scavenge dead animals.

1.2 Asiatic black bear (Ursus thibetanus)

Vernacular names: kaalal bhalu, reech (Hindi), haput (Kashmiri),

The Asiatic black bear is a medium sized black-coloured bear with a lightish nuzzle and ears that appear large in proportion to the rest of its head, especially when compared with other bear species of bears. It has a prominent crescent-shaped white mark on its chest, and a ruff of longer hair on their necks (http://www.bearbiology.com). Black bears are good tree climbers, and often create tree nests in the process of breaking branches inward toward the trunk to obtain fruits and nuts (Mac Donald, 2001). Adult males range from 50-200 kg and adult females from 40 to 125 kg (Prater, 1980; Oi et al., 2006). Sexual maturity of females occurs at 3-4 years of age. Mating occurs during late summer or early autumn with young being born in February. Cubs are weaned at less than six months old, but may stay with their mothers for two to three years (http://www.bearbiology.com). Asiatic black bears live predominantly in forested areas, especially in hills and mountainous areas. In summer, they have been reported at altitudes over 4,300 m in the Himalaya (Sathyakumar et al., 2011) to lower elevations (70m) in the foot hills (Sathyakumar and Choudhury, 2007). Apparently, they den for winter sleep in the northern parts of their range. Black bears are distributed over a wide area of southern Asia extending from Iran, through Afghanistan, Pakistan, India, Nepal, Bhutan, China, Myanmar, Taiwan to Japan (Oi

et al., 2006), In India, black bears are distributed all along the southern side of the Greater Himalaya (1000-4300m) and in the hills of northeast Indian States (> 70m) (Sathyakumar and Choudhury 2007). Asiatic black bears have been reported to feed on a wide range of foods, including fruits, bees' nests, insects, invertebrates, small vertebrates, and carrion. They occasionally kill domestic livestock, but the degree to which they prey on wild hoofed mammals in unknown (http://www.bearbiology.com).

1.3 Sun Bear (Ursus malayanus)

Vernacular names: Beruang Madu (tribal)

Sun bear is the smallest of bears with the shortest hair (Mac Donald, 2001). It has a short sleek, black coat, short muzzle that is gray to faint orange in color. The crescentshaped chest patch is yellowish or light coloured. The muzzle is shorter and lighter colored than that of a black bear and in most cases the white area extends above the eyes. The ears are small and round. The paws are large and the soles are naked, which is thought to be an adaptation for climbing trees. The claws are large, curved and pointed, inward curved front legs, proportionately large feet, strong jaw muscles and disproportionately large canines and the longest tongue of all bears (Fredriksson, 2006). Adults weigh 27 to 65 kg and males are generally 10 to 20% larger than females. (http://www.bearbiology.com). Not much is known about the breeding of Sun bears and it appears that they do not have a definite breeding season and usually one cub is born (Schwarzenberger et al., 2004). Tropical evergreen rainforest that receives high annual rainfall is the sun bear's main habitat in Borneo, Sumatra, and peninsular Malaysia. In mainland Southeast Asia, sun bears inhabit seasonal ecosystems with a long

dry season (3-7 months), during which rainfall is <100 mm per month. Seasonal forest types are usually interspersed in a mosaic that includes semi-evergreen, mixed deciduous, dry dipterocarp (<1000 m elevation), and montane evergreen forest (>1000 m). Sun bears occur in mainland Southeast Asia as far west as the north-eastern states of India (Johnsingh, 2003; Choudhury, 2011), as far north as Yunnan Province in China, and south and east to Sumatra and Borneo, respectively (Fredriksson, 2006).

Sun bears are omnivores, feeding primarily on termites, ants, beetle larvae, bee larvae and honey, and a large variety of fruit species, especially figs (*Ficus spp.*), when available. Occasionally, growth shoots of certain palms and some species of flowers are consumed, but otherwise vegetative matter appears rare in the diet. In Bornean forests, fruits of the families Moraceae, Burseraceae and Myrtaceae make up more than 50% of the fruit diet (Wong et al., 2002; http://www.bearbiology.com).

1.4 Sloth Bear (Melursinus ursinus)

Vernacular names: bhalu (hindi), Karadi (Tamil, Malayalam)

Sloth bear is small bear with a shaggy coat especially over the shoulders with grey and brown hairs mixed in with the dark black coat. It has a distinctive whitish or yellowish chest patch in the shape of a wide U, or sometimes a Y if the lower part of the white hairs extends down the chest. The snout is light coloured and mobile. The nostrils can be closed voluntarily. It is thought that the reduced hair on the muzzle may be an adaptation for coping with the defensive secretions of

termites. Adult males weigh 80-140 kg and females weigh 55-95 kg (Prater, 1980; http://www.bearbiology.com). Physical adaptations for digging and eating insects include long, slightly curved claws, a broad palate for sucking, the absence of two front upper incisors, and large, protrusible lips (Mac Donald, 2001). Sloth bears are found in forested areas and in grasslands, predominantly at lower elevations. They apparently favor drier forests and have been reported to prefer areas with rocky outcrops. Most sloth bears are found in India and Sri Lanka, but they have also been reported from Bangladesh, Nepal, and Bhutan (Garshelis et al., 1999; Johnsingh, 2003; http://www.bearbiology.com). Mating occurs in May, June, and July. In captivity, mating pairs come together for only one or two days during which time there may be considerable vocalizing and fighting. Gestation lasts from six to seven months. Most litters consist of either one or two cubs, but litters of three cubs have been reported. Cubs are born in earth dens and apparently do not leave them until they are two to three months old. The cubs stay with their mothers who carry them on their backs until they are nearly two or more years of age. (Joshi et al., 1999; http://www.bearbiology.com). Sloth bears feed extensively on termites and have special adaptations for doing this: The naked lips are capable of protruding, and the inner pair of upper incisors are missing, which forms a gap through which termites can be sucked. The sucking noises made by feeding in this manner can apparently be heard from over 100 m away. They also eat eggs, other insects, honeycombs, carrion, and various kinds of vegetation including fruits. (Joshi et al. 1997; Gokula et al., 1995; Joshi et al., 1997; http://www.bearbiology.com)

2.0

BEAR CONSERVATION ACTION PLANNING

2.1 Background and Objectives

India does not have a Conservation Action Plans for Bears in India. The IUCN/SSC Bear Action Plan (1999) had two chapters that compiled information on the distribution, status, threats and conservation actions for the Asiatic black bear and Sloth Bear. In 2006, a similar but improved effort was made for all the bear species of India for the compilation "Understanding Asian Bears for their Future" published by Japan Bear Network, 2006. These plans have been very successful in collating large quantities of useful information on the distribution, status, and habitats of species or groups of species, and in identifying the gaps in knowledge and conservation priorities.

However, such plans had lots of useful information they were mostly used by biologists, and their relevance to practical conservation programmes was often unclear, because (a) it was compiled by experts of the Specialist Groups whose knowledge was confined to areas where they had worked or based on secondary information collated from individuals working in such areas; and it was not clear who were the target audiences. These plans are only tools and are of no use without effective implementation.

India has four species of bears that are seriously threatened due to poaching for illegal trade in bear parts, live-cub trade, and retaliatory killings to reduce conflicts; and also due to habitat loss, degradation and fragmentation. Therefore, there was an urgent need to develop an action plan through inclusive, participatory processes that lead to

broad ownership that would improve prospects for implementation and, ultimately, sustained conservation successes.

2.2 The Approach

To accomplish this, the guidelines provided by the IUCN/SSC were adopted. The Species Conservation Planning Task Force SSC/IUCN developed the guidelines for "Strategic Planning for Species Conservation: An Overview" (2008) which emphasizes on a Status Review, with Vision and Goals for saving the species, Objectives that need to be met to achieve the Goals, and Actions that will accomplish those Objectives. The steps involved in preparing a logical framework approach.

2.3.1 Start up workshops and survey design

A start-up meeting was held at WTI HQ on 5th September, 2011 during which the purpose and process for the development of the National Bear Action Plan were discussed. Following this, the compilers of this plan presented the approach and methodology for the State Consultations and field surveys along the lines of the IUCN/SSC Strategic Planning for Species Conservation. This included: literature survey, compilation of existing information, gap analysis, and finalization of the data collection formats for field surveys and the Questionnaire Surveys with the field managers. It was decided to use the forest division as the unit of survey. Survey teams were identified for each State for executing the surveys. The identified teams were further oriented with the process of data collection at a workshop held at Bhopal.

2.3.2 The survey teams

The survey teams were constituted based on the area and knowledge of the area. The list of team members that carried out the surveys and consultations in different States of India are provided in Appendix III.

2.3.3 State wide field surveys

A total of 37 persons were involved in the survey. In all, 661 Forest Divisions were visited and data collated from these after interviews with the local divisional forest officers. The exercise occupied man days and involved extensive travel to each of the forest divisions, howsoever remote, in the process covering tens of thousands of kilometers. The bear distribution maps from WII database were used during the surveys for field verification and later refinement in consultation with the field managers, field staff and biologists.

2.3.4 Analysis and Map preparation

Data collected from field were entered in the prescribed formats (MS Excel) and sent to WTI HQs after validation by the Team leaders. Later, the data were summarized and sent to writers for writing up on the status review in the States along with threats and current management practices followed by the forest departments. The maps were also refined, based on the information produced by the surveys.

2.3.5 Consultative meetings

State Level

Once the authors wrote their status reviews, these were sent to respective Chief Wildlife Wardens. A state level consultative meeting was held in each state capitals or head

quarters different where the review was presented and the threats discussed and updated. This was followed by a session on development of Vision, Goals, objectives and actions required to achieve the objectives. States (See Append-I) during which the Chief Wildlife Warden, senior officials and field managers participated. In each of these workshops, apart from officers of the forest department, members of the civil society, researchers participated. Between 25-30 persons participated in each meeting that lasted a full day. Twenty six such meetings were were held that included participation of over 750 individuals in the State consultative process which resulted in a log frame specifying the necessary action for each state. From this, a draft action plan was compiled and sent to the respective Chief Wildlife Wardens for their comments.

National level

From the State plans and the action suggested therein, a national plan for bears was evolved and presented to a gathering of Chief Wildlife Wardens or their representatives on 2 November 2012 at New Delhi in a National Consultative meeting. This plan complete with Vision, goal and objectives and actions drew comments from the participants which were incorporated to produce a final National Bear Conservation Action Plan.

The Plan and its limitations

The National bear Conservation Action Plan therefore reviews the four species of bears found in India and provides a prescription of conservation for a five year period in the form of a log-frame. This plan is based on the priority actions suggested by each State for their bears.

At the time of data collection, it became quite

obvious that bear is one species which although reflecting the Indian conservation scenario so closely, more so than some of the more charismatic species, has not got its due, perhaps because it is relatively more common. Therefore no State had a conservation agenda focussed on bear as for some other species. There were exceptions like the States confronted with human-bear conflict and the need to having a strategy to fight this aspect. It also became clear that since bear was not the focus of conservation for most States, information on various aspects such as distribution, numbers, threats and habitats was lacking. Therefore what emerged from the States were generic suggestions which may to a great extent apply to any other species. However, there were several species specific and area specific issues raised which have been captured in the plan.

As a result, the plan, especially the State plans, may look somewhat repetitive in some of the

actions suggested (which are based on either the perception of threats or lack of knowledge). In several cases, like some States in northeast India, where a State may have more than one species of bear, some of them sympatric, the actions suggested for different species tend to be similar since they may occur in similar habitats with similar threats. However since these have been developed independently by the States, without the knowledge what the other states are proposing, the plans, in our opinion, reflect the priority actions suggested by the States for the conservation and protection of the bear species in their States.

This is a first comprehensive attempt to produce action plans for bear species in the States and if implemented will produce enough information to provide a good background for the next edition which may be due in 2018.

3.0

THE NATIONAL BEAR CONSERVATION ACTION PLAN

S. SATHYAKUMAR, R. KAUL, AND N.V.K. ASHRAF

The information on status, distribution, habitat, and threats are presented for all four bear species separately (Sections 3.1 to 3.4) followed by the consolidated Action Plan strategy and recommendations (Section 3.5 to 3.10) and the log frame.

3.1. THE HIMALAYAN BROWN BEAR (Ursus arctos isabellinus)

3.1.1 Distribution and Habitat

In India, the Himalayan brown bear is largely confined to the high altitudes (> 3,000m) of the Himalaya, i.e., the alpine scrub and meadows above timberline, ecologically separated from the forest dwelling Asiatic black bear (Schaller, 1977; Prater, 1980). However, there are a few sites in the Himalaya, where the brown bears use the subalpine forested areas to some extent, thereby overlapping with the distribution range of the black bear (Sathyakumar, 2001; 2006a). The brown bear occurs in very low densities in the subalpine and alpine regions (3,000 to 5,500m) in the Greater Himalayas and in some parts of the trans-Himalayan regions and are confined only to the States of Jammu & Kashmir, Himachal Pradesh, and Uttarakhand (Figure 3.1). There are no confirmed reports on the presence of the Tibetan brown bear (*U.a. pruinosus*) from north Sikkim where it was reported to occur in the past (Sathyakumar, 2001; 2006a).

The potential brown bear distribution range in India is estimated to be about 36,000 km² of which 28,000 km² is in the northwestern and western Himalayan region (the southern side

of the Greater Himalaya) and 8,800 km² is in the trans-Himalayan region of Ladakh (Sathyakumar and Qureshi, 2003; Sathyakumar, 2006a). The brown bear habitats are mostly the alpine scrub or *krummholz*, alpine meadows, glacial moraines and barren slopes. However, they also use the subalpine oak rhododendron and conifer forests occasionally.

The distribution and status of the brown bear in the three States of India are presented below.

Jammu and Kashmir: The brown bear occurs in 8 PAs: Dachigam NP, Gulmarg WS, Hirapora WS, Overa-Aru WS, Limber WS, Lachipora WS, and Kishtwar NP (Appendix-I). It is also present in suitable undisturbed alpine areas in the Forest Divisions (FD) of Lidder, Sindh Marwa, Kishtwar, Poonch and Badheruwah and in the Zanskar and Suru Valleys in Ladakh the Trans-Himalayan region that occurs north of the main Himalayan range (Sathyakumar, 2002; 2006b). It is reported as 'rare' throughout the state except for a few localities such as Overa-Aru WS, Limber-Lachipora (R.Kaul pers. comm.) and Zanskar Valley in Ladakh (Sathyakumar, 2006b) where it is reported to be 'fairly common' during spring or summer months.

Himachal Pradesh: The brown bear is present in 10 PAs in Himachal Pradesh and in some watersheds outside PAs. It is reported as "fairly common" in Kugti WS and Great Himalayan NP, but as "rare" in other PAs. Outside of PAs, it is present 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; 2006b).

Uttarakhand: In Uttarakhand, the brown bear is 'very rare' and occurs in very low densities along a narrow stretch of alpine zone confined to the districts of Uttarkashi, Tehri, Rudraprayag and Chamoli. It is unlikely that the brown bear distribution in India extends as far east up to Nepal (Galbreath et al., 2007. There has been no recent confirmed information on the occurrence of this species east of Nanda Devi (7,817m) and the eastern most distribution limit of this subspecies in India probably ends near Nanda Devi in Chamoli district (Sathyakumar unpublished). The brown bear is present in and around the Nanda Devi NP & Biosphere Reserve (BR) including the Valley of Flowers NP (Kala, 2004), Kaghbusandi, Khiron Valley, Niti Valley; (Lamba, 1987; Sathyakumar, 2006b), Kedarnath WS, Govind WS and in alpine regions of Yamunotri, Gangotri, and Badrinath. Recent surveys in Gangotri NP confirmed brown bear presence in the Nelong Valley (Bargali, 2010; Maheshwari and Sharma, in press).

3.1.2 Population Status and threats

Brown bear population estimates for India vary from ~ 100, based on expert knowledge (Johnsingh, 2003) to ~ 500 based on extrapolation of a density estimate of 1 bear/75 km² for the potential habitat ranged of 36,000 km² estimated by rule-based modeling (Sathyakumar, 2006a). However, based on recent surveys, we estimate the population to be ~300. Lack of scientific information on brown bear population estimates makes it difficult to make any assessment on the changes in the status of

brown bears in India (Sathyakumar, 2006b).

Brown bear is threatened largely due to poaching for bear parts, and retaliatory killings by migratory grazers and local villagers to reduce livestock or crop depredation (Sathyakumar, 2006a).

3.1.3. Protection to Species

The Himalayan brown bear is listed as "Vulnerable" by the IUCN (2012), Appendix I of CITES (GoI, 1992), Schedule I of the Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003), and in Schedule I of the Jammu & Kashmir Wildlife (Protection) Act, 1978 (JKWPA, 1978). Therefore, the brown bear has been accorded highest protection in India. The consolidation of the PA network through creation of PAs including new categories such as Conservation Reserve (CR) and Community Reserve (CMR), rationalization of PA boundaries, stricter regulations for forest and environmental clearances, have contributed significantly to the protection of brown bear and its habitats.

3.1.4 Brown bear Human Interactions

One of the serious limiting factors for brown bear conservation in India is the response of people towards brown bear-human conflicts. Reports of livestock killing by brown bears and occasional attacks on humans are fairly common in the north western and trans-Himalayan regions. Livestock losses due to brown bears were reported by migratory graziers who spend the summer months in high altitude pastures (Sathyakumar, 2001; 2002; 2006a; Rathore, 2008). 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 supervision by children near villages, and (3)

poor or no search effort by villagers to locate missing livestock which were presumed to be killed by brown 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.

3.1.5 Brown bear Habitat Management

Brown bear is threatened due to habitat loss mostly due to developmental projects such as infrastructure development, road building, and other anthropogenic activities. Habitat degradation is due to unsustainable use of alpine regions such as livestock grazing, medicinal plant extraction and other human uses (Kala and Rawat, 1999; Sathyakumar, 2006a). Many important brown bear habitats that occur outside the PA network but form corridors or links to existing population units remain unprotected.

3.1.6 Research and Information:

Scientific information on brown bear is scanty and is limited to a few status and conflict surveys (Sathyakumar, 2001; 2002; 2006a,b;

Sathyakumar and Qureshi, 2003; Maheshwari and Sharma, 2010) and a few intensive studies on brown bear habitat use and human conflicts (Rathore, 2008).

3.1.7 Capacity Building

Apart from some wildlife managers and frontline staff, most of the field managers and staff require capacity building. Other stakeholders require sensitization and training in order to help protection of brown bear, its habitat, and in reducing brown bear-human conflicts.

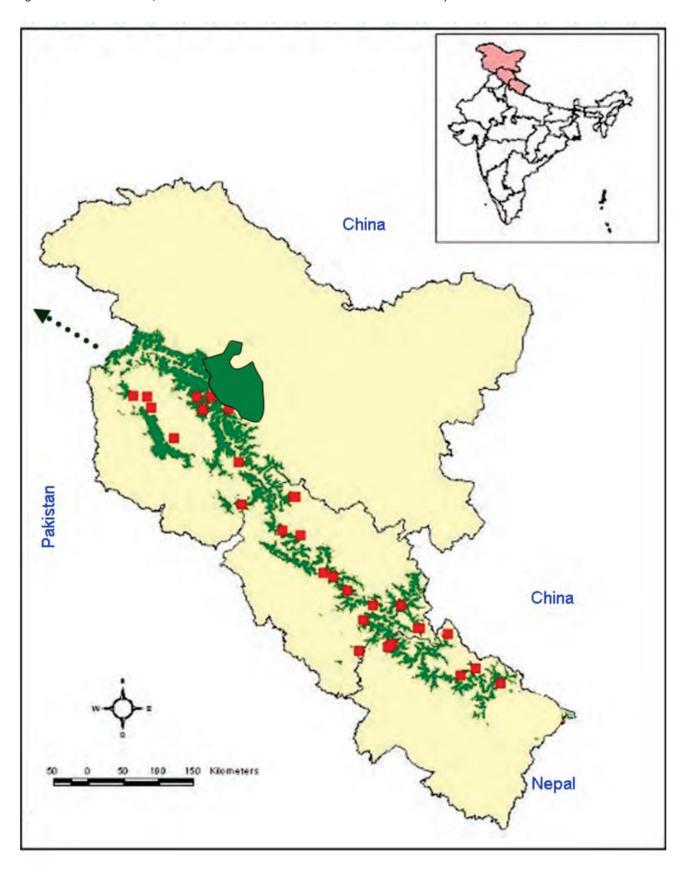
3.1.8. Communication and education

Existing levels of awareness and education are insufficient to strengthen conservation of brown bear and other wildlife species or their habitats.

3.1.9. Legislation and Policy

Despite an array of Policies and Legislation, conservation efforts for brown bear and its habitat have faced limitations due to want of site specific policies or flexibility in adaptation of existing policies.

Fig. 3.1. Himalayan brown bear distribution in India (Jammu & Kashmir, Himachal Pradesh and Uttarakhand States)



3.2. ASIATIC BLACK BEAR (Ursus thibetanus)

3.2.1 Distribution and Habitat

The Indian Himalayan region and the hills of northeast India cover ca. 18% of India's geographical area and probably hold one of the largest populations of Asiatic black bear in Asia (Sathyakumar, 2001; Sathyakumar and Choudhury, 2007). Black bears are continuously distributed in north India, all along the southern side of the Greater Himalayas and the hills of northeast India. They generally inhabits forested habitats ranging from 1,200 m to 3,300 m (Prater, 1980), but also occur in hills and low land forested areas (>70m) of northeast India (Sathyakumar and Choudhury, 2007), high altitude subalpine forests (4,300m) in eastern Himalaya (Sathyakumar et al., 2011), and rarely alpine scrub and meadows as confirmed by photocaptures at 4,230m in the western Himalaya (Sathyakumar unpublished). Black bear distribution range overlaps with that of the sloth bear (< 1,200 m), the Himalayan brown bear (>3,000 m) and the sun bear in north-east India (Choudhury, 1997a,b; Sathyakumar and Choudhury, 2007). The Asiatic black bear is distributed in the Himalayan States of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, and small portions of northern West Bengal. Outside the Himalaya, the black bear is distributed in the hills and edges of plains of northeast Indian States such as Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura (Fig. 3.2 & 3.3). Black bear distribution in India is contiguous with Bhutan, China, Nepal, Pakistan and Myanmar.

The potential black bear distribution range in India is estimated to be $ca. 270,000 \text{ km}^2 \text{ of}$ which $\sim 78,000$ is in the western Himalaya and $\sim 192,000$ in the eastern Himalaya and hills of

northeast India (Sathyakumar and Choudhury, 2007). Black bears occurs in a variety of habitats that range from tropical mixed forests in the edges of hills and plains, lower Himalayan forests to temperate forests and high altitude subalpine oak-rhododendron and conifer forests. They also use human altered forested landscapes such as *jhum* (shifting cultivation) areas, abandoned fields, secondary forests and occasionally alpine scrub and meadows above the tree-line.

The distribution and status of the black bear in the 12 States of India are presented below.

Jammu and Kashmir: The best known populations of black bear in India are from this State. Black bears are reported from 16 PAs (Appendix I) and 20 other areas. They are reported as 'fairly common' in most of the PAs particularly Dachigam NP, Overa-Aru WS, Limber WS, Lachipora WS, and a few CRs such as Bran-Harwan, Khiram-Shikarkgarh-Panyar-Khangund, Khrew-Khonmoh, and Wangat. They are also reported from over 20 other areas and some of these include FDs in Lidder (Pahalgam), Naranaga, Sindh, Wangat, Anatnag, and Reserved Forests (RF) of Gugnar, Bianoi, Pir Panjal, Zaberwan, Bandipora, and Kahai. In Jammu region, black bears are reported from the FDs of Marwa, Rambandh, Batote, Doda, Badhruwa, Kistwar, Poonch, Rajouri, Nowshera, Reasa, Mahor, Udhampur, Jammu, Ramnagar and Bilwar (Sathyakumar, 2001, Sathyakumar and Choudhury, 2007).

Himachal Pradesh: Black bears are reported as fairly common in 21 PAs (Appendix I) particularly Great Himalayan NP, Kugti WS, Tundah WS, Kanawar WS, Khokhan WS, Kalatop-Khajjiar WS, Majhatal WS, and Chail WS. Outside of PAs, black bear are reported to occur in forested areas throughout the State. Notable ones are: Pangi, Bharmaur, Dhaula

Dhar range, Bara Bangal, Chota Bangal, Parbati valley, Pandrabis, Bashleo Pass, Solang and Jagatsukh valleys, upper catchments of Bata, Giri, Sutlej and Yamuna, Shimla ridge, Karsog, Shali, Kandyali, Hatu, Moral Kanda, Ropa valley, Kalpa, and Kaksthal areas (Sathyakumar, 2001; Sathyakumar and Choudhury, 2007.

Uttarakhand: Black bears are present in and around 11 PAs (Appendix I) and fairly common in Nanda Devi NP, Valley of Flowers NP, buffer zones of Nand Devi BR, Kedarnath WS, Govind NP & WS, Gangotri NP and Ascot WS. They occur in very low densities in the middle and lower Himalayan regions of the State including Corbett NP, Rajaji NP, and Mussorie WS. They are reported from 25 FDs including 15 areas outside PAs such as Tons, Uttarkashi, Tehri, Badrinath, Pithoragarh, Narendra Nagar, Chakrata, Ram Nagar, Almora, Bageshwar, Nainital, Kedarnath, Yamunotri and Gangotri valleys, and upper catchments of Ram Ganga and Ladhiya valleys. Rarely, black bears have been encountered in the Tarai region also (Sathyakumar and Choudhury, 2007; Bargali, 2010; Maheshwari and Sharma, in press).

West Bengal: The lower and mid Himalayan forested habitats in the northern parts of the State encompasses the distribution range of black bears. Black bears are present in 5 PAs (Appendix I) of which notable ones are Singalila NP and Neora Valley NP. Other FDs and WDs that have black bears are: Darjeeling, Kalimpong, Kurseong, Jalpaiguri, and Buxa East (Sathyakumar, 2001; Sathyakumar and Choudhury, 2007).

Sikkim: Black bears occurs in forested habitats throughout State (all 4 districts) up to 4,300m and is reported from 8 PAs (Appendix I) and rare in Khangchendzonga NP (Sathyakumar,

2001; Sathyakumar and Choudhury, 2007; Sathyakumar et al., 2011).

Assam: Black bears occur throughout the Himalayan foothills and adjacent plains, hilly tracts south of Brahmaputra in Barail Range, Karbi Plateau and adjacent plains including the low hills of Barak Valley in extreme south spanning 22 districts (Choudhury 1997a, Sathyakumar & Choudhury 2007). They are present in 22 districts including 7 PAs (Appendix I) and fairly common in Barail WS and East Karbi Anglong WS. They are fairly common in the forested areas of Karbi Anglong district (Choudhury, 1993) and North Cachar Hills district (Sathyakumar and Choudhury, 2007).

Arunachal Pradesh: With much of its geographical area under forest cover, this State has a nearly continuous distribution of black bear occurring in suitable undisturbed habitats in all the 16 districts (Sathyakumar 2001). They are reported to occur in and around 11 PAs (Appendix I) and other areas such as Hot spring, Ditchu (Lohit District), Taley Valley RF, Anini Social FD, and Siang districts (Sathyakumar, 2001; Choudhury, 2003; Sathyakumar and Choudhury, 2007).

Meghalaya: Black bear are widely distributed in the State covering all 7 districts and found in all 4 FDs, but they are rare and reported from in and around 4 PAs (Appendix I). They are also reported to occur in small numbers in some RFs namely Narpuh, Saipung, Baghmara, and Nongkhyllem (Sathyakumar and Choudhury, 2007).

Mizoram: Black bears are distributed in all 14 FDs and 10 PAs (Appendix I) in the State including Mizo hills (Sathyakumar and Choudhury, 2007) but they are generally rare or in low densities.

Tripura: Black bear populations are scattered in different forest patches and hilly tracts practically throughout the State. FDs such as Manu, Kanchanpur, Longthorai, Ambasa, Teliamura, Deo and Gumti and the only one PA, i.e., Trishna WS have reported presence of black bears (Sathyakumar and Choudhury, 2007).

Manipur: Black bears are found throughout the hilly areas (Choudhury 1992) of the State and are reported from 1 PA, i.e., Kailam WS (Appendix I), and 7 FDs such as North (Kangpokpi) Churachandpur, East (Ukhrul), West (Tamenglong), Jiribam, Tengnoupal and Senapati. However, the presence of black bear in these areas needs further confirmation.

Nagaland: Although the presence of black bear has been reported from all 10 FDs and 1 PA (Fakim WS), this needs further confirmation (Sathyakumar and Choudhury, 2007).

3.2.2 Population Status and threats

Information on population status of black bears is available from a few PAs in India. In the Lower Dachigam area of Dachigam NP, the summer black bear encounter rates were 1.33/km and the density was 48 bears/100 km² based on camera trapping during the period 2009-2011 (Sathyakumar et al., 2012). For the same area, the density was estimated to be 1.3-1.8 bears/km² during 1988-89 by Saberwal (1989). In Great Himalayan NP, Himachal Pradesh, Vinod et al. (1999) reported that black bear encounter rates ranged from 0.01 to 0.02 bears/km walk between 1996 and 1999.

In Uttarakhand, the status of black bear has improved in Nanda Devi NP from no sightings or evidences in 1993 to 1 sighting and 4 scats in 2003 (Sathyakumar, 2004).

Encounter rates of black bear along transects in this NP ranged from 0 to 0.66 scats/km during 2003. 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 survey period (November December 2005) and encounter rates along transects ranged from 0 to 0.4 bear scats/km walk. In Rajaji NP, black bears were photographed at remote camera traps on 10 occasions out of 900 trap nights (Sathyakumar and Choudhury, 2007).

In Sikkim, a three years study using camera traps in Prek chu catchment (182 km²) of Khangchendzonga NP, resulted in low numbers of photo captures (N=24) and bear signs (Sathyakumar et al., 2011). These evidences and captures of black bear were recorded in temperate and sub-alpine areas mainly (1,950 m to 3,600 m) but also a single capture at 4,280 m which could be an exception. The black bear photo capture rates (# captures/100 trap days) in Prek chu were similar in temperate (1.19 + 0.69) and subalpine 0.93 ± 0.49 during spring, whereas they were in temperate zone only (0.94 ± 0.42) during autumn (Bashir et al., 2011). For remaining States, there is no information on the relative abundance or estimates of black bear population.

Density Estimates for black bear in India varies between 48 Bears/100 km² (Dachigam NP) to 6 Bears/100 km² (some areas in Arunachal Pradesh) and 2 to 3 Bears/100 km² (most of the distribution range). Based on these density estimates, Sathyakumar and Choudhury (2007) used densities of 1 bear /40 km² and 1/50 km² to extrapolate an estimated population of 5,400 to 6,750 black bears in India. An analysis of changes in the status of black bears in the PAs of India between 1995 and 2005 indicated equal proportions of PAs

reporting increase, stable, and decreasing populations (Sathyakumar and Choudhury, 2007).

Asiatic black bears are threatened largely due to hunting and poaching for bear parts that cater to the illegal wildlife trade, and also retaliatory killings by people to reduce crop and livestock depredation (Sathyakumar and Choudhury, 2007). A survey of wild animal use by humans revealed that in 2 villages of Lower Dibang Valley district in Arunachal Pradesh, at least 52 bears were killed in a single year. Similarly, a survey on patterns of animal use by humans revealed that large numbers of black bears are killed every year. A small sample (n= 15) of Phesama village revealed harvesting of at least 52 bears in their lifetime (Choudhury and Rengma, 2005).

3.2.3. Protection to Species

The Asiatic black bear is listed as "Vulnerable" by the IUCN (2012), Appendix I of CITES (GOI, 1992), Schedule II of the Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003), and in Schedule I of the Jammu & Kashmir Wildlife (Protection) Act, 1978 (JKWPA, 1978). Therefore, the black bear has been accorded highest protection in India. The consolidation of the PA network through creation of PAs including new categories such as Conservation Reserve (CR) and Community Reserve (CMR), rationalization of PA boundaries, stricter regulations for forest and environmental clearances, have contributed significantly to the protection of black bear and its habitats.

3.2.4 Black bear Human Interactions

Reports of crop and livestock depredation by black bears and consequent retaliatory killing of bears by people has been a matter of serious concern in the Himalayan States such as Jammu & Kashmir, Himachal Pradesh, and

Uttarakhand (Sathyakumar, 2001). For instance, in the State of Jammu & Kashmir, high levels of bear-human conflicts were reported largely in the form of horticulture and agriculture crop depredations by black bear (Choudhury et al., 2008 Charoo et al., 2011). In the Great Himalayan NP, Himachal Pradesh, 350 of 1,348 (26%) incidents of livestock predation during 1989-98 were by black or brown bears (Chauhan, 2003). In Uttarakhand, black bears accounted for 28.5% of 540 attacks on humans including 9% fatalities by large carnivores between 1991 and 2001 (Chauhan, 2003). In 2009, Sikkim experienced the first ever serious black bearhuman conflicts in the State (Bashir et al., 2011). In Arunachal Pradesh, black bears caused damage to maize, which is a major crop for many hill tribe people. Possible causes for the increased incidences in the reporting of livestock depredation and attacks on humans by 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. Overall, there has been a reduction in the tolerance levels of humans who suffer from losses due to black bear (Sathyakumar and Choudhury, 2007).

3.2.5 Black bear Habitat Management

Throughout India, black bears are seriously threatened due to habitat loss, degradation and fragmentation is largely due to development projects, encroachment, and human dependence on forests for fuel wood, fodder and other forest products. In the northeast Indian states, *jhum* (shifting cultivation) and conversion to commercial plantations has led to serious impacts on black bear habitats (Sathyakumar, 2001; Sathyakumar and Choudhury, 2007). Over 70% of the PAs with black bear populations are <500 km² and suffer from anthropogenic pressures from within and outside. Many important black bear habitats that occur outside the PA network but form corridors or links to existing population units remain unprotected.

3.2.6 Research and Information:

Scientific information on black bear is scanty and is limited to a few status and conflict surveys (Sathyakumar, 2001; Chauhan, 2003; Johnsingh, 2003; Sathyakumar and Choudhury, 2007; Maheshwari and Sharma, 2010; Bargali, 2010; Choudhury et al., 2011; Charoo et al., 2011; Bashir et al., 2011; WWF, in prep.). A few short studies on black bear food habits (Schaller, 1969; Manjrekar, 1989; Sathyakumar and Viswanath, 2003), movement patterns (Saberwal, 1989), rehabilitation (Ashraf et al. 2008) and an intensive ecological study using modern tools and techniques on black bears have been

carried out in India (Sharma et al., 2011; Sathyakumar et al., 2012). However, there is lack of even basic information on black bear presence / absence for many areas in northeast Indian States. Information on population estimates, relative abundance and monitoring are wanting.

3.2.7 Capacity Building

Apart from some wildlife managers and frontline staff, most of the field managers and staff require capacity building. Other stakeholders require sensitization and training in order to help protection of black bear, its habitat, and in reducing black bear-human conflicts.

3.2.8. Communication and education

Existing levels of awareness and education are insufficient to strengthen conservation of black bear and other wildlife species or their habitats.

3.2.9. Legislation and Policy

Despite an array of Policies and Legislation, conservation efforts for black bear and its habitat have faced limitations due to want of site specific policies or flexibility in adaptation of existing policies.

Fig. 3.2a. Asiatic black bear distribution in northern India (Jammu & Kashmir, Himachal Pradesh and Uttarakhand States)

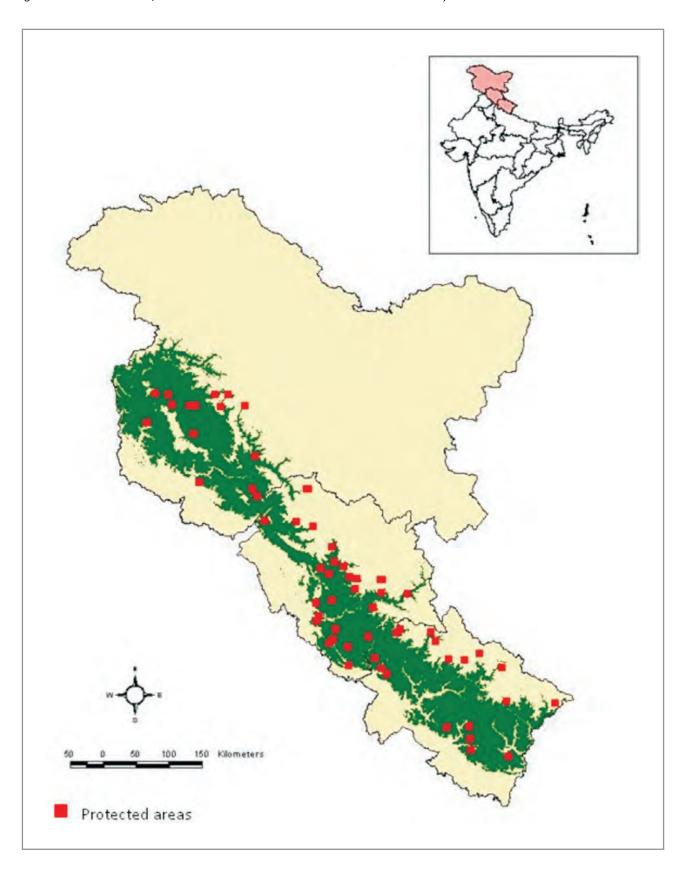
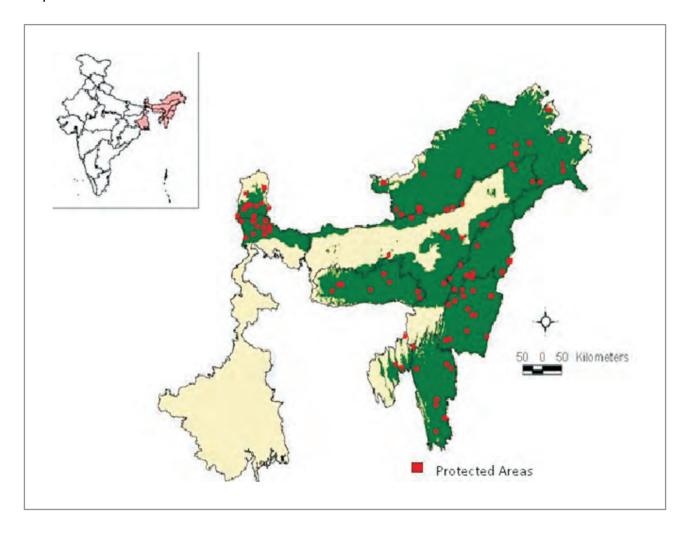


Fig. 3.2b Asiatic black bear Distribution in northeastern India (West Bengal, Sikkim, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Manipur, Nagaland and Tripura States).



3.3. SUN BEAR (Ursus malayanus)

3.3.1 Distribution and Habitat

Sun bears are very rare and are patchily distributed in northeast India, most of it along the Indo-Myanmar border. The rarity is due to northeast India being located at the western most global distribution range of sun bears. They inhabit tropical and subtropical forests (>150m) south of the Brahmaputra river (Lohit river in eastern Arunachal Pradesh). Sun bear distribution range overlaps with that of the Asiatic black bear (Sathyakumar and Choudhury, 2007) and Sloth bear in this region (Choudhury, 1997a;b; 2011). However, sun bears are rarer than Asiatic black bears through out their distribution range in India. Today, Sun bears are distributed in all the northeast Indian States (Choudhury, 2011) and this includes: Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland and Tripura (Fig. 3.3). Sun bear distribution in India is contiguous with Myanmar.

Historical records of sun bear presence in India are from Garo Hills (Blanford, 1891), Assam (Pocock, 1941), Sibsagar (Sclater, 1891) from where a female specimen was procured (currently in the ZSI Museum), near Kaziranga NP (Gee, 1967) and other parts of northeast India (Higgin, 1932; Prater, 1980). Sun bear populations were believed to have declined during the 1980s and 1990s leading to lack of reports, and the consequent conclusion that the sun bears are no longer distributed in India (Servheen, 1999). Recent surveys by Choudhury (2003, 2011, in press), Chauhan and Singh (2005), Chauhan (2006), Chauhan and Lalpunthania (2008), and particularly the use of camera traps had led to the confirmation of sun bears from many areas in northeast India such as Namdapha (Karanth & Nicholas, 2000; Datta et al., 2008), Jeypore FD

in Assam (Kakati, 2012) and in Mizoram by State Forest Department (Choudhury, 2011)

The potential sun bear distribution range in India is estimated to be *ca.* 120,000 km². Sun bears occurs in a variety of habitats that include tropical low land semi-evergreen, moist deciduous, and bamboo forests, subtropical wet hill and wet temperate forests (Chauhan, 2006; Choudhury, 2011, in press).

The distribution and status of the sun bear in the 7 States of India are presented below. Arunachal Pradesh: Sun bears are mainly found in Tirap, Changlang and Lohit (including Anjaw) districts (Choudhury, 2003; 2011, in press) of Arunachal Pradesh. It has been recorded from two protected areas, Namdapha NP (Karanth and Nicholas, 2000; Datta et al., 2008) and Kamlang WS and the distribution range has been mapped by Choudhury (2003, 2011).

Assam: The sun bear in Assam is distributed in the hilly tracts south of the Brahmaputra in Barail Range, Karbi Plateau and foothills of Patkai Range, rarely extending into adjacent plains. In the extreme south, it occurs in the low hills of Barak Valley. Although sun bear was recorded in 11 districts, currently it occurs only in 6 districts (Choudhury, 2011; in press). The main strongholds of sun bears are in Karbi Anglong and in Barail Range in Cachar and Dima Hasao (North Cachar Hills) districts. Blanford (1891) did not mention occurrence of sun bear in present Assam although he mentioned of Garo Hills (then part of Assam). Pocock (1941) stated about its occurrence as 'possibly Assam'. However, Sclater (1891) mentioned of a female specimen at the Indian Museum (now in Zoological Survey of India) from undivided Sibsagar (now Sivasagar) district. All past and present records have been put together recently by Choudhury

(2011). Now the sun bear populations in Assam are present in some PAs, notably, Dihing-Patkai WS, East Karbi Anglong WS, North Karbi Anglong WS, and Barail WS. A sun bear was photo captured in camera trap in 2009 in Jeypor RF, just outside Dihing-Patkai WS (Kakati, 2012). The presence of sun bear in Amchang WS, Garampani WS, Marat Longri WS, Nambor WS and Nambor-Doigrung WS need confirmation (Choudhury, 2011). However questionnaire survey revealed that currently Malayan sun bear is found only in one FD.

Manipur: The earliest record of sun bears in this State was made by Higgins (1932). Although, there were reports of sun bears in the State, they were sporadic, indicating that they were patchy distributed and rare. Choudhury (2011) confirmed sun bear presence based on his intermittent surveys in Manipur from 1987 to 2011 through local reports, skull, other body parts and footprints in Chandel (especially in Yangoupokpi Lokchao WS), Churachandpur (especially in Kailam WS), Senapati, Tamenglong, and Ukhrul (Shiroi and Anko) districts (Choudhury, 1992; 2011). Based on questionnaire surveys, Chauhan and Singh (2006) confirmed presence of sun bears in the Chandel and Ukhrul districts along the border with Myanmar. In some areas adjacent to Myanmar, sun bears were reported to be sighted a few times by villagers, and indirect signs were also recorded (Chauhan and Lalthanpuia, 2008; Choudhury, 2011).

Meghalaya: The earliest report of sun bear in Meghalaya were from Garo Hills by Blanford (1888-91) followed by Sclater's (1891) report of a male specimen at ZSI Museum and by Hinton & Lindsay (1926) who reported collection of a juvenile female from Duragiri in East Garo Hills district. Choudhury (2011)

reports the collection of a sun bear specimen in the early 1980s from Balpakram NP and also suggested sun bear presence in Nokrek NP, Baghmara RF (in Garo Hills) and in forests of Trongpleng, on south facing slopes between Cherrapunjee (Sohra) and Mawsynram (in East Khasi Hills), forests of West Khasi Hills and Narpuh and Saipung RFs in Jaintia Hills based on secondary information.

Mizoram: The earliest reference of occurrence of Sun bear in Mizoram was by Lewin (1869) who mentioned of its occurrence in Chittagong Hill Tracts. In one of the sites, south of Assam's Cachar district, a Sun bear was photographed through camera trap set up by the state Forest department on 7 February 2009. This area is now Pualreng WS in Kolasib and Aizawl districts. Prior to this, sun bear photocaptured in Dampa TR and WS, Mamit district in 2007. Forest staff and experienced hunters familiar with the species have reported its presence in Lengteng WS, Murlen NP, Ngengpui WS and Phawngpui (Blue Mountains) NP besides unclassed forests scattered all over the state including Thorangtlang, Tawi and Saza WSs. During the recent field surveys and consultations with the State Forest Department, sun bears were reported to be present in 13 FDs and 10 PAs).

Nagaland: Earliest reference to Nagaland being within sun bear distribution range was made by Sterndale (1929) as mentioned in Gee (1929) where the sun bear's habitat was described as 'Garo Hills east and south to the Malay Peninsula'. Secondary information from wildlife staff and local villagers indicated its presence in all the districts but at varying status. Sunbears were reported as relatively abundant from Peren, Mon, Tuensang and Kiphire when compared to other districts where only stray records have been reported. Chauhan and Sethy (2011) reported presence

of sun bears from Itanki and Fakim NPs based on secondary information.

Tripura: There are unconfirmed reports of sun bear in Tripura from areas adjoining Dampa in Mizoram and probably in Jampui Tlang, North Tripura (Choudhury, 2011).

3.3.2 Population Status and threats

Information on population status of sun bears is not available. The photo capture rates of Sun bears were too low for the many hundred days of camera trap effort. Sun bears are threatened largely due to hunting/poaching (for consumption and bear parts that cater to the illegal wildlife) trade, for sale as pets, and also retaliatory killings by people to reduce crop depredation in some States of northeast India (Chauhan, 2006; Choudhury, 2011).

3.3.3. Protection to Species

The Sun bear is listed as "Vulnerable" by the IUCN (2012), Appendix I of CITES (GoI 1992), and Schedule I of the Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). Therefore, the sun bear has been accorded highest protection in India. The consolidation of the PA network through creation of PAs including new categories such as Conservation Reserve (CR) and Community Reserve (CMR), rationalization of PA boundaries, stricter regulations for forest and environmental clearances, have contributed significantly to the protection of sun bear and its habitats.

3.3.4 Sun bear Human Interactions

Reports of crop depredation by sun bears and consequent retaliatory killing of bears by people have been reported from some of the northeastern States of India (Chauhan, 2006). For instance, in Chandel and Ukhrul districts

of Manipur, the villagers suffer from both economic loss due to crop damage (rice, maize, sweet potato, pulses, oilseeds and sugarcane, plum, pumpkin) and human injuries due to sun bear (Chauhan, 2006). Similarly, there are many reports of crop depredation by sun bears in Lawngtlai and Thenzawl FDs in Mizoram. In Arunachal Pradesh, sun bears caused damage to maize, which is a major crop for many hill tribe people. There are also reports of injury to villagers which are very low and some of the reports of livestock depredation are wrongly attributed to sun bears but would have been made by the black bear.

3.3.5 Sun bear Habitat Management

Due to conversion of lowland forests in to agricultural areas, plantations and human habitation, and heavy resource competition, most of the suitable sun bear habitats got degraded and fragmented (Chauhan, 2006). Although 50% of Sun bear's original habitat range has been lost, there is still significant proportion of habitat available for sun bear in the States of northeast India (Choudhury, 2011). In Arunachal Pradesh, sizeable sun bear habitat falls under two relatively large PAs, i.e., Namdapha NP and Kamlang WS that are contiguous and may offer hope for future. In Assam, PAs such as Barail WS and Karbi Anglong WS are notable areas for sun bear conservation and therefore needs to be strengthened. Similarly, in Meghalaya, Nokrek and Balpakram NPs and Narpuh and Saipung RFs encompass significant sun bear habitats that need to be protected. However, bear-specific management and protection measures in these States need further strengthening.

Throughout India, sun bears are seriously threatened due to habitat loss, degradation and fragmentation is largely due to development projects, encroachment, and human dependence on forests for fuel wood, fodder and other forest products. In the northeast Indian states, *jhum* (shifting cultivation) and conversion to commercial plantations has led to serious impacts on sun bear habitats (Chauhan, 2006; Choudhury, 2011).

3.3.6 Research and Information:

Scientific information on sun bear is scanty and is limited to sighting records, camera trap records, status and conflict surveys (Choudhury, 1992; 1997; 2003; 2011; Chauhan, 2006; Datta et al., 2008; Kakati, 2011). There is lack of even basic information on sun bear presence / absence for many areas in northeast Indian States. Information on population estimates, relative abundance and monitoring are wanting.

3.3.7 Capacity Building

Apart from a few wildlife managers and frontline staff, most of the field managers and staff require capacity building. Other stakeholders require sensitization and training in order to help protection of sun bear, its habitat, and in reducing sun bear-human conflicts in areas where they are reported to occur.

3.3.8. Communication and education

Existing levels of awareness and education are insufficient to strengthen conservation of sun bear and other wildlife species or their habitats.

3.3.9. Legislation and Policy

Despite an array of Policies and Legislation, conservation efforts for sun bear and its habitat have faced limitations due to want of site specific policies.

200 Kilometers Inferred Original Range (around 1990s) Inferred Current Range District Boundary Report (Reliable) Present Record State Boundary Sun Bear 100 20 Fig. 3.3 Sun bear distribution in India (after Choudhury et al., 2011) (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura)

3.4. SLOTH BEAR (Melursus ursinus)

3.4.1 Distribution and Habitat

The sloth bear is the most widely but patchily distributed bear species in India ranging from the foot hills of the Himalaya and Terai grasslands in the north to the southern Western Ghats in the extreme south of India; and from the moist tropical forests and Brahmaputra flood plains in the east to the semi-arid and arid habitats of western India. The central Indian landscape and the Deccan Plateau form strong holds of sloth bear populations in India. The distribution of sloth bear in India in such diverse habitats only substantiates the adaptability of this species. Although the distribution is wide, it is now confined to five regions viz., northern, northeastern, central and southeastern and southwestern populations (Garshelis et al., 1999; Johnsingh, 2003; Yoganand et al., 2006). Sloth bear distribution range overlaps marginally with the Asiatic black bear in the north and northeast, and with sun bears in northeast India (Sathyakumar, 2001; Sathyakumar and Choudhury, 2007; Choudhury, 2011). The Sloth bear is distributed in States of Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chattisgarh, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisa, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal [Fig. 3.4] (Yoganand et al., 2006, Chauhan, 2006). Although earlier reports indicated presence of Sloth bear in the States of Mizoram (Mishra et al., 1992; Chauhan, 2006) and Manipur (Garshelis et al., 1999), they are erroneous (Yoganand et al., 2006; Choudhury, 2011). Sloth bear distribution and populations are contiguous between India and neighbouring countries such as Bhutan and Nepal.

In India, 90% of sloth bear populations are confined in the dry and moist deciduous forests of which the former account for 50% of the sloth bear populations (Yoganand et al., 1999). Sloth bears also occur in tropical evergreen forests, scrub lands and rocky hills. However, their relative abundance vary across these vegetation types, as indicated by their higher abundance in deciduous forests, followed by dry deciduous, scrub and evergreen forests (Yoganand et al., 1999). The potential Sloth bear distribution range in India was estimated to be ca. 200,000 km² (Johnsingh, 2003; Akhtar et al., 2004a; Chauhan, 2006), but the recent surveys indicate that the distribution range to be 400,000 km².

The distribution and status of the Sloth bear in the 20 States of India are presented below

Andhra Pradesh: Being the 4th largest State in India encompassing portions of Eastern Ghats, Plateaus and river deltas, Andhra Pradesh holds significant proportion of sloth bear habitats and population in India. Sloth bear may have reached its current form during early Pleistocene, the time when the bear family specialized and dispersed. A fragment of fossilized humerus from the Pleistocene, found in Andhra Pradesh's Kurnool Basin is identical to the humerus from the modern day sloth bear (Andhra Pradesh Forest Department). The presence of sloth bear is reported from 6 FDs such as Nizamabad, Nagarjuna Sagar, Giddalur, Nandyal, Guntur and Narsipatnam FDs and 13 PAs (Table 3.4a) notable of these are Venkateswara NP, Nagarjunasagar Srisailam TR and Gudla Brahmenswara WS. Jhala et al. (2011) estimated the occupancy of sloth bear as 27291 km² area of the State.

Arunachal Pradesh: Earliest literature mentions presence of sloth bear in Arunachal

Pradesh but probably only in the foothills adjoining the plains of Lohit rover. Choudhury (2003) had mentioned that it is rare in the State and occurs in grasslands and forests, both in the plains and foothills. Arunachal Pradesh includes the easternmost (96°18'E) distribution limits for sloth bear but there are no confirmed reports of sloth bear from this State (Chouhdury, 2011). PAs where sloth bears are reported to be present are Pakke WS and D'Ering WS. In Pakke WS, where Asiatic Black Bear is common, the sloth bear was always very rare and its footprints were recorded (1994-95) in the flat plain areas along the Khari River and in D'Ering WS, sloth bear evidences were recorded around Japang Beel (Choudhury, 2011).

Assam: In Assam, three bear species *viz.*, sloth bear, black bear and sun bear are present, but all of them are very rare and occurs in low densities in the Himalaya foothills, the Brahmaputra valley, and hilly tracts south of Bharmaputra (50-1,00m) characterised by tropical and sub-tropical forests, and grasslands (Choudhury, 1997; 2011). In the extreme south, there were reports of sloth bear from Barak Valley (Pocock, 1932). Although it was reported from all the administrative districts of Assam in the past, currently it definitely occurs in 7 out of 27 districts (Choudhury, 2011) and 5 out of 12 FDs. Sloth bear populations in Assam are present in and around 11 PAs, notably, Manas NP and TR, Kaziranga NP, Nameri NP and North Karbi Anglong WS (Appendix-I).

Bihar: In Bihar, sloth bears are distributed in the moist deciduous forests of the terai in Valmiki TR located in the north-western part adjoining Nepal, and dry deciduous forests of Kaimur Plateau in south western part, southern forests bordering Jharkhand, and forest patches of Munger, Jamui and Banka in the south eastern part of the State. Sloth bears have been reported from 12 FDs *viz.*, Rohtas, Kaimur, Munger, Jamaui, Banka, Nawada, Gaya, Nalanda, Valmiki TRD-1, and Valmiki TR-2. Although reported from Nalanda and Banka FDs, the sloth bear presence needs confirmation. The PAs (Appendix-I) encompassing sloth bear distribution ranges in the State are Valmiki NP & WS, Kaimur WS, Bhimbandh WS, and Gautam Buddha WS. Jhala et al. (2011) estimated the occupancy of sloth bear as 457 km² area of the State.

Chattisgarh: In terms of distribution, sloth bear has the most widely recorded range than any of the large carnivores in Central India with forested area coverage of 180,628 km² (Jhala et al., 2011). Chattisgarh encompasses one of the significant central Indian sloth bear habitats of India and consequently a wide distribution of sloth bear occurring in 13 PAs (Appendix-I) and 23 FDs. Important PAs with significant populations of sloth bear include Achanakmar WS, Sitanadi WS, Guru Ghasi Das NP, Tamorpingla WS and Udanti WS. Jhala et al. (2011) estimated the occupancy of sloth bear as 38628 km² area of the State.

Goa: Sloth bear is reported to occur in all the four FDs of the State, *viz.*, North Goa Wildlife and Ecotourism Division, North Goa FD, South Goa Wildlife and Ecotourism Division and South Goa FD. Jhala et al. (2011) estimated the occupancy of sloth bear as 837.75 km² area of the State.

Gujarat: The State representing the semi-arid and arid tracts of western India also form the western most limit of sloth bear distribution in India. In Gujarat, the sloth bears are patchily distributed in the dry deciduous forests between north-eastern and south-central part of the State. Sloth bears occur in and around 5 PAs (Appendix-I) as well as several

unprotected forest patches of Sabarkantha, Banaskantha, Mehsana and Panchmahal districts. Notable PAs include: *viz*. Ratanmahal WS, Shoolpaneshwer WS, Jambughoda WS and Jessore WS. Banaskantha district is believed to hold the highest sloth bear density in the country (Garshelis et al., 1999).

Jharkhand: Being a State with substantial forest cover, the sloth bear is widely distributed. Of the 34 FDs, sloth bear is present in 24 FDs and most of which may hold significant sloth bear populations. Seven PAs have reported sloth bears in their areas of which Palamau TR, Betla NP, Bhimbandh WS and Dalma WS are notable ones. Jhala et al. (2011) estimated the occupancy of sloth bear as 2067 km² area of the State.

Karnataka: Much of the Indian Deccan Plateau and considerable stretches of the Western Ghats fall within the State leading to diverse habitats ranging from moist tropical forests to dry deciduous forests, hilly and rocky areas, and scrublands. However, the sloth bear is widely distributed within the 22 districts that is predominantly the Deccan Plateau. Scrubland habitats in eastern and moist deciduous forest in south-western parts of Karnataka are inhabited by sloth bears. Notable PAs with sloth bear populations are Daroji WS, Bannerghata NP and Bandipur TR etc. Jhala et al. (2011) estimated the occupancy of sloth bear as 16852 km² area of the State.

Kerala: The sloth bear distribution extends into the southern Western Ghats and their foothill region of Kerala where they are distributed in 12 PAs, some of which include the Parambikulam WS, Periyar TR, Peppara WS and Wayanad WS. Jhala et al. (2011) estimated the occupancy of sloth bear as 7812 km² area of the State.

Madhya Pradesh: Sloth bear has the most widely recorded range than any of the large carnivores in Central India with forested area coverage of 180,628 km² (Jhala et al., 2011). Madhya Pradesh encompasses one of the significant central Indian sloth bear habitats of India and consequently a wide distribution of sloth bear occurring in many PAs (Appendix-I) and 64 FDs. Important PAs with significant populations of sloth bear include Panna NP, Bandhavgarh NP and Madhav NP. Jhala et al. (2011) estimated the occupancy of sloth bear as 43499 km² area of the State.

Maharashtra: The Sloth bear is widely distributed in the State as it is reported from all five regions *viz.*, Konkan, Vidarbha, Marathwada, Paschim, and Khandesh and Northern Maharashtra. It is reported to be present in 11 FDs and 15 PAs notable ones are Melghat TR, Tadoba TR and Pench TR. Jhala et al. (2011) estimated the occupancy of sloth bear as 21070 km² area of the State.

Meghalaya: Apart from a single specimen obtained from Khasi hills in the past, there has been no confirmation on the presence of Sloth bear from this State (Choudhury 2011).

Mizoram: There has been no recent record on the presence of Sloth bears from this State. Reports by Mishra et al. (1992), and Chauhan (2006) are erroneous as pointed out by Yoganand (2006) and Choudhury (2011).

Nagaland: Being located in the eastern most part of its distribution, the sloth bear that was reported from Assam Nagaland border areas, is now confined to a probably isolated population in Intanki NP (Choudhury 2011).

Odisa: This eastern coastal State is contiguous to Chhattisgarh and Madhya Pradesh States offering connectivity to habitats and populations. Of 30 districts in the State, sloth

bear occurs in 12 districts and is reported from 44 FDs and 14 PAs (Appendix-I). Notable PAs are Simlipal TR, Satkosia TR and Kuldiha WS. Jhala et al. (2011) estimated the occupancy of sloth bear as 47433 km2 area of the State.

Rajasthan: Together with Gujarat, this State represents the western most limit of sloth bear distribution in India where sloth bears are patchily distributed in semi-arid and arid dry deciduous forests of the State. Sloth bears are present in and around 15 PAs (Appendix-I) as well as many FDs. Notable PAs include: Ranthambhore NP, Mount Abu NP, Kela Devi WS, and Kumbalgarh WS (Chauhan, 2006). Jhala et al. (2011) estimated the occupancy of sloth bear as 640 km² area of the State.

Tamil Nadu: Along with Kerala, the State of Tamil Nadu encompasses the southern most distribution of sloth bears in India. The southern Western Ghats bordering Kerala and the southern Deccan Peninsula are represented in the State that include a variety of habitats from tropical moist forests, to dry deciduous forests, scrublands and open dry hills. Recent surveys revealed that sloth bear are distributed in 15 districts, and present in 21 FDs and 6 PAs. The PAs where sloth bears are fairly common include the Mudumalai NP, Indira Gandhi NP & WS, and Kalakad-Mundathurai TR (Appendix-I). Jhala et al. (2011) estimated the occupancy of sloth bear as 9736 km² area of the State.

Uttarakhand: Three species of bears, viz., the Himalayan brown bear, Asiatic black bear and Sloth bear are distributed in this State but there is a marginal overlap between the sloth and black bear (Sathyakumar and Choudhury, 2007; Bargali, 2010). The northwestern most population and distribution limits of sloth bear is found in this State. Sloth bears are rare and occur in low densities in the Terai-Arc

landscape along the foot hills north of the Gangetic plains. They are present in Corbett NP, Rajaji NP and Sonanadi WS.

Uttar Pradesh: Sloth bears are distributed in the Terai-Arc landscape in the northern part along the border with Nepal and also the southern part bordering Madhya Pradesh and Jharkhand. It is present in 23 FDs and nine PAs. Jhala et al. (2011) estimated the occupancy of sloth bear as 3385 km2 area of the State.

West Bengal: Sloth bear is present in the northern and south-eastern parts of the State and was once reported to be relatively abundant in north Bengal where both black and sloth bears occurred (Choudhury, 2011). Recent surveys indicate that the sloth bears are currently reported from 8 FDs and 4 PAs, notably Buxa TR. There are no recent reports of sloth bear from Gorumara NP and Jaldapara WS.

3.4.2 Population Status and threats

Sloth bear population status varies in different parts of the country but they enjoy better status in the central and western regions, particularly in the States of Madhya Pradesh, Chattisgarh, Gujarat and Rajasthan. Density Estimates for Sloth bear in India varies between 10 to 23 bears/100 Km² (Chauhan, 2003; 2006; Akhtar et al., 2004) in optimal and well protected habitats of central and southern India, but elsewhere the density estimates are much lower. Reports of very high densities of sloth bears in a few PAs of Gujarat and Rajasthan have been mentioned earlier (Chauhan, 2006), but such high densities have not been scientifically validated. Chauhan (2006) used an average density of 12 bears/100 km² to extrapolate for ca. 187,000 km² habitat range and estimated the sloth bear population in India to be over 20,000. Although, the recent surveys indicated a larger potential sloth bear habitat range, there is no information on the sloth bear population estimates from this area. Therefore, the sloth population estimate is believed to be over 20,000 without any idea on the upper limit.

Sloth bears are threatened largely due to hunting (for consumption) and poaching for bear parts that cater to the illegal wildlife trade, and also retaliatory killings by people to reduce crop depredation and attacks on humans (Garshelis et al., 1999; Chauhan, 2006). Live bear cub trade for use as pets or the illegal bear dancing outside India are still a threat (See Chapter 4.0).

3.4.3. Protection to Species

The Sloth bear is listed as "Vulnerable" by the IUCN (2012), Appendix I of CITES (GoI 1992), and in Schedule I of the Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). Therefore, the Sloth bear has been accorded highest protection in India. The consolidation of the PA network through creation of PAs including new categories such as Conservation Reserve (CR) and Community Reserve (CMR), rationalization of PA boundaries, stricter regulations for forest and environmental clearances, have contributed significantly to the protection of Sloth bear and its habitats.

3.4.4 Sloth bear Human Interactions

Reports of crop depredation and attacks on humans by Sloth bears and consequent retaliatory killings have been a matter of serious concern, mostly in central India and to some extent in western and southern India. Possible causes for the increased incidences in the reporting of livestock depredation and attacks on humans by Sloth 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 populations in and around PAs and bear habitats, (3) increased dependence on forest products (also sloth bear food items) by people leading to increased frequency of bear-human encounters, 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 (Garshelis et al., 1999; Cahuahn et al., 1999; 2003; Johnsingh, 2003; Akhtar, 2004; Akhtar et al., 2000; 2002; 2004; Bargali, 2004; Bargali et al., 2005; Chauhan, 2006).

3.4.5 Sloth bear Habitat Management

Although widespread, sloth bear populations are declining due to degradation of its habitats, which have now become fragmented (Akhtar, 2004; Akhtar et al., 2000; 2002; 2004). Throughout India, Sloth bears are also seriously threatened due to habitat loss in the form of developmental activities (Garshelis et al., 1999; Johnsingh, 2003; Chauhan, 2006). For instance, degradation and fragmentation of sloth bear habitats in Madhya Pradesh and Chattisgarh have led to high incidences of sloth bear human conflicts (Bargali, 2004; Bargali et al., 2005; Chauhan, 2006). Similarly, in Gujarat the sloth bear habitats in Aravalis (Banaskantha and Sabarkantha Districts) that has been fragmented into smaller pockets due to cultivation, human settlement and road networking. Many important Sloth bear habitats that occur outside the PA network but form corridors or links to existing population units remain unprotected.

3.4.6 Research and Information:

Scientific information on sloth bear is restricted to a few status surveys, conflict surveys and short studies (Gokula, 1991; Gopal, 1991; Gokula and Varadrajan, 1995; Chauhan and Rajpurohit, 1996; Desai et al., 1997; Chauhan et al., 1999; Johnsingh, 2003; Bargali, 2010; Yoganand et al., 2006; Choudhury et al., 2011; Dhariaya, 2012). A few intensive studies on sloth bear ecology were carried out in Panna NP (Yoganand et al., 2005), and North Bilaspur FD (Akhtar et al., 2000; 2002; 2004b; Bargali, 2004; Mewada, 2011) have been carried out. However, there is lack of even basic information on Sloth bear presence/ absence for many areas in northeast Indian States. Information on population estimates, relative abundance and monitoring are wanting.

3.4.7 Capacity Building

Apart from some wildlife managers and frontline staff, most of the field managers and staff require capacity building. Other stakeholders require sensitization and training in order to help protection of Sloth bear, its habitat, and in reducing Sloth bear-human conflicts.

3.4.8. Communication and education

Existing levels of awareness and education are insufficient to strengthen conservation of Sloth

bear and other wildlife species or their habitats.

3.4.9. Legislation and Policy

Despite an array of Policies and Legislation, conservation efforts for Sloth bear and its habitat have faced limitations due to want of site specific policies or flexibility in adaptation of existing policies.

3.5 Ex situ management and Rehabilitation

India has a large number of bears (~800) in zoos, captive facilities and rescue centres throughout the country (Appendix-II). Of these, the captive population of sloth bears is the highest (n=564) followed by Asiatic black bear (n=182). Brown bear (n=5) and sun bear (n=4) are a very few in captivity. There are no conservation breeding programmes for bears in India. However, bears are exhibited in zoos as they are a major attraction and also serve the purpose of awareness and conservation education. Captive bears in the remaining facilities are either rescued from wild or from kalandars and are usually not open for general public. Management of bears in zoos and rescue centres are now improving with better facilities and technical inputs from national and international agencies and bear rehabilitation and welfare have been accorded high priority. Please see Chapter 5.1 for more details.

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Fig. 3.4 Sloth bear distribution in India

3.6 Recommendations

3.6.1 Protection to species

- Strengthening of existing network of informers and various law enforcing agencies (para-military forces), including monitoring of wildlife crimes at Inter-State check posts and international borders.
- In northeastern States, create awareness and use communities to ban bear hunting in northeast Indian States along with continuation on the ban of issue of licenses for rifles and bore guns, and replacing them with licenses for small guns.
- Development of a process for awards/incentives to wildlife staff/ informers who help in wildlife protection or in curbing the illegal trade in bear parts.

Forest with Sloth Bear Protected area

• Conduct surveys/studies to assess the illegal trade in bear parts.

3.6.2 Management of Bear-Human Interactions

• Awareness creation for stakeholders on bear behavior and the philosophy co-existence in addition to strengthening of indigenous conflict reduction measures to reduce crop and livestock depredation by bears.

- Strengthen the conflict management teams with equipment, training, and capacity building. Creation of non-lapsable funds for speedier disposal of compensation claims.
- Development and maintenance of a conflict database for regular monitoring.

3.6.3 Management of bear habitats:

- Continue protection and maintain brown bear habitat use by pastoralists and local communities at or below sustainable levels.
- Identify and manage bear corridors outside PA network and manage them at the landscape level under the Project Snow Leopard Programme.
- Prevent brown bear habitat fragmentation by bringing in changes in land use policy and regulating developmental projects
- In northeastern State, prevent habitat loss (for black and sun bears) due to conversion for agriculture, plantations and developmental projects. Encourage permanent agriculture instead of shifting (*Jhum*) cultivation that is practiced in northeast Indian States and discourage mass conversion of *Jhum* areas into commercial plantations.
- Restore degraded bear habitats through existing government programs such as NREGA and Haryalia Schemes using local communities.
- Identify critical bear habitats and corridors outside PA network and manage them as Community or Conservation Reserves with approval and support from local communities.

3.6.4 Research and Monitoring:

• Confirm presence/absence of bears by camera trapping / genetic studies and sign

surveys in gap areas and carryout periodic monitoring.

- Population estimation of bears using noninvasive methods to be initiated.
- Investigations on bear-human conflicts, ecology, food habits, movement and Ranging Patterns using GPS/ Satellite telemetry have to be carried out.
- Enhancement of technical Inputs for implementation of research, management and conservation plans through specialized institutions/experts in the concerned field has been identified as crucial.

3.6.5 Capacity Building:

- Specialized training modules for forest personnel in wildlife management and on wildlife-human conflict management for local communities (members of JFMC/ EDC and pastoralists) are required.
- Capacity building programs for the wildlife researchers of the State Forest/ Wildlife Department have to be carried out to enable them to conduct biodiversity assessments, ecological studies, and monitoring.

3.6.6 Conservation Education:

- Enhance awareness of all stake holders on brown bear, wildlife conservation, and the philosophy of co-existence through appropriate communication materials.
- Sensitizing the judiciary, public representatives, officials of the Line Departments including military, Para-military forces on wildlife crimes and conservation are crucial.

• Efforts to ensure special focus on bear conservation in the Wildlife Interpretation Centers have to be made.

3.6.7 Policy and Legislation:

- Fund allocation and powers to disburse compensation amounts at the Division Level for cases dealing with human injuries/deaths due to bear / other wildlife has been proposed.
- In northeastern States, fund allocation for rewarding local communities who surrender their guns and providing them with alternate sustenance using existing government programs has to be initiated.
- A policy to strengthen Inter-State and Transboundary cooperation and collaboration for

- conservation of bears in the region would be required.
- Involvement of Corporate / Developmental Sectors in biodiversity conservation as part of Corporate Social Responsibility has to be initiated.

3.6.8 Ex situ Conservation and Bear Welfare

- Enhancement of technical inputs in the management of bears in captivity.
- Research on captive bears particularly on bear behavior, breeding, physiological aspects and health are required, and therefore needs to supported with funds and technical inputs.
- Implementation of a sustained programme to rehabilitate bears back into the wild requires funds for research, infrastructure, and technical inputs and therefore needs to be supported.

NATIONAL BEAR CONSERVATION AND WELFARE ACTION PLAN FOR INDIA

VISION

Maintain viable populations of all bear species in their natural habitats

GOAL

To ensure stable status of all bear species and minimal bear-human conflicts through conservation efforts

Themes	Objectives
Protection from illegal trade in bear parts	To protect bears from poaching for illegal trade in bear parts, live cub trade, and effectively anage the legal aspects
Bear - Human conflict mitigation.	To reduce and manage effectively the Bear-Human conflicts
Habitat management	To restore degraded bear habitats through management and community participation
Research and information	To enhance knowledge on bears in India through scientific research and strengthen the collection, assimilation and application of relevant information.
Capacity development	Strengthen the organizational, human capital, skills and resources for bear conservation.
Communication and education	Enhance awareness and knowledge of all stakeholders about bears and other wildlife to appreciate their values, conservation issues and take proactive conservation actions.
Policy and Legislation	Review and amend policy and regulations concerning black bear conservation, if deemed appropriate.

Theme: Protection to bears from illegal Wildlife Trade

Objective: To protect bears from poaching for illegal trade in bear parts, live cub trade, and effectively manage the legal aspects

No	Activity	Timeframe
1	Strengthen intelligence gathering mechanisms and share with different law enforcing agencies including para-military forces to curb illegal trade in bear parts and live cubs	Ongoing
2	Survey/ Study on bear hunting and illegal trade in bear parts or cubs	2013-2016
3	Strengthen monitoring of wildlife crimes at Inter-State check posts and international borders	Ongoing
4	Legal assistance to ensure convictions/ create green lawyer network	2013 onwards
5	Create awareness and use communities to ban bear hunting (in northeast Indian States) along with continuation on the ban of issue of licenses for rifles and bore guns, and replacing them with licenses for small guns (applicable to northeast Indian States only)	2013-2015
6	Award local communities who surrender their weapons and provide alternate sustenance (applicable to northeast Indian States only)	2013-2017

B Theme: Management of bear-human conflicts
Objective: To reduce and manage effectively the bear- Human conflicts

No	Activity	Timeframe
1	Awareness camps on bear behaviour and ways to minimise bear-human interactions at the local levels (JFMC/EDC)	2013 onwards
2	Creation of wildlife rapid action and rescue teams at District level to manage bear-human interactions	2013-2016
3	Create a fully equipped bear rescue/ rehabilitation center in the States (immobilization equipment, drugs, animal holding boxes / transport vehicles/facilities)	2013-2015
4	Creation of a database on bear and other large carnivore -human conflicts including identification and monitoring of high conflict spots	2013 onwards
5	Improvement in the current mechanism of assessment of economic losses of crop /livestock depredation by bears & other wildlife licenses for small guns (applicable to northeast Indian States only)	2013-2016
6	Strengthen indigenous methods of crop and livestock protection through community participation by providing incentives to those who help create infrastructure that reduces conflicts	Ongoing
7	Provision of non-lapsable corpus fund in the Division headquarters for timely disbursement of ex-gratia payment and to meet the plastic surgery costs for victims of bear attacks	2013 -2017

Theme: Habitat management

Objective: To restore degraded bear habitats through management and community participation

No	Activity	Timeframe
1	Continue protection to bear habitats and prevent habitat loss due to conversion for agriculture, plantations and developmental projects	Ongoing
2	Restore degraded bear habitats through existing government programmes (NREGA/Haryalia Scheme) using local communities or cubs	2013-2016
3	Identify critical bear habitats and corridors outside PA network and manage them as Community or Conservation Reserves with approval and support from local communities	2013-2016
4	Prevent bear habitat fragmentation by bringing in changes in land use policy and regulating developmental projects	2013-2016
5	Reduce dependency of local communities in bear habitats by providing viable alternatives of food, fodder and fuelwood	2013-2016
6	Encourage permanent agriculture instead of shifting (Jhum) cultivation and discourage mass conversion of Jhum areas into commercial plantations (applicable only to northeast Indian States)	2013 onwards

Theme: Research and information

Objective: To enhance knowledge on bears in India through scientific research and strengthen the collection, assimilation and application of relevant information.

No	Activity	Timeframe
1	Confirm presence/absence of bears by camera trapping / genetic studies and sign surveys and periodic monitoring	2013-2016
2	Population estimation of bears using non-invasive methods	2015-2017
3	Investigations on the bear-human interactions	2013-2015
4	Bear habitat evaluation and food habit studies	2014 onwards
5	Movement and Ranging Patterns of bears using GPS/ Satellite telemetry studies	2014 onwards

E

Theme: Capacity development
Objective: Strengthen the organizational, human capital, skills and resources for bear conservation.

No	Activity	Timeframe
1	To fully equip frontline forest / wildlife staff with latest devices and equipment for management of bear/ other wildlife and humans during interactions	2013-2015
2	Specialized training modules for forest personnel in wildlife management	2014-2017
3	Training on wildlife-human conflict management for local communities (members of JFMC/ EDC and pastoralists)	2013-2015
4	Strengthen wildlife health centers by creating infrastructure and engaging Wildlife Veterinarians	2013-2016
5	Capacity building of wildlife researchers of the State Forest/ Wildlife Department in biodiversity assessments, ecological studies, and monitoring	2014-2017

F

Theme: Communication and education

Objective: Enhance awareness and knowledge of all stakeholders about bears and other wildlife to appreciate their values, conservation issues and take proactive conservation actions.

No	Activity	Timeframe
1	Enhance awareness of all stakeholders on bears, wildlife conservation and the philosophy of co-existence through appropriate communication materials	2014-2017
2	Sensitizing the judiciary, public representatives, Officials of the Line Departments including military, Para-military forces on wildlife crimes and conservation	2014-2017
3	Celebrate one-day of the Wildlife Week as "Bear Day"	2013 onwards
4	Ensure special focus on bear conservation in the Wildlife Interpretation Centers	2013 onwards

Theme: Policy and Legislation

Objective: Review and amend policy and regulations concerning bear conservation, if deemed appropriate.

No	Activity	Timeframe
1	Allocate funds for rewarding local communities who surrender their guns and providing them alternate sustenance using existing government programmes (NREGA) [applicable only to northeast Indian States]	2013-2017
2	Fund allocation and powers to disburse ex gratia / relief amount at the Division Level for cases dealing with human injuries/deaths due to bears / other wildlife	2013-2017
3	Involvement of Corporate / Developmental Sectors in biodiversity conservation as part of Corporate Social Responsibility	2013-2015
4	Trans-boundary cooperation and collaboration with Bangladesh, Bhutan, China, Myanmar, Nepal and Pakistan for conservation of bears in the region	2013-2017
5	Inter-State cooperation with neighbouring States for controlling wildlife crimes and wildlife-human interactions in the region	2013-2017
6	Enhance Technical Inputs for implementation of research, management and conservation plans through specialized institutions/experts in the concerned field	2013-2017

4.0 Bears and People

4.1 Community participation in Bear conservation Rudra P. Mahapatra and Indu Kumari

In India, bears have long been recognized as an integral part of the life of the people as evident by the references to bears in culture, mythology, literature and the fact that human communities have lived in and around bear habitats for centuries. Bears have been feared, hunted for both sport, meat and for reducing losses to crops and livestock, their parts used in indigenous medicine systems and other purposes. Capture of live sloth bear cubs for use as "dancing bears" remains a significant threat in some parts of the range (Seshamani and Satyanarayan, 1997). Also, in most parts of the range, encounters between people and bears have increased over years leading to human injuries and deaths (Rajpurohit and Krausman, 2000; Bargali et al., 2005; Chauhan, 2006)..

Sloth bear in India have traditionally been sourced from the wild and 'trained' as dancing bears by the Kalandar community. Generally, bear cubs are captured in India and are taken to Nepal to be trained as dancing bears. After training these bears are traded back to India. This practice has now been declared illegal and sloth bear are protected in law, both in India and Nepal, as well as by international treaties to which both the countries are signatories. However, factors such as lack of awareness, weak law enforcement and porous borders facilitate illegal wildlife trade. Despite the ban prohibiting capture and confinement of sloth bears, they are still in demand in India. The bear cubs are bought and trained to dance by Kalandars, who earn their livelihood through bear dance performances. Kalandars

have been known to visit tourist hotspots in Nepal to organize bear dances.

About 400 sloth bear were held by Kalandars in India in 2006 (Chauhan, 2006). Since then however, an encouraging number of Kalandars have surrendered their bears and opted for alternative livelihood opportunities offered by various Non-Governmental Organizations (WSPA-WTI, Wildlife SoS) in various Indian States including Madhya Pradesh, Chhattisgarh and Bihar. As part of a broader strategy, effort was made to identify trade in live bears in India to identify areas where initiatives could be taken at the grass roots level to make an impact on the live cub trade.

4.1.1 Central Indian Landscape Case Study

Preliminary analysis of data from Odisha, Chhattisgarh and Madhya Pradesh led to identification of areas vulnerable for poaching of sloth bears, 21 trade centers and the trade routes in these States. Local villagers informed that sloth bears were generally poached during November to January and Kalandars/traders were active in and around bear habitats. Use of guns, traps and poison to poach bears were reported during the survey including use of all bear parts in the illegal trade through 2-3 levels of dealings. The rate of live bear cub for sloth bears varied from Rs 300-600 (US\$ 8-14) at poacher level to Rs 2500-5000 (US\$ 60-120) at final traders level at which the Kalandhars (dancing bear community) purchase. Our analysis revealed that at least 40-45 bear cubs were being traded

mostly from Sambalpur and Mayurbhanj to neighbouring states of Chhattisgarh, Andhra Pradesh and Jharkhand.

We focused on the source where from these bear cubs are being poached and traded out to Nepal. Sambalpur and surrounding areas (Baripada, Angul) in Odisha are one of the key forest areas from where bear cubs are sourced for this bear trade. These areas of Odisha are now being targeted by the Wildlife Trust of India to stop poaching and illegal trade in bear cubs. Towards this effort, we launched a campaign to create awareness about the bear conservation among the local masses.

4.1.2 Rural Sloth Bear Campaign and in Trade Control

One of the most active trade routes originated in Odisha and ended in Uttar Pradesh and Bihar, where the cubs were either kept by Kalandars or transported to buyers across Nepal border. Thus, our emphasis lay on stopping trade in bears by working with enforcement agencies, developing a network of informers (mostly ex-poachers) and creating public awareness in Sambalpur district, identified as one of the main source areas of sloth bear cubs for the illegal market in India. A focused awareness campaign was initiated in January 2009, in Taravada village in

Sambalpur district of Odisha. The campaign aimed at sensitizing local people to the cruelty and dangers of bear cub poaching while also alerting them about the illegalities of wildlife trade. The campaign was expected to influence the attitude of the local people against capture of sloth bear cubs and wildlife trade in general.

As part of the campaign, local street play artists dressed in bear costumes enacted the story of 'bear cubs being separated from their family for entertainment of humans'. The campaign also incorporated local elements including folk songs and dances on environment subjects to effectively reach out to the people of the area and help spread awareness.

The performances were advertised through posters, personal invitations and by word-of-mouth. Movement of artists in bear costumes through the respective villages and song/dance performances also helped attract the viewers. Performances held on weekly bazaar days drew crowds of over a hundred people. Apart from street plays, different other activity like sports, drawing and debate competitions, nature camps, open discussions helped a lot in spreading awareness. This campaign changed much at the ground level. Some examples are provided in the Box.

Bear cub found at Majhi Sahi, Baud District, January 2010:

Due to the awareness generated by WTI's Sloth bear campaign, some of the villagers from Routpada contacted WTI for rehabilitation of two cubs that were in their possession, On investigation, we found only one cub (about 6-7 week old) in the village as the other one had been taken away by a relative living in nearby village. Later, a girl (about 12 years old) was attacked by sloth bear in forest that resulted in public outrage and a retaliatory killing attempt that resulted in two cubs left behind by the injured mother. The villagers were in possession of the orphaned cubs that were rescued by the quick action taken by WTI along with the State Forest Department, Baud district. The villagers were also made aware about the prohibition of keeping a scheduled species. The cubs are in Sambalpur Deer Park





Sloth bear cub rescued from Puruna Gahr village, February 2011:

Some villagers of Puruna Garh while collecting firewood in forests had an encounter with a mother with two cubs that resulted in the separation of one of the cubs that was brought to the village and kept for three days. As the villagers had seen the street play, they were aware of the consequences and informed WTI which sent out its team for a verification and consequently led to the rescue of the sloth bear by the State forest department As the mother of the cub kept visiting the village fringes at night regularly, the rescued cub was kept in a bamboo basket covered with a gunny bag at a site where the mother had been sighted by the villagers. This led to the successful unification of the rescued cub with the mother. Apart from this many other animals like barking dear, monitor lizards and snakes were rescued and rehabilitated by the forest department with the help of the local communities who we had made aware.





4.1.3 Formation of Village Protection Committees

Being a strife prone area, the local forest department enforcement activities are understandably weak. So it was decided to form a Village Protection Committee in each village which would assume responsibility for protection of the bear dens around the village. Dens with cubs were found with the help of people who frequent the village (like cattle grazers) and confirmed by the sound of the new born cubs. When a positive den was found, a team would guard the den through day and night from a Machan (Platform on a tree) erected at a safe distance. People going to forest were also made aware about the presence of the bear dens to avoid encounters.

Till date, nine dens have been identified and are being protected by the villagers themselves and no news of poaching of bear cubs from this area has been heard. Apart from protecting the dens during the bear cubing season, the Village Protection Committees patrol the forest during summer to prevent hunting of other animals and also work as regular informers for the forest department. On 13th May 2011 in a joint patrolling with forest department, Village Protection Committee of Terebeda village arrested three poachers with three guns (1 licensed and 2 non

licensed) and burnt several hides outs made by poachers near water holes. On the 16th May, two persons with bear meat were arrested in Charmal range under Redhakhol division. This was the first ever documentary evidence of poaching of bears for meat consumption in Odisha.

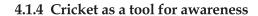












Cricket, which is a popular sport throughout India, was used to benefit the cause of sloth bear conservation. Eight teams from different interior pockets of bear affected areas were selected to participate in the tournament. Residents of Redakhol gathered over the weekend to cheer local teams in the cricket tournament organized as part of the Sloth Bear Campaign, to spread awareness on the plight of sloth bears in the country. The tournament



attracted over 3000 people who were also informed on conservation issues and also witnessed a street play on sloth bear conservation.

By effective use of awareness tools, positive opinions and attitudes towards conservation can be built. Once the opinions are changed, communities need to be guided to effect measures which are more effective in such areas where enforcement is not very effective due to remoteness of the sites and political strife.



4.2 Rehabilitation of Bear Dancers (Kalandars) in India- a case study Indu Kumari, Sudipto Chatterjee, Shameem Ahmed and Arshad Hussain

"Dancing bears" refer to sloth bears kept in captivity by certain (performing) nomadic communities, called Kalandars, who make their bears dance and perform tricks to beg for money. The Kalandars have been practicing the tradition of dancing bears since medieval times (Seshamani & Satyanarayan, 1997) and were patronized by the Mughal rulers in India around 16th Century AD. According to Berland (2003): "The Qalanadar, peripatetic nomads, are readily recognized as nomadic entertainers who travel with their trained bears, monkeys, goats and dogs. They are also skilled jugglers and acrobats, magicians, and musicians, impersonators, and beggars, and may also carry messages and news". The bears are hand raised by the Kalandars and in order to prepare them for performance, their canines and nails are removed. Their nose is pierced and a rope is passed through this hole. By tugging of this rope, the Kalander exercises control of the animal. All these raise ethical issues of animal welfare concerns and rights (Ramanathan et al., 2004).

After the promulgation of the Indian Wildlife (Protection) Act, 1972, some States, as per the law, issued certificates to Kalandars certifying ownership of the bears. In 1998, performance of animals was completely banned by the Indian Government effectively making bear dancing illegal. Despite the ban, poverty, illiteracy and inability to move to new livelihoods ensured that the Kalandars were dependent on this cruel occupation. WTI and the World Society for Protection of Animals, UK (WSPA) conducted a nationwide survey of dancing bears which revealed a presence of 346 dancing bears in the country (D' Cruze et al., 2010). This prompted WTI and WSPA to initiate a program with the goal of ending the tradition of performing bear dancing in India

and to take substantive measures for conservation of the sloth bear.

4.2.1 Approach

The initiative rested on three main approaches:

- **1. Campaigns:** To generate awareness about the illegality of bear capture for training into bear dancing at specific sites from where bears were captured..
- **2. Alternative Livelihood:** To provide Alternative Livelihood to Kalandars, who were dependent on bear dancing for their livelihood so that they could derive their livelihood from other means
- **3. Trade control:** To identify and secure bear dens and to prevent poaching in areas where such cases were high.

4. The Alternative Livelihood Programme

The largest concentrations of Kalandars were found in Naya Basera, Bhopal in Madhya Pradesh, Chorbhatti, Bilaspur in Chhatisgarh and Munger, Nawada and Nalanda in Bihar. Their complete dependence on bears for eking out a livelihood led to their continued return to the wild to source bear cubs. Initiatives involved several components and was executed in two phases:

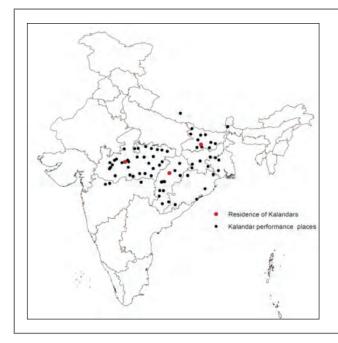
Phase 1 Alternative Livelihood Support:

Our involved identification of the Kalandar settlements followed by rapport building with the community making them aware of the existing wildlife laws and suggesting to them, viable alternatives to the age old profession. The alternative livelihood programme was designed on the basis of the skill sets of the Kalandars and subsequent trainings (Table 4.1)

Table 4.1 Support provided by WTI/WSPA

States						
Madhya Pradesh		Bihar and UP		Chhattisgarh		
Kalandars	Dependants	Kalandars Dependants		Kalandars	Dependants	
22	25	10 12		18 39		
Total: 50 Kalandars and 76 Dependents						

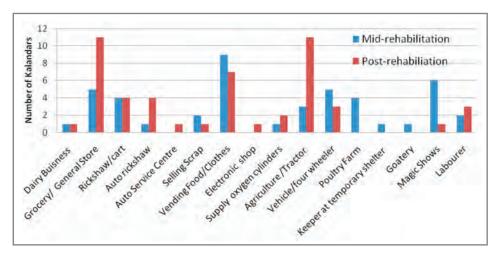
Figure 4.1 Residence of Kalandars and the places of performance



Rehabilitation/Alternative Livelihood:

The project rehabilitated 31 Kalanders in 2006, five in 2007, two in 2008, seven Kalanders in 2010 and five Kalanders in 2011. The nature of alternate livelihoods provided to the Kalandars is shown in the figure 4.3.

Figure 4.2 Alternative livelihoods of kalandars



Phase 2 monitoring:

In the second phase regular monitoring of the livelihood intervention was conducted. Extra support was provided to Kalandars, after a needs assessment. Fresh support was provided when a Kalandar failed in his Alternative Livelihood. All Kalandars were constantly motivated. Another dimension of the project was the deep impact it had on the society for issues like health, youth affairs including sports and career planning, children's education and women empowerment were also touched. It was realized during the course of the implementation that Kalandars would be more faithful to the Alternative Livelihood if the family members of the Kalandars were also brought under the ambit of the project. It became apparent that Kalandar women, who mainly remained indoors, needed to be empowered, so that they would not only be able to influence the men folk but also contribute to the household economy. Depending on their skills and interest, they were motivated and supported to start small enterprises. Similarly, Kalander children if educated would bring in further prosperity and security to the family so the project ensured that Kalandar children received continued education, so that Kalander children did not make a livelihood out of wildlife in future.

4.2.2 The initiatives on Kalandar

a. Formation of Self Help Group (SHG) and Micro-enterprise Development

In Bilaspur, Chhattisgarh, after a training need assessment and a series of group meetings with the women of the Kalandar family, a woman SHG was formed in December 2010 with 12 members. The SHG was named 'Quadri' after a saint revered by the Kalandars. A space was hired for a training centre and six sewing machines were provided. Several rounds of trainings on stitching were provided to 12-15

women at the village during September 2011 to March, 2012. Seven women members have completed the training successfully till date. The trainees were getting orders from the village and the SHG members were also saving Rs. 30/- per month per head in their SHG.

In Madhya Pradesh an entrepreneurship awareness camp was organized in February 2006 in which 25 individuals of the community participated. This was followed by a training programme for making detergents in collaboration with the Centre for Entrepreneurship Development- Madhya Pradesh (CEDMAP), Bhopal, in which nine women and three men of the community participated. Sewing machines and training for tailoring and embroidery was also provided. The impact of these trainings was assessed in 2011 which indicated that the trainees on detergent and soap making were not earning as their products could not compete with the well established products available in the market. Most of the trainees on tailoring and embroidery were earning individually but not on a regular basis because the finished products were not good enough to compete with better products in the market. This necessitated further trainings for enhancement of their skills so refresher trainings on tailoring and embroidery were organized during March May 2011. A SHG of the ten women was then formed to initiate their own micro enterprise. A common centre was provided to the group, to prepare the work orders of stitching.

b. Activity for the children of rehabilitated Kalandars:

WTI motivated the rehabilitated Kalandars to send their children to school and a survey in 2010 revealed that of the 78 children in the Kalandar families, 34 were going to school, 18 were drop-outs and were involved in some livelihood or household activity, seven did not enrolled and 19 were too young to go to school.

To keep the momentum going, the following activities were organized.

I. Education support to Children: Children of the rehabilitated Kalandars i.e. 29 children in Chobhatti, Bilaspur, 12 children in Kongia, Durg, two children in Bhopal and 11 children in Bihar were provided education support by WTI-WSPA in 2011 and 2012. They were enrolled in a school and provided school uniforms, school books and stationary through different events. The progress of these children was monitored regularly.

II. Children's Awareness Activities: To create awareness among the children of the Kalandars, activities like animated documentaries on good health and hygiene practices, importance of education, nature and conservation followed by on the spot interactive quiz was organized in the community and schools.

c. Health Camp:

Free health checkups and free medicines were provided to the beneficiaries through different health camps through which 72 members benefited in Bhopal, 22 members benefited in Biharsharif and 30 members benefited in Nawada, Bihar. An interaction with the local government health worker on how to maintain personal hygiene, healthy food habits, and health precautions during pregnancy, importance of vaccinations for children's and menstrual cycle care for girls and ladies was held in Bhopal. At the end of project period, all of the participants were found utilizing public and private health services, whenever required.

4.2.3 Monitoring and Evaluation of the Programme through success indicators:

The overall success of the programme on providing alternative livelihood was monitored through a carefully chosen set of seven indicators: (Kumari et al., 2011). The

rehabilitated Kalandars were monitored every month on the basis of the seven indicators. The performance on each indicator was scored good performance 2 points, average performance 1 point and poor performances zero points and a graph was prepared for the performance of each rehabilitated Kalanadar based on these indicators to assess the progress and sustainability of the AL. Performance of Rehabilitated Kalandars: The monthly monitoring and evaluation of the rehabilitated Kalandars showed the following results:

Indicator 1: No bears or wild animals used (Source of Livelihood): None of the beneficiaries were using any wild animal for their livelihood.

Indicator 2: Civil Society Integration:
Post rehabilitation, 98% of the
rehabilitated Kalandars procured Voter
Identity Cards, 80% Ration and the Below
Poverty Line (BPL) Cards. The
applications for rest 20% are being
processed at respective authorities. Ration
card helped them in purchasing ration
from the government supported Public

Indicator 3: Economic security: 98% of the Kalnandars have a savings bank account and 80% were saving for future use.

Indicator 4: Income Increased: 84% of the Kalandars claimed that they earned more during the past but the monitoring and evaluation data shows that the average annual income of the Kalandars had increased (Fig 4.3).

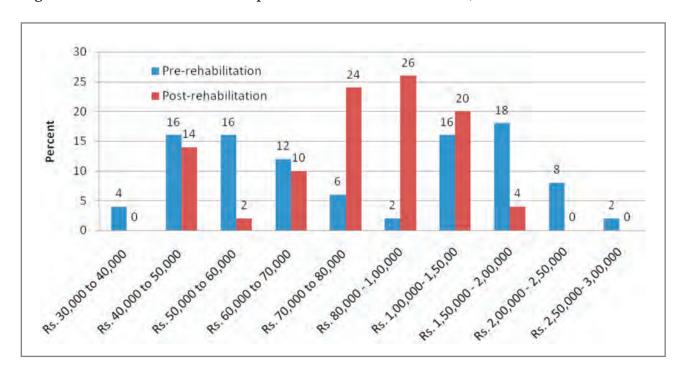


Figure 4.3 Annual Income: Pre and post rehabilitation of Kalandars, 2006-2012

Indicator 5: Income Potential Utilization: Working days of the beneficiaries averaged to five days per week.

Indicator 6: Education of Children: Out of 74 children 68 were going to school regularly. 54 children had been provided support for their admission, uniform and books by WTI-WSPA while others have been linked to govt. schools schemes.

Indicator 7: Healthcare provided by Govt/NGOs: All the rehabilitated Kalandars have been linked to Government Healthcare Centers and schemes.

By the end of 2011, the WTI-WSPA initiative ensured that none of the rehabilitated Kalandars were involved in bear dancing or performance with any other animal. 74% of these rehabilitated Kalandars had successfully taken up their Alternative Livelihood (AL) and were fully dependent on these options for their livelihood. Thirteen Kalandars couldn't perform well and efforts are ongoing to support them for a sustainable alternative livelihood. The average result of the Monitoring and evaluation of all the rehabilitated Kalandars since 2006 is given in figure 4.4.

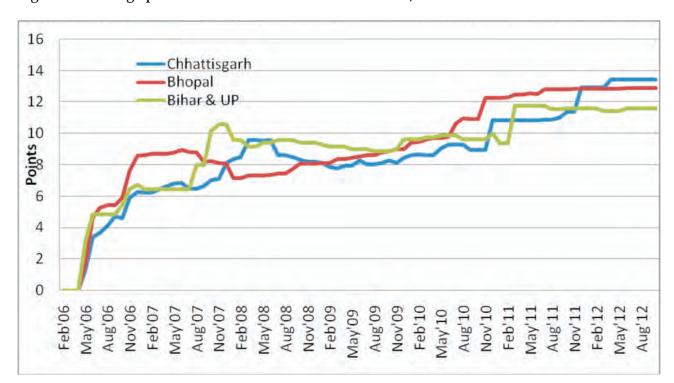


Figure 4.4 Average performance of rehabilitated Kalandars, 2006-2012

The consolidated performance sheet was then prepared for all the Kalandars based on the points obtained by each of them in the 14 point scale. The performance of the rehabilitated Kalandars is summarized in table 3.

Table 4.2 Status of Alternative Livelihood of rehabilitated Kalandars

State	Excellent Performance	Average Performance	Poor Performance	
Madhya Pradesh	9 (40%)	9 (40%)	4 (20%)	
Bihar	4 (50%)	2(25%)	2 (25%)	
Chhattisgarh	6(33%)	5(28%)	7 (39%)	
UP	NA	2(100%)	NA	
India	19 (38%)	18 (36%)	13 (26%)	



Age: 43 Years, **Address:** Village- Chorbhatti, Block Takathpur, Bilaspur (C.G.)

Past Status: Bear Dancer Present Occupation: Agriculture

Information of Family members: Married to Alimun Bi, they have got five sons and four daughters and three of them are going to school.

Alternative Livelihood: Sher Ali's initial support for goatery met with a failure. All his goats died due to a viral disease. Then he opted for agriculture as an AL. As he had 4 acres of agriculture land he opted for agriculture as a livelihood. He was supported irrigation facility and a bore well was dug in his field. He was also supported with fencing wire and fencing pole to secure the land from cattle.

Income: He could raise two crops a year and earned Rs. 150 thousand from paddy annually. In addition he grows vegetables which are very good source of income for his family. Recently he started property dealing which provides him extra income.

Civil society integration: He has Election ID card, Ration Card, Bank Account and a Kisan (Farmer) Pass Book.



Zameer Khan (s/o Saleem Khan) **Age:** 30 yrs

Past Status: Bear Dancer Present Occupation: Auto Driving

Alternative Livelihood: Zameer used to perform with the bear of his father. Together with his father he was given initial support of Rs.65000 in 2006 to buy a second hand auto. He used his auto to ply school

children and Government staff for a monthly fare and in the spare time he plied the vehicle inside city routes. With his earnings he repaid his loan taken to buy an auto and brought another second hand loading auto in 2010. In 2010 he was earning 200-300 per/day. He and his father were mentors for other Kalandars.

Since Zameer's brother was dependent on him he was struggling with his economic security till July 2010 but Zameer was very consistent and hard working with his livelihood. It was evident from the fact that he upgraded his initial vehicle with more updated model and later brought one more for his brother. He was also awarded by WTI for his good performance in 2010.

4.2.2 Lessons learnt and The Way Forward

As an outcome of seven years of implementation of the project, none of the rehabilitated Kalandars returned to their traditional profession. The national average of the project was 38% of the rehabilitated Kalandars performed very well during the last one year of project implementation while 36% were average. About 26% beneficiaries failed in their initiatives. Lack of education, nomadic life style made acceptability and sustainability of the alternative livelihood difficult for those Kalandars who could not benefit from the initiative. Addiction to alcohol, gambling, low priorities to health and hygiene and nonparticipation of women were strong social issues that remain to be addressed. It would be a pragmatic endeavour to ensure that children of Kalandars find the right place in civil society. It was also found in the survey that the beneficiaries still have the tendency of taking huge debts and falling in the debt trap, then jeopardising the alternative livelihoods provided to them.

The pan-India survey by WTI-WSPA in 2010 revealed that the dancing bears had reduced to 28 so it can be concluded that while the project has been largely successful in bringing down the tradition of bear dancing in India, the practice continues in remote parts of the country particularly in the Indo-Nepal region with a porous border. The success of the project in the states of Madhya Pradesh, Chhattisgarh and Bihar could be replicated in these regions.

4.3 Conservation education strategy for the conservation of bears in India

Lima Rosalind

4.3.1 Introduction

Despite bears having been immortalized in our movies and teddy bears around the world, they still evoke fear and repugnance. It is for this rationale that in spite of the very many ecological studies conducted on the bears, their conservation remains ineffectually isolated. They are threatened by a variety of causes and the growth of bear populations is limited by several factors. The most important of which include human caused habitat disturbances, the growth of human population around bear habitats, cutting of forests, and related deterioration of habitat. Consequently, distribution ranges for the bears have become isolated and comparable to islands. In addition, because of the high economic value that bear parts command, illegal hunting and poaching has become a very serious contributing factor to the decline in bear numbers. Bears are similar in some ways to man, yet awesomely more physically powerful and clearly more at home in natural environments. In learning to share some of our national parks and protected areas with the bears we can begin to rediscover and redefine our place in nature.

The bears are a threatened species and so their declining numbers need urgent attention and an engagement with the stakeholders like the communities in northeast Indian States, to ban bear hunting along with continuation on the ban of issue of licenses for rifles and bore guns, and replacing them with licenses for small guns, Strengthening intelligence gathering mechanisms and share with different law enforcing agencies including para-military forces to curb illegal trade in

bear parts, Survey/ Study on bear hunting and illegal trade in bear parts, Strengthen monitoring of wildlife crimes at Inter-State check posts and international borders, Legal assistance to ensure convictions/ create green lawyer network and a host of other mechanisms including education and awareness programs leading to a better understanding of the market forces and also social conditions.

Some efforts like the collaboration of the Odisha Forest department and the Wildlife Trust of India in engaging volunteers for a mobile campaign to spread awareness for conflict mitigation and trade control for the sloth bear conservation, rehabilitating the Kalandar communities and providing the bears a safe refuge are but a trickle in the vast canvas of yet to accomplish any tangible results in transforming the attitude and behavior of the varied stakeholders in the bear landscape in India. Urgent measures in that direction will help us to execute better put in viable measures for bear conservation. A dedicated conservation education strategy for bears needs to be evolved and positioned to take off with ample support from the respective State Forest departments and the Ministry of Environment and Forests and help secure the future of these much persecuted species. This paper sets the tone for a much needed Conservation Education strategy for the bears.

4.3.2 The Context

Conservation Education especially in our context for conserving the four bear species in our range is a process of learning that leads to an individual/ groups willingness and ability to take action which directly or indirectly, immediately or in the long run, by themselves or in conjunction with the other actions leads to the conservation of environmental entities

such as land, water, biodiversity and so on. The educational exercise is often planned or strategized. Such a strategy could be made for a single educational event or for a larger educational intervention in which single events happen. In both strategies there are certain crucial elements and certain relationships among these elements, all of which arranged in a particular fashion, give us an educational strategy and with the goal of Bear conservation, a bear conservation education strategy.

The elements are and could be ordered as follows:

- 1. Situation analysis: The conservation status of the species involved the problems which in the first place necessitated conservation action, the parties involved and the conflicts of interests, the nature and requirements for conservation action planned and so on. Identify areas, individuals, groups, issues where conservation education is indicated.
- **2. Objectives:** What is the overall program or individual program expected to achieve?
- **3. The Learners or the Target group:** Who needs to learn? What is their profile?
- **4. Content:** What needs to be learned? What would be the themes messages of the Program?
- 5. Approach, Methods: How will the content be dealt with? How will it be treated keeping in view the learners, their profiles, needs, the objectives, and their relationships with the possible facilitators? All this makes up the approach to be followed. The approach will also take into account the magnitude of the program. What will be done through the training

mode, through meetings, interpersonal communications, directly and indirectly, through fairs, panchayats, local communication methods, local institutions and so on?

- 6. Media and Media Planning: Identify appropriate media, making a message-media-audience matrix, sequencing of the individual events, strategy for maximizing reinforcements as individual programs often reinforce one another. Pre testing and Post-testing strategies.
- **7. Implementation:** Who will do what in this whole program, access to expertise, phasing, when, where, and the logistics involved
- **8. Monitoring and Evaluation:** Mechanisms for monitoring of the program, feedback and evaluation systems.
- **9. Budget/resource requirements:** Estimates of what the whole will program cost, where will the money come from and so on.

4.3.3 Situation Analysis in the bear landscape

In almost any region of the world facing conservation issues, a key challenge is to capture the imagination and interest of local people in a way that stimulates cooperation and conservation action. As conservation biologists, how can we cultivate ecological and conservation literacy in communities adjacent to threatened and endangered species and their habitats? How can we bring local people into the conservation fold and keep them involved? How can we find a successful solution to mitigate bear human conflict? In India, Bears have suffered from a "persecution syndrome" that seems almost historical as the fear and loathing of them is passed on from generations through stories

and attitudes. There is scarce engagement with the communities to mitigate the bear human conflicts in India. A possible explanation for this would be a lack of will or knowhow. One way of engaging with communities is through the Outreach and partnership programs.

Effective outreach and partnership programs would (1) increase the knowledge base of participants and their ability to use scientific approaches to understanding conservation issues; (2) collect long-term ecological data by capturing the interest and enlisting the assistance of local communities in general and students and their teachers in particular; and (3) facilitate opportunities for constructive dialog between scientific researchers and communities located within or adjacent to ecosystems being studied, which builds a more fruitful foundation for the development of environmental policies and conservation plans. (Feinsinger et al., 1997; Caton et al., 2000; Yaffe and Wondolleck, 2000),

Outreach and partnership programs typically focus on taking scientific information out of the ivory tower and onto the streets, but the scope of the programs can differ markedly. Outreach programs tend to connect scientists with an audience in a fairly unidirectional way: scientific knowledge is transmitted through venues such as seminars, discussions, or workshops. By comparison, partnerships represent multidirectional sharing of information and perspectives. By definition (McKechnie, 1976), a partnership gives participants a more-or-less equivalent share or stake in something with others; everyone makes contributions and shares in decisionmaking, risks, and benefits. Furthermore, by working with local communities, scientists can learn how local residents relate to the threatened species and habitats they study.

Well-designed programs can foster understanding of the ecology of local ecosystems and encourage participants to become more engaged in conservation efforts close to home.

The Conservation education (CE) strategy for bears will thus need to address all the major stakeholders. CE strategy for the bear conservation is not a blue print for saving the bear populations but is a concentrated effort at arriving at the best possible alternatives and solutions from among the stakeholders, through consensus-building support for the conservation of the bears.

4.3.4 Stakeholders

The major stakeholders would thus include forest workers, hikers, tourists, tour operators, fishers, food gatherers, forest department personnel, armed forces personnel, border police personnel, bureaucracy, decision makers, migratory livestock herders (gujjars, gaddis and bakkarwals), land developers, teachers, non-governmental organizations, Gram Panchayat members, media personnel and other outdoor enthusiasts.

4.3.5 Methods /Content /Themes

There is a great need to increase the level of public awareness regarding the natural history, current population status, and habitat conservation needs of all the four species of the bear in India. This is most important for preventing human injuries and property damage, and for improving local acceptance of the bear. A number of policies and programs should be developed to redress this situation. First, a public education program should be established to introduce the findings of scientific research on bear habitat interactions and the disruptive effects of human activity on them. This is necessary not only to prevent

damages or accidents involving bears, but also to affect a change in citizens' attitudes towards them. With the efforts of funding organizations, governments, and policymakers it is important to forge "outreach and research partnerships" with local communities through school and informal citizen science programs, particularly where long term monitoring programs are planned or underway. Furthermore, a system for assessing bear population status and human attitudes toward their conservation is necessary.

Wildlife management staff who can respond to damage problems and potentially dangerous situations should be placed in the field to ensure the support of local communities for management plans. Such a program will require the input and cooperation of government and non-government organizations as well as the commitment of adequate financial support.

In regions inhabited by bears, the fear and loathing of them remains strong. This may reflect the strength of stories passed down of historic damages and accidents. It also results from the lack of public outreach that conveys research findings or guidelines that could minimize conflicts and damages. Few people understand that casually discarded garbage creates food-conditioned bears and can invite later damage.

Problem prevention outreach programs should be directed to forest workers, hikers, tourists, tour operators, fishers, food gatherers, and other outdoor enthusiasts who spend their time in bear habitat. For instance, a simple response such as providing a safe exit to a bear when encountered is not practiced by villagers who end up chasing it and suffer from consequences of a bear attack. A number of approaches should be used to create outreach programs on several audience levels. This

should include specific recommendations on minimizing conflicts with bears for people living near bear habitats, as well as elementary and middle school programs describing the critical role of the bears in the natural history of India. This outreach activity should not be limited to the realm of government wildlife agencies, but should be carried out cooperatively with foresters, land developers, teachers, non-governmental organizations, armed personnel and media personnel. The current reliance on the removal of "problem bears" should be reconsidered. Brown bears show apparent behavioral variation by individuals, often a result of situation specific learning. Rather than treating all bears encountered as 'problem bears' a management system that recognizes and responds to food conditioned bears through proper management will help reduce conflicts. Such approaches have been succeeded in many bear range countries of the world.

In the Glacier National Park, U.S.A., management actions there have included successful clean-up of garbage and other unnatural food sources both in developed and backcountry areas, an intensified research program on both grizzly bear ecology and the grizzly's relation-ship to man, as well as management of human activities in certain backcountry areas. The latter point has included periodic trail closure in areas known to be frequented by female grizzlies with cubs or in areas where grizzlies seasonally congregate for food, or in areas where unnatural food sources attracted grizzlies. In Glacier in 1969-73, there were no grizzly-caused human injuries, despite an increase in number of visitors. Glacier National Park, U.S.A., is a good example of a park which has employed most of these research and

management techniques and has as a result greatly decreased both human injury and also handling and control kills of grizzly bears. Their work is well documented (Martinka, 1968; 1971; 1974).

The identification of 'problem bears' and notification of people in the area is important for gaining public support for management. Various management options such as the relocation of 'problem bears, the use of barbed wire or electric fences and other deterrents, and compensation systems should be considered in addition to strengthening of traditional crop protection measures such as drumming of empty metal tins, use of guard dogs, community level guarding and burning chilies in cow dung cakes (Charoo et al., 2011). Bear habitat conservation should become a consideration of the forest planning process, road construction, and other development projects.

Monitoring programs can be achieved by establishing a network of bear observers, preferably from among some of the trained village youth or interested groups, who would be responsible for both monitoring population trends and running some urgent research projects. This network can be coordinated on a national or international level. Minimizing habitat fragmentation by protecting linkage areas between subpopulations, and through the closure of unused forest roads should also be encouraged.

Another area of concern relates to the international trade in bear gall bladder and other parts. Probably the most difficult task is stopping poaching and the illegal trade in bear parts. The problem can be solved by either improving wildlife controls to prevent poaching, or enforcing customs control to prevent trade. If there is no international trade,

there will be no commercial poaching because there is extremely little demand for bear parts within the country. A strategy should be developed to inform the general public of the connection between the regulation of trade and worldwide bear conservation.

Finally, successful conservation practices that encourage social acceptance for coexistence with a large mammal like the bear require much work! Even in a country like India that has a history of human tolerance towards wildlife that is fast eroding, this would be an enormous task. Proactively addressing these problems requires a learned, experienced, and committed work force along with some of the enabling factors like funding support and a plausible determination for transforming attitudes for the conservation of bears.

5.0

EX SITU CONSERVATION AND BEAR REHABILITATION

5.1 Status of Bears in Ex Situ in India and Way Ahead B.S. Bonal and Brij Kishor Gupta

5.1.1 Introduction

The Central Zoo Authority (CZA) is a statuary body of Ministry of Environment & Forests, Government of India established in 1992 to oversee the functioning of zoos in India and provide technical assistance. There are 70 Zoos

and five Rescue Centres who are housing a total number of 795 individual (as on 31st March, 2012) bears in captivity for the purpose of conservation, education to the public and for their lifetime care. The details of the bear species housed in various Indian Zoos & Rescue Centers is as show in Table 5.1.

Table 5.1 Status of Bears in Indian Zoos (As On 31.3.2012)

S. No.	Species of Bear	Male	Female	Unknown Sex	Total	No. in Zoos	No. on Rescue Centers	No. of Zoos	No. of Rescue Centers
1	Sloth bear Melursus ursinus	292	267	3	562	251	311	40	3
2	Himalayan black bear Ursus thibetanus	106	95	22	223	211	12	53	2
3	Himalayan brown bear <i>Ursus arctos</i>	3	1	1	5	5	0	1	0
4	Malayan sun bear Helarctos malayanus	1	3	0	4	4	0	2	0
5	European brown bear <i>Ursus arctos</i> <i>arctos</i>	1	0	0	1	1	0	1	1
	Total	403	366	26	795	472	323	97 (70)	6 (5)

5.1.2 Bear updates

The details on animal acquisitions, birth, death and disposal of bears in Indian zoos from April 1995 to 31st March, 2012 reveals that the number of bears in the captivity increased consistently from 313 to 795. Sharp increase in holding of bear population in zoos was observed during 2004-05 to 2010-11 due to large number of bears rescued from 'madaris'

called 'kalandars' and housed in rescue centres. One hundred and fourteen bear cubs were born in various Indian zoos in a period from 1995-96 to 2011-12, which is just about 1.34% of total holding. On the other hand, 973 cases of bear acquisition were recorded by zoos, majority of which were seized or rescued (11.37%). Five hundred and fifty five bears died since April 1995, which was 6.58% of the total holdings (Fig.1).

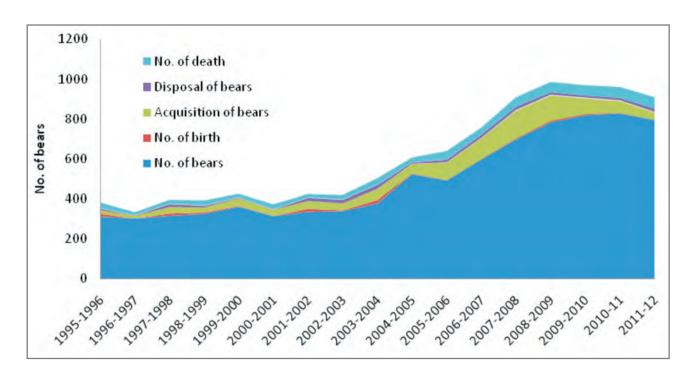


Fig. 5.1 Status of captive bear housed in Indian Zoos during 1995-2012

It is clear from the figure above that acquisitions far exceeded disposal and mortality and therefore the resultant increase in the total number of bears. Also striking is the low birth rate in the bears.

Five species of bears have been kept in Indian zoos in the last decade or so. These are the four species of bears found in India the sloth bear (*Melursus ursinus*), the Asiatic black bear (*Ursus thibetanus*), the sun bear (*Helarctos malayanus*) and the Himalayan brown bear

(Ursus arctos). Additionally, some zoos also hold the European brown bear (Ursus arctos arctos). Whereas number of most other species has remained stable, sloth bear has shown an increase after the year 2004-05. This period coincides with a drive to stop the tradition of bear dancing in India by various NGOs like the Wildlife SoS and Wildlife Trust of India. Consequently, a number of sloth bear were rescued from Kalanders and moved to zoos and rescue centres.

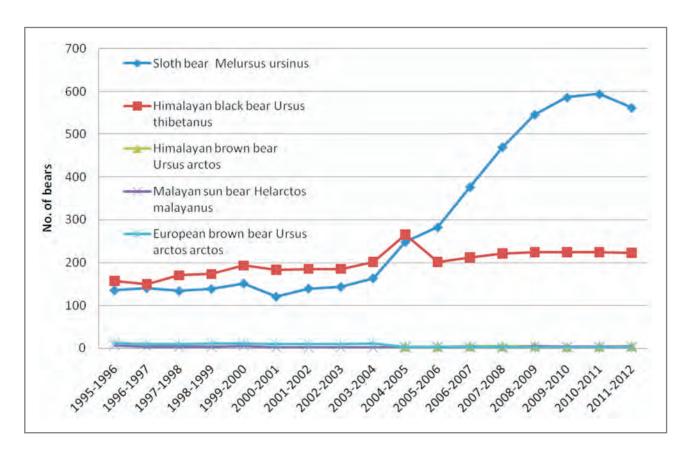


Fig 5.2 Bear species wise status of bears in Indian Zoos

Asiatic black bear has been the most productive with births occurring in 21 of the 55 zoos (38%). On the other hand, the sloth bear, bred in only 10 of the 43 facilities (23%). A detailed inventory is provided in annex II.

5.1.3 Steps taken and future action plan proposed

Several steps have been taken by the Central Zoo Authority to ensure the Indian zoos comply with good practices and standards of animal upkeep and welfare. Some of the measures taken are:

1.Ensuring improvement of the Animal housing, display of animals and animal enclosures.

• Most the bear enclosures in Indian zoos

were built prior to formation of the Central Zoo Authority and hence the design and dimensions of enclosures were not of good standards. The CZA has reformed it rules and norms and zoos are being asked strictly to adhere the improved conditions for animals.

- No zoo can build any new enclosures for bear species without obtaining prior approval of the Central Zoo Authority which is approved after due scrutiny by the Expert Group on Zoo Designing of CZA.
- A zoo shall review their existing bear exhibits complying with the standards and norms as prescribed by the CZA and improve them accordingly.
- All the bear exhibits as well as bears housed in life time care facilities should be kept in housing which has been enriched

for physical and mental well being of the animals.

 Scientific breeding and infusion of new blood into the existing population is encouraged.

2. Ensuring Upkeep and healthcare of animals

- CZA has reformed its rules and guidelines for the better upkeep and veterinary care of animals and circulated to the zoos for the guidance and implementation. A Memorandum of Understanding (MoU) signed with Indian Veterinary Research Institute, Bareilly identified as the National Referral Centre (NRC) to provide specialised services and facilities to the recognised zoos/rescue centres of the country pertaining to diagnosis and therapeutic measures for infectious and non-infectious disease and healthcare among the wild animals. All recognized zoo may consult the IVRI for any disease investigations.
- Periodic disease screening of captive bears for infectious and non-infectious disease and their healthcare.

3.Ensuring Maintenance of Records, Studbooks and preparation of Inventory

- For better record keeping and breeding, the CZA has signed a Memorandum of Understanding with International Species Information System (ISIS) to provide its services to zoos.
- The Central Zoo Authority has assigned the responsibility of preparing and updating the studbooks of all four bear species found in Indian zoos for the purpose of conservation breeding to the

- Wildlife S.O.S for five years. The Wildlife S.O.S shall be publishing the interpretative studbooks of all the species annually and provide hardcopy of studbook to each zoo where bears are housed.
- National and international studbook for all four species should be prepared and shared among all zoos across the globe.

4. Ensuring Conservation Research

- The Central Zoo Authority is encouraging zoos to conduct research on behaviour and husbandry of animals so that zoos can have provide improved guidelines for the upkeep and breeding of animals. Several research projects have been initiated with the Padmaja Naidu Zoological Park, Darjeeling, Wildlife SoS and the Wildlife Institute of India, Dehradun.
- The Central Zoo Authority has also entrusted Indian veterinary Research Institute Bareilly to standardize diet of animals including bears, in captivity. The final report has been received and vetted by CZA. Soon it will be circulated to all zoos.

5. Conservation Breeding

- The CZA has indentified conservation breeding programme for Brown and Malayan sun bear at Himalayan Nature Park Kufri and Aizawl zoo, respectively and zoos are being asked to develop off display conservation breeding centres for which Central Zoo Authority would provide 100% financial assistance for
- i nfrastructure as per guidelines.
 - Breeding of the animals should be planned in advance at state and national

level considering the studbook of animals. Inbreeding should be avoided.

- All the four Indian species should be part of GSMP (Global Species Management Plan) of WAZA (World Association of Zoos and Aquariums) which provides scientific basis of bear breeding in zoos.
- Rehabilitation of bears rescued from wild or poachers should be sent to only such zoos who has plan for breeding and wish to induce new blood in its existing population, else efforts should be to release back to the wild, if they are found fit to be released.
- Exchange of bears among the zoos at national and international level should be encouraged for planned breeding.
 Memorandum of Understanding between the Leipzig Zoo (LZ), Germany under process to be signed for cooperation to improve, develop and implement future strategies in the fields of Capacity building/ exchange of manpower, Sharing of management practices, Scientific animal exchanges, Training programme for zoo supervisors in India by the experts of the Leipzig Zoo, Leipzig, Exhibit designing and Research and conservation breeding programmes
- Memorandum of Understanding between Central Zoo Authority and National Trust for Nature Conservation, Nepal (NTNC) is under process to be signed to cooperate to improve, develop and implement future strategies in field of capacity building, animal exchanges etc.

6. Biotechnological Intervention

 In order to infuse new technology in the field of assisted reproduction, DNA finger printing (genetic analysis) and establishing cryo banking (Gene bank) of endangered species a Laboratory (Laboratory for Conservation of Endangered Species LaCONES) has been established at Hyderabad in collaboration with the Centre for Cellular & Molecular Biology, Hyderabad, Department of Forests, Government of Andhra Pradesh, Department of Bio-technology, Government of India and Council of Scientific & Industrial Research (CSIR).

7. Capacity Building

- The Central Zoo Authority organizes training programmes and workshops for all categories of zoo personnel (Director, Curator, Veterinarians, Biologist, Educators and Keepers) to enhance their efficiency and skill in zoo management and continue with innovative changes.
- One zoo director and veterinarian is deputed every year to attend the Endangered Species Recovery Course, conducted by Durrell Conservation Academy of Durrell Wildlife Conservation Trust Jersey, UK. The Central Zoo Authority has now decided to organize the course in India so as to reach knowledge sharing to more zoo directors and veterinarians by inviting faculty from Durrell Wildlife Conservation Trust, Jersey. This effort is expected to raise the status of upkeep and veterinary care of bear species too and help in successful breeding and conservation of bear species in India.
- Imparting the education & awareness among masses through electronic media by zoos on bears, their behavior, importance, illegal trade etc.

Thus the hosts of steps taken by CZA for the Indian zoos are expected to uplift the housing,

welfare and management of bears and other animals within the Indian Zoos.

5.2 Bear Rehabilitation into the wild Dr. N.V.K. Ashraf

Historically and globally, organized orphan bear releases do not seem to be a very ancient practice, though nuisance and problem bears might have been released to the wild now and then. Here we differentiate orphan bear rehabilitation from the anecdotal releases of sub-adult and adult unmanageable captive bears that might have happened across the globe in all bear-bearing countries. Considering the fact that bear is the only widely distributed charismatic large mammal across most of the temperate countries of Palearctic and Neoarctic realms, the practice of objectivised bear rehabilitation would have in all probability originated in countries of these realms.

The term 'wildlife rehabilitation' is loosely used in India (and perhaps many other countries as well) and it means different things to different people. In India, even placing confiscated dancing bears and circus animals in large enclosures for lifetime care is considered as rehabilitation. However, 'wildlife rehabilitation' as defined by the National Wildlife Rehabilitation's Association (USA) means "treatment and temporary care of injured, diseased, and displaced indigenous animals, and the subsequent release of healthy animals to appropriate habitats in the wild" (Miller, 2000). The guidelines for the placement of confiscated animals provided three options (IUCN, 2002): (i) Return to the Wild, (ii) Euthanasia and (iii) Captivity. Rehabilitation in the context of this article means 'return to the wild' and not placing them in captivity, no matter how spacious and

natural/naturalistic the facility may be.

Reports of orphan bear releases have come in from few bear bearing states in India, largely carried out by the respective state forest departments. However, these are invariably unplanned releases, done without any regard to the biological and ecological needs of the released bears. Such attempts are akin to abandonment as no special attempt is made to either impart survival skills before release or monitor their survival post-release. The first ever recorded attempt to systematically rehabilitate orphan bear cubs confiscated from people was in Arunachal Pradesh, initiated in 2003-04 by the International Fund for Animal (IFAW) and Wildlife Trust of India (WTI) in collaboration with the Department of Environment and Forests, Arunachal Pradesh (Ashraf, et al 2008).

5.2.1 Cub displacement and justification for rehabilitation

Of the four species of bears found in India, the sloth bear (*Melursus ursinus*) and Asiatic black bear (*Ursus thibetanus*) are naturally the most commonly displaced or orphaned from the wild. Bear cubs in general and Asiatic black bear cubs in particular, are rarely confiscated from traders in India. Only sloth bear cubs are sometimes confiscated from traders who catch them for induction into bear dancing practice. As bear dancing tradition is now on the wane, almost all the present sloth bear cub displacements would be due to reasons other than 'capture for trade'.

Rehabilitators are not faced with the question of not knowing the origin of bear cubs as bear cub 'rescues' happen locally in the respective bio-geographic sub-regions.

The most common cause of displacement of Asiatic black bear cubs in the north-eastern parts of India is hunting. Mother bears are hunted and the cubs get orphaned, though most of the bear owners do not readily agree on having procured the cubs after a hunt. The displacement is therefore not due to habitat loss but hunting. Habitat is therefore available for considering 'Return to the Wild' option. All the lifetime care facilities in the northeast, be it rescue centres or zoos, are overcrowded. Resorting to 'Return to the Wild' option would naturally bring down the pressure on illprepared zoos and other lifetime care centres. Since the launch of the orphan Asiatic black bear rehabilitation program in Arunachal Pradesh and Assam in 2003, only five of the 32 orphaned bears have ended up in lifetime care. These five bears were considered nonrehabilitable and therefore 'Captivity' was considered as the apt option.

5.2.2 Advantage of being bears

Among large mammals, bears are ideal candidates for rehabilitation as they are less social, omnivorous and more importantly prefer to remain solitary for most part of their lifetime once weaned off from the mother. The advantages of these biological and behavioural attributes are that bears as a group (except probably the polar bear), can be taught to forage on their own without going through the challenge of imparting skills like predation. Rehabilitation success is therefore guaranteed in the case of bears if appropriately carried out. In spite of such inherent advantages, orphan bear rehabilitation as a conservation and welfare tool has not yet drawn the attention of various state governments in

India. This could be due to a combination of factors, the principle among them being the lack of knowledge on the rehabilitation techniques. Moreover, the state forest departments have other set priorities in wildlife management and would consider placing the 'rescued' cubs under lifetime care an easy option as opposed to rehabilitating them back to the wild. The state governments have the option of partnering with a reputed Non-governmental Organization (NGO) to achieve this objective but the need is rarely realized.

5.2.3 Learning from past experiences

Fredriksson (2005), based on her studies in Borneo with sun bears (*Helarctos malayanus*) demonstrated how unplanned anecdotal releases by the local wildlife department ended up being unsuccessful. Based on their initial attempts to rehabilitate orphaned Asiatic black bears in Arunachal Pradesh, Ashraf et al. (2008) showed how even well planned schemes can go wrong if appropriate rehabilitation method is not followed. Unlike the temperate regions, the released bears in the tropics have to deal with predators and people. Depositing yearlings in hibernating dens as a rehabilitation technique (see Beecham, 2006) is not an option in tropics where bears do not hibernate. The rehabilitators will have to opt for other means of creating site fidelity and imparting survival skills to overcome these challenges.

5.2.4 Walking the bears: As assisted way of soft release

In the wild, the cubs learn the behavioural skills necessary for survival from their mothers. But a mother bear cannot "teach" her cubs any of these skills in a captive environment. The cubs would therefore be learning the survival skills by watching what the mother does and avoids 'in the wild'. In

other words, the cubs watch their mother's reaction to both carrots and sticks of the natural world. Wilderness or the natural habitat therefore plays an important role in shaping the survival skills of bears, with the mother's active roles being confined to nursing and protection. Like how a bear cannot "teach" survival skills in captivity, a rehabilitator too cannot teach survival skills by holding them captive, though a hard-released bear cub might learn them all by itself if thrown into an environment where competition from conspecifics are less and threats from predators and people are insignificant (see Clark et al., 2002 for example).

The principle behind the 'assisted release' method of soft-release, followed for rehabilitating Asiatic black bears in India, is to nurse and protect the cubs as they get acclimatized to challenges in the wild (Fig. 5.2.1). In an assisted release program, the question of released bears getting attached to

man-made food source does not arise as the cubs themselves wean away from the supplementary food source. Unlike bears, captive-raised and hard-released, bear cubs in an assisted release program detach themselves from food source, not by force but by choice. Finding the habitat more exciting and rewarding, the cubs stop visiting the enclosure area which they associate with food.

The Indian experience of bear rehabilitation has shown that the appropriate method would be to rehabilitate cubs in the wild and not release 'rehabilitated' bears to the wild. The bears in assisted release are not 'cared and fed' during rehabilitation but only 'protected while foraging' during the period. Benjamin Kilham's experiment with American black bears (*Ursus americanus*) was probably the first ever known attempt of releasing bears by this method (Aldrich, 2001). Fredriksson (2005) also demonstrated the value of 'walking the bears' in the forests in her experiment with sun bears in Borneo.



Fig. 5.3 Rehabilitator with Asiatic black bear cubs in Arunachal Pradesh, India (Left) and the grown up cubs honing their foraging skills (Right).

The assisted release method has been successfully tested with American black, Asiatic black and Malayan sun bears, while its applicability to sloth bears has not yet been field tested. In all probability, there is no

organized and documented sloth bear rehabilitation project in place, either in India or Sri Lanka. Attempts to rehabilitate five sloth bear cubs in Munger Forest Division of Bihar in 2007 had to be discontinued following





Fig. 5.4 Sloth bear cubs foraging for insects during their acclimatization in Bihar, India.

threats from extremists (WTI, unpublished). The sloth bear cubs were taken for daily incursions into the forest by two dedicated caretakers for more than two months before the operation had to be curtailed. This brief two month stint with sloth bear cubs in the wild again reinforced the value of in-situ acclimatization as it helps to sharpen their foraging and other skills required for survival in the wild. Though the cubs had never seen their mothers or any other adult bear employing their specialized rostrum to draw out subterranean insects, the cubs were seen resorting to this practice at any given opportunity during the acclimatization period (Fig. 4.2.2). Needless to say that, for all rehabilitation programs irrespective of the method being employed, the selection of an appropriate release site is a key factor for postrelease survival. For the sloth bear, the release site should have all the key elements like termite mounds and fruiting trees which alone can make their training grounds ideal for honing their foraging skills before release. Anthropomorphic disturbances and human trespassing have to be negligible, if not completely absent, in areas selected for an insitu acclimatization program that would last for seven to ten months before the bears are 'let off' from the clutches of rehabilitator's control.

5.2.5 Rehabilitation and release

Concerns with bear releases have been on two fronts: (i) Effect on released bears (susceptibility to predation and poaching, and welfare concerns) and (ii) Effect on resident bears (transmission of disease, chances of genetic pollution and competition). It is true that most rehabilitation programs do not take into consideration the abundance of bears already present at the release site. Keeping in mind that a saturated population means a healthy breeding population, any 'release' of bears after 7-10 months of *in situ* acclimatization (roughly coinciding with the period cubs leave their mothers) would be considered as new recruits to the population. By allowing the bear cubs to grow in the area of their release, the resident bears do not get threatened by the sudden appearance of a sub-adult bear as it happens with any hard-release program. The other merit of in situ acclimatization over ex situ training is that released bears also do not suddenly end up in a world unfamiliar to them (Table 5.2). There is probably little room for factors like density dependent social intolerance having an effect on the released and resident bears during assisted release programs. Moreover, dispersal to marginal habitats because of intense competition in high density areas would be common to both natural recruits and rehabbed bear cubs.

Table 5.2 Advantages of in situ training of bear cubs meant for rehabilitation

Skills for survival	Ex situ training & release	In situ rehabilitation	
1. Foraging skills	Only wild collected fruits can be provided, but foraging behaviour cannot be simulated as space and resources are limited within the enclosure	Encourages natural foraging behaviour since supplementary food is given only in the evenings after daily incursions into the forest	
2. Predator avoidance	Captivity has tremendous limitations in training a bear to respond to presence of predators	Honed during acclimatization as the cubs are exposed to presence during daily incursions	
3. Site fidelity	Unless soft-released by holding the cubs in temporary confinement, site-fidelity at release site cannot be established by hard-release	Not only site fidelity, but the process helps the bears to establish a home-range of their own by 18-24 months of age	
4. Body condition post-release	Captive reared bear cubs put on weight and begin losing weight after hard or soft release	Acclimatized cubs do not become obese and so do not end up losing significant weight after 'release'	
5. Threats of disease transmission	Long term confinement increases the possibility of picking up infections	Being in the wild, negligible. Contact with humans is minimal as their role is only limited to protection	

While prolonged care of bears in captivity may create undesirable effects on bears kept for release, the effects of prolonged human contact with bear cubs during in-situ acclimatization has been found to be insignificant. Assisted-released bears do not return or look for human assistance or become nuisance bears. Neither have they been found to get killed by people or predated by large carnivores. None of the 23 Asiatic black bears released after six to nine months of acclimatization in the states of Arunachal Pradesh and Assam had become nuisance bears (WTI, unpublished). None of them were predated or killed by people either, as far as is known.

5.2.6 Measuring rehabilitation success

What are the measures of a successful bear rehabilitation program? Van Dijk (2005) assigns this to the following four: (i) Survival post-release, (ii) causing no negative impact on resident bears, (iii) causing no nuisance to humans living around and (iv) reproductive success. Of these four, the last one requires tagging select individuals over a protracted period of time. But prolonged post-release monitoring studies have shown that rehabilitated female American black bears have successfully bred and raised their cubs (Kilham and Gray, 2002). No training is required for teaching the bears to mate as it is triggered by hormones upon reaching sexual

maturity. Captive bears mate, conceive and nurse their young without any previous history of learning from their parents. Cubs that have learnt their survival skills and managed to live on their own in the wild for 6-10 months post-release would be expected to survive and graduate to adulthood.

5.2.7 Conclusion

Like how, many zoos in response to criticism by animal welfare groups, have evolved from being mere menageries to conservation centres with a better environment for animals (Rabb, 1994; Mazur and Clark, 2000), it is time the amateur world of animal welfare oriented wildlife rehabilitators also begin responding to the positive criticisms from hard-core 'species' conservationists who point out to many of the drawbacks in rehabilitation practices followed by them (Huber, 2005; van Dijk, 2005; Cuarón, 2005). Bear rehabilitators have begun responding to these challenges posed by biologists on the merits of orphan bear rehabilitation by coming out with

rehabilitation strategies that befit the species' biological and ecological requirements. Undoubtedly, orphan bear rehabilitation has been in the forefront in showcasing the emergence of wildlife rehabilitation as a welfare and conservation tool in India (Ashraf et al, 2006).

There are many positives in resorting to the option of 'return to the wild' of bear cubs with rehab potential as opposed to the option of depositing the cubs for lifetime care in zoos and rescue centres. Orphan bear rehabilitation brings down the number of animals in facilities which are already overcrowded, takes care of welfare of individual bears which is otherwise compromised in captive facilities, and more importantly contribute to conservation in areas where supplementation or reintroduction is required. Above all, rehabilitation programs if properly communicated to local community, can also act as ambassadors of conservation, spreading awareness on the plight of orphans and the causes leading to their displacement from the wild.

SUMMARY OF STATE ACTION PLANS









Sloth bear Black bear Sun bear Brown bear





ANDHRA PRADESH

BEAR CONSERVATION ACTION PLAN ANDHRA PRADESH

2012

Harendra Singh Bargali¹, A.V. Joseph² and Hitesh Malhotra³

Project team

Laxmi Narayan, Harendra Singh Bargali, Aniruddha Mookherjee,
Rahul Kaul and Prajna Paramita Panda

Geographical location: 12°37′N-19°55′ N, 76°45′E-84°46′ E

Area: 2,75,069 km²

Bio-geographic zone: Deccan Peninsula

Biotic Province: 6D Central Plateau, 6C Eastern Highland, 6E Deccan South, 8B

East Coast

Forest area: 63,815 Km² (23.2% of the state geographical area)

Forest cover is 46,389 Km²

Bear habitat range: NA Bear Population estimate: NA

Human population: 84.67 million (2011) **Livestock population:** 60. 17 million (2007)

6.1.1 Introduction

Andhra Region

country's southeastern coast. It is India's fourth largest state by area and fifth largest by population. This state of south India shares its borders with the state of Chhattisgarh, Maharashtra and Orissa towards its north, Karnataka towards its west and Tamil Nadu towards its south. The eastern side of the state is bordered by the Bay of Bengal. At 972 km, Andhra Pradesh has the second largest coastline in the country (http://www.mapsofindia.com). The state includes the eastern part of Deccan plateau as well as a considerable part of the Eastern Ghats. The entire state is divided into the

Andhra Pradesh is situated on the

The climate of Andhra Pradesh varies considerably, depending on the geographical region. Monsoons play a major role in determining the climate of the state. The state receives heavy rainfall from southwest monsoon, however about one third of the total rainfall in Andhra Pradesh is brought by the northeast monsoon.

following three distinct regions: 1. Telangana

Region, 2. Rayalaseema Region and 3. Coastal

Sloth bear (*Melursus ursinus*) is the only bear species found in Andhra Pradesh. The sloth bear is endemic to Indian sub-continent

and has its distribution in India, Sri Lanka, Nepal and Bhutan. Recently, the species has been extirpated from Bangladesh. Sloth bear may have reached their current form in the early Pleistocene, the time when the bear family specialized and dispersed. A fragment of fossilized humerus from the Pleistocene, found in Andhra Pradesh's Kurnool Basin is identical to the humerus from the modern day sloth bear.

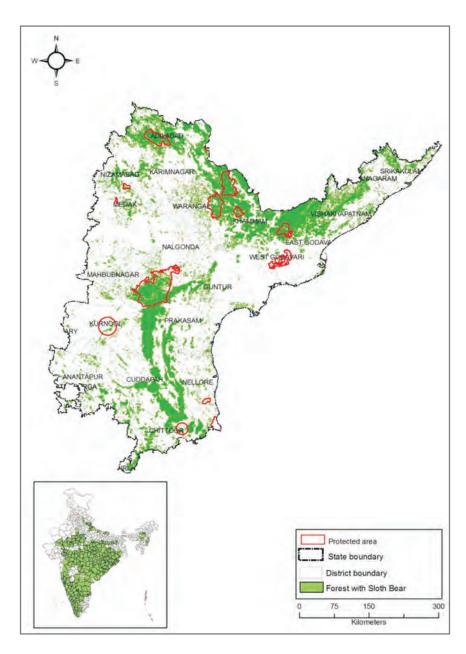
6.1.2 Distribution and Relative Abundance

Andhra Pradesh may be divided into three physiographic regions - a) hilly region encompassing Nallamalai and Erramalai hills of Rayalaseema and Eastern Ghats, b) the plateau with an altitude of 100 m spread mainly over Telangana regions and c) the deltas of rivers between the Eastern Ghats and the sea coast (Anon, 2011). As per Champion and Seth's classification (1968), forests in the state, including habitat supporting sloth bear population, can be classified as Southern Moist Mixed Deciduous Forest, Littoral Swamp Forest, Dry Teak Forest, Dry Red Sanders Bearing Forest, Southern Dry Mixed Deciduous Forest, Dry Deciduous Scrub, Dry Savannah Forest, Hardwickia Forest, Dry Bamboo Brakes, Southern Thorn Forest, Dry Scrub Forest and Tropical Dry Evergreen Forest (Anon, 2010).

The presence of sloth bear is reported from six forest divisions (excluding the Protected Areas) in Andhra Pradesh such as Nizamabad, Nagarjuna Sagar, Giddalur, Nandyal, Guntur and Narsipatnam divisions between 2010 and 2011. In case of protected areas, the sloth bear is reported from a number of Wildlife Sanctuaries (WLS) namely Nagarjunasagar, Srisailam (Rajiv Gandhi Wildlife Sancturay), Sivaram, Pakhal,

Kinnerasani, Papikonda, Pocharm, Pranahita, Kaundinya (Wildlife), Sri Lanka Malleswaram, Sri Venkateswara, Gudla Brahmeswara, and Peninsula Narsimha, Kawal Tiger Reserve (TR), Eturnagaram and Kambalakonda, whereas, in case of National Parks (NP) the species is reported from Sri Venkateswara NP and Papikonda NP (Anon, 2009). The distribution of sloth bear in Andhra Pradesh is shown in Fig. 6.1.1.

Fig. 6.1.1 The distribution of sloth bear in Andhra Pradesh



6.1.3 Population estimates

Limited information is available on population estimates of sloth bear in the State of Andhra Pradesh. Detailed census figures on a division-wise manner are lacking. Though the state forest department reported estimates from various FD's, however these estimates need verification with robust scientific techniques.

6.1.4 Conservation Issues

i. Threats to the species:

Bears raid crop fields and fruiting trees in search of food which may result in human-bear conflict. Incidents of poaching have been recorded by the forest department in Kamareddy, WLM Warangal, Anantapur and Jannaram Forest Divisions. Incidents on retaliatory killing have also been reported from Karimnagar West, Mahabubnagar, and Jannaram Forest Divisions. However, detailed information on the extent of human-bear conflict and trade in bear body parts is completely lacking from this state.

ii. Threats to habitats:

Outside the protected areas, sloth bear habitat in territorial forest divisions is facing habitat degradation due to various activities including anthropological pressures from local communities, quarrying of granite and sandstone, diversion of forest land for nonforestry purposes and illegal cultivation by local communities. Due to habitat fragmentation, sloth bear populations are getting encircled by agriculture activity around foothills of hillocks whereby they get confined to hill portions, like in Jaffarghat Fort, Warangal District.

6.1.5 Management Actions Taken

i. Protection to the species:

The sloth bear is listed in Appendix I of CITES, Vulnerable (A2 cd+4cd; C1) category of the IUCN Red List of threatened species (Garshelis et al., 2008) and protected under Schedule I of the Wildlife (Protection) Act 1972 as amended in 2003 (GOI, 1972; 2003).

ii. Habitat Management:

Information on activities aimed specifically at sloth bear conservation is lacking. The sloth bear populations are protected both inside and outside Protected Areas but their distribution outside protected areas needs to be studied in detail to obtain updated information from time to time. Detailed information on sloth bear distribution within territorial divisions or protected areas is lacking. In case of territorial forest divisions, managers have limited resources available to manage the area with limited legal power and these are the areas facing problem from quarrying activities, illegal encroachment and pressure from the developmental activities.

iii. Management of Bear-Human Interactions

The state forest department has a policy for compensation for financial reimbursement in case of human mauling or killing by wild animals. Other measures to mitigate human-bear conflict include promotion of awareness through various awareness programs and hoardings on sloth bear conservation. In addition, the Andhra Pradesh Forest Department has made a provision to have a Conflict Management Team at the Circle Level. Outside protected areas, some of the forest divisions have reported that they had provided drums and crackers to villagers to chase away bears from villages.

iv. Research and Monitoring

There is limited information available on sloth bear populations and their monitoring in the state. Since sloth bear exists in a number of protected areas, there is some information available on their presence and distribution. According to a study on estimation of tiger population in the country it was found that the sloth bear distribution in Gadchiroli district (Maharashtra) southern Chattisgarh, northern to eastern Andhra Pradesh and entire forested habitat of Orissa is contiguous and forms largest single block of occupied forests (Jhala et al., 2007). Detailed scientific information on status and distribution of bears within each territorial division or protected area is the need of the hour.

v. Limitations

Lack of information on sloth bear status and distribution of sloth bear in the entire state and its interaction with local communities are the main limitations for conservation of bears in Andhra Pradesh.

6.1.6 Management Actions Proposed

1. Management of sloth bear-human interactions (conflicts)

The extent and magnitude of sloth bear human interactions in the state are to be investigated and site specific mitigation plans need to be developed. A database should be developed on bear human interactions. The status and straying behavior of sloth bear populations in non-forest areas of Karim Nagar and Anantpur districts need to be investigated. The existing facilities of rescue vans and management teams should be strengthened. Local

communities need to be involved in managing bear human conflicts.

2. Protection of sloth bear habitats

The sloth bear habitats outside forest areas should be consolidated/protected as bear movement areas. Water and habitat management measures need to be taken up in bear habitats. NTFP collection by local people in critical sloth bear habitats needs to be regulated and monitored. Natural resource users (local communities) should be involved in habitat management. Outside Protected Areas, a number of forest divisions have reported to have sloth bear distribution. Those forest divisions are required to be categorized by identifying crucial habitats and delineating areas for future conservation strategies targeting at sloth bear conservation.

3. Protection of bears

Existing wildlife protection measures need to be strengthened and continued. The existing network of informers and various law enforcement agencies in forest areas should be strengthened. The judiciary, police, customs and revenue department officials and personnel need to be sensitized on wildlife crimes including bears.

4. Field surveys and monitoring

There is a need to compile detailed information on sloth bear distribution and its population for both inside and outside the protected areas in the state. The present available information is in parts and holds limited merits in planning future conservation strategies. The presence of sloth bear in potential

areas may be studied through camera traps. A study also needs to be conducted on bear-human interactions to mitigate conflicts. Illegal trade of bear body parts in the state should be investigated.

5. Awareness Campaign

Bear must be included as a key species in ongoing awareness campaigns. Rural school children (up to 8th standard) must be targeted and nature camps and other awareness activities may be organized to promote environmental awareness. Massive environmental awareness campaign should be initiated

against developmental activities which are detrimental to environment and wildlife. Good quality audio-visual materials and collaterals (posters, brochures, stickers etc.) in local language may be produced and distributed.

6. Capacity Building

Frontline forest staff should be provided with latest devices and equipments for enhanced protection of bear and other wildlife. Frontline staff should be given specialized training for management of bear-human conflicts. Suitable training modules may be developed for different stakeholders for protection of bears.



ARUNACHAL PRADESH

BEAR CONSERVATION ACTION PLAN ARUNACHAL PRADESH

2012

Anawaruddin Chaudhury¹ and J. L. Singh²

Project team

Anawaruddin Chaudhury, Soumya Dasgupta, Moni Kardong,
Sunil Kyarong, Rahul Kaul and Sandeep Kr Tiwari

Geographical location: 26°28′ to 29°30′N, 91°30′ to 97°30′E

Area: 83,743 Km² **Bio-geographic zone:** 2 Himalaya

Biotic Province: 2DB (East Himalaya)

Forest area: 51,540 Km² (61.55% of geographical area) and forest cover of

67,410 Km²

Bear habitat range: 7500 km² (approx.) **Bear Population estimate:** Not available **Human population:** 13.8 lakhs (2011)

Livestock population: Cattle & buffalos: 506,000 (2007)

Goat & sheep: 312,000 (2007)

6.2.1 Introduction

Arunachal Pradesh, the 'land of the rising sun', is the easternmost state of India. Like other parts of northeast India, a majority of the people native to the state are of Tibeto-Burmese origin.

Much of Arunachal Pradesh lies in the Himalayas. However, parts of Lohit, Changlang and Tirap regions fall in the the Patkai Hills. At the lowest elevations, Arunachal Pradesh shares its border with the state of Assam (Brahmaputra Valley, semievergreen forests). Much of the state, including the Himalayan foothills and the Patkai hills, are home to Eastern Himalayan broadleafed forests. Towards the northern border with China, with increasing elevation, comes a mix of Eastern and Northeastern Himalayan Sub-alpine Conifer Forests, followed by Eastern Himalayan Alpine shrub and meadows and ultimately rock and ice at the highest elevations.

Areas that are at a very high elevation in the upper Himalayas close to the Tibetan border have an alpine or tundra climate. The middle Himalayas experience temperate climate and the lower areas at the sub-Himalayan and sea-level elevation generally experience humid, sub-tropical climate with hot summers and mild winters. Arunachal Pradesh receives heavy rainfall (2,000 to 4,100 mm) annually, most of it between May and September.

Arunachal Pradesh is known to hold three species of bears - the Sloth Bear (*Melursus ursinus*), Asiatic Black Bear (*Ursus thibetanus*) and Sun Bear (*Helarctos malayanus*). All the three species are ecologically distinct from each other and occur in different parts of the state.

SLOTH BEAR

6.2.2 Distribution and Relative Abundance

In Arunachal Pradesh, the sloth bear is extremely rare and occurs in very low densities in the foothills and plains where it affects tropical forests and grasslands (100-1,000m) (Choudhury, 2003). It occurs in a few protected areas of the state, notably from Pakke Wildlife Sanctuary (confirmed), Itanagar and D'Ering Memorial Sanctuary Wildlife Sanctuaries (both unconfirmed). Since it is the only species of bear that regularly occurs in wet savanna or elephant grass jungle in Assam, most of the sporadic records of bears in the past in the tall elephant grass jungle of D'Ering Memorial Sanctuary were

believed to be of this species. Bohnur Ali (Forester; pers. comm. in 2001). Hinton and Lindsay (1926) mentioned of the presence of sloth bear in the Lohit Valley. This is also the easternmost report of the species in its entire range (96°18'E) (Choudhury, 2011). The distribution of sloth bear in different forest divisions of Arunachal Pradesh, as reported by the state forest department, has been given in table 1.

6.2.3 Population estimates

No population estimation of sloth bear has been carried out by the State Forest Department or any other institutions in the state and thus none are available.

6.2.4 Conservation Issues

i. Threats to Species

Poaching (for bear body parts) level is relatively very low as the species itself is very rare but occurs if encountered. There are no reports of retaliatory killings (to reduce livestock and crop depredations) by sloth bear in Arunachal Pradesh.

ii. Threats to Habitats

The potential sloth bear habitat range in Arunachal Pradesh is about 1500 km². With the exception of the protected areas, most of the sloth bear habitat in Arunachal Pradesh is threatened due to slash-and-burn or jhum cultivation, deforestation and encroachment. Construction of roads and infrastructure development, tea plantations and development of human settlements in foothills and adjacent plains have also threatened the potential sloth bear habitats, leading to habitat loss and degradation (Choudhury, 2011).

6.2.5 Management Actions taken

i. Protection to species

There are no special initiatives that the state has carried out specific to sloth bear. However, generally under various governmental programmes some benefits accrue to sloth bear also. Although the Wildlife (Protection) Act of India, 1972 does afford the bear and its habitats protection (Schedule I), this is seldom enforced, more so in remote areas and non protected areas.

ii. Habitat management

Major part of potential habitat of the sloth bear in the State is under various protected areas. However, bear-specific management and protection measures need further strengthening in the state.

iii. Management of bear-human interactions

No specific management action has been taken for sloth bear human interactions in the state. There is no specific report of livestock (immature mithun and cattle, and goat and sheep) depredation by sloth bear and also no specific report of injury to any villager, hunter or wood cutters.

iv. Research and monitoring

No regular survey or monitoring has been done by the State Environment and Forest Department of the state. However, some data is available as a result of general faunal surveys or other synoptic works (Choudhury, 2003; Sathyakumar and Choudhury, 2007; Choudhury in press). Recently, a comprehensive status report as part of north-east India has been prepared

(Choudhury, 2011). The Wildlife Institute of India carried out questionnaire surveys to understand the abundance of the species.

v. Limitations

So far there is no field survey specifically targeting this species, hence, exact status in different areas, density estimates and other details are not available. Questionnaire surveys and local reports are often suspect owing to the fact that all three species of bears found in North East India look similar (black

in color with a whitish patch on the chest. This was also experienced by the interviewers in the interviews conducted by Wildlife Trust of India - it was very difficult for ordinary villagers, hunters or even forest staff to correctly identify the species. The general replies were 'black-coloured bears with whitish patch on chest', and size such as large or small. From such reply it was impossible to differentiate the species (Choudhury, 2011). Arunachal Pradesh is still culturally oriented towards a tradition of hunting and as a result, it is difficult to enforce the Act.

Table 6.2.1. The presence record of bears species in different forest divisions in Arunachal Pradesh

Sr. No.	Name of forest division	Asiatic Black bear	Sloth bear	Sun Bear
1	Changlang Social Forestry Division	Yes	No	Yes
2	Khonsa Forest Division	Yes	No	Yes
3	Namdapha National Park	Yes	No	Yes
4	Nampong Forest Division	Yes	No	Yes
5	Bomdila Forest Division	Yes	No	No
6	Khelong Forest Division	Yes	No	No
7	Lohit Forest Division	Yes	No	No
8	Debang Forest Division	Yes	No	No
9	Mehao Wildlife Sanctuary Division	Yes	No	No
10	Seppa Forest Division	Yes	No	No
11	Yingkiong Forest Division	Yes	No	No
12	Mauling NP Division	Yes	No	Yes
13	Anjaw Forest Division	Yes	No	Yes
14	Namsai Forest Division	Yes	Yes	No
15	Kamlang Wildlife Sanctuary Division	Yes	No	Yes
16	D'Erring Memorial Wildlife Sanctuary	Yes	Yes	No
17	Tawang Forest Division	Yes	No	No
18	Likabali Forest Division	Yes	Yes	No
19	Daporijo Forest division	Yes	No	No
20	Hapoli Forest Division	Yes	No	No
21	Banderdewa Forest Division	Yes	Yes	No
22	Itanagar Wildlife Sanctuary Division	Yes	No	No
23	Aalo Forest Division	Yes	No	No

Source: Questionnaire survey of forest divisions in Arunachal Pradesh

ASIATIC BLACK BEAR

6.2.6 Distribution and Relative Abundance

In Arunachal Pradesh, the black bear is still fairly common in several areas and occurs widely from the edge of the plains to high mountains including tropical, subtropical, temperate to sub-alpine scrub (100-4,000m) (Fig. 6.2.1). The presence of Asiatic black bear has been recorded in all the 16 administrative districts of the state (Choudhury, 2003; Sathyakumar and Choudhury, 2007; Choudhury, in press).

The black bear populations in Arunachal Pradesh are present in most of the protected areas, viz., Namdapha and Mouling National Parks, Dibang Wildlife Sanctuary, Pakke Tiger Reserve, Eagle's Nest Wildlife Sanctuary, Sessa

Orchid Sanctuary, Kamlang Wildlife Sanctuary, Mehao Wildlife Sanctuary and Kane Wildlife Sanctuary. It is still common in many of these protected areas. There are also past reports from D'Ering Memorial Wildlife Sanctuary (Choudhury, in press). The distribution of Asiatic black bear in different forest divisions of Arunachal Pradesh, as reported by the state forest department, has been given in table 6.2.1.

6.2.7 Population estimates

Population estimates for Asiatic black bear are lacking for Arunachal Pradesh. Wildlife Institute of India has conducted one study on the distribution black bear and sun bear, but no population or abundance estimate is available from that study.

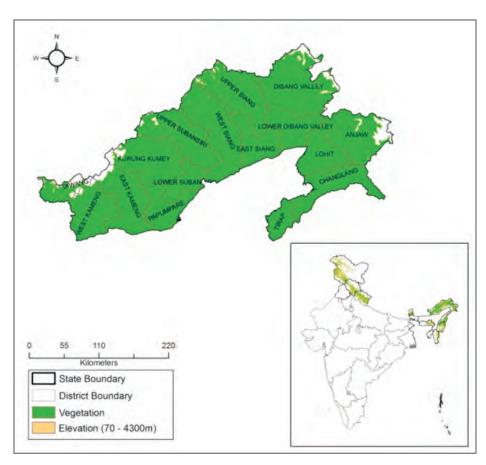


Fig. 6.2.1 The distribution of black bear in Arunachal Pradesh

6.2.8 Conservation Issues

i. Threats to Species

Poaching (for bear parts) level is high as the species is relatively more abundant. The meat of poached animals is also taken as food (Hilaluddin et al., 2005). Retaliatory killings (to reduce livestock and crop depredations) also take place, however, the hunters also remove the gall bladder for bile (indicating that 'retaliation' could be an excuse to kill) and take its meat. The level of poaching could be gauged from a survey of wild animal use by humans, which revealed that hunters of two villages of Lower Dibang Valley district had killed at least 52 bears in a single year (Choudhury and Rengma, 2005).

ii. Threats to Habitats

The potential black bear habitat range in Arunachal Pradesh is about 65,000 km2. With the exception of the protected areas, large part of the black bear habitat in the state is threatened due to slash-and-burn shifting or jhum cultivation, deforestation and encroachment. In the high elevation areas, grazing of domestic yaks and expansion of pastures at the expense of forest is also potential yet unsubstantiated threat in some areas where yak are kept. Construction of roads and infrastructure development to meet demands of the tourists (in Tawang area), security, tea plantations (in foothills), and hydro-power projects have also threatened the black bear habitats, leading to degradation of habitat and its loss.

6.2.9 Management Actions taken

i. Protection to species

Protection to black bear has been possible only in some areas where access is possible and where adequate staff is posted.

Rest of the areas are understaffed and patrolling in remote and rugged terrain is difficult and therefore the species is always vulnerable to poaching.

ii. Habitat Management:

A sizeable habitat of the black bear in the State is under various protected areas. However, there is no bear-specific management and protection measures have been taken by the state forest department for black bear.

iii. Management of Bear-Human Interactions

To rescue and rehabilitate black bear in Arunachal Pradesh, a centre called the Centre for bear Rehabilitation and Conservation (CBRC) has been set up by the forest department of Arunachal Pradesh in collaboration with the Wildlife Trust of India in Pakke Wildlife Sanctuary. Between 2002 and 2011, as many as 20 black bear cubs have been rescued by Wildlife Trust of India (WTI) and kept at raised at this Rehabilitation Centre. Two of these were sent to Itanagar Zoo while the rest were released back into the wild. Livestock (immature yak, mithun and cattle, and goat and sheep) depredation by black bear is occasionally reported by villagers but is not very significant. There are also reports of injury to villagers, hunters and wood cutters, which are however, low. There is however, no systematic documentation of such cases. The state has no specific management plans to deal with bear-human interactions.

iv. Research and Monitoring

No bear specific studies have been conducted in Arunachal Pradesh. However, references to this species are available from general faunal surveys to indicate the location of this species in the state (Katti et al., 1990; Kaul et al., 1991; 1992; Choudhury, 2003; Sathyakumar and Choudhury, 2007; Choudhury, in press). The Wildlife Trust of India is presently monitoring released black bears in the process collecting useful information on its ecology and behaviour. The Wildlife Institute of India carried out questionnaire surveys to understand the distribution of the species in the state.

v. Limitations

Arunachal Pradesh is a remote part of the country where tribal rights are still more effective at the grassroots level than the federal laws. Therefore enforcement of the Wildlife (Protection) Act is difficult. This seems to be the main limitation to conserving bears in general in the state.

SUN BEAR

6.2.10 Distribution and Relative Abundance

Arunachal Pradesh is the north-western edge of sun bear's global distribution. In this state, the sun bear is rare and apparently occurs in low numbers in the hills and foothills including tropical and subtropical forests (from 150m up), south of the Brahmaputra river (Lohit river in eastern Arunachal Pradesh). The sun bear is mainly found in Tirap, Changlang and Lohit (including Anjaw) districts (Choudhury, 2003, in press). It has been recorded from two protected areas, Namdapha National Park and Kamlang Wildlife Sanctuary (Choudhury, 2003). The distribution of Malayan Sun bear in different forest divisions of Arunachal Pradesh, as reported by the state forest department and surveys, has been given in table 1.

6.2.11 Population estimates

No population estimates for Malayan

sun bear in Arunachal Pradesh are available.

6.2.12 Conservation Issues

i. Threats to species

Poaching, specifically for bear parts, may occur if encountered. The meat of poached animals is consumed. Retaliatory killings (to reduce livestock and crop depredations) do not appear to be a major threat in Arunachal Pradesh.

ii. Threats to habitats

The potential sun bear habitat range in Arunachal Pradesh is about 7500 km2. With the exception of the protected areas, most of the sun bear habitat in Arunachal Pradesh is threatened due to jhum cultivation, deforestation and encroachment. General threats like road construction, development of new infrastructure, clearing lowland forest for tea plantations and also setting up of new villages inside forest and to some extent mining, especially coal have also threatened sun bear habitats.

6.2.13 Management Actions taken

i. Protection to species

The Wildlife (Protection) Act of India, 1972 provides the legal protection to this species. Besides, it is listed as "Vulnerable" in the Red Data Book (IUCN, 2012). It is also listed on Appendix I of CITES (GOI, 1992). Actively, patrolling by staff of the state forest department in protected areas further improves the protection status of the species.

ii. Habitat Management

A sizeable part of the sun bear habitat in the State is under two relatively larger protected areas, i.e., Namdapha National Park and Kamlang Wildlife Sanctuary. Both are also contiguous, making the area a significant protected region for long-term conservation of the species. However, bear-specific management and protection measures in the state need further strengthening.

iii. Management of Bear-Human Interactions

Livestock (immature mithun and cattle, and goat and sheep) depredation by sun bear is not specifically reported by villagers as in its entire range it is sympatric with the relatively commoner Asiatic black bear. There are also reports of injury to humans but these are low. There is however no systematic documentation of such cases. So far there are no specific management plans for the species in the State.

iv. Research and Monitoring

Although dedicated research on sun bear has not been conducted in the state, some data has emanated from general faunal surveys (Karanth and Nichols, 2000; Choudhury, 2003, Choudhury in press). Recently, a comprehensive status report as part of North-East India has been prepared (Choudhury, 2011). The Wildlife Institute of India carried out one survey on status and distribution of sun bear in few states in North East India including Arunachal Pradesh (Chauhan and Lalthanpuia, 2008). Data has also been generated during the all Indian Tiger Estimation (Borah et al., 2012).

v. Limitations

No emphasis on bear species in general and sun bear in particular in the state and bear conservation needs to be brought focus.

6.2.14 Management Actions proposed

1. Research and monitoring

The key bear habitats need to be identified and their status, ecological requirements and threats need to be assessed. The threat perceptions for different species also need to be identified. Population estimation of all three bear species should be done periodically following a well defined and constant monitoring protocol. The ecological requirements of all bear species need to be identified.

2. Reducing hunting and poaching

Awareness regarding bear conservation should be created among local communities. Different schemes of alternate livelihood need to be developed for local communities. The existing ban on issuing of license for .22 rifles, .315 rifles and 12 bore guns should be extended. The existing gun licenses may be replaced with small arm licenses. This would help to reduce hunting. Also, rewards should be given for surrendering rifles and guns to reduce the number of guns which may translate into lesser poaching. Legal assistance should be provided to ensure convictions and a green lawyer network may be created to effectively pursue convictions. An intelligence gathering mechanism may be developed to preempt trade in bear parts. All this will need systematic engagement with the communities. The under-staffed forest department is ill equipped both in terms of manpower and equipment.

3. Habitat protection and restoration

More areas coming under jhum cultivation should be discouraged and permanent cultivation should be encouraged in the state. Haryalli schemes of the government should be integrated into degraded bear habitats. Stakeholders and local communities should be engaged in key bear areas outside protected areas for better bear conservation. In high altitude bear areas, alternate sources of space heating, other than firewood, should be explored.

4. Awareness

Awareness on bear conservation should be developed at all levels including schools, colleges, media, local communities, policy makers, government line departments, district administration including police and judiciary.

5. Manpower and infrastructure

Bear protection force (including engagement of ex-service men and local community/ village biodiversity management committees) should be created. Skill up-gradation of workforce may be undertaken. Necessary

equipments (vehicle, communication tools, etc) should be provided to the frontline staff and protection forces. Appropriate infrastructure should be created for protection forces.

6. Reduction of human-bear conflict

A corpus may be created to dispense exgratia payment to victims of bear mauling and causality and crop depredation. This will not only help the affected persons but also change peoples' attitudes towards the animal.

7. Welfare and Rehab Centers

A bear rehabilitation centre is already in existence in Pakke Wildlife Sanctuary run jointly by the Arunachal Pradesh Department of Environment and Forests and the Wildlife Trust of India. However looking at the distances and the lack of road network in the state of Arunachal Pradesh, it is suggested that another rehab centre may be created in the eastern part of the state. Other attendant infrastructure (including equipments, van, etc) need to be developed in these centers. Reward schemes should be started for people/villagers to rescue and surrender wild animals especially bears.



ASSAM

BEAR CONSERVATION ACTION PLAN ASSAM

2012

Anawaruddin Choudhury¹ and Suresh Chand²

Project team
Anawaruddin Choudhury, Aftab Ahmed, Rathin Barman and N.V.K.Ashraf

Geographical area: 24°09′ to 27°58′N, 89°42′ to 96°01′E

Area: 78,438 Km² **Biogeographic zone:** 9 North-East

Biotic Province: 9A (North-East Brahmaputra Valley) and 9B (North-East

North-East Hills)

Forest area: 26,832 Km² (34.21%) and forest cover of 27,673 Km²

Bear habitat range: 10,000 km² (approx.) **Bear Population estimate:** Not available **Human population:** 311.69 lakhs (2011)

Livestock population: Cattle & buffaloes: 10,541,000 (2007)

Goat & sheep: 4,674,000 (2007)

6.3.1 Introduction

Located south of the eastern Himalaya, Assam comprises the Brahmaputra and the Barak river valley systems along with the Karbi Anglong and the North Cachar Hills. It is spread over an area of 78,438 km² and is surrounded by six of the other seven states of the north east. These are Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya. These states are connected to the rest of India via a narrow strip in West Bengal called the Siliguri Corridor. Assam also shares international borders with Bhutan and Bangladesh (http://assam.gov.in).

With the "Tropical Monsoon Rainforest Climate", Assam has temperate climate (summer max. at 95100 °F or 3538 °C and winter min. at 4346 °F or 68 °C) and experiences heavy rainfall and high humidity. It is one of the richest biodiversity areas in the world and consists of tropical rainforests, deciduous forests, riverine grasslands, bamboo and numerous wetland ecosystems; and many are now protected as national parks and reserved forests. The Kaziranga, home of the rare Indian Rhinoceros, and Manas are two UNESCO World Heritage Sites in Assam (http://assam.gov.in).

Assam is known to hold three species of bears - the sloth bear (*Melursus ursinus*), Asiatic black bear (*Ursus thibetanus*) and sun bear (*Helarctos malayanus*). All the three species are ecologically distinct from each other and occur in different parts of the state. The distribution ranges of all these three species appear to have decreased in Assam in the last three decades.

The present status of all the three bear species and efforts to conserve them in Assam are documented below.

SLOTH BEAR

6.3.2 Distribution and relative abundance

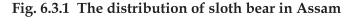
According to Blanford (1891) and Lydekker (1924), the occurrence of the sloth bear in Assam was doubtful. However, the hunting party of the Maharaja of Cooch Behar (1908) shot two sloth bears at Simlaguri (Barpeta Road) in 1895 (Choudhury, 2011). Therefore the sloth bear was always considered relatively rare in Assam. Also, Assam lies at the easternmost part of its range and densities are expected to be lower. The distribution of sloth bear in Assam was found all over the state. In the extreme south, there were reports of its occurrence from Barak Valley (Pocock, 1932). Although it was

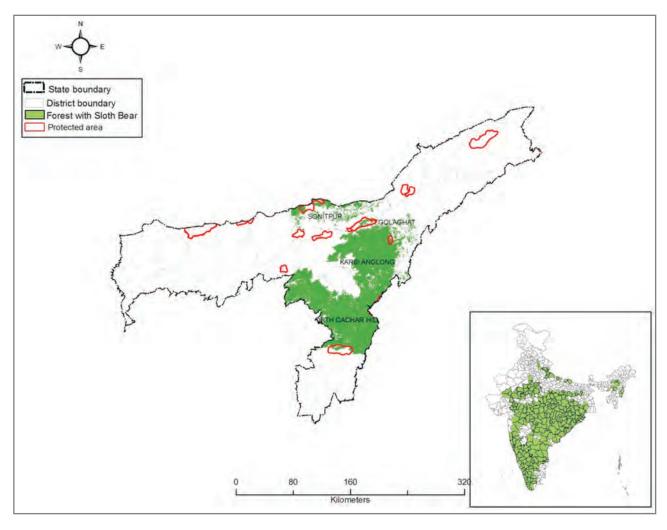
reported from all the administrative districts in the past, currently it definitely occurs in seven out of 27 administrative districts (Choudhury, 2011). The questionnaire survey done by Wildlife Trust of India suggested presence of sloth bear from five of the 12 forest divisions in the Assam. The sloth bear populations in Assam are present in and around the Manas National Park and Tiger Reserve, Kaziranga National Park and North Karbi Anglong Wildlife Sanctuary. Sloth bear has also been reported from Nameri National

Park, Sonai Rupai Wildlife Sanctuary, Barnadi Wildlife Sanctuary, Nambor Wildlife Sanctuary, Nambor-Doigrung Wildlife Sanctuary, East Karbi Anglong Wildlife Sanctuary, Marat Longri and Barail Wildlife Sanctuary (Choudhury, in press) (Fig. 6.3.1, Table 6.3.1).

6.3.3 Population estimates

No information on the estimates or numbers of sloth bear is available from Assam.





6.3.4 Conservation issues

i. Threats to the species

The incidence of poaching of sloth bear for body parts must happen if encountered by hunters but such occasions must be rare as it is rarely encountered in the state. There are also some unconfirmed reports of people consuming bear meat as food in few parts of the state.

ii. Threats to the habitats

The extent of potential habitat for sloth bear in Assam is about 3500 km². With the exception of the protected areas, most of the habitats of all three bear species are adversely impacted in Assam due to slash-and-burn or jhum cultivation (mainly in the northern slopes of Karbi Anglong), deforestation and encroachment (for settlement and farming), various development activities and expanding tea plantations of the small growers. The questionnaire conducted by Wildlife Trust of India (WTI) revealed that the dependency of local people on forest produce is adversely impacting the conservation of sloth bear but may not be under immediate threat from cattle grazing and tourism related activities.

6.3.5 Management Actions taken

i. Protection to the species

The sloth bear is listed in Schedule I of the Indian Wild Life (Protection) Act (GOI, 1972, 2003), "Vulnerable" (IUCN, 2012) and in Appendix I of CITES (GOI, 1992). Special powers accorded to the forest staff in Assam have enabled them to patrol the protected areas more effectively than in other parts of the country. However, in areas outside the PAs, lack of and inadequately trained staff hampers protection measures.

ii. Habitat Management

Bulk of the sloth bear habitat falls under protected areas of the State. No bear-specific management protection measure taken by the Assam State Forest Department. North Karbi Anglong Wildlife Sanctuary needs to be strengthened further to ensure proper protection to sloth bears.

iii. Management of bear-human interactions

Livestock depredation by sloth bear is insignificant. There are a few reports of injury to villagers apparently due to sloth bear but such instances are scarce. There is also no systematic documentation of such cases. So far there are no specific management plans for the species in the State. Only one case of human injury by sloth bear was reported from Eastern Assam Wildlife Division during that questionnaire survey conducted by WTI.

iv. Research and monitoring

No dedicated work has been done on the species in Assam. Recently, a comprehensive status report covering many past records of bears as part of north-east India has been prepared (Choudhury, 2011).

v. Limitations

Lack of credible information on sloth bear in Assam precludes informed decisions on what the species requires and what aspects to manage.

ASIATIC BLACK BEAR

6.3.6 Distribution and relative abundance

The distribution of black bear in Assam extends over in the Himalayan foothills and adjacent plains, the hilly tracts south of the

Brahmaputra in Barail Range, Karbi Plateau and adjacent plains (Fig. 6.3.2). In the extreme south, it occurs in the low hills of Barak Valley. Although once recorded in all the districts of Assam, it now occurs in 22 out of the 27 administrative districts. It occurs in five of the 12 forest divisions of the state. These areas comprise about 42% of the total forest preserve in the state. It is still relatively common in Karbi Anglong, Cachar and Dima Hasao (North Cachar Hills) districts (Choudhury, in press). The Asiatic black bear populations in Assam are present in several protected areas such as Manas National Park and Tiger Reserve, Nameri National Park, Sonai Rupai Wildlife Sanctuary, Dihing-Patkai Wildlife Sanctuary, Nambor Wildlife Sanctuary, Nambor-Doigrung Wildlife Sanctuary, Garampani Wildlife Sanctuary, East Karbi Anglong Wildlife Sanctuary, North Karbi Anglong Wildlife Sanctuary, Marat Longri Wildlife Sanctuary and Barail Wildlife Sanctuary. There are past records from Barnadi Wildlife Sanctuary and the southern fringe of Kaziranga National Park (Choudhury, in press).

6.3.7 Population estimates

No information on the estimates or numbers of this species is available from Assam.

6.3.8 Conservation Issues

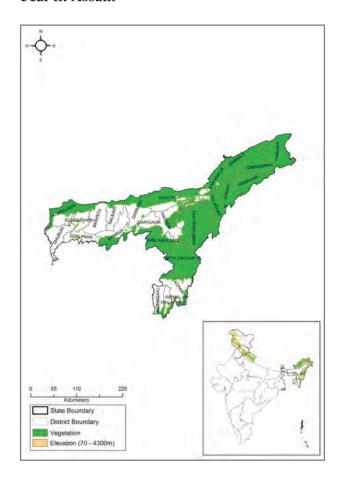
i. Threats to the Species

Poaching of Asiatic black bear is reportedly low in Assam. However reports of people consuming bear meat as food have appeared from a few parts of the state. Retaliatory killings (to reduce livestock and crop depredations) are almost unknown.

ii. Threats to the Habitats

The potential Asiatic black bear habitat range in Assam is about 20,000 km². The main threat to the habitat of this species appears to be the slash and burn Jhum cultivation which is prevalent outside the protected areas. This is mainly so in Karbi Anglong, Dima Hasao and Cachar areas. The questionnaire survey conducted by WTI revealed that local communities are often dependent on forest resources and this may be a source of competition for resources.

Fig. 6.3.2 The distribution of Asiatic black bear in Assam



6.3.9 Management Actions taken

i. Protection to the species

The black bear is listed in Schedule II (pt. II) of the Indian Wild Life (Protection) Act (GOI, 1972; 2003), conferring it the necessary legal protection country wide. It is also listed as "Vulnerable" in the Red Data Book (IUCN, 2012) and in Appendix I of CITES (GOI, 1992).

The questionnaire revealed that in many divisions are under staffed and equipment inadequate to enforce wildlife protection and various management activities. The staffs have limited capacity and resources to deal with critical management interventions, especially in areas outside the protected areas.

ii. Habitat management

There are no bear-specific measures for protection and management undertaken by the Assam State Forest Department. Protection measures taken up by the Assam State Forest Department for other important wildlife species such as tiger, rhino and elephant provides parallel protection to black bears in different protected areas. However, the protection measures in other protected areas need to be strengthened further.

iii. Management of bear-human interactions

Livestock depredation cases by black bear are occasionally reported by local villagers but are very insignificant. Reports of injury to humans are infrequent. However, systematic documentation of such cases is lacking. Human-bear conflict was reported only from Eastern Assam Wildlife Division (two cases) and Western Assam Wildlife Division (WTI survey).

iv. Research and Monitoring

No regular or systematic surveys or monitoring of bear species has been conducted by the Assam State Environment and Forest Department or any other external agency or organisation. Location data on the distribution of this species is available from other surveys of general nature (Choudhury, 1997; Choudhury, 2011).

v. Limitations

Lack of information and lack of focus are the two main limitations to the conservation of the Asiatic black bear in the state.

SUN BEAR

6.3.10 Distribution and relative abundance

The Malayan sun bear in Assam occurs in the hilly tracts south of the Brahmaputra, in the Barail Range, Karbi plateau and foothills of Patkai Range, rarely extending into adjacent plains. In the extreme south, it occurs in the low hills of the Barak Valley. Although sun bear was recorded in 11 districts in the past it is currently confined to only six districts (Choudhury, in press). The main strongholds of sun bear are in Karbi Anglong and in Barail Range in Cachar and Dima Hasao (North Cachar Hills) districts. Blanford (1891) did not mention the occurrence of sun bear in present Assam although he reported it from Garo Hills (then part of Assam). Pocock (1941) stated about its occurrence as 'possibly Assam'. The protected areas, notably, Dihing-Patkai Wildlife Sanctuary, East Karbi Anglong Wildlife Sanctuary, North Karbi Anglong Wildlife Sanctuary and Barail Wildlife Sanctuary hold sun bear. Recently a camera trap captured a sun bear in Jaypur Reserve

Forest, just outside Dihing-Patkai Wildlife Sanctuary (Kashmira Kakati, pers. comm., 2010). It has also been recorded in the past from the southern buffer of Kaziranga National Park (Gee, 1967). The presence of sun bear in Amchang Wildlife Sanctuary, Garampani Wildlife Sanctuary, Marat Longri Wildlife Sanctuary, Nambor Wildlife Sanctuary and Nambor-Doigrung Wildlife Sanctuary need confirmation. Questionnaire survey by WTI revealed information of sun bear from only one forest division of Assam.

6.3.11 Population estimates

No estimates available. However, camera trapping during the All India Tiger Estimation may throw some light on number of bear species in some areas, especially in the tiger reserves.

6.3.12 Conservation Issues

i. Threats to the species

The incidence of poaching of sun bear for body parts is almost unknown as this bear species is very rare and occurs in very low density in Assam.

ii. Threats to the habitats

The potential sun bear habitat range in Assam is about 7,000 km2. With the exception of the protected areas, most of the sun bear habitats in Assam are adversely impacted due to slash-and-burn or jhum cultivation (mainly in Karbi Anglong, Dima Hasao and Cachar), deforestation and encroachment (for settlement and farming). Besides, local communities may use the habitats of sun bear to extract fuel, fodder and minor forest produce.

6.3.13 Management actions taken

i. Protection to the species

The sun bear is listed in Schedule I of the Indian Wild Life (Protection) Act as amended in 2003 (GOI, 1972; 2003) providing it the highest protection in law. It is also listed as "Vulnerable" in the Red Data Book (IUCN, 2012) and in the Appendix I of CITES (GOI, 1992).

ii. Habitat Management

The existing protected areas provide some level of protection to the sun bear habitats. However, protection measures in some important areas like Barail Wildlife Sanctuary and North Karbi Anglong Wildlife Sanctuary need to be strengthened.

iii. Management of bear-human interactions

Livestock depredation cases by sun bear are rare. There are a few reports of injury to villagers, hunters, wood cutters, forest staff, etc, which are however, very low. There is no systematic documentation of such cases.

iv. Research and Monitoring

Systematic surveys or population monitoring of bear species has not been conducted by the Assam State Environment and Forest Department. However, general distributional data is available from work on other species (Chauhan and Singh, 2006; Chauhan and Lalthanopuia, 2008).

v. Limitations

So far no survey has been taken up by the Assam State Forest Department specifically targeting any of the bear species.

Table 6.3.1. The status of bear species in different Protected Areas in Assam.

Name of the Protected Area			
(size in km²)	Sloth Bear	Asiatic Black Bear	Sun Bear
Kaziranga NP (850)	Rare	NA	NA
Manas NP (500)	Rare	Rare	NA
Nameri NP (200)	Very rare	Rare	NA
North Karbi Anglong WS (97)	Rare	Very rare	Very rare
Barail WS (326)	NA	Fairly common	Rare
Dibru-Saikhowa NP (340)	NA	Occasional	NA
Dihing-Patkai WS (111)	NA	Very rare	Very rare
East Karbi Anglong WS (222)	NA	Fairly common	Rare
Garampani WS (6)	NA	Very rare	NA
Marat Longri (451)	NA	Very rare	NA
Nambor WS (37)	NA	Very rare	NA
Nambor-Doigrung WS (97)	NA	Very rare	NA
Sonai-Rupai WS (220)	NA	Rare	NA

WS Wildlife Sanctuary

6.3.14 Management actions proposed

1. Habitat degradation and fragmentation

Selected forest patches should be protected against jhuming in Karbi-Anglong, Dima Hasao and Cachar areas with the consent of local communities. Habitat improvement must be taken up to ensure proper protection and conservation of all bear species found in Assam. Effective control on encroachments in forest areas and protected areas should be ensured. Interstate border disputes with neighbouring states may be expeditiously resolved in order to protect and manage the rich forest areas along the inter-state border of Assam.

2. Developmental activities

The forest and wildlife areas should be used minimally in all developmental projects. Fragmentation of key bear habitats due to construction of roads and other development activities should be avoided as far as possible. Low impact eco-tourism activities should be promoted involving local communities in and around all the protected areas. Unplanned growth of tourist resorts around PAs should be discouraged/restricted.

3. Bear-Human interaction management

Bear-human conflict zones in Assam should be delineated and indicated on maps. Village defence groups may be formed and their capacity to address bear-human conflict situations enhanced. Rescue facilities for bear in the zoos may be facilitated in the state.

Orphaned bear cubs, which are displaced due to various reasons, should be rehabilitated. Rapid response mobile units and rescue centres may be established in significant bear occupied areas.

4. Conservation research and monitoring

The ecology of sympatric bear species should be studied in Kaziranga-Karbi Anglong Elephant Reserve and other important bear bearing areas of the state. Population estimation of all three species of bears should be taken up in the entire state. The presence and absence of sloth bear and sun bear must be studied through camera traps in potential areas.

5. Awareness and education

Good quality audio-visual materials on bears may be produced and used for a bear specific awareness campaign. Messages on bear should be included as a key species in all ongoing general wildlife awareness campaigns. Incentives should be provided to the people who help in rescue and rehabilitation of bears. A project bear may be launched at National level. One day in the wildlife week may be dedicated to bears. Forest Department alone cannot achieve the goal. Involvement of all the stake holders viz. all Government line Departments, villagers, civil society/ NGOs and local self panchayats and gram-sabhas has to

be emphasized adequately.

6. Bear trade and consumption

A detailed database should be created on poaching and trade in bear and bear body parts. Communities may be involved and motivated to give up consumption of bear meat. A network of various law enforcing agencies may be established including forensics. The judiciary may be sensitized in the state on wildlife crimes including those involving bear.

7. Policy and legislation

Legal support should be provided to the forest department so that they are able to take the cases of wildlife crimes till convictions. Authorities granting/renewing fire arm licenses may insist on NOC from concerned DFO in the bear bearing areas before considering the applications. Financial resource crunch for wildlife conservation (including bear conservation) need to be appropriately addressed.

8. Capacity building

Suitable training modules may be developed for different stakeholders for protection of bears. Frontline staff should be equipped with latest devices and equipments for enhanced protection of bears. Specialized training should be imparted to frontline staff for the protection of bears. Senior forest officers may be sent for exposure visits to different countries that have specific bear management plans in place.



BIHAR

BEAR CONSERVATION ACTION PLAN BIHAR

2012

Samir Kumar Sinha¹ and D.K. Shukla²

Project team Arshad Hussain, Samir Kumar Sinha, Anil Kumar Singh, Rahul Kaul **Geographical Location:** 24° 20′10″-27° 31′15′ N, 82° 19′50″- 88° 17′40″E

Area: 94,163 Km² **Biogeographic zone:** 7 Gangetic Plain

Biotic Province: 7B (Lower Gangetic Plain)

Forest area: 6,473 Km² (6.87% of geographical area), Forest cover is 6845 Km²

Bear habitat range: App. 6000 Km² **Bear Population estimate:** Not known

Human population: 103.8 million (2011) **Livestock population:** 30.34 million (2007)

6.4.1 Introduction

The eastern Indian state of Bihar is entirely landlocked. It has Nepal in the north, West Bengal in the east, Jharkhand in the south and Uttar Pradesh in the west. .

It is a vast stretch of fertile plain drained by river Ganga, including its northern tributaries Gandak and Kosi, originating in the Nepal Himalayas and the Bagmati originating in the Kathmandu Valley. Bihar is mildly cold in the winter, with the lowest temperatures being in the range from 2-10 °C. It is hot in the summer, with average highs around 35-40 °C (http://gov.bih.nic.in).

A total of 7.27% and 3.38% of the total geographical area is covered under forests and wildlife protected area (PA) network, respectively. The PA network in the State also includes wetlands designated as bird sanctuaries. As per FSI report (Anon, 2011) natural forest cover in the State can broadly be categorized into tropical wet evergreen (1.22%), tropical moist deciduous (6.81%), littoral & swamp forest (0.24%) and tropical dry deciduous forest (84.66%). Sloth Bear (*Melursus ursinus*) is the only bear species found in Bihar.

6.4.2 Distribution and Relative Abundance

Sloth bear has been reported to occur in 12 forest divisions (FD) of the state, such as

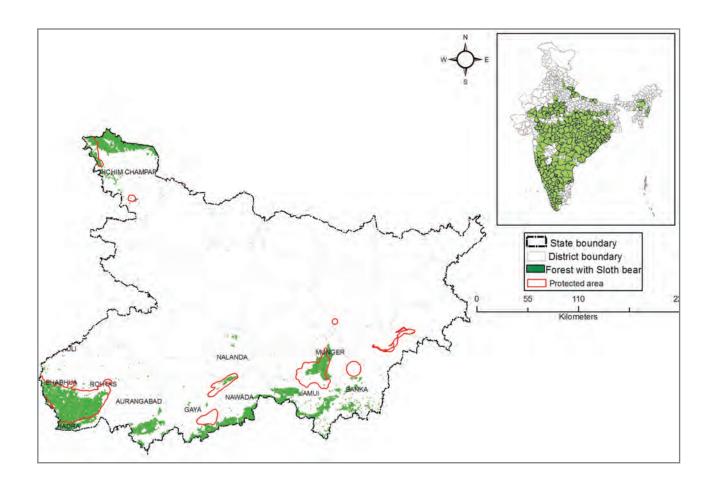
Rohtas, Kaimur, Munger, Jamui, Banka, Nawada, Gaya, Nalanda, Valmiki Tiger Reserve (TR) Division-1, and Valmiki TR Division-2. However, presence of sloth bear in Nalanda and Banka forest divisions needs verification. As per the Forest Department report, bear presence has not been recorded (no instance of human-bear conflict recorded either) in Banka division in the last three years. The species is distributed in the moist deciduous forests in the terai area in Valmiki TR in north-western part, and dry deciduous forests in Kaimur Plateau in south western part, southern forests bordering Jharkhand, and forest patches of Munger, Jamui and Banka in the south eastern part of the State. The PAs falling within the sloth bear distribution range in the State include Valmiki Wildlife Sanctuary (WS) and National Park (NP), Kaimur WS, Bhimbandh WS and Gautam Buddha WS (Fig. 6.4.1).

6.4.3 Population estimates

The species has been neglected in terms of monitoring and research. Therefore authentic information on its distribution and abundance is lacking. As part of the all India exercise on tiger, co-predator and prey monitoring co-ordinated by Wildlife Institute of India and National Tiger Conservation Authority in 2006-07 and 2010, no data could be collected on sloth bears and other wildlife in the protected areas / forests except Valmiki Tiger

Reserve. However, the forests of Valmiki TR, Bhimbandh WS and Kaimur WS reportedly hold better population of sloth bear than other PAs. The occupancy trend is available only for Valmiki TR, where it decreased from 532 to 457 km2 during a period of 2006 to 2010 (Jhala et al., 2008; 2011).

Figure 6.4.1. The distribution of sloth bear in Bihar



6.4.4 Conservation Issues

i. Threats to the Species

Lack of information on status of bear population and its habitat seems to be a major bottleneck in conservation of the species. However, scattered information on bear trade, poaching, tree felling and other biotic pressure in the bear habitats indicate that the bear population in the state is facing various kinds

and intensities of threats. Low level of protection, owing to shortage of frontline staff and poor infrastructure in the protected areas of the state is another important issue that not only affects the bear population but all other wildlife.

The species faces various levels of threats in the state, the most important is poaching and trade of live cubs. The forests bordering Jharkhand state are more prone to trade of live cubs. Confiscation of bear cubs from Jamui area indicates removal and trade of the species in this part of the state. Haveli Kharagpur in Munger Forest Division has been identified as one of the eight sloth bear cub poaching hotspots in the country (Gupta et al., 2007).

Altogether 12 cases of poaching/ confiscation of sloth bears have been reported in the last five years in the state. The terai forest in Valmiki Tiger Reserve, bordering Nepal, is also prone to poaching and illegal trade for this species and its derivatives due to the porous borders. As per the records of the forest department, two bears have been poached in the tiger reserve in the last five years.

As of now, threats of retaliatory killings in the light of increasing instances of negative interaction of sloth bear and human population prevails in the state. Though, killing of sloth bear for this reason has not been reported, but increasing human-bear conflict, especially cases of human injury due to bear attack, poses a significant threat to the species. Nawada forests and Valmiki TR areas are more sensitive in this regard. Sugarcane fields along the forest boundary of Valmiki area are used as temporary shelter by the species and cases of attack on human beings due to chance encounters becomes prominent at the time of the crop harvesting. Death of a woman in a bear attack in Jamui has also been reported.

ii. Threats to the Habitats

Most of the bear habitats in the state are parts of wildlife PA network. As per available information from the PA managers, on an average, 75% of the PAs are potential sloth bear habitats. However, these areas are under

varying extents of community use, like collection of timber and non-timber forest produce and cattle grazing, and pose direct and indirect threats to the bear habitat. Though, disturbances due to tourism activities are minimal, the infrastructure development projects like irrigation reservoir (such as Durgawati) in Kaimur WS, and construction of roads in some of the bear occupied forests are the foreseen threats to the bear habitat. Illegal mining in and around some of the bear habitats viz. Bhimbandh WS adversely affects the habitat. The sloth bear habitat between India and Nepal is connected through northern Bihar (Terai Arc Landscape) and the sloth bear populations in central and eastern Indian landscape are connected through southern Bihar. These sloth bear occupied areas are under threat due to various anthropogenic reasons, which needs special management emphasis.

6.4.5 Management Actions taken

i. Protection to the species

There is no specific strategy for protection of bears in Bihar. However, being found in the PAs of the state, the species gets highest degree of legal safeguard. However, the protection level in wildlife sanctuaries is not very encouraging. Shortage of frontline staff and infrastructure are the main hurdles in effective patrolling and enforcement in most of the bear occupied protected areas. Moreover, almost all bear occupied protected areas and forests, except Valmiki TR have security related issues and therefore anti-poaching operations and management interventions becomes a tough task for the forest department. An orphan bear cub being rehabilitated in Bhimbandh WS in Munger was killed by "extremists" in 2007 and the project had to be shut down due to safety concerns. Lack of reliable information network

restricts intelligence based enforcement to control poaching and illegal trade.

ii. Habitat Management

No habitat specific management measure for the conservation of sloth bear has been taken in Bihar. As part of habitat management and improvement measures, apart from forest fire control, water holes are created/ managed during pinch period, in some of the PAs. Habitat management measures in tiger habitats such as Valmiki TR work for other species as well.

iii. Management of Bear-Human Interactions

There is no specific management plan prepared by the state to address issues on human bear interactions. However, a policy for compensating crop losses and human injury/ death due to bears is in place and by all reports timely. Though crop damage by bears is also an issue, affected people hardly demand compensation, perhaps due to low scale of damage or being unaware of the option. The number of negative human-bear interactions around Valmiki TR has reported an increase. The management of Valmiki TR takes extra care by deploying watchers and making people aware of bear presence during sugarcane harvesting season, when chances of encounter of farmers and sheltering animal increases as well as the instances of human mauling.

No rapid response/ rescue/ conflict management teams are in place to address the emergencies in the sloth bear occupied areas. Infrastructure for restraining, transporting and rehabilitating the bears in emergency situations is negligible. In the recent years remote drug delivery devices (tranquilizing equipments) have been purchased in Kaimur WS, Bhimbandh WS and Valmiki TR. But, no exclusive veterinary support has been provided in these areas to deal with wildlife emergencies.

iv. Research and Monitoring

No specific research and monitoring on bear is being done in the state. As a part of All India Tiger Monitoring exercise conducted by the Wildlife Institute of India and its partners in collaboration with the state forest department, occupancy of the species was studied in Valmiki Tiger Reserve.

v. Limitations

No bear specific survey to estimate the abundance and population trend has been taken up by the Bihar State Forest Department in any forest divisions. Hence, the current status of sloth bear including abundance estimates and other details in different forested areas of Bihar are not available.

6.4.6 Management Actions Proposed

Well thought out strategies must be in place for successful conservation efforts in future. The efforts should be aimed at recovering the depleting populations and reversing the trend of habitat degradation. The elements outlined below are integral to a comprehensive conservation strategy for sloth bear in Bihar.

1. Research and Monitoring

Workshops need to be organized for sensitization towards conservation of sloth bear for frontline forest staff to discuss methodology of the study and importance of knowledge of status of sloth bear in all Forest Divisions (FD) in the State. Baseline information should be generated on occupancy (at beat level), and relative abundance index

(range level) of the species across the state (entire forest area in the state). Critical sloth bear populations as well as habitats in the state need to be identified and monitored. It is also important to identify low bear abundance areas and improve habitat conditions and remove the factors responsible for decline of population in such areas. Conservation of remaining population in such areas would require intensive management interventions. It is most likely that improvement in conditions would help the population in adjoining forest areas to occupy the improved habitat.

2. Trade and poaching control

A baseline needs to be generated on bear trade, communities involved in these activities and their modus operandi. Awareness should be spread to the society to discourage illegal trade and use of bear products in identified trade hot spots. The wildlife wing of the state forest department needs to be strengthened. Manpower and infrastructure need to be improved in bear ranging divisions. Bear den sites need to be identified and protected to minimize removal of cubs during breeding season. An intelligence network needs to be developed to help in reducing instances of bear poaching and trade involving local communities.

3. Human bear interactions

The situations of negative interactions leading to casualty of bears, mauling and casualty to human life and loss of property need to be assessed and analyzed so that causes of conflict are understood and scientifically drawn mitigation strategy in place.

Compensation mechanism should be improved to provide immediate relief to the affected persons, especially in case of human injury and death. Area specific conflict mitigation plans need to be developed to reduce cases of retaliatory killings of bears and loss of human property and life. Conflict mitigation plans should be put in place in key bear areas. A rapid response unit may be constituted in participation with local communities in high bear-conflict areas to reduce death of bears in such situations including addressing medical emergencies. Enforcement of regulation may be strengthened for controlling poaching.

4. Habitat management

Habitat restorations plans need to be formulated and executed in all bear ranging divisions. These restoration plans need to be incorporated in management plans of the respective protected areas. A framework may be developed to assess the affect of developmental activities on bear habitat. A policy should be made to restrict nonforest developmental activities that may negatively affect bear habitats. Legal and illegal mining activities may be stopped in and around bear habitats. The degraded but potential bear habitats adjoining Valmiki TR, Bhimbandh WS and Kaimur WS could be identified and habitat restoration measures undertaken with the participation of the local communities to improve habitat quality for sloth bear and other wildlife.

5. Communication and education

Educational activities may be organized periodically for various target groups to improve understanding on bears and conservation issues. A bear conservation education network may be developed in the state. Communication strategies should be formulated and implemented for creating community awareness on human bear interactions. Timely and effective media coverage should be done regarding conservation projects and issues on bears. Few seminars may be organized on issues related to bears. Bear reserves may be declared in key habitats to highlight importance of the area.

6. Bear welfare

The captivity conditions may be enriched and maintained resembling natural habitat of bears. A rescue center may be developed with state of the art life time care facilities for captive and free ranging bears. A protocol and set of guidelines for field officials and frontline staff may be developed to act quickly in case of seizure of live bears. A comprehensive rescue and rehabilitation

strategy needs to be developed for bears. Infrastructure and dedicated teams need to be developed and maintained for rescuing the bears displaced during conflict situations. Frontline staff, forest officials, veterinarians, local administration and other stakeholders needs to be trained time to time for their capacity building for rescue operations.

7. Capacity enhancement

Specific plans need to be developed and implemented to conserve bears in priority areas. Funding sources should be mobilized for implementation of the action plan. Collaboration with national and international conservation organizations and experts may be developed and strengthened to enhance capabilities. Partnerships should be built with institutions, organizations and universities for specialized training on ecology, biology, rescue and rehabilitation and conservation education. The frontline forest staff should be periodically trained to enhance their capacity for better protection and human-bear conflict mitigation.



CHATTISGARH

BEAR CONSERVATION ACTION PLAN CHATTISGARH

2012

Naim Akhtar¹ and Ram Prakash²

Project team
Shameem Ahmed, Rajendra Prasad Mishra, Naim Akhtar, Rahul Kaul,
Sandeep Kumar Tiwari and Prajna Paramita Panda

Geographical location: 17°47′ N 24°06′ N, 80°15′ E 84°24′ E

Area: 135,191 km²

Biogeographic zone: 6 Deccan Peninsula

Biotic Province: 6B Chotta-Nagpur, 6C Eastern Highlands and 6D Central Plateau

Forest area: 59,722 Km² (44.21% of the state geographical area)

Bear habitat range: 49,530 Km²

Bear Population estimate: Within the range of 3000-5000 (no reliable data)

Human population: 25.54 million (2011 census)

Livestock population: 14.42 million (Livestock census 2007)

6.5.1 Introduction

The central Indian Chhattisgarh state is one of the youngest and richest in natural resources, including forests. It has Madhya Pradesh in the northwest, Maharashtra in the west, Andhra Pradesh in the south, Odisha in the east, Jharkhand in the northeast and Uttar Pradesh in the north. (http://cg.gov.in).

The northern and southern parts of the state are hilly, while the central part is a fertile plain. Deciduous forests of the Eastern Highlands Forests cover roughly 44% of the state. In, the north lies the edge of the great Indo-Gangetic plain. The Rihand River, a tributary of the Ganges, drains this area. The eastern end of the Satpura Range and the western edge of the Chota Nagpur Plateau form an east-west belt of hills that divide the Mahanadi River basin from the Indo-Gangetic plain. The central part of the state lies in the fertile upper basin of the Mahanadi river and its tributaries. This area has extensive rice cultivation. The upper Mahanadi basin is separated from the upper Narmada basin to the west by the Maikal Hills (part of the Satpuras) and from the plains of Odisha to the east by ranges of hills. The southern part of the state lays on the Deccan plateau, in the watershed of the Godavari River and its tributary, the Indravati River (http://en.wikipedia.org/wiki/Chhattisgarh). The climate of Chhattisgarh is hot and humid

due to its proximity to the Tropic of Cancer. Summer in Chhattisgarh is from April to June and temperatures can reach 48°C (100°F). The monsoon season is from late June to October and is a welcome respite from the heat. Chhattisgarh receives an average of 1,292 mm of rain.

12% of India's forests are in Chhattisgarh, and 44% of the State's land is under forests. Identified as one of the richest bio-diversity habitats, the Green State of Chhattisgarh has the densest forests in India, rich wildlife, and above all, over 200 nontimber forest products, with tremendous potential for value addition (http://cg.gov.in). The forests of the state fall under two major forest types, i.e., Tropical Moist deciduous forest and the Tropical Dry deciduous forest. Only Sloth bear (*Melursus ursinus*) is found here.

6.5.2 Distribution and relative abundance

In central India, a large proportion of the sloth bear population occur outside the Protected Areas. Density of sloth bear in the unprotected habitats of the North Bilaspur Forest Division was estimated at 23/100 km², which was higher than the Protected Areas (PA) (Akhtar, 2004; Akhtar et al., 2008). With an average density of 12.1 bears/100km², populations of sloth bear in PA's have been estimated and found similar to the trend as

studied by Garshelis et al. (1999a; 1999b). The data gathered from the Chhattisgarh State Forest Department indicate that sloth bear is a widely occurring species with presence in 35 Protected Areas and Forest Divisions (Fig. 6.5.1). The total sloth bear population is 13,028 as reported by the State Forest Department. However, this needs to be validated.

6.5.3 Population estimates

The Chhattisgarh State Forest Department's of estimates of sloth bear numbers are not methodologically robust. Chhattisgarh's total of the 13028 individuals appears to be on the higher side and exceeds previous estimates (Akhtar, 2004; Chauhan, 2006; Garshelis et al., 1999). The details on the population status of sloth bear in the State based on the Forests Department records and possible numbers based on the study by Akhtar (2004) are given in Table 6.5.1.

Akhtar (2004) has been shown no population of bears in the Katghora, Janjgirchampa, Jashpur, West Bhanupratappur, Bastar, Dantevada and Indravati Tiger Reserve Forest Divisions. But, these areas are rich in bears as reported by the State Forest Department. The number of incidents of human-bear conflicts from Katghora, Janjgirchampa, Jashpur, Bastar, Dantewada and Indravati Tiger Reserve in last five years indicates the presence of bears in these Forest Divisions.

Table 6.5.1. Estimated number of sloth bears in different forest divisions as recorded by the State Forest Department and their possible numbers.

Name of forest division	estim	lation of sloth bear as nated by State Forest department	Possible population of sloth bear as estimated by Akhtar (2004)		
	2006-07	2010-11	, ,		
Bilaspur	46	-	50		
Raigarh	879	-	200		
Korba	619	-	150		
Marwahi	435	267	200		
Katghora	221	-	-		
Janjgir Champa	50	-	-		
Dharam Jaigarh	851	758	200		
North Surguja	1725	-	200		
South Suguja	1710	-	200		
East Surguja	266	-	40		
Jaspur	1213	-	-		
Guru Ghasi Das National Park	740	-	200		
Manindargarh	1043	-	200		
Koria Baikunthpur	14	16	10		
Durg	155	-	50		
Rajnandgaon	97	-	50		
Khairagarh	192	-	50		
Kawardha	239	-	50		
Kanker	100	65	65		
Narainpur	70	52	52		
South Kondagaon	6	-	6		
North Kondagaon	69	11	11		
East Bhanu Pratappur	24	2	2		
West Bhanu Pratappur	20	-	-		
Bastar	233	-	-		
Bijapur	350	117	117		
Dantewada	506	-	-		
Kanger Vally National Park	26	28	28		
Indravati Tiger Reserve	171	-	-		
Dhamtari	126	-	40		
Mahasamund	832	-	200		
Total	13028		3056		

From the above estimates, it is clear that the sloth bear population is declining in managed forests outside the PA's. Akhtar (2004), Bargali (2004; 2005) and Chauhan (2006) have estimated the densities of sloth bear in different areas which is given in table 6.5.2.

Fig. 6.5.1. The distribution of sloth bear in Chhattisgarh

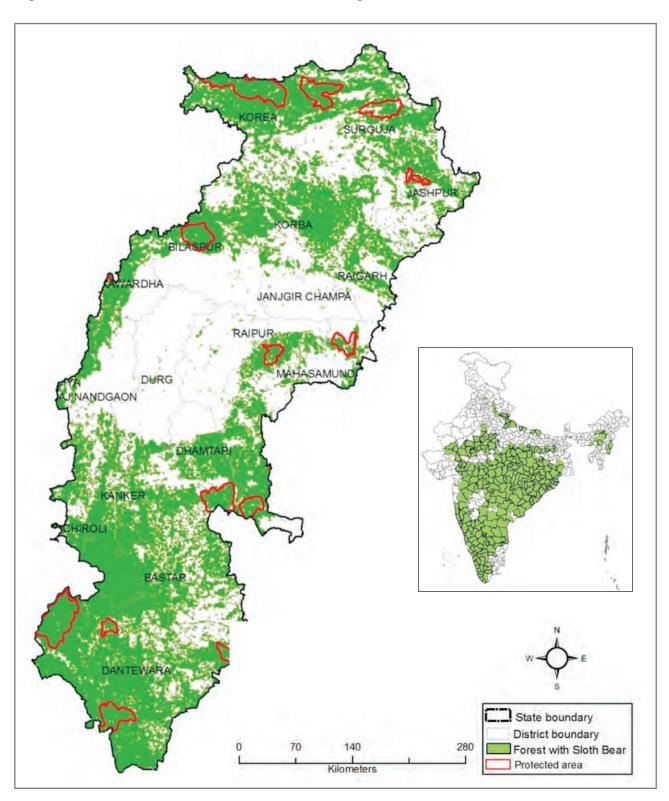


Table 6.5.2. Status and abundance of sloth bears in different protected areas in Chhattisgarh

Name of the PA's	Area	Density of sloth bear/100 km ²	Status	
Achanakmar WS	551.55	12	Very Common	
Badalkhol WS	104.45		Common	
Barnawapara WS	244.66		Unknown	
Bhairamgarh WS	138.95		Common	
Gomardha WS	277.91		Unknown	
Guru Ghasi Das NP	1471.13	15	Very Common	
Indravati NP	1258.37		Very Common	
Kangerghati NP	200.00		Unknown	
Pamed WS	262.12		Common	
Semarsot WS	430.35		Unknown	
Sitanadi WS	553.36	17	Very Common	
Tamorpingla WS	608.51	18	Very Common	
Udanti WS	247.60	14	Very Common	
Total	6348.96			

Bear density in the unprotected habitats of North Bilaspur Forest Division was found to be 23 individuals/100 km², which was higher than in PA's. The average density of the sloth bear in the state was around 12 individuals/100 km². Considering the fact that more than 55.79% of the 59,722 km² forest area does not have bear and with 8-10 individuals/100 km² in total bear habitat available in the state (except 55.79% of 59722 km² and 9954 km² Unclassified Forest), the population of the sloth bear could be estimated to fall between 3665-4581.

6.5.4 Conservation Issues

i. Threats to the Species

Trade in bear body parts in India has been reported by World Society for the Protection of Animals (WSPA) and Wildlife Institute of India (WII) in their studies. Bears are poached largely for the bear bile/gall bladder which is smuggled out of country through Nepal and Bangladesh (Akhtar, 2004). The important bear poaching areas in the state are Marwahi-Pendra, Katghora, Jaspur, Dharamjaigarh, Raigarh, Bacheli (Dantewada), Manendragarh, Sarguja (East), Sarguja (South), Kanker and Kawardha. The important centres of trading of live bears and body parts are Marwahi-Pendra, Mahendragarh, Bilaspur, Jangir, Ambikapur, Jashpur, Dharamjaigarh, Raigarh, Katghora, Raipur, Rajnandgaon, Mahasamund, Kawardha, Bacheli (Dantewada) and Jagdalpur.

To put an end to poaching and trade of sloth bear cubs, many NGO's such as Wildlife Trust of India, WSPA, Wildlife SOS, Free the bear Funds, International Animal Rescue and have initiated a campaign to spread awareness on the cruelty and illegality of bear cub poaching in India including Chhattisgarh.

Trading of bear cubs for street performance has also declined considerably due to the ban on bear dancing and the initiatives of NGOs providing alternate livelihoods to Kalanders.. However, isolated incidents of bear cub seizure indicate that cubs are still being traded for reasons that could not be established. Seven cases of bear cub seizure were reported by the Chhattisgarh Forest Department in last five years.

Human-bear conflict is very common in Chhattisgarh and incidents of retaliatory killings have been reported from Anooppur, Bilaspur Forests Circle, and Marwahi Forest Division of Chhattisgarh. Chhattisgarh has a long history of the human-bear conflict, as reported by many studies (Bargali et al., 2005; Bargali, 2004; Chauhan and Rajpurohit, 1996; Akhtar and Chauhan, 2008). Reports of the human bear conflict during last five years are given in table 6.5.3.

Table 6.5.3. Number of conflict incidences recorded in different Forest Divisions in last five years.

Name of forest division	2006-07	2007-08	2008-09	2009-10	2010-11	Total
Bilaspur	-	-	1	3	3	7
Raigarh	41	40	33	36	39	189
Korba	19	63	44	32	15	173
Marwahi	7	2	20	7	29	65
Katghora	12	17	13	14	24	80
Janjgir Champa	7	2	-	9	1	19
Dharam Jaigarh	34	25	21	26	14	120
-rth Surguja	31	7	9	-	27	74
South Suguja	65	80	62	51	77	335
Eastr Surguja	83	55	<i>7</i> 5	39	32	284
Jaspur	61	35	31	13	40	180
Gru Ghasi Das National Park	2	3	3	10	6	24
Manindargarh	39	30	26	28	27	150
Koria Baikunthpur	21	21	24	24	15	105
Durg	-	1	2	1	9	13
Rajnandgaon	2	1	-	-	1	4
Khairagarh	4	3	5	4	3	19
Kawardha	5	1	4	6	1	17
Kanker	23	13	24	1	4	65
Narainpur	7	7	7	5	1	27
South Konda gaon	-	-	-	1	1	2
North Konda Gaon	-	-	-	2	1	3
East Bhanupratap Pur	1	1	-	-	-	2
West Bhanupratap Pur	-	_	-	-	-	0
Bastar	2	5	13	7	8	35
Bijapur	2	1	6	5	2	16
Dantewada	6	16	8	18	21	69
Sukma	3	5	1	1	2	12
Kanger Vally National Park	-	-	-	-	1	1
Indravati Tiger Reserve	-	4	-	3	6	13
Raipur	7	5	3	1	-	16
Gariya Band	14	6	3	8	13	44
East Raipur	-	-	2	4	3	9
Dhamtari	2	2	4	7	4	19
Mahasamund	30	25	10	25	29	119
Total	530	476	454	391	459	2310

The above data needs further verification based on research.

i. Threat to the Habitat

Though bear habitat inside Protected Areas has seen less deterioration, habitats in Reserved Forests areas have not been so fortunate due to legal and illegal mining for stones, bauxite and coal. The dependence of local people on minor forest produces such Diospyros melanoxylon leaves, Shorea robusta leaves and seed, Madhuca indica seed and flower, fuel wood, mushrooms, Buchanania lanzan fruit etc also cause habitat degradation. More and more land is also being diverted for coal mining. Implementation of Schedules Tribes and Forests Dwellers Act, 2006 will also have an impact on bear habitat, as more sloth bear habitats are being converted into arable land. Change in cropping pattern is also harming the bear food availability in the area. Due to fragmentation of Forests, sloth bears

often enter villages to raid agriculture and forage on wild Ficus and horticultural produce being processed(mango, Anona squamosa, Zizyphus, mahua, ground nut, maize, sweet potato). Some villagers are now resorting to alternate crops that do not attract bears. Large source of bear food is being removed from around villages intentionally which ultimately will have a bearing on sloth bear population in Chhattisgarh (Akhtar, 2006a).

As per the report from Wildlife Institute of India and Wildlife Trust of India on impact of people on forests area (Table 6.5.4), it is observed that utilization of forests resources for a community purpose and well as livestock grazing are very high. Very few people visit forests areas for tourism.

Table 6.5.4. Percentage use of forested areas by local community, livestock and tourism at different scales.

Use of forested areas	Lowest	Low	Moderate	High	Highest
Local community use	2.9	11.4	22.9	45.7	17.1
Livestock use	0.0	14.3	34.3	40.0	11.4
Tourism use	68.6	20.0	11.4	0.0	0.0

Lowest (<20%), Low (20-40%), Moderate (40-60%), High (60-80%) and Highest (80-100%)

6.5.5 Management Actions taken

Biodiversity conservation in Chhattisgarh is mandated by the Chhattisgarh State Forest Policy commissioned in 2001. The policy envisions the establishment of a representative network of protected areas including Biosphere Reserves, National Parks, Sanctuaries, Gene conservation centers and People's Protected Area. Sloth bear habitats are also reported to get protection under the aforesaid mandate. The Policy also looks at identifying and securing crucial corridors between National Parks, Sanctuaries, forests and other Protected Areas. Such areas should be managed with wildlife friendly management practices like the retention of snags, grasslands, special lithic habitats, caves, cliffs, den sites and water bodies etc. This mandate of the government is very crucial for the sloth bear conservation and needs to be strengthened and implemented in right spirit (Akhtar, 2004; Akhtar et al., 2006b).

i. Protection to the species

Though Forests department have antipoaching squad/teams in Protected Areas, this is absent in the Reserve Forests. No planned patrolling is done in the Reserved Forest areas though the Forest Department staff are bound to react in emergency situations. Hence, there is an urgent need to establish anti-poaching teams or extend the mandate of the existing ones to Reserved Forest areas as well.

ii. Habitat management

All Forest Divisions in the state prepare Management Plans for conservation and management of wildlife including the sloth bear. Community participation has been restricted to collection of minor forest produce (Akhtar and Chauhan, 2006) in many Protected Areas. There is room for restoration of sloth bear habitat across all the Forest Divisions especially forest areas outside the PA's. Restoration is possible only through reduction of human pressure on forests, which includes afforestation, managing cattle grazing, fuel wood and minor forest produce collection, and ban on stone mining from bear den sites..

iii. Management of bear-human interactions

The state is unequipped to deal with human-bear conflict situations. As a result, many of the conflict animals get killed on the spot. The State Forest Department has a compensation scheme which takes care of human death and injuries due to bear attacks but not for crop depredation. With no rescue and rehabilitation centre or project in place, bears caught in conflict situations are sent to Kanan Pindari and Raipur zoos.

iv. Research and Monitoring

Chhattisgarh has seen significant research and data collection about ecology and behaviour of sloth bear. Bilaspur Forests Circle has been well studied area by the Wildlife Institute of India, Dehradun (Akhtar, 2004; Chauhan, 2006, Garshelis et al., 1999; Bargali ,2004; 2005; Chauhan et al., 2003; Chauhan, 2006). Marwahi Forest Division has been well-studied area over the years and considerable decline in status of the bear population was observed in the area. There is a need to have proper monitoring and research programs in different Forest Divisions to keep an eye on change in population dynamics, bear ecology and human-bear conflict.

v. Limitations

The database on actual bear abundance, their habitat and level of conflict in different forest divisions are lacking in Chhattisgarh. No bear specific management practice exists in the state. Certain areas are not reachable due to the presence of extremists.

6.5.6 Management Actions Proposed

1. Habitat Management

Critical/ potential bear habitats should be identified, surveyed and their quality in terms of food and water availability assessed and improved. The linkages between viable habitats need to be identified, secured and strengthened. The sloth bear habitats in reserved forests areas should be properly marked on the landuse/landcover maps to ensure proper protection. Each Forest Division should have a specific component in the Management Plan to take care of sloth bear habitats in Protected and Reserve

Forest Areas. The department can consider including a separate chapter on wildlife management in the working plans for areas outside PAs. There is a need to understand and control the impact of human pressures on bear habitats. These biotic pressures would include timber harvesting, minor forest produce collection, fuel wood collection, and mining of stones and other minerals. Alternative fuel options may be provided to the villagers at subsidized rated. Man-made fires should be controlled to ensure protection to sloth bear habitats that harbor fruiting trees like Zizyphus sp. and Phoenix sp.

Marwahi Forest Division should be especially monitored to strengthen the sloth bear conservation effort. Large contiguous forest patches need special protection and need to be protected by declaring them as Bear Conservation Areas. Smaller forest areas with good sloth bear population should be declared as Community reserves.

2. Development Activities

Development strategies around the bear habitat need to be attuned to bear conservation and welfare. The concerned departments need to be identified who are related with the implementation of the action plan. Forest and wildlife lands should be minimally involved, especially, in mining.

3. Humanbear interaction

Appropriate and timely ex-gratia for crop losses should be introduced. People should also be suitably

compensated for their loss in terms of lives, injury and cattle loss as well. Free treatment should be provided to the people mauled by bears. Awareness must be created about the dangers in minor forest product extraction from bear habitat. Rapid Rescue Teams (RRT) may be created in each division. Problem bears need to be identified and moved to appropriate captive facilities.

4. Research and Information

There is need to regularly monitor the sloth bear population across various forest division in Chhattisgarh and maintain an updated data base. Wildlife Institute of India should be given the responsibility of standardizing the methodology for bear density estimation. Bear population estimation must be undertaken simultaneously in all bear distribution areas of the state.

5. Trade, poaching and enforcement

All the existing vacancies need to be filled up and the staff appropriately trained and equipped for effective patrolling and enforcement. Intelligence gathering and coordination between various enforcement agencies need to be strengthened. Frontline staff may be given the power to use fire arms in emergency situations. A legal cell can be created and prosecution mechanism may be strengthened by engaging eminent legal practitioner. A panel of green lawyers may also be identified and created in the state.

6. Awareness Campaign

Local people, joint forest management committees, eco-development

committees, eco-clubs and school children should be sensitized about sloth bear conservation. Policy makers, judiciary and enforcement agencies may be sensitized on wildlife crime and law enforcement. Awareness campaign should focus on highlighting dangers in collecting the minor forest produce from the areas where bears have their dens.

7. Capacity Building of frontline staff

The frontline staff should undergo capacity building courses in population estimation, enforcement and conflict animal management. They may also undergo reorientation courses on wildlife conservation at periodic interval. A wildlife training school can be established in the state. Exposure visit for frontline staff can be arranged in India or abroad. All the Forests Division should be equipped with the tranquilizing equipment and adequate infrastructure and man-power to deal with the human-bear conflict situations.



GOA

BEAR CONSERVATION ACTION PLAN GOA

2012

Harendra Singh Bargali¹, Richard D'souza² and Sashi Kumar³

Project team Harendra Singh Bargali and Prajna Paramita Panda Geographical position: 14°53'N-15°40' N, 73°40'E-74°21' E

Area: $3,702 \text{ km}^2$

Biogeographic zone: 5 Western Ghats Biotic Province: 5A Malabar Plains

Forest Area: 1224 Km² (33.06% of the state geographical area) and forest cover

of 2219 Km²

Bear habitat range: 837.75 Km²

Bear Population estimate: NA

Human population: 1.46 million (2011) Livestock population: 0.18million (2007)

6.6.1 Introduction

Goa is India's smallest state by area and the fourth smallest by population. Located in western India, it is bounded by the state of Maharashtra to the north and by Karnataka to the east and south, respectively, while the Arabian Sea forms its western coast with a coastline of 101 km (http://www.goa.gov.in). Goa is a small state with a geographical area of 3,702 km2 and falls under two physiographic zones 1) Western Ghats and 2) Coastal Plains (Anon 2011). Most of Goa is a part of the coastal country known as the Konkan, which is an escarpment rising up to the western range of mountains, which separate it from the Deccan Plateau. The highest point is Sonsogor, with an altitude of 1,167 meters (3,827 feet). Goa features a tropical monsoon climate under the Köppen climate classification. Goa experiences hot and humid weather for most of the year with May being the hottest with day temperatures of over 35 °C (95 °F) along with high humidity. The monsoon rains in early June provide a respite from the heat. Most of Goa's annual rainfall is received through the monsoons which last till late September. Goa has a short winter season between mid-December and February when the night temperature falls to 21 °C (68 °F) and day temperature is around 28 °C (84 °F) with moderate amounts of humidity.

As per Champion and Seth (1968), forests in Goa are classified as a) IA/C4 West Coast Tropical Evergreen Forest b) IB/E1 Cane brakes, c) IB/E2 Wet Bamboo brakes, d) 2A/C2 West Coast Semi Evergreen Forest, e) 3B/C2 Southern Moist mixed deciduous forests, f) 3B/C2S1 Southern Secondary Moist mixed deciduous forests, g) 8A/C1/DS1South Indian Sub-Tropical Hill Savannah Woodland and h) 8A/C2 Western sub-tropical hill forest.

6.6.2 Distribution and Relative Abundance

Sloth bear is present in all the four forest divisions (FD) in the state of Goa (Fig. 6.6.1). These are North Goa Wildlife and Ecotourism Division, North Goa FD, South Goa Wildlife and Ecotourism Division and South Goa FD. Since, the Goa State Forest Department has not maintained any specific details regarding bear, no abundance estimate is available for any of the Divisions.

6.6.3 Population estimates

Data on the population estimates for sloth bear in the state are lacking. Although, the Goa State Forest Department conducted a wildlife census in North and South Goa Forest Divisions in 2010-2011, no abundance figures are available. However, according to a study conducted by Wildlife Institute of India, Dehradun, in collaboration with the state

forest department, it has been reported that the occupancy of sloth bear in Goa is 837.75 km² (Kamat, 2012).

6.6.4 Conservation Issues

i. Threats to Species

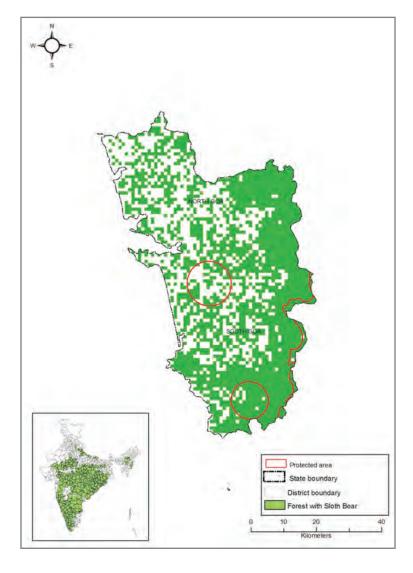
The sloth bear is reported in areas where forests form contiguous habitats with those of the Karnataka State. Incidents such as crop damage or human mauling are quite rare, therefore, the species is not facing any threat from human retaliation. Activities such as

poaching and trade in body parts are also not reported from the state.

ii. Threats to Habitats

Other than the information on area occupied by sloth bear in Goa (837.75 km²) there is no detailed information available on sloth bear distribution and conservation issues involved. However, it has been reported that mining and other developmental activities are exerting pressure on forest area in the state that is occupied by the sloth bear.

Fig. 6.6.1. The sloth bear occupied districts in Goa



6.6.5 Management Actions Taken

i. Protection to species

No particular measure has been taken by the Goa State Forest Department for the protection and conservation of sloth bear in the state.

ii. Habitat Management

The sloth bear is reported from two wildlife divisions and in one of the ranges of two forest divisions (Table 1). Detailed information on distribution, habitat occupied and habitat requirement of sloth bear is not available. The forest department is managing available habitats under the regular Annual Plan of Operations.

iii. Management of Bear-Human Interactions

Very few incidents of human-sloth bear conflict has been reported in Goa recently and in the past. One of the wildlife divisions reported a single case of human mauling whereas another wildlife division reported occasional incidents of crop damage. The forest department has a policy for ex-gratia in case of crop damage or human casualties by sloth bear. However, this scheme needs to be extended to wildlife divisions also as presently it is applicable to only the forest divisions.

iv. Research and Monitoring

No research activity on bear has been carried out in the state. The only information available on forests occupied by sloth bear is from a recent study conducted by Wildlife Institute of India which was originally aimed at estimating tiger population in the state.

v. Limitations

Availability of limited or no information on sloth bear in the state is the prime concern for the conservation of this species. However, sloth bear is also not a species that has drawn much conservation attention in the state.

6.6.6 Management Actions Proposed

1. Research and monitoring

A study to establish baselines in distribution and status of bears in the state should be conducted. Thereafter, further investigations on aspects like ecology, conflict or others may be taken up if necessary.

2. Bear-human interaction management

Though there does not seem to be much human-bear conflict in the state, but those where it does occur need to be mapped and causes for such conflicts need to be understood to either preempt conflict or put appropriate mitigation measures in place. Provision of ex-gratia, in case of human mauling and killing should be extended to wildlife divisions as well. As per the current policy the scheme of ex-gratia is applicable to territorial divisions only.

3. Habitat management

Key areas of sloth bear should be determined and measures put in place to secure these.

4. Awareness and Education

The information on sloth bear ecology and behavior should be disseminated to stakeholders highlighting conservation values. Such campaigns should be extended to include various other groups like judiciary, local police, students, government agencies etc.

5. Capacity building

Training programs should be arranged

periodically for the frontline staff. Adequate infrastructure and equipment to deal with monitoring and conflicts need to be provided. Periodic evaluation and monitoring should be performed.



GUJARAT

BEAR CONSERVATION ACTION PLAN GUJARAT

2012

Nishith Dharaiya¹ and S.K. Goyal²

Project team
Nishith Dharaiya, Darshan Sukhadiya and Aniruddha Mookerjee,
Rahul Kaul and Prajna Paramita Panda

Geographical location: 20°07′ to 24°43′N, 68°10′ to 74°29′E

Area: 1,96,030 km²

Biogeographic zone: 3, Indian Desert, 4, The Semi Arid, 5, The Western Ghats, 8, The

Coast

Biotic Province: 3B Kachchh, 4B Gujarat Rajwada, 5A The Malabar plains,

5B The Mountains, 8A The West Coast

Forest area: 18,927 Km² (9.66% of the state geographical area) and forest

cover of 19,113 Km²

Bear habitat range:3791.39 Km²Bear Population estimate:282 (2011)Human population:60383628 (2011)Livestock population:167.48 Lac (2007)

6.7.1 Introduction

Like most states in India, Sloth bear (*Melursus ursinus*) is the only species of bear found in the state of Gujarat. As Gujarat falls under the semi-arid region; however, the area has sparse and scattered forests. The notified forested area in Gujarat is 19,113 km², which is 10% of the total geographic area of the state (Singh, 2001). The forest falls mainly under the unprotected and reserved forest category, used by the local community mainly for the collection of fuel wood and other forest products, cattle grazing, etc.

6.7.2 Distribution and relative abundance

In Gujarat sloth bears are patchily distributed in the dry deciduous forests between North-Eastern and South-Central part of the state. They occurs in five protected areas viz. Shoolpaneshwer, Jambughoda, Ratanmahal, Jessore and Balaram Anbaji Wildlife Sanctuaries as well as several unprotected forest patches of Sabarkantha, Banaskantha, Mehsana and Panchmahal districts (Table 6.7.1, Fig. 6.7.1). Banaskantha district is believed to hold the highest sloth

bear density in the country (Garshelis et al., 1999). Population of sloth bear in Gujarat is fragmented into three major regions: a) sloth bear in Aravalis (Banaskantha and Sabarkantha Districts) which is again fragmented into smaller pockets due to cultivation, human settlement and road networking, b) sloth bear population in Ratanmahal, Jambughoda and Neighboring forest patches of Vadodara and Dahod districts and c) a small isolated population of sloth bears in Narmada and Bharuch Districts (Shulpaneshwar Wildlife Sanctuary). Current Status of sloth bear in north eastern part has been extensively studied by Dharaiya and Ratnayeke (2009), Dharaiya (2010) and Mewada (2011). The State Forest Department regularly conducts estimation of bear population in all the Forest Divisions as a part of their monitoring activities. The previous research study showed that the survival of sloth bears depends on availability of suitable habitats along boulder and rocky outcrops in forest areas. People invade forests and share natural resources, which result in increasing humanbear conflicts in many forest patches of north Gujarat (Dharaiya and Ratnayeke, 2009).

Table 6.7.1. Bear Distribution in the Protected Areas (PA), Forest Divisions (FD) and Reserved Forests (RF) in Gujarat

Name of Protected Area	Area (km²)	Name of Division	States of Sloth Bear
Shoolpaneshwer	608	Narmada Forest Division (East)	Rare
Jambughoda	130.38	Wildlife Division Vadodara	Rare
Ratanmahal	56	Devghadha Bariya	Rare
Jessore	180	Banaskantha Forest Division	Common
Balaram Anbaji	542.08	Banaskantha Forest Division	Common

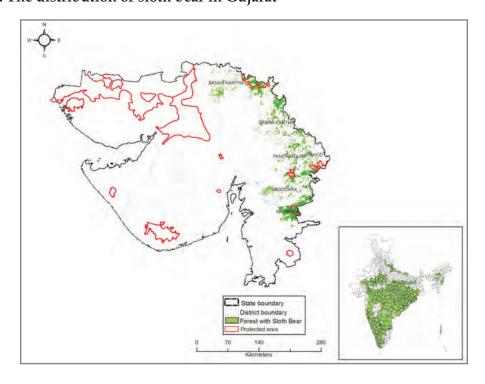
6.7.3 Population estimates

The state forest department organizes wildlife census operation every five years in entire state. Bear population estimation is carried out mainly through sign survey and direct encounter method. The recent population estimate of sloth bear in different districts of the state is given in table 6.7.2. According to the forest officers of concerned division, the bear population has increased marginally in last five years.

Table 6.7.2. Current status of sloth bears in different district of in Gujarat

District Name	Estimated number of sloth bears
Banaskantha	90
Vadodara	45
Sabarkantha	21
Narmada	17
Panchmahal	9

Figure 6.7.1. The distribution of sloth bear in Gujarat



6.7.4 Conservation Issues

i. Threats to the species

Except for Sabarkantha district, no case of poaching, killing or trading of bear body parts has been reported in last five years in Gujarat. Couple of cases reported from in Sabarkantha district was due to of retaliatory killing in 2008 and 2009. No poaching of bear or incident of trade in bear or bear parts has been recorded by the forest department in last five years.

ii. Threats to the habitats

The bear habitat in Gujarat mostly occurs in terminating mountain ranges of Arawalis, Satpuda and Sahiyadri with dry deciduous to moist forest types. Fruits and other parts of more than 35 plant species have been reported from here, which are consumed by sloth bears (Mewada, 2011). Sloth bears are also known to feed on honey, termites and ants. The main issues with the available bear habitats in the state are pressure on the habitats by livestock grazing, tourism and developmental activities like road construction, expansion and mining, which are reported as major factors leading to habitat degradation and fragmentation of forest patches. Out of seven forest divisions with sloth bear population in this state, forest patches in four divisions are unprotected, and not declared as sanctuaries. Moreover, pilgrim places like Kedarnath Temple in Jassore Sanctuary, Balaram and Ambaji Temples in Balaram Ambaji Wildilfe Sanctuary, Shulpaneshwar Mahadev Temple in Shulpaneshwar Sanctuary attract huge number of pilgrims and tourists every year from all over the country in different seasons. Though, the protection level and network of the forest department is very good in the state, the level of disturbance and pressure is

increasing many folds due to pilgrims swarming the areas in huge numbers.

6.7.5 Management Actions taken

i. Protection to the species

There are no specific anti poaching squads, conflict management teams and specific equipments with forest field staff available in most of the sloth bear ranges of Gujarat. The rescue teams are generally available only in the protected areas, focusing almost entire in and around Gir National Park. Since majority of bear habitats fall outside the jurisdiction of protected area network of the state, they lack protection equipments, trained man power and local rescue team.

ii. Habitat management

Forest field staff manage habitats in almost all the forest divisions, which include regular monitoring, plantation programs, often with community involvement. Eco development committees, village development committees, stakeholders' groups are formed in each forest division to carry out habitat restoration and improvement programs.

iii.Management of bear-Human Interactions

Rescue teams and conflict mitigation measures exist only in those bear habitats which are declared as wildlife sanctuaries. Bear-human interactions are very common issue in all districts of Gujarat except Panchmahal district. Human injuries due to bear attack are commonly recorded in the state but no specific management plan is in place by the forest department to mitigate the conflict. The state recorded 127 humansloth bear interaction cases in the last five years, of which 95 were cases of human injuries with one casualty. The state forest department provides

compensation to the victims after the approval of the compensation application by the higher authorities. Out of 95 such compensation applications, 57 applications have been sanctioned by the state forest department in last five years.

iv.Research and Monitoring

Research and monitoring activities in the bear occupied forest divisions is very little. No research on the distribution, food, habitats, and other aspects of sloth bear has been carried out in Gujarat. Studies have been carried out in Jassore and Balaram Ambaji Wildlife Sanctuaries as well as in Sabarkantha and Mehsan Districts of Northern part of the state during 2007-2010 by Wildlife Institute of India (Chauhan and Soni, not published) and North Gujarat University (Dharaiya and Ratnayeke, 2010; Mewada, 2011).

v. Limitations

The important limitations for conservation of sloth bear and its habitats in the state are shortage of field staff and equipments, absence of bear rescue and conflict management teams and lack of data on Sloth bear ecology, its Habitats and biotic pressure. Apart from these, lack of skilled and trained forest staff, increasing human activities and uncontrolled developmental activities, grazing and cutting of trees in forest areas and lack of awareness both among field staff and local community are the threats that hamper the conservation of sloth bear in Gujarat.

6.7.6 Management actions proposed

Following management actions have been proposed for conservation of sloth bear and their habitats in Gujarat based on the secondary information collected during the survey, personal interactions with forest officers of the concerned divisions and consultative workshop conducted by the state forest department and Wildlife Trust of India.

1. Habitat management and improvement

Eco-sensitive zones need to be declared around bear habitats and human activities curtained in these zones. The corridors between Balaram Ambaji and Jassore Sanctuary and unprotected forests of Satlasana and Taranga Hills and Ratan Mahal and Jambughoda Sanctuary need to be restored. Habitat restoration and enrichment activities like plantation of fruiting trees and establishing waterholes have to be initiated.

2. Conflict mitigation

Mobility and networking of frontline forest field staff may be increased in the areas which are not sanctuaries. There is a need of commission of two separate rescue and conflict management teams which need to be deployed in North Gujarat Circle and Vadodara Circle. All approaches seeking compensation promptly processed. Public toilets may be developed in the villages around conflict zones as an effort to minimize conflict with bears.

3. Management of Tourism and pilgrimage to conserve bear habitat

Night traffic in the vicinity of bear habitats should be managed especially in tourist and pilgrim seasons. Hoardings and signages on bear conservation issues and local wildlife can be displayed on the highways, highway hotels and other such places.

4. Research and management

Ecological factors governing the distribution of sloth bear must be studied. A protocol for conducting scientific and systematic census of sloth bear in Gujarat needs to be developed. Wildlife corridors in fragmented forest patches in Central and south Gujarat have to be mapped after a field survey. Land use of both bear and humans should be mapped in high conflict zones to study the extent of resource sharing.

5. Awareness campaign

Nature camps may be organized in villages around bear habitats specifically to create awareness on bear behaviour and ecology, prevention of bear attacks, first aid, compensation scheme etc. The disposal of Madhuca indica waste and other food items should be streamlined in tribal villages. Hoardings may be prepared through community involvement at public places such as schools, hospitals offices etc. Awareness camps could be initiated in Shoolpaneshwar and Ratan Mahal Sanctuary through School Eco Clubs.

6. Capacity building

The field staff must be trained on rescue protocols, identifying bear signs, attacks, differentiating bear identifications, bear dens etc. They also need training on monitoring and collecting data with appropriate and advanced techniques. Local researchers should be encouraged and involved in routine monitoring of sloth bear and habitats.



HIMACHAL PRADESH

BEAR CONSERVATION ACTION PLAN HIMACHAL PRADESH

2012

S. Sathyakumar¹, S.B. Islam² and R.K. Sood³

Project team
S. Sathyakumar, Masood Ahmad Dar and Rahul Kaul

Geographical position: 30° 22′ to 33° 12′ N, 75° 45′ to 79° 04′ E

Area: 55,673 Km²

Biogeographic zones: 1 Trans Himalaya, 2 Himalaya

Biotic Province: 1A Ladakh Mountains, 1B Tibetan Plateau, 2A North-west

Himalaya and 2B West Himalaya

Forest area: 33,033 (66.52% of the geographical area) and forest cover of

37,033 Km²

Bear habitat range: 20,300 Km² **Bear Population estimate:** Not available **Human population:** 6.86 million (2011)

Livestock population: Cattle & buffaloes: 30,41,000 (2008)

Goat & sheep: 21,42,000 (2001)

6.8.1 Introduction

Himachal Pradesh is a state in the northern India. It is spread over 55,670 km², and is bordered by Jammu and Kashmir on the north, Punjab on the west and south-west, Haryana and Uttar Pradesh on the south, Uttarakhand on the south-east and by the Tibet Autonomous Region on the east. Himachal Pradesh is a mountainous state with elevations ranging from 350 meters to 7,000 meters above sea level. The state has areas like Dharamsala that receive very heavy rainfall, as well as those like Lahaul and Spiti that are cold and almost rainless. Broadly, Himachal experiences three seasons; hot weather season, cold weather season and rainy season. Summer lasts from mid April till the end of June and the lower areas may become fairly hot. However the higher areas experience moderate temperatures, ranging from 28 °C (82 °F) to 32 °C (90 °F). Winter lasts from late November till mid March. Snowfall is common in the temperate to alpine tracts (generally above 2,200 meters i.e. in the Higher and Trans-Himalayan region). According to 2003 Forest Survey of India report, legally defined forest areas constitute

66.52% of the area of Himachal Pradesh,

although area under tree cover is only 25.78%. The southern part of the state, which is at the lowest elevations, has both tropical and subtropical dry broadleaf forests and tropical and subtropical moist broadleaf forests. These are represented by northwestern thorn scrub forests along the border with Haryana and Uttar Pradesh and by moist deciduous forests in the far southeast. Rising into the hills, a mosaic of western Himalayan broadleaf forests and Himalayan subtropical pine forests is found. In the uppermost elevations western Himalayan alpine shrub and meadows in the northeast and northwestern Himalayan alpine shrub and meadows in the northwest are found. In Himachal Pradesh, two species of bear are found such as Asiatic Black bear (Ursus thibetanus) and Himalayan Brown bear (Ursus arctos).

ASIATIC BLACK BEAR

6.8.2 Distribution and relative abundance

Asiatic black bear is distributed widely in the State as it occurs in suitable undisturbed forested areas up to 3,000 m (Sathyakumar, 2001). Recent consultations with PA managers of the state revealed that the black bear is

present in 30 forest/wildlife divisions (Table 6.8.1, Fig. 6.8.1). They are reported as 'common' in Kanawar Wildlife Sanctuary, Khokhan Wildlife Sanctuary, and as 'fairly common' in Great Himalayan National Park, Gamgul-Siahbehi Wildlife Sanctuary, Rupi Bhaba Wildlife Sanctuary, Kais Wildlife Sanctuary, Kalatop-Khajjiar Wildlife Sanctuary, Kugti Wildlife Sanctuary, Majhatal Wildlife Sanctuary, Nargu Wildlife Sanctuary, Shikari Devi Wildlife Sanctuary, and Chail Wildlife Sanctuary. In Manali Wildlife Sanctuary and Bandli Wildlife Sanctuary, black bear is reported as 'rare'. In other PAs, the status is unknown. Outside of PAs, black bear are reported to occur in an additional 25

areas, including 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), 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 Shimla District; and the Ropa valley, and Kalpa and Kaksthal areas in Kinnaur District (Sathyakumar, 2001; Sathyakumar and Chaudhury, 2008).

Table 6.8.1. Presence of Asiatic black bear and Himalayan brown bear in different forest divisions in Himachal Pradesh

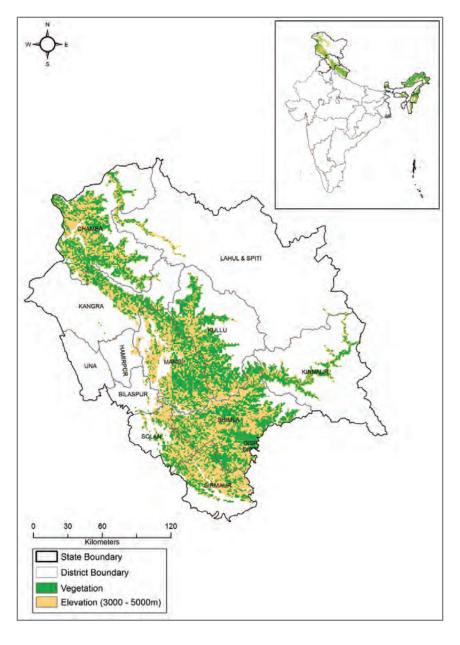
Forest Divisions	Asiatic Black Bear	Himalayan Brown Bear
Nalagarh Forest Division	No	No
Palampur Forest Division	Yes	Yes
Dharmshala Forest Division	Yes	Yes
Nurpur Forest Division	Yes	No
Bharmore Forest Division	Yes	Yes
Churah Forest Division	Yes	Yes
Dalhousie Forest Division	Yes	No
Chamba Wildlife Division	Yes	Yes
Chamba Forest Division	Yes	Yes
Dehra Forest Division	No	No
Una Forest Division	No	No
Hamirpur Wildlife Division	Yes	Yes
Hamirpur Forest Division	No	No
Suket Forest Division	Yes	No
Nachan Forest Division	Yes	No
Chaupal Forest Division	Yes	Yes
Lahul Forest Division	Yes	Yes
Shimla Forest Division	Yes	No
Rajgarh Forest Division	Yes	No
Renuka ji Forest Division	Yes	No
Poanta Forest Division	No	No
Nahan Forest Division	Yes	No
Kunihar Forest Division	No	No
Solan Forest Division	No	No
Kinnaur Forest Division	Yes	Yes
Spiti Wildlife Division	No	Yes
Sarahan Wildlife Division	Yes	Yes
Rampur Forest Division	Yes	No
Rohru Forest Division	Yes	No
Theog Forest Division	Yes	No
Kotgarh Forest Division	Yes	No
Anni Forest Division	Yes	No
Karsog Forest Division	Yes	No
Siraj Forest Division	Yes	No
Kullu Wildlife Division	Yes	Yes
G H National Park	Yes	Yes
Parvati Forest Division	Yes	Yes
Kullu Forest Division	Yes	No
Mandi Forest Division	Yes	No
Jogindernagar Forest Division	Yes	No

6.8.3 Population estimates

The PA managers reported that there have been no systematic exercises to estimate population of black bear by the Forest Department or other research institutions/universities. However, an increasing trend in black bear visual encounters and bear signs has been reported for most of the Forest/Wildlife Divisions in the State during the last five years which may

be due to: increased incidences of human-bear encounters/conflicts as a consequence of increased use of bear habitats and human habitations by humans and black bears respectively; or habitat loss; or shortage of bear food in natural habitats. Vinod et al. (1999) reported that Asiatic black bear encounter rates along transects ranged from 0.01 to 0.02 bears/km walk in Great Himalayan NP between 1996 and 1999.

Figure 6.8.1. The distribution of Asiatic black beer in Himachal Pradesh



6.8.4 Conservation Issues

i. Threats to species

There are no official reports on poaching or confiscation of bear parts in Himachal Pradesh during the period 2006-2011. Nevertheless, poaching (for bear parts) and retaliatory killings (to reduce livestock and crop depredations) are threats to black bears in Himachal Pradesh due to demand for bear products in the global illegal wildlife market and increasing bear-human conflicts (Kaul et al., 2002). Despite high levels of protection, there are a few reports of trans-boundary and inter-state issues with reference to the illegal bear trade or possible trade routes. However, with growing demand for bear parts, monitoring the long, high and rugged international borders may pose serious challenge to this State.

ii. Threats to habitats

The potential black bear habitat range in Himachal Pradesh includes semi-evergreen mixed forests, temperate and subalpine mixed and coniferous forests (up to 3,000m), and private lands within these elevation zones. The black bear habitat area forms 25-30% of the 30 Forest Divisions of the state. During late summer and autumn, black bears are reported to feed on cultivated crops such as maize, vegetables and fruits as well as on livestock. With the exception of some remote areas, most of the bear habitats are subjected to low to moderate use by people for meeting their dayto-day requirements, livestock grazing, and pilgrimage/ecotourism. The extent and magnitude of such use in bear habitats depends upon factors such as proximity to villages, trekking routes and roads. Developmental activities such as hydro-power projects, road building and forest dependency by local communities living in and around

bear habitats have threatened the black bear habitats, leading to habitat loss and degradation.

6.8.5 Management actions taken

i. Protection to species

There are no bear specific plans in Himachal Pradesh but general protection measures exercised by the state forest department have benefitted the bear species also. The exercise on rationalization of PA network including creation of new protected areas in Kullu district would benefit black bear and other wildlife species.

ii. Habitat management

Asiatic black bear habitat loss in the State is largely due to developmental projects such as infrastructure development, road building, hydro power projects and other human activities. Habitat degradation is largely due to natural resource extraction by local communities, livestock grazing and other human uses.

iii. Management of bear-human interactions

Survey respondents reported bear-human conflicts to be high around the PAs. Chauhan (2003) reported that 26% of livestock depredation was by black and brown bears based on an assessment of wildlife-human conflicts at Great Himalayan NP during the period 1989-1998, and these occurred primarily in alpine rangelands (58%) where livestock grazing is generally unsupervised, with depredation occurring largely during the month of September (41%). During the period of 2008-2012, a number of 132 cases of black bear-human conflicts were reported and compensation cases settled by the state forest

department. There were 121 cases of human injuries and 11 cases of human deaths caused due to bear attacks.

iv. Research and monitoring

Monitoring of wildlife species including black bear in Great Himalayan National Park that has an excellent baseline data based on research carried out during 1995-1999 (WII-FREEP, 1999) and field surveys carried out in others parts of the State by research institutions in collaboration with the State Forest Department.

v. Limitations

The field managers reported that scientific information on black bear distribution, status, threats, bear-human conflicts, human use in bear habitats, and ecological aspects particularly causes for the movement patterns of bear during late summer and early winter towards villages leading to crop/livestock depredations are lacking. The State Forest Department has reported lack of trained man power and equipment such as bear snares, chemical immobilization kit, transportation cages, and vehicles to deal with bear-human interaction situations. The Department has also reported lack of adequate funds for timely settlement of compensation claims.

HIMALAYAN BROWN BEAR

6.8.6 Distribution and relative abundance

In Himachal Pradesh, the brown bear is rare and occurs in low densities in the alpine region including the alpine scrub and subalpine regions near 'tree line' (3,000-5,000m) in the Greater Himalaya. The brown bear distribution in Himachal Pradesh is a narrow stretch of alpine zone and its junction

with the subalpine zone confined to the districts of Shimla, Kullu, Kinnaur, Kangra, Chamba, Bharmour, Lahul and Spiti. The Himalayan brown bear populations in Himachal Pradesh are present in and around the Great Himalayan National Park, Kugti Wildlife Sanctuary, Tundah Wildlife Sanctuary, Gamgul-Siahbehi Wildlife Sanctuary, Kais Wildlife Sanctuary, Kanawar Wildlife Sanctuary, Lippa Asrang Wildlife Sanctuary, Rupi Bhaba Wildlife Sanctuary, Sangla Wildlife Sanctuary, and Sechu Tuan Wildlife Sanctuary (Sathyakumar, 2001; 2006) (Table 6.8.1, Fig. 6.8.2). Outside PA network, the brown bear is reported to occur in Malana, Hamta Pass, Solang Valley, Bara bangal, Parbati valley, Ropa Valley, Khakstal, Manali, Pooh and Lingti and Ensa Valleys in Spiti (Sathyakumar, 2006). The Kugti Wildlife Sanctuary and Great Himalayan National Park are probably the two PAs where the brown bear is reported as 'fairly common'.

6.8.7 Population estimates

There has been no population estimation exercise carried out by the State Forest Department or other institutions. During the recent surveys (2011-12), field managers reported that brown bear population trend as 'increasing' in Chamba and Lahul Forest Divisions and as 'stable' in Bharmour Forest Division. For the remaining areas, the status is unknown.

6.8.8 Conservation Issues

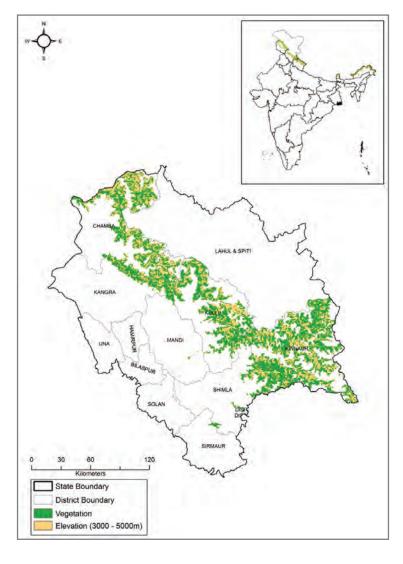
i. Threats to species

With the exception of a few areas where the brown bear is 'fairly common', it is rare in most parts of Himachal Pradesh. There were no official records of poaching, retaliatory killings and confiscation of brown bear parts during the period of 2006-2011. Field managers reported that there are no known illegal trade routes with the exception of some sites on the international border with adjoining Tibet. However, poaching and retaliatory killings are potential threats due to increasing demand for bear parts in the global market for wildlife products; and increasing levels of bear-human conflicts. Villagers residing in brown bear range reported losses to horticulture and agricultural crops due to brown bears. Migratory grazers also reported loss of goat and sheep due to brown bears in the alpine regions during summer.

ii. Threats to habitats

With the exception of a few PAs and remote high altitude regions that are least used by people, most of the brown bear habitat in Himachal Pradesh is threatened due to high levels of livestock grazing, medicinal plant extraction and other human uses (Singh and Rawat, 1999; Mehra and Mathur, 1999). Infrastructure development (roads) to meet demands of the increasing pilgrim and tourist populations and for the security forces, and hydro-power projects have seriously threatened the brown bear habitats, leading to habitat loss and degradation.

Figure 6.8.2. The distribution of Himalayan brown beer in Himachal Pradesh



6.8.9 Management actions taken

i. Protection to species

No specific state plans address brown bear in Himachal but general protection measures by the state do afford protection to the species.

ii. Habitat management

Himalayan brown bear habitat loss in the State is largely due to developmental projects such as infrastructure development, road building, hydro power projects 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. Regulation of livestock grazing and medicinal plant extraction in a few PAs (for example, Great Himalayan NP) has significantly benefited enhancement of wildlife habitat quality including that of the brown bear.

iii. Management of bear-human interactions

Livestock (goat and sheep) depredation by brown bear was reported by migratory graziers who graze their livestock in Great Himalayan NP (Chauhan, 2003) and other high altitude regions of the State (Sathyakumar, 2006). As the reports on brown bear-human interactions are very low or negligible there are no specific management plans for the same as reported by the State. Awareness programmes including painting and essay competitions for school children are being carried out by the State particularly in the Wildlife Week and World Environment Day celebrations

iv. Research and monitoring

Research on the ecology and conflicts of brown bear-human conflicts at Kugti Wildlife Sanctuary has been carried out (Rathore, 2008). Monitoring of wildlife species including brown bear in Great Himalayan NP that has an excellent baseline data based on research carried out during 1995-1999 (WII-FREEP, 1999) and field surveys carried out in others parts of the State by research institutions in collaboration with the State Forest Department.

v. Limitations

The field managers expressed that there is a lack of knowledge on the scientific information on brown bear distribution, status and conflicts and that scientific studies using radio-telemetry are required. They also reported inadequate facilities and support such as infrastructure (rescue centre), equipment (chemical immobilization, drugs etc.), capacity building (conflict management) and logistics (vehicle) for the field officers and front line staff.

6.8.10 Management Actions Proposed

1. Minimizing human bear interactions

Awareness camps should be organized on bear behaviour and ways to minimize bear human interactions at the JFM/EDC levels. The Wildlife rapid action and rescue teams should be strengthened at district levels to manage human bear interactions. The bear rescue/ rehabilitation centre in the state should be enhanced and equipped with immobilization equipment, drugs, animal holding boxes / cages and transport vehicles/facilities. A database

can be created on wildlife human conflicts in the state. The current mechanism of assessment of economic losses of livestock depredation by bear/other wildlife should be improved. Indigenous methods of crop protection should be strengthened.

2. Protection to bears from illegal wildlife trade

The existing network of informers and various law enforcing agencies need to be strengthened in collaboration with para-military forces. A survey/study need to be conducted on illegal trade on bear parts in the state. monitoring of wildlife crimes should be strengthened at inter-state check points. Awards and incentives may be provided to wildlife staff and informers.

3. Habitat management

The protection should be continued to natural bear habitats in the state. All bear habitats should be restored based on the findings and recommendations of the studies. The bear corridors should be identified and managed outside protected area network in the state.

4. Research and information gathering

The presence/absence of bears in potential areas must be confirmed using camera trapping study. The populations of bears should be estimated in the state using some non-invasive methods. An investigation may be carried out on the bear human interactions. Bear habitat evaluation and food habit studies should be conducted in the state. Movement and ranging pattern of bears may be studied in different forested

areas using GPS/ satellite telemetry studies.

5. Capacity development

The frontline forest and wildlife staff should be fully equipped with latest devices and equipment for management of bear/ other wildlife and humans during interactions. Specialized training modules in wildlife management should be arranged for forest personnel. Local communities (members of ecodevelopment committees) should be trained on wildlife-human conflict management. The wildlife health centers should be strengthened by creating infrastructure and engaging wildlife veterinarians. The wildlife researchers of the State Forest Department should be trained in biodiversity assessments and monitoring.

6. Communication and education

Awareness of all stakeholders should be enhanced through appropriate communication materials on bear/wildlife conservation and the philosophy of co-existence. The judiciary, public representatives, Officials of the Line Departments including military, Para-military forces should be sensitized on wildlife crimes and conservation. One day of the wildlife week may be celebrated as 'Bear Day'. Special focus on bear conservation may be ensured in the wildlife interpretation centers.

7. Policy and legislation

Fund allocation and powers should be given at the Division level to disburse compensation for cases dealing with human injuries/ deaths due to bear and other wild animals. The corporate/ developmental sectors should be involved in biodiversity conservation as part of corporate social responsibility. Trans-boundary cooperation and collaboration should be made with China for conservation of bears in Himachal Pradesh. Inter-state cooperation should be made with

Jammu and Kashmir, Uttarakhand, Haryana and Punjub for controlling wildlife crimes and wildlife-human interactions in the region. Technical inputs should be enhanced for implementation of research, management and conservation plans through specialized institutions/ experts in the concerned field.



JAMMU & KASHMIR

BEAR CONSERVATION ACTION PLAN JAMMU & KASHMIR

2012

Riyaz Ahmed¹, Samina Amin Charoo², Rahul Kaul³ and A.K. Singh⁴

Project team
Riyaz Ahmed, Masood A Dar, Samina Amin Charoo,
Rahul Kaul and Prajna Paramita Panda

Geographical position: 32°.17' to 36°.58' N, 73° 26' to 80°.26' E

Area: 222,236 Km²

Biogeographic zone: 1 (Trans-Himalaya) and 2 (Himalaya)

Biotic Province: 1A (Ladakh Mountains), 1B (Tibetan Plateau) and 2A

(North-West Himalaya)

Forest area: 20,230 Km² (9.1% of state geographical area) and forest cover of

22,539 Km²

Bear habitat range: 18,000 Km² (approx.)

Bear Population estimate: Not available **Human population:** 12,548,926 (2011)

Livestock population: Cattle & buffaloes: 109.86 lakh

Goat & sheep: 65.90 lakh

6.9.1 Introduction

The State of Jammu and Kashmir can be divided into three distinct geographical regions. In the southeastern part of the state, the plains of India rise to form the Shivalik and the Pirpanjal ranges to the west and Dhauladhar (Himachal Pradesh) to the east. Much of the Jammu region lies in these parts. Between the Pirpanjal range to the south and the Great Himalayan range to the north lies the valley of Kashmir, the bed of which lies at 1,530 m. North of the valley of Kashmir is the region of Ladakh, amidst the Great Himalayan range, the Zanskar range, the Ladakh range and the eastern Karakoram.

By virtue of its diverse landscapes, the state of Jammu and Kashmir is endowed with varied ecosystems. On a broad scale, Rodgers and Panwar (1988) divided the State into three Bio-geographic regions i.e. the Trans Himalaya (Ladakh), the NW Himalaya (Kashmir and Jammu hill regions) and the Punjab Plains (Jammu region).

These bio-geographic regions hold varied vegetation types ranging from dry and moist alpine through temperate, sub-tropical and tropical types. These support plant and animal communities not only characteristic of

this ecological zone but also endemic to the state.

Two species of bears are reported to occur in the State of Jammu and Kashmir, *viz.*,

- (a) the Himalayan Brown Bear
- (b) the Asiatic Black Bear.

HIMALAYAN BROWN BEAR

6.9.2 Distribution and Relative Abundance

In Jammu & Kashmir, the brown bear occurs in the subalpine and alpine regions of all the main mountain Ranges (3,000-5,000m) viz, Pir Panjal, Kajinag, (Ahmad et al., 2011), Greater Himalayas and in the Zanskar and Suru Valleys of Ladakh in the Trans-Himalayas (Sathyakumar and Qureshi, 2003; Sathyakumar 2006.). Brown bear has been reported from Dachigam NP, Gulmarg WS, Hirapora WS, Thajwas WLS and Kistwar NP and Overa-Aru WLS (Sathyakumar 2001; 2006) and Kajinag NP, Tatakuti-Kalamund WLS, Khara Gali (Ahmad et al., 2011) (Fig. 6.9.1). They are also known from suitable undisturbed alpine areas in the Forest Divisions of Lidder, Sindh, Marwa, Poonch and Baderwah (Sathyakumar 2001; 2006). There appears to be a good population of Himalayan brown bear in Kargil District

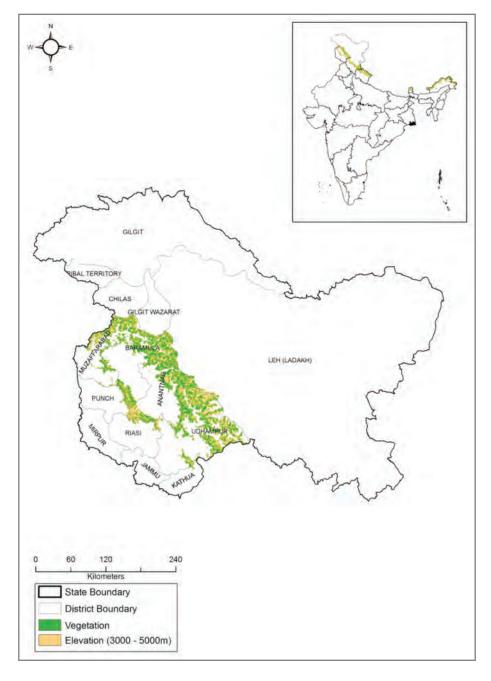
(Kanji WLS) of Ladakh region of the state as per this survey. Of the 34 forest divisions that occur in the state, brown bear is found in 20 forest divisions, being exclusive to two (not occurring with black bear).

6.9.3 Population estimates

No estimates are available on the brown

bear abundance in the state. Questionnaire surveys carried out in the years 1994-95 and 2005 to assess the status of brown bear and changes in its relative abundance within the PAs of the state revealed that the status of this species was either reported as 'unknown' or 'rare' and hence no conclusions could be drawn based on this information (Sathyakumar, 2001; 2006).

Fig. 6.9.1 Distribution of Himalayan brown bear in Jammu and Kashmir



6.9.4 Conservation Issues

a) Threats to Species:

There are cases of retaliatory killing of brown bears by herders during summer when livestock depredation by brown bear occurs. Migratory grazers, who use the alpine pastures for grazing their flocks in summer, reported loss of goat and sheep to brown bears throughout their distribution range. However the number of such cases in the Greater Himalaya is not known. Sathyakumar & Qureshi (2003) who investigated large carnivore-human conflicts using questionnaire surveys in Zanksar (n=180) and Suru (n=232) Valleys have reported that brown bear was relatively more abundant in Zanskar and accounted for 42% of livestock depredation cases in this valley but only for 10% cases in Suru where it is quite rare. Brown bear killed livestock mostly around villages (54%) and 'doksa' or summer grazing camp (42%), and the remaining in night shelters. Their domestic prey was mainly cattle (52%) and goat and sheep (41%). They killed livestock largely during summer (64%) and to some extent in spring (28%). Local people reported brown bear sightings on livestock kills (38%) or have confirmed it based on tracks and signs (42%) found near kills and also based on secondary information (21%). Brown bear were reported to cover their kills with earth, vegetation and stones by villagers (Sathyakumar and Qureshi, 2003).

b) Threats to Habitats:

The brown bear habitats are generally above the altitudes that are subject to pressures from development and the resultant habitat destruction and fragmentation. However, construction of roads, when aligned within brown bear habitats may pose some threats. Alpine pastures are heavily used for

livestock grazing during summer and may lead to competition of resources as well as habitat degradation in the form of exploitation of medicinal plants. Unregulated tourism into brown bear country may be a source of disturbance.

6.9.5 Management Actions taken

i. Protection to species:

The Himalayan brown bear is listed on Schedule I of the J&K Wildlife Protection Act and also the Indian Wildlife (Protection) Act 1972 as amended in 2003 (GOI, 1972; 2003). The species therefore enjoys highest legal protection. It is also listed as "Vulnerable" in the Red Data Book (IUCN, 2012) and in the Appendix I of CITES (GOI, 1992).

Over 60% of forest divisions have poor to fair protection levels and this is expected as a large part of the range of this species is outside the PA network.

ii. Habitat Management:

Not much has been done in this regard particularly with the focus on Himalayan brown bear in Jammu and Kashmir, the network of PAs adding to about 2500 km² of protected habitat.

iii. Management of Bear-Human Interactions:

During summers, migratory graziers and local shepherds take their livestock to alpine and subalpine areas for grazing when interactions may occur. In Kajinag NP and Hirpura WLS, livestock depredation by the brown bear was reported by the herders (Ahmad et al. Unpublished). There are no government schemes for compensation on account of damage to livestock, operational at present.

iv. Research and Monitoring

Preliminary surveys on brown bearhuman conflicts have been conducted in the Ladakh region (Sathyakumar and Qureshi, 2003; Sathyakumar, 2006). No other dedicated studies have been conducted on the species of the state. However, location information exists for some areas due to sightings during surveys by various people for wildlife.

v. Limitations

Lack of information on the brown bear distributions and threats to its populations and habitats was identified as one of the limitations for conservation action. Also, lack of necessary infrastructure in these areas for monitoring was also a limitation.

ASIATIC BLACK BEAR

6.9.6 Distribution

In the state of Jammu and Kashmir, Asiatic black bears are widely distributed in most forested areas of the valley (Fig. 6.9.2). Of the 34 forest divisions, the black bear is reported from 31 divisions. Specifically they are present in all PAs such as Dachigam National Park (NP), Overa-Aru WS, Kazinag NP, Hirpora WLS, Rajparian, Naranag-Wangat WLS, Baltal WLS, Limber WS, Lachipora WS, Gulmarg WS, Kishtwar High-Altitude NP, Achabal WLS, Kharagali, Tatakuti-Kalamund WLS and Nandni WLS. The species also occurs in Conservation Reserves like Ajas, Brain-Harwan, Khiram-Shikargah-Panyar-Khangund, Khrew-Khonmoh, Naganari and Banihal CR,

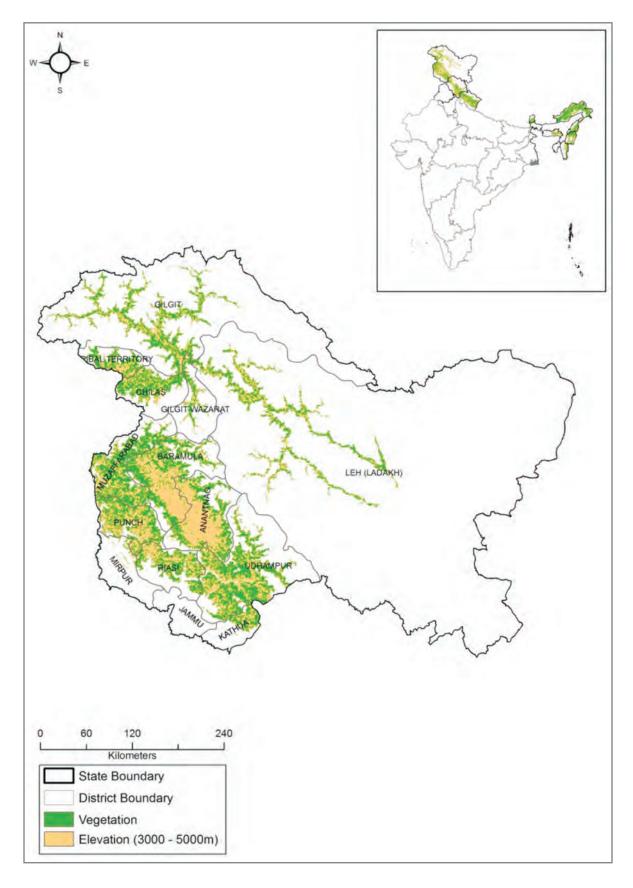
Sumchan Saphaire WS, and Sudmahadev CR. Its distribution also extends into proposed PAs of the state like Ghambiar-Mughlan WLS, Dera-ki-Gali WLS, Ans River WLS, and Nowshera WLS.

It is also reported from all forest divisions of Kashmir. In the Jammu region, black bears are reported to occur in the forest divisions of Marwa, Ramban, Batote, Doda, Baderwah, Kishtwar, Poonch, Rajouri, Nowshera, Reasi, Mahor, Udhampur, Jammu, Ramnagar and Bilwar (Sathyakumar and Choudhury, 2007).

6.9.7 Population estimates

No population estimation exercise or any census has been carried out by the J&K State Forest Department or other institutions/organisation so far. Saberwal (1989) reported Himalayan black bear density estimates of 1.31.8 bears/km² in Lower Dachigam during high fruit abundance. Sathyakumar et al. (2012) estimated the summer density of 44 bears/100 Km2 for Lower Dachigam based on camera trap capture-recapture technique (Sathyakumar et al., 2011). The questionnaire surveys carried out in 1994-95 and 2005 to assess the black bear status and changes in the relative abundance in PAs of J&K revealed that the black bear status remained largely as 'fairly common' from all across the bear range areas (Sathyakumar and Choudhury 2007). Black bears are perceived to have increased in 70% of the forest divisions. This may be a result of human bear conflict that has shown an appreciable increase in the last decade. However, this claim is un-substantiated by any actual estimation.

Fig. 6.9.2 Presence of Asiatic Black bear in Jammu and Kashmir



6.9.8 Conservation Issues

i. Threats to Species

Some cases of retaliatory killing of bears have been reported from the state. People argue that retaliatory killings happen when bears come to their orchards of human habitation and that there are no retaliatory killings in the forest areas. People further say that black bears damage fruits and other agricultural crops in summer season.

Due to increase in the instances of bear human conflict in the state, peoples' tolerance towards wildlife, especially bears, has declined substantially rendering both the humans and the bears vulnerable. Due to religious reasons, bear parts other than fat, are not locally consumed and find their way out to the state. The survey found that shops still stock bear derivatives like vials containing bear fat.

ii. Threats to Habitats:

Black bear may be threatened in the state due to habitat degradation and in the wake of increased developmental activities in forest like construction of Dams, Hydroelectric Power Projects. Forest edges, which served as buffers for villages have now been encroached. Changes in land use (houses being constructed in orchards) too have led to increased bear human conflicts. Forest fires too have been identified as a threat to bear habitats.

About 30% of forest divisions, where black bear occur are under heavy to very heavy use by human populations. Livestock use in about 35% forest divisions is high while tourist activities in bear bearing areas were low (only 10% of forest divisions heavily impacted).

6.9.9 Management Actions taken

i. Protection to species

Various measures have been taken by the Department of Wildlife Protection, Jammu and Kashmir for bear protection. These however appear insufficient due to lack of sufficient field staff. The department has organized Rapid Rescue Teams to handle bear related emergencies. However the reach of the wildlife department, which is a separate Department under the forests, is limited to Protected Areas. Therefore protection level in about 67% of forest divisions, that are mainly territorial, is low. However despite this, the population of bears in the state appears healthy.

ii. Habitat Management:

Black bear habitat loss is largely due to changes in the land use patterns from forests to agriculture/horticulture and development projects. This has led to a mosaic of fragmented forests, human habitats and agriculture/horticulture lands which are used by bears to move between areas. Human dependence on forests for fuel wood and fodder, as well as the extraction of other forest products, impacts due to tourism, infrastructure development and resultant pressures has degraded bear habitats. The specific conservation plans and an active management of existing populations of bears are needed. There is no state action plan/conservation plan available with the state government which could have provided clear-cut measures for conservation of bears and their habitat. Fruit bearing trees and shrubs must be planted in the bear habitat so that bears will get sufficient food in their respective habitats. The habitats have become fragmented so the bears have to travel longer distances to get their food.

iii. Management of Bear-Human Interactions:

Approximately 25% of forest divisions reported bear- human conflict and this is mainly within the Kashmir valley. About 40% of the forest divisions are covered by conflict management teams. A study on the bear human conflict was conducted in 2007 (Choudhury et al., 2008). According to this study most of the bear attacks occurred in the months of August-November, the times coinciding with the fruit harvesting season and ripening of corn. Almost 90% of the attacks occurred in daylight hours with majority occurring in agricultural areas (including orchards). The report maps hot spots in the valley for bear conflict and throws light on the possible ecological drivers of increased conflict and recommends certain actions which may bring the conflict down. Charoo et al. 2011 based on investigations carried out in the Dachigam NP landscape during 2007-2009 reported that there was considerable overlap in resource use by black bears and humans in this landscape with 72% of villagers interviewed (n=227) claimed to be dependent on forest resources in bear habitats, and 85% reported crop depredation by black bears. The three types of bearhuman interactions recorded in Dachigam landscape were crop depredation, bear attacks on humans, and livestock depredation. Of these, crop damage (85%) was most common, which occurred during MayDecember and peaked in summer (JunSep), when bears were active and crop production was at its highest.

Although the DWLP, J&K has made attempts to manage human- bear interactions, they have not been very successful due to lack of sufficient and well trained staff. The reach of the department is limited to protected areas and when a conflict situation arises in a territorial area, the staff of the wildlife protection department may not be at hand to

deal with the situation, thus losing precious time, exacerbating conflict and the damage due to it.

There should be proper monitoring of bear-human conflict areas where at least one of the employees is present at the problem site until the situation is resolved. The conflicts can be resolved through active participation of people of affected areas in resource management, enhancement of living status of people, timely compensation, education and awareness among people regarding the importance of bears in nature and how to avoid bears in the wild, villages or crop fields. There is a very good compensation scheme in practice in the state.

iv. Research and Monitoring:

Apart from sporadic studies (Saberwal, 1989; Singh, 2007; Choudhury et al., 2008; Charoo, 2011), concerted long term studies and monitoring of bears in the state are lacking. There is a general perception that the increased instances of bear conflict with humans are a result of increase in bear populations. However, no estimates are available. Hence, informed management decisions cannot be taken.

Over 60% of all divisions have reported that no initiatives have been taken specific to bears. Efforts at bear centric awareness activities have been generally low (17% forest divisions reported some activities). Translocation of conflict animal as an intervention has been rarely exercised (only 5% divisions).

v. Limitations:

Over half of the forest divisions report low manpower availability to address bear conservation whereas over 70% of all forest divisions report complete lack of equipment to manage bears. This is understandable since only a small proportion of the black bear range is under the control of department of wildlife where the staff is expected to be equipped.

6.9.10 Management Actions Proposed

This is based on the responses from the forest officers of 34 forest divisions and subsequently a consultative meeting to determine key priority actions suggested in the state.

- Assess the status and distribution of bear species through research and monitoring
- 2. Reduce the effects of habitat degradation and fragmentation in important bear habitats.
- 3. Reduce human bear conflict and bring about a positive attitudinal change in the mindset of general public towards bear.
- 4. Reduce bear killing for trade in parts
- 5. Appoint optimum staff levels that are trained, equipped and motivated
- 6. Adopt policies to regulate issues related to conservation of bears
- 7. Address the welfare issues of the rescued/orphaned bears
- 8. Potential brown bear habitats identified must be protected from developmental activities (roads, hydropower projects, tourism) and natural resource extraction or use, particularly livestock grazing.
- 9. Assessment and resolution of brown bear-livestock interactions in the Greater Himalaya.

Table 6.9.1: Bear Distribution in the Protected Areas (PA), Forest Divisions (FD) and Reserved Forests (RF) in the State

Name of forest division	Species of bear		
Jammu Wildlife Division	Black		
Jammu Forest Division	Nil		
Kuthwa Forest Division	Black		
Billawar Forest Division	Black		
Kuthwa Wildlife Division	Black		
Udhampur Forest Division	Black		
Ramnagar Forest Division	Black		
Reasi Forest Division	Black		
Mahore Forest Division	Brown, Black		
Rajouri Forest Division	Brown, Black		
Rajouri Wildlife Division	Brown, Black		
Poonch Forest Division	Brown, Black		
Nowshera Forest Division	Black		
Ramban Forest Division	Black		
Batote Forest Division	Black		
Doda Forest Division	Black		
Kishtwar Forest Division	Brown, Black		
Marwah Forest Division	Brown, Black		
Ch. Valley Wildlife Division	Brown, Black		
Badrewah Forest Division	Black		
Kargil Wildlife Division	Brown		
Kargil Forest Division	Brown		
Kupwara Forest Division			
(Kamraj, Khamil)	Black, Brown		
Kulgam Forest Division	Brown, Black		
Bandipora Forest Division	Brown, Black		
Anantnag Forest Division	Black		
Wildlife Division Central	Brown, Black		
Pir Panchal Forest Division	Brown, Black		
Sind Forest Division	Brown, Black		
Wildlife Division South	Brown, Black		
Tangmarg Forest Division	Brown, Black		
Langate Forest Division	Brown, Black		
Wildlife Division North	Brown, Black		
Shopian Wildlife Division	Black, Brown		



JHARKHAND

BEAR CONSERVATION ACTION PLAN JHARKHAND

2012

Naim Akhtar¹ and A.K.Malhotra²

Project team

Amrendra Kumar Singh, Naim Akhtar, Rahul Kaul, Anil Kumar Singh, Sandeep Kumar Tiwari, Prajna Paramita Panda, and Krishnendu Mondal **Geographical location:** 22°00′ N 24°37′ N, 83°15′ E 87°01′ E

Area: 79,714 km² (2.4 %) of the country

Biogeographic zone: 6 Deccan Peninsula

Biogeographic Province: 6B Chotta Nagpur and 6C Eastern Highland Forest area: 23,605 Km² (29.61% of the geographical area)

Bear habitat range: 12,825 Km²

Bear Population estimate: No reliable estimate; range of 1200-1500

Human population: 26,945,829 (2.6% of country) **Livestock population:** 1,47,13,160 (2003 census)

(Cattle - 7658721, Buffaloes - 1343494, Sheep - 679929, Goat - 5031016)

6.10.1 Introduction

The distribution of forest cover in the state of Jharkhand is not uniform. On the basis of the total area under forest cover, the districts of the state have been grouped into three categories; Group-A: districts having more than 30% forest cover like West Singhbhum, Palamu, Garwa, Latehar, Chatra, Hazaribagh, Ramgarh, Kodarma, Lohardaga and Sahibganj; **Group-B:** districts with 20% to 30% forest cover like East Singhbhum, Saraikela, Ranchi, Khunti, Gumla, Simdega and Bokaro and **Group-C**: districts with less than 20% cover such as Dhanbad, Dumka, Pakur, Godda, Deoghar, Jamtara and Giridih (Jharkhand Forest Department). The forest department of Jharkhand has grouped the entire state of Jharkhand into five regionsnamely 1) Ranchi Region, (2) Singhbhum Region, (3) Palamu Region, (4) Hazaribagh Region and (5) Dumka Region. Only one species of bear, Sloth bear (Melursus *ursinus*) is found here.

6.10.2 Distribution and Relative Abundance

A large proportion of the sloth bear population in central India occurs outside the protected areas network (Akhtar et al., 2008; Chauhan, 2006). Out of the 34 forest divisions in Jharkhand, sloth bear presence was

reported from 24 forest divisions during the survey conducted by Wildlife Trust of India in 2012 (Table 6.10.1). During this survey, it is found that reserved forests areas in various forest divisions of the state has existing sloth bear habitats which may hold substantial sloth bear populations. Chauhan (2006) reported that Palamau Wildlife Sanctuary, Betla National Park and Dalma Wildlife Sanctuary had higher abundance of bear compared to Koderma Wildlife Sanctuary and Palkot Wildlife Sanctuary.

6.10.3 Population estimates

Reliable estimates of sloth bear numbers do not exist for Jharkhand. However based on interviews and examination of official records, approximate numbers of bears in various forest divisions are given in the table 6.10.1. Though, Jharkhand has good protection and management interventions, no reliable data on sloth bear occupancy and abundance exists. However Chauhan (2006) reports that the population may be on the decline in the reserved forests outside the protected area network. The approximate range of sloth bear habitat spreads to 15000 km² in the state. If it can be assumed that the bears average 8-10 individuals/100 km² in the state, the population of the sloth bear may be around 1200-1500.

Table 6.10.1. Sloth bear occupied forest divisions in Jharkhand with reported bear population

	Sloth bear occupied forest divisions Bear population					
		2006-07	2007-08	2008-09	2009-10	2010-11
1	Dhanbad Forest Division	-	-	-	-	-
2	Simdega Forest Division	-	-	-	-	-
3	Chatra South Forest Division	-	-	-	_	-
4	Koderma Forest Division	_	-	-	_	-
5	Dumka Forest Division	1	1	1	2	2
6	Bokaro Forest Division	-	-	-	-	-
7	Godda Forest Division	-	-	-	-	-
8	Porahat Forest Division	-	-	-	-	-
9	Daltonganj core area project Tiger	-	13	10	3	-
10	Wildlife Division, Hazaribagh	8	8	10	11	11
11	Pakur Forest Division	-	-	-	-	-
12	Garhwa South Forest Division	-	-	-	_	-
13	Saranda Forest Division	400	-	-	_	456
14	Ranchi East Forest Division	-	-	-	-	-
15	Wildlife Division, Ranchi	_	-	36	339	222
16	Dhalbhum Forest Division	-	-	-	-	-
17	Ranchi Wast Forest Division	-	-	-	-	-
18	Gumla Forest Fivision	-	-	-	-	-
19	Seraikela Forest Division	-	-	-	-	-
20	Khunti Forest Division	-	-	-	-	-
21	Hazaribagh West Forest Divi	-	-	-	-	-
22	Daltonganj Buffer area project Tiger	-	66	118	43	36
23	Ramgarh Forest Division	-	-	-	-	-
24	Chaibasa South Forest Division	-	-	-	-	27

6.10.4 Conservation Issues

1. Threats to Species

As per a report by World Society for the Protection of Animals (WSPA), poaching of bears for its parts does occur in Jharkhand which finds its way to Nepal and Bangladesh. It is reported that the local tribesmen in the state hunt sloth bear during the festival of Bishu-Sendra during the month of April every year apart from the hunting of the other animals. On 23rd April 2012, two sloth bear were killed by the tribal during the same festival.

Human-bear conflict is common in Jharkhand and many incidences of retaliatory killings have been reported by WSPA and it still exists in many parts of the State. However, only two incidences of retaliatory killing have been reported by the state forest department in Dhalbhum Forest Division (2007-08) and Seraikela Forest Division (2010-11). Only one case of poaching has been reported by the state forest department in Porahat Forest Division during 2007-08. Poaching of bears by

Kalander for purposes of dancing has reduced considerably due to ban imposed by the Government of India on performances of dancing of bears. However, sporadic incidents may occur.

2. Threats to Habitats

The condition of habitat in protected areas is reportedly secure but is vulnerable in the reserved forests due to legal and illegal mining. Peoples' dependence on minor forest products such as tendu leaves, sal leaves and seed, mahua seed and flower, fuel wood among others, cause much disturbance in the bear habitat. This may lead to deterioration in habitat quality and deprive wild animals of forage. Implementation of Scheduled Tribes and Forests Dwellers Act, 2006 may also impact bear habitat as more sloth bear habitats are being converted into arable land (Akhtar et al., 2008). As per the survey by Wildlife Trust of India, it was observed that in some forest divisions, livestock grazing and utilization of forest resources by the community is very high.. Very few people visit forest areas for tourism (table 6.10.2).

Table 6.10.2. Extent of forest use by local community, livestock and tourism in different forest divisions in Jharkhand.

Name of forest division	Local community use	Livestock use	Tourist use
Dhanbad Forest Division	-	-	-
Simdega Forest Division	Very high	Low	Very low
Chatra South Forest Division	-	-	Nil
Hazaribagh East Forest Division	-	-	-
Garhwa North Forest Division	Nil	Nil	Nil
Daltonganj North Forest Division	-	-	Nil
Koderma Forest Division	-	Nil	Nil
Giridih Forest Division	Nil	Nil	Nil
Giridih Aff.Forest Division	Nil	Nil	Nil
Deoghar forest Division	Very low	Very low	Nil
Jamtara Forest Division	-	-	Nil
Dumka Forest Division	Very high	High	Very low
Bokaro Forest Division	High	High	Very low
Godda Forest Division	Low	High	Very low
Porahat Forest Division	High	Very low	Very low
Daltonganj core area project Tiger	Nil	Nil	Very high
Wildlife Division, Hazaribagh	Lowest	High	High
Pakur Forest Division	Low	High	Very low
Latehar Forest Division	-	-	-
Garhwa South Forest Division	High	Low	Nil
Saranda Forest Division	Very low	Very low	Very low
Ranchi East Forest Division	-	-	Nil
Wildlife Division, Ranchi	Low	Very low	Very low
Dhalbhum Forest Division	Very low	Very low	Very low
Ranchi Wast Forest Division	Very low	Very low	Very low
Gumla Forest Division	Very high	High	Nil
Seraikela Forest Division	Low	High	Very low
Kolhan Forest Division	High	Low	Very low
Khunti Forest Division	Very low	Very low	Very low
Chatra North Forest Division	-		Very low
Hazaribagh West Forest Division	Low	Low	Nil
Daltonganj Buffer area Project Tiger	High	High	Very low
Ramgarh Forest Division	Very low	High	Very low
Chaibasa South Forest Division	Very low	Very low	High

6.10.5 Management Actions taken:

Conservation of sloth bear in Jharkhand can be achieved through the establishment of a representative network of protected areas including Biosphere Reserves, National Parks, Sanctuaries, and other types of Protected Area. The crucial corridors between national parks, sanctuaries, forests and other protected areas should be identified and notified for linking them to maintain genetic continuity of flora and fauna. Such areas should be managed with prescriptions favoring wildlife requirements like the retention of snags, natural gaps, grassy areas, special lithic habitats, caves, cliffs, den sites and water bodies etc. (Akhtar, 2004; Akhtar et al., 2006).

i. Protection to species

Though the forest department has anti poaching squad/teams in protected areas and have regular patrolling but this is largely absent in the Reserved Forests Areas.

Although no regular patrolling system exists in the reserve forests, the department's action is largely reactive to information. There is an urgent need to further empower these anti poaching teams for sloth bear protection in the state.

ii. Habitat Management:

All forests divisions and protected areas in the state have a working plan/management plan. These have components that deal with conservation of bear habitats, although not directly addressing bear species. Community participation has been restricted to collection of minor forest produce only (Akhtar and Chauhan, 2008). There is need to restore the sloth bear habitat across all the Forest Divisions in the state especially outside the protected areas. The habitat can be restored through reduction of biotic pressure

on forests, regulating cattle grazing, fuel wood and minor forest produce collection, ban on stone mining from bear den sites and plantation of the fruiting species in the forest areas.

iii.Management of Bear-Human Interactions

Jharkhand has a long history of the human-bear conflict (Chauhan and Rajpurohit, 1996). The state does not have effective strategy to deal with the human-bear conflict. Many of the forests divisions are not equipped to deal with animals during conflict situations. Ideally, conflict animals should be captured and kept in a rescue centre if rehabilitation is not possible. The state does not possess any specialized rescue centre and occasionally animals rescued from conflict situations are sent to the Deer Park, Muta or Bhagwan Birsa Zoological Park, Ranchi. State forest department has a compensation scheme for the loss of human life or injury caused due to sloth bear attack but does not have any provisions to pay compensation against the crop loss due to sloth bear raids. Problematic sloth bears may also be relocated into the other Protected Areas to mitigate human bear conflict.

As per the survey conducted by Wildlife Trust of India, 314 cases of human bear conflict have been reported in last five years by the state forest department of which human death occurred in 14 cases. Highest number of incidents were reported from Ranchi East Forest Division (n= 65) followed by Gumla Forest Division (n= 56), Simdega Forest Division (45) Chaibasa South Forest Division (29), Buffer Area Daltonganj (28) and Khunti Forest Division (19). Mahua (Madhuca indica) flowers are the favorite food items of sloth bear and same is also being collected by the

villagers from forests for distilling alcohol and food during early summer, which brings them in conflict with sloth bear. At times, there are also reports of poisoning of mahua flower to kill sloth bears in some territorial regions, but the numbers are not confirmed.

iv. Research and Monitoring and Management action Proposed

Very little information is available on sloth bears from Jharkhand. Hence it is strongly recommended that the state must prioritize its research activities and commission surveys of the sloth bear range in the state based on direct (sightings) and indirect evidence (scat, foot marks etc.). Systematic scientific estimation of sloth bear population is needed in all forest divisions. Currently the information on sloth bear is available only from project tiger areas. There is also a need to have proper monitoring and research in the State of Jharkhand to keep an eye on change in population dynamics, bear ecology, human-bear conflict and threats.

v. Limitations

Protection of sloth habitats and population does not seem to have priority in the state.

6.10.6 Management Actions Proposed

1. Research and monitoring

An extensive research in the area of bear biology, distribution and population dynamics needs to be taken up by the state forest department. All the forest divisions need to be surveyed to understand the distribution, status of sloth bear in the state and identify critical bear habitat. Local universities, NGOs and other National Organizations should be collaborated for this research work in the areas

of bear conservation.

2. Habitat management (restoration of sloth bear)

Commercial activities should be regulated judiciously inside the bear habitats. Fruit bearing species preferred by sloth bear should be planted. Effective measures should be taken to control forest fire. Water conservation in the forest areas should be ensured by effective management. Ecodevelopment activities should be taken up in fringe villages near bear habitats to reduce anthropogenic pressure. Legal status should be provided to remaining bear habitats.

3. Capacity development (Strengthen the forest staff for protection of sloth bear habitats)

Vacant posts should be filled immediately in state forest department. Basic infrastructure (patrolling vehicles, equipments, ammunition, computer and other gadgets) should be provided to the department. Sufficient financial resources must be provided to the state forest department with immediate effect. Capacity building programs should be taken up imparting training to forest personnel on crime control including trade and proper investigation of wildlife cases, latest techniques and wildlife management, especially to mitigate bear-human conflict.

4. Management of human bear conflict

A strategy must be developed to deal with human-bear conflict. The nature and extent of human-sloth bear conflict should be determined. The process of payment of compensation due to the damages caused by bear may be simplified and rationalized. Facilities must be provided for rescued bear in the existing/ to be created rescue centre in the

state. Public awareness initiatives should be taken up on conflict issues.

5. Minimizing the threats of trade and poaching

Effective intelligence networking to be established to stop trade in bear parts on priority basis. Better liaison should be made with law enforcement agencies. Training should be provided to forest personnel on crime control including trade and proper investigation of wildlife cases. Proper patrolling and enforcement initiatives should be taken up to stop sloth bear hunting and habitat destruction. Rewards and incentives may be provided to the informers. A database should be maintained on traders, crimes and judgments. Better liaison should be made with the neighboring states. Kalandar community should be rehabilitated.

6. Communication and education

Committees should be formulated at village level to educate the locals on sloth bear conservation and on do's and don'ts at the time of bear encounter, etc. Such activities may be facilitated through NGOs and other organizations. Local people should be provided proper education and awareness on sloth bear conservation through workshops, symposiums, training, drama and outreach activities to build positive bear-people linkages. Print or other electronic media may be used for the education and awareness for general public.

7. Policy and Legislation

Policy planning setup must be strengthened in the state to ensure better conservation of wildlife including bear.



KARNATAKA

BEAR CONSERVATION ACTION PLAN KARNATAKA

2012

Kartik Satyanarayan¹, Aniruddha Mookerjee² and Dipak Sarmah³

Project team

A. Kumarguru, S. Swaminathan, K. Ramkumar, Kartik Satyanarayan, Aniruddha Mookerjee, Rahul Kaul, Prajna Paramita Panda and Krishnendu Mondal **Geographical location:** 11°30′-18°25′N, 74°10′-78°35′E

Area: 1,91,791 Km²

Biogeographic zone: 5 Western Ghats, 6 Deccan Penninsula and 8 Coasts

Biotic Province: 5A Malabar Plains, 5B Western Ghat Mountains, 6D Central

Plateau, 6E Deccan South and 8A West Coast

Forest Area: 38,284 Km² (19.96% of the state geographical area)

Bear habitat range: 19,714 Km²

Bear Population estimate: NA

Human population: 61.13 million (Census 2011)

Livestock population: 30.86 million (Livestock census 2007)

6.11.1 Introduction

The state of Karnataka located in South India is bordered by the Arabian Sea to the west, Goa to the northwest, Maharashtra to the north, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. The state has three principal geographical zones: a) the coastal region of Karavali, b) the hilly Malenadu region comprising the Western Ghats c) the Bayaluseeme region comprising the plains of the Deccan plateau.

Karnataka experiences four seasons. The winter in January and February is followed by summer between March and May, the monsoon season between June and September and the post-monsoon season from October till December. Meteorologically, Karnataka is divided into three zones coastal, north interior and south interior. Of these, the coastal zone receives the heaviest rainfall with an average rainfall of about 3,638.5 mm per annum, far in excess of the state average of 1,139 mm. Agumbe in the Shivamogga district receives the second highest annual rainfall in India. About 38,284 Km² (i.e. 19.96% of the state's geographic area) is under forests. The state has five major forest types: Tropical Wet Evergreen, Tropical Semi-evergreen, Tropical Moist Deciduous, Tropical Dry Deciduous and

Tropical Thorn Forest. The only bear species found in Karnataka is the sloth bear (*Melursus ursinus*).

6.11.2 Distribution and relative abundance

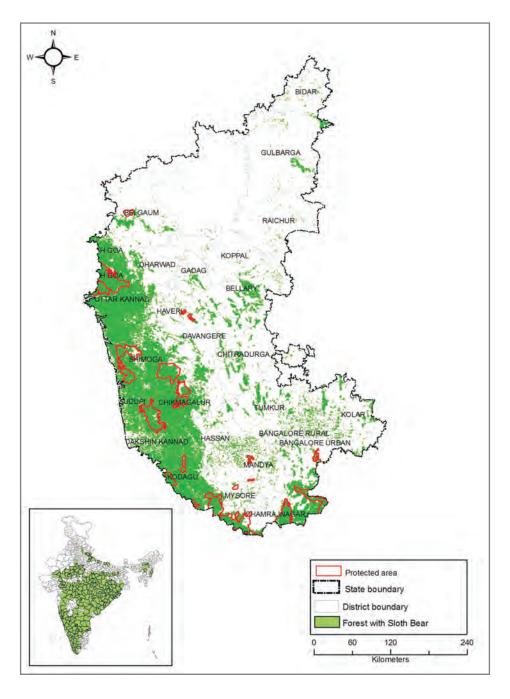
In Karnataka, the distribution of sloth bear varies from dry deciduous habitat to moist tropical forest in Western Ghat. Bear occupancy was recorded in 22 of the 30 districts. The district with sloth bears are Mysore, Chamrajanagar, Uttar Kannada, Chickmagalur, Shimoga, Kodagu, Udupi, Bangalore, Ramnagara, Kolar, Chickballapura, Hassan, Tumkur, Raidur, Belgaum, Gadag, Mandiya, Koppal, Bellary, Dharwad, Devangere, Chitradurga (Fig. 6.11.1). All these belong to the Indian Deccan plateau landscape.

No attempt has been made to estimate the abundance of Sloth Bear in the state. Only effort to estimate relative bear abundance was in Sanapur Forest Division by the Karnataka Forest Department with the help of a NGO, Wildlife SOS. The estimation was done based on sign survey on randomly laid transects. Bear signs such as scats and pugmarks were counted on those transects. It was found that the relative encounter rate of Bear signs is 1.95 \pm 0.6/ kilometre. It is planned to continue the survey with the same design in Daroji Wildlife Sanctuary and Ramnagaram District.

6.11.3 Population estimates

Detailed Population estimation has not been carried out in the entire state and the information is not available. In Daroji Wildlife Sanctuary, the estimated population of sloth bear is 120 as reported by the Karnataka Forest Department. A small population of 6 sloth bears were recorded in Bannerghatta National Park in 2007-08, 15 in Dharwad Territorial Division in 2009-10, 4 in Mysore Territorial Division in 2007-08, 3 animals in Honnavar Division in 2009-10 and a couple of individuals in Mysore Wildlife Division in 2009-10. However, these estimates have to be validated.

Fig. 6.11.1 The distribution of sloth bear in Karnataka



6.11.4 Conservation Issues

i. Threats to species

In the last five years, poaching and hunting has become uncommon as reported by the State Forest Department. Though, Bear cub trade was practiced by few communities till few years back, it has been checked by antipoaching and enforcement measures.

Population isolation due to various developmental activities and fragmentation of landscape, thereby limiting the bear's movement and range, is one of the major threats to the bear population. Populations in fragmented habitats surrounded by agrosettlement complexes tend towards conflicts with humans and possible genetic inbreeding leading to long term species survival threats. Retaliatory killing, however uncommon it is, remains a threat. There is suspicion of poaching for gall bladder. However, no records of hunting came across during the limited survey done, but the management needs to be alert to this threat given the relatively high number of bears in the state.

ii. Threats to habitat

Agriculture, land encroachment, collection of fuel wood and minor forest produce, and over-grazing are major reasons for habitat destruction in Karnataka. Bear habitat faces immense pressure due to granite mining and stone quarrying as well. Mining is a major threat to bear population in three districts (Chitradurga, Devangere and Bellary) of Karnataka. Similarly, activities around Hydro-Electric Power Plants and windmills are again a threat to bear population in 11 districts of Karnataka (Mysore, Uttar Kannada, Koppa, Hassan, Tumkur, Chitradurga, Devangere, Bellary, Raidur, Belgaum and Dharwad). Constructions of Highways are

likely to affect bear populations in Bangalore and Ramnagaram.

Encircled by mining operations with heavy machinery, bear habitat suffers from forest destruction, change in topography, and excessive air and noise pollution. Deprived of natural food, and boulders and caves where they rest, the animals are being driven to the edges of human habitation leading to conflict. An example is the Kudremukh Iron Ore Company Limited which operated within the boundaries of the Kudremukh National Park (http://en.wikipedia.org/wiki/Wildlife_of_K arnataka).

Both local and inter-district migratory shepherd communities, limit the growth of the vegetation and promote proliferation of weeds. Exotic species outgrowth namely Cassia auriculata and Lantana camara are widely seen. Goats which are browsers, cause damage to the young trees and plants. Large tracts of forest land have also been cleaned up for monoculture plantations like teak, coffee and rubber.

Some other threats to the habitats include road networks fragmenting potential bear habitats, extensive custard apple and honey collection etc. Custard apple and honey collection are the source of income for people in many settlements. Excessive harvesting of MFP (Minor forest produce), which is otherwise the main food source and energy source for sloth bears limits the availability of food in the natural habitat for bears.

6.11.5 Management actions taken

i. Protection to species

The sloth bear is listed as "Vulnerable" (IUCN, 2012). It is also listed on Appendix I of CITES (GOI, 1992) and on Schedule I of the

Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). Creation of a network of protected areas has led to protection to sloth bear habitats in the state, for example, Daroji Bear Sanctuary where the habitat needs to be regenerated through aggressive reforestation. Another one is planned at Handigundi in the Ramnagaram division and the proposal has been sent to Government of India asking for 4585 hectares to be turned into Karnataka's second Sloth Bear Sanctuary.

ii. Habitat management

Various conservation activities are in progress to protect the biodiversity present in Karnataka. These activities are mostly done by the state Forest Department and in collaboration with other organizations like Wildlife Trust of India, Wildlife Conservation Society and Wildlife SOS and Kudremukh Wildlife Foundation.

Creation of Daroji Bear Sanctuary of 55.87 km² and further protecting additional area of approximately 29 km² as buffer zone has helped in the improvement of habitat quality. This program with deployment of adequate man-power and implementation of conservation program has improved the habitat quality and strengthened the bear population. Undertaking ecological studies of bears and its habitat are going on in these areas. It is estimated that about 120 Sloth Bears live in this sanctuary. The sanctuary has innumerable wild fruit-bearing trees and bushes like kavale (Carissa carandas), jane (Grewia teliafolia), ulupi (Grewia salvitidia), nerale (Eugenea jambolana), bore (Zyziphus *jujuba*), etc in its premises (http://www.fulcrum.in/Daroji_Bear_Sanctu ary.htm). Also, the authorities have started planting orchards of custard apple (seetaphal), Singapore cherry, mango, banana, maize, etc

within the ranges of the sanctuary and have also established several waterholes. Bears are fond of termites and honey, which are also available in plenty here.

The presence of human habitation within the core area of reserved forests poses severe problems like human-bear conflict and destruction of habitat due to agriculture and cattle grazing. Systematic efforts are being made to relocate some of this population into proper zones outside the protected area in Chikmagalur district.

iii. Management of bear-human interactions

Information on bear behavior can help avoidance of conflict between man and animal. According to Karnataka Forest Department records, the bear-human conflicts are severe in five districts namely Chamrajnagar, Chickmagalur, Tumkur, Chitradurga and Bellary. Cases of crop damage have been recorded from Chitradurga and Bellary districts. Maximum human injury cases were reported from Tumkur district followed by Bellary, Koppal, Chamrajnagar, Chickmagalur, Devnagere and Hassan.

To tackle conflict, a few workshops were held in different villages of Bellary district. Workshops held in the villages around the Daroji Sanctuary and the formation of a village committee comprising of members of the settlements situated in and around Daroji Sanctuary was effective in reducing potential conflict (Wildlife SOS). This activity needs to be intensified as community understanding of the species and their participation in any habitat management plans increase the chances of success.

Despite having a sizable sloth bear population, conflict with humans is not as

frequent, perhaps due to the presence of good habitat in the protected area system and lack of attractive food sources outside.

In case of bear attacks on humans, there is provision for compensation, but the formalities are lengthy and time consuming. However, people seem happy with the scheme and 69 % of those affected received compensation in the last few years. To prevent retaliatory killings, this process should be made quicker.

iv. Research and monitoring

Wildlife SOS, undertook an ecological investigation on sloth bears in reserve forests near Daroji Bear Sanctuary and in the Sanapur Forests, examining scat samples and sampling vegetation to quantify density of plants consumed by bears. A Bear-human conflict study in the same area showed that 26 people were attacked by bears with conflict distribution over 8 districts of Karnataka in one year. But Conflict level was low, compared to higher black bear-human conflict areas in Kashmir (282 human attacks between 2001 and 2009). More surveys of bear areas and monitoring of bear population and threats need to be undertaken to formulate a comprehensive plan for the conservation of bears in the State.

v. Limitations

Despite the fact that mining causes significant damage to the habitat, alters species movement, behaviour and distribution; it is difficult to stop or check due to political patronage and legal hurdles neutralising the state wildlife apparatus. Local communities which should be an integral part of conservation are not always co-operative since they blame the Forest department for their losses (of crops, livestock or human

lives). Effective regulation for livestock grazing is lacking in conservation reserves. Although laws exist to deal with this, education/ awareness building and negotiation with locals to check this are constrains.

6.11.6 Management Actions Proposed

1. Human bear conflict

There is a need to create a comprehensive bear conflict map for the entire state. All the conflict cases should be analysed with location specific conflict management solutions. The identified villages in the North and South of the Daroji Bear Sanctuary (DBS) need to be relocated and nodevelopment zones marked in their place to ensure continued movement of bears. Well equipped village response teams should be created to deal with conflicts. Intensive rural development schemes should be initiated in the villages surrounding DBS. Timely release of assured compensation funds should be ensured for timely relief of conflict victims.

2. Minimizing habitat degradation and fragmentation

Bear sanctuaries may be created in Gudikote, Kooligi taluk and Bellari districts with approximate 5000 hectares of excellent bear habitat and another out of Kamasamudra Reserve Forest in Kolar district with approximate 9000 hectares of excellent bear habitat. Micro-management of habitat should be ensured at identified locations to grow more bear-preferred plant species. The minor forest product collection (especially wild custard apple and

honey) should be stopped or restricted to selected locations to create improved food supplies for bears. Location specific soil and moisture conservation work should be taken up based on the identification of critical bear conservation zones.

3. Field survey and monitoring

GIS map should be prepared on the distribution and population concentrations of sloth bear along with regular den sites, mining and quarrying zones and conflict points. The bear monitoring exercise should be conducted on yearly basis. The areas with viable bear populations should be identified and explore possibilities of declaring them as establishing community reserves. A baseline study can be conducted on trade in bear and bear parts.

4. Minimizing developmental activities

No Go zones need to be created based on identification of critical areas for bear conservation that emerge from GIS layering of the distribution, population concentrations, regular den sites, mining and quarrying zones, and conflict points.

5. Awareness campaign

Research based location specific awareness drives should be conducted to tackle conflict situations. Awareness programs should be conducted on garbage management, do's and don'ts with appropriate audio/visual material for prevention of bear attacks. Specific awareness drives may be conducted on locations with higher concentration of shepherds. Stall feeding should be encouraged to reduce large scale grazing.

6. Capacity building

Specialized training should be provided to the forest staff to tackle bear related issues. The rescue teams should be equipped with essential and appropriate materials to deal with emergencies.

7. Policy review

Location specific budget components may be created for bears and wildlife for territorial areas in Working Plans. Greater policy priority should be given to wildlife areas in working plans. Revenue lands that support bears should be selectively considered for conversion into reserved forests for long term conservation. Sloth bear Foundation could be created on lines of the Tiger Foundation.



KERALA

BEAR CONSERVATION ACTION PLAN KERALA

2012

Matthew Nixon Armstrong¹ and V. Gopinathan²

Project team

Justin Prakash, V.Mohan, Tiju C. Thomas and Sabu Jahas, N.V.K.Ashraf

Geographical location: 08°17′-12°47′N, 75°52′-80°24′E

Area: 38,863 km²

Biogeographic zone: 5 Western Ghats and 8 Coasts

Biotic Province: 5A Western Ghats-Malabar Plain, 5B Western Ghats Mountains

and 8A West Coast.

Forest area: 11,265 Km² and forest cover of 17,300Km²

Bear habitat range: 5190.00 Km²

Bear Population estimate: NA

Human population: 33.39 million (2011 census)

Livestock population: 5.8 million

6.12.1 Introduction

The sloth bear (Melursus ursinus), the only species found in Kerala is protected as Schedule I under the Indian Wildlife Protection Act (1972). Out of thirty three forest divisions, sloth bear occur in 27 forest divisions of Kerala. The sloth bear habitat extends to about 5,190 sq. km in the state of Kerala. The habitat degradation and fragmentation has reduced the available optimal habitat of the sloth bear leading to more bear- human conflicts. This animal is known for their potential to become aggressive toward humans (Higgins, 1932;, 1969; Laurie and Seidensticker, 1977; Phillips, 1984; Krishna Raju et al., 1987; Gopal, 1991; Rajpurohit and Krausman, 2000; Bargali et al., 2005; Akhtar, 2006; Ratnayeke et al., 2007a). They are secretive animals that appear to avoid human contact whenever possible and seem to have a low tolerance toward people when they do inadvertently meet (Garshelis et al., 1999). Unfortunately, they often encounter humans in agricultural fields or when people enter the forest to gather food or wood. However, when faced with a fight, the sloth bear has also evolved an extremely violent aggressive tendency. This aggressive behavior most likely evolved due to sharing habitat with and encountering other large mammals, such as elephants and rhinoceroses, and

predators, notably tigers, leopards, and dholes (Garshelis et al., 1999). Ramesh et al. (2009) revealed that sloth bear constituted 0.53% of the tiger diet and predator density may be the reason for the reduced human-sloth bear conflict due to increased carnivore density in Parambikulam Tiger Reserve in recent years. Ecological studies on sloth bear in Kerala are few. However, food and feeding of sloth bear was studied in Periyar Tiger Reserve and in Parambikulam Wildlife Sanctuary (Nelson et al., 1998; Easa, 2001). The abundance of sloth bear in forests of Kerala was estimated by Easa and Jayaraman (1998). Sloth bear range occupies about 45% of the forest cover in Kerala. However, no specific management initiatives have been adopted due to negligible human sloth bear conflict. Under the authority of the Ministry of Environment and Forests, a questionnaire survey was conducted by the Wildlife Trust of India in collaboration with Wildlife Institute of India and state forest department for developing an action plan for the conservation of sloth bears in the state of Kerala.

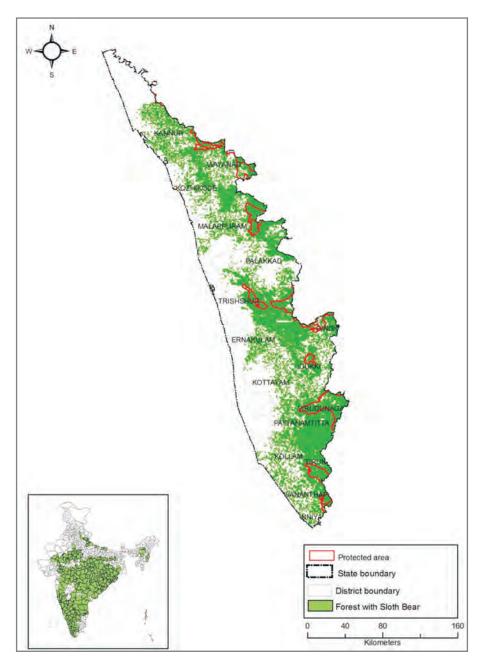
6.12.2 Distribution and relative abundance

The survey result shows that in Kerala the sloth bear population is reasonably healthy. Sloth bear is distributed in all forest divisions of Kerala. However, its occurrence

was reported from only 27 of the 33 forest divisions surveyed. The sloth bear presence data was not available for forest divisions of Kothamangalam, Mankulam, Kozhikodu, Punalur, Thrissur, Munnar and Peechi Wildlife Sanctuary. In addition to that, sloth bears are unrecorded in northern most parts of the Kerala and Idukki and adjacent areas where there are suitable habitats. The relative

abundance of sloth bear is available from scat density, obtained from wildlife census in the state. The sloth bear scat density was 154.94/km² in 1993 census which showed an increase to 772.06/km² in 1997. In 2002 census, the sloth bear scat density was 605.39/km² indicating stability of the population. The distribution of sloth bear in Kerala has been shown in Fig. 6.12.1.

Fig. 6.12.1. The distribution of sloth bear in Kerala

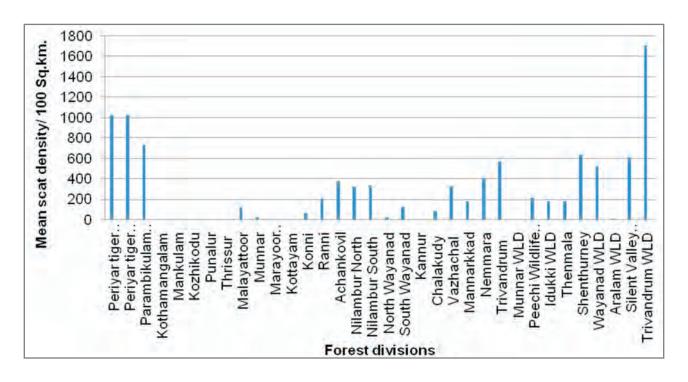


6.12.3 Population estimates

Totally 5190 km² sloth bear habitat available in Kerala and the rough assessment of the population of sloth bear is 420 animals in the distribution range. This result indicates the healthy population trend as one sloth bear per 12 km². The number of sloth bear sighted during 1997 census was 12 which increased to

56 in 2002. Moreover, the densities of indirect evidence compared to 1997 estimates indicate an increasing trend in some of the forest divisions. Indirect evidences of sloth bear in other forest divisions have by and large remained stable. The sloth bear scat density for forest divisions of Kerala are given in Figure 6.12.2.

Figure. 6.12.2 Division wise mean sloth bear scat density in Kerala



6.12.4 Conservation Issues

i. Threats to the Species

Only one case of bear killing was recorded across the state in the past five years from Wayanad Wildlife Division. No other record of bear poaching and retaliatory killing has been reported by the state forest department. Detailed information on the extent of human-bear conflict and trade of live bear cubs and bear body parts is however lacking from the state.

ii. Threats to the Habitats

Most of the bear occupied habitats are protected in this state. In some forest divisions, fragmentation of forest land has prevented the movement of sloth bear population. Proliferation of exotic weeds is adversely affecting bear habitat in areas like Mukulam, Kottayam, Punalur and Mannarkkad divisions. Forest fire is one of the reasons for displacement of bears and all other forms of wildlife in forest areas in Kerala.

6.12.5 Management Actions taken

i. Protection to the species

Regular patrolling has been undertaken in all territorial forest divisions and protected areas of Kerala for protection. Anti-poaching watchers have been employed in most of the forest divisions using local people especially the tribal community.

ii. Habitat management

The developmental projects such as roads, irrigation dams, hydro-electric project in the wildlife sanctuaries are the major threats to bear habitat in the state. The impact of such developmental activities on sloth bear status and distribution is not known and often gets ignored.

iii. Management of bear-human interactions

The department has provided proper guidance to villagers living around bearbearing areas such as Periyar Tiger Reserve and Parambikulam Tiger Reserve on how to avoid interaction with sloth bears. General wildlife conflict management strategies are being followed in most of the forest divisions and protected areas; thus the need for a specific conflict management guideline for bears is not warranted.

The questionnaire survey results shows that in only five out of the 34 forest divisions recorded sloth bear-human conflict namely Kannur, Wayanad, Palghat, Ernakulam and Kollam. There were few cases of compensation application received from these forest divisions. Two applications were received during 2008-09 and 2010-11 respectively from Palghat Forest Division. Overall, two compensations were sanctioned to the beneficiaries in 2011 and one cases each in

2008-09 and 2009-10. There were two human injury cases reported from Palghat Forest Division and one case each from Ernakulam and Kollam. In the last six years, only one report of human death due to bear attack has been reported (Kannur). In the past decade no conflict was evident from any forest divisions which has slight increase in current years. Apart from injury and death, cases of crop depredation were also reported from Kannur Forest Division. No records of poaching, confiscation and retaliatory killing have come from Kerala so far.

iv.Research and Monitoring

Research and Monitoring are not structured and systematic and needs to be initiated.

v. Limitations

Scant information on sloth bear in the state makes it difficult to initiate long term initiatives. However, this should not come in the way of short term conservation initiatives.

6.12.6 Management Actions Proposed

1. Human-bear interaction

The human-bear dynamics need to be studied as the first step towards conflict mitigation. Awareness should be spread to reduce human ill-will towards bear. Prompt adequate medical care and compensation must be ensured and this will go a long way in assuaging the effects of conflict. Alternate livelihood for traditional honey collectors may be provided as they appear to be primarily involved with bear-human conflict.

2. Habitat management

Potential sloth bear habitat and factors limiting their distribution should be identified. Acquisition of private enclosures in existing sloth bear habitats could be undertaken. The habitat quality in existing sloth bear habitats should be improved. Mitigation measures for fire control should be taken up.

3. Research and monitoring

An appropriate methodology should be developed for sloth bear population estimation and monitoring. Population estimation may be conducted every three years. A long term study on sloth bear ecology and behavior may be conducted in selected areas. Frontline staff need to be equipped with camera traps, digital cameras etc.

4. Awareness and community participation

Awareness materials (banners, leaflets) may be prepared for different awareness programs in the state at various levels. Education camps, seminars and workshops are needed to be conducted. Media to be actively involved for wide outreach. The impact of all awareness

and outreach activities be documented. A sloth bear day may be dedicated in the state. Proper infrastructure should be procured to conduct awareness and outreach activities.

5. Capacity development

Capacity building programs should be undertaken for the forest staff on several aspects like identification of bear body parts used in illegal trade, crime detection, monitoring populations etc. The infrastructure and manpower for anti-poaching activities should be strengthened. Basic field amenities should be provided to the frontline staff. Capacity building programs may be taken up for the field staff on legal issues.

6. Developmental activities

Traffic in road passing through forests should be regulated. The scattered settlements within the forest are hindrances to the free movement of wildlife in certain protected areas. Measures should be taken up for resettling the interior enclosures thereby consolidating areas ensuring free movement of wildlife.



MADHYA PRADESH

BEAR CONSERVATION ACTION PLAN MADHYA PRADESH

2012

Debobroto Sircar¹ and P. K. Shukla²

Project team

Dibyendu Mandal, Ravi Sawalani, Rajendra Prasad Mishra,

Debobroto Sircar and Rahul Kaul

Geographical location: 21° 17′ N and 26° 52′ N, 74° 08 E and 82° 49′ E

Area: 3, 08,245 Km²

Biogeographic zone:6. Deccan Peninsula **Biotic Province:**6. Deccan Peninsula

Forest area: 94,689Km² (30.72% of the state geographical area)

Bear habitat range:79,083 Km²Bear Population estimate:Not availableHuman population:72.60 million (2011)Livestock population:40.70 million (2011)

6.13.1 Introduction

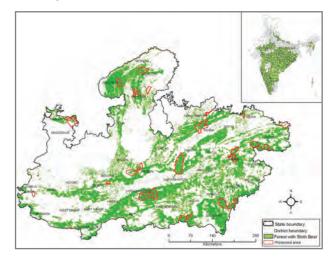
With a forest cover of 180,628 km², the Sloth bear (*Melursus ursinus*) has the most widely recorded distribution range than any of the large carnivore in Central India (Jhala et al, 2011). The erstwhile state of Madhya Pradesh (undivided Madhya Pradesh including Chhattisgarh) had the largest sloth bear population in the country with the bear inhabiting an area of 135, 395 km² of the forest (Rajpurohit et al., 2000).

6.13.2 Distribution and relative abundance

The survey conducted by Wildlife Trust of India (WTI) showed that 64 of the 73 forest divisions have sloth bear. As in the case of most states, no attempt has been made so far to estimate the bear population in the state. In 1993-94, a comprehensive survey was undertaken by the Wildlife Institute of India (WII) for its National Wildlife Database to generate a list of protected areas occupied by sloth bear. Bandhavgarh NP, Bhairamgarh WS, , Fossils NP, Kanha NP (population estimate of 70; 7 bears/100 km²), Kheoni WS, National Chambal WS, Panchmarhi WS, Panna NP (Common), Panpatha WS, Pench NP (Rare), Ratapani WS, Sardarpur WS, Satpura NP, Shivpuri NP and Singhori WS were identified to have sloth bear populations in undivided Madhya Pradesh (Fig. 6.13.1). Survey respondents also confirmed that sizable populations of sloth bear also exist

outside the PAs in the state (Garshelis et al., 1999).

Fig. 6.13.1 The distribution of sloth bear in Madhya Pradesh



6.13.3 Population estimates

During the 2012 survey conducted by Wildlife Trust of India in Madhya Pradesh, information on sloth bear population estimates from all forest circles in the state of Madhya Pradesh [16 Forest Circles and 73 Forest Divisions (Territorial and Wildlife)] were collected. Only six forest divisions had estimates for the year 2010-2011. These included Kuno-Sheopur WLS (20), Sanjay TR (500), Sidhi (197), Sidhi/Singrauli (782), Pench TR (60) and Alirajpur (10). Most of these estimates were generated as part of the 'All India Tiger Estimation Project' by the Wildlife

Institute of India, where sloth bear, identified as a "co-predator", was estimated based on sightings and indirect signs. Since it is difficult to obtain accurate estimates of abundance from sign and sighting data, the figures presented below may be unreliable. Only Kanha NP reported a population of 70 sloth bears with a density of 7 individuals/ 100 km². The other forest divisions failed to present any recent (after 2010) sloth bear population estimates. No information could be gathered on the sizeable population known to reside outside the PAs in Madhya Pradesh. WTI survey indicated that bear population is perceived to have increased in Kuno Sheopur, Bandhavgarh NP, Anuppur, Rewa, Nemuch, Shahdol, Panna NP, Damoh, Singrauli Forest divisions. The population has declined in Satna and Khargone division. While results from 20 forest divisions indicated that the bear population has remained the same, its status in the rest 33 forest divisions was unknown.

6.13.4 Conservation issues:

i) Threats to species

Sloth bear is protected by inclusion in Schedule 1 of the Wildlife (Protection) Act 1972. The sloth bear population in India is threatened largely by poaching (Garshelis et al., 1999) and the state of Madhya pradesh is no different. Bears have been poached for gall bladder and other parts, which are often exported to South-east Asian countries as an ingredient to Traditional Chinese Medicines (TCM). A survey by WTI recorded a number of poaching cases from different forest divisions (Table 6.13.1) although no cases of confiscation and retaliatory killings were recorded during the survey. Forest officials indicated the practice of retaliatory killing of bears in certain divisions. Incidence of sloth bears getting killed by road and railway hits, and electrocution were also noted.

Table 6.13.1. Poaching cases and other bear killings in different forest divisions of Madhya Pradesh

Name of the Forest Division	Poaching Cases	Other bear killings		
Sanjay TR	1	3		
Sidhi FD	3	2		
Umariya FD	3	4		
Katni FD	1	0		
Dindori FD	2	0		
Chattarpur FD	1	3		
South Shahdol FD	22	9		
North Shahdol FD	12	11		
Anuppur FD	3	7		
Gwalior FD	0	1		
Obaidullahganj FD	0	1		
Alirajpur FD	0	1		

The survey recorded trade of live bears or their parts from only Obaidullahganj and South Shahdol Forest Divisions. However, as many of the adjoining forest divisions reportedly have poaching, it is likely to extend to unreported areas as well. Existence of Kalandar community, known for their "bear shows" also instigates the practice of capturing bears in some parts of the state, though recent steps taken up by MPFD alongwith wildlife NGOs (WTI and Wildlife SOS) have drastically reduced such instances. With adjoining states like Chhattisgarh, Maharashtra and Odisha reporting presence of illegal trade routes, the trade is likely to exist in Madhya Pradesh as well. Sidhi, Shivpuri and Shahdol districts of Madhya Pradesh are considered sloth bear cub poaching hot spots (ISIBTR, 2007). The reasons for the lack of

information on illegal trade can be attributed to:

- a) Infrequent poaching of sloth bears in the region.
- b) Strong networking among the defaulters, that help them get by unnoticed by the authorities and
- c) Because reporting poaching is considered a disgrace.

Past records (1989-1994) have shown that sloth bear had caused the maximum number of human attacks, followed by tiger, leopard and wild boar (Rajpurohit et al., 2000). A 2010-2011 study on human bear conflict in the state showed that 12 of the 16 divisions are affected by human sloth bear conflict (Sircar, 2012) (fig. 6.13.2). The trend of the human sloth bear conflict cases showed an increase from a period of 1990 to 2010 in the state (Fig 6.13.3).

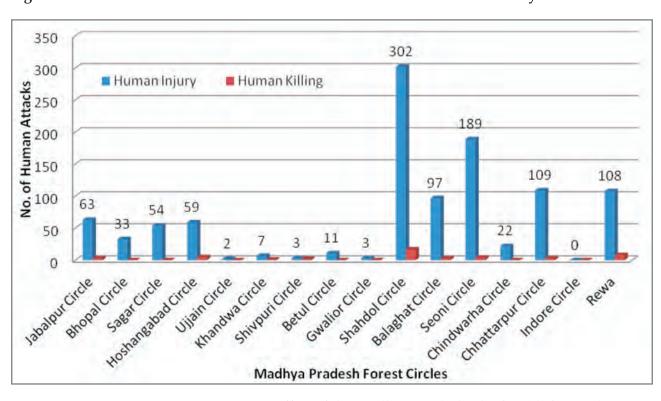


Figure 6.13.2. Sloth bear attacks on humans in different forest circles of Madhya Pradesh

Source: Office of the Madhya Pradesh Chief Wildlife Warden, 2010

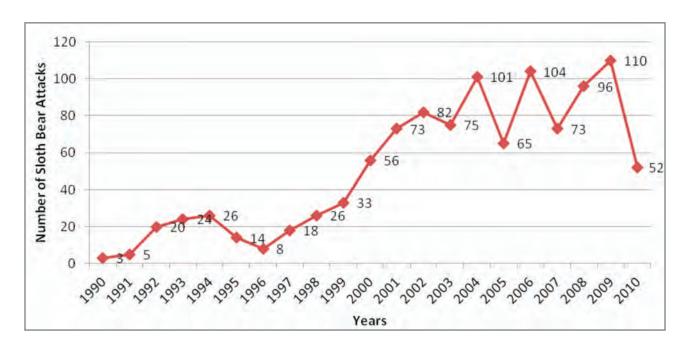


Fig. 6.13.3. Sloth bear attacks on humans in different years in Madhya Pradesh

Source: Madhya Pradesh Forest Department & Action Plan Report, 2011
**Official records were not updated for the state in 2010 leading to a dip in the number of cases.

In Central India, sloth bear is locally considered as one of the most feared and dangerous wild animals (Bargali et al., 2005). Sloth bear seems to have a very low tolerance towards humans. Majority of the HBC cases have occurred either when the humans enter sloth bear habitat or when the sloth bear enters kitchen gardens in the village homesteads. Maximum conflict cases have occurred in the month of March and early April, which coincides with Mahua (Madhuca indica) season when both bears and humans compete for the same resource. The conflict intensity may rise upto 2.23 cases / day during this period, while in other months, it comes down to 1.4 cases/ day (Sircar, 2012). Other edibles valued by bear as well as humans are Jamun (Syzygium cumini), ber (Zizyphus spp.), Tendu (Diaspyros melanoxylon), Bel (Aegle marmalos), Chironji (Buchanania lanzen), Honey etc. Therefore, when both human and bear share the same space and depend on the same resources, the

conflict (human injuries and human death) becomes inevitable. Because of such negative interaction, attrition levels among the locals rise, often leading to considerable number of bears being persecuted and killed in retaliation.

ii) Threats to the habitat

As per the recent survey undertaken by WTI, sloth bear in Madhya Pradesh is found to largely inhabit dry deciduous forests. Reports of its existence are also indicated in moist deciduous, and scrublands. All these forest types are well distributed over the state. With ever increasing human and associated livestock population in and around the forests, the dependency of humans on forests too has risen, creating unsustainable pressures due to overharvest of forest produce in terms of timber, fuelwood, and other non timber forest products (specifically Mahua). Establishment

of monoculture plantations of species like teak and eucalyptus, expansion of agricultural lands, encroachment and developmental activities like roads and canals extensions, irrigation dams, mining projects etc. have negatively impacted the survivability of sloth bears in the already patchy and fragmented habitat in the state.

6.13.5 Management actions taken:

i. Protection of the species

Madhya Pradesh Forest department (MPFD) with many tiger reserves, national parks and wildlife sanctuaries in its control has pioneered many conservation initiatives in the state. However, all management efforts have been directed towards safeguarding the tiger, swamp deer, gaur with little or no emphasis on sloth bear conservation. With increased cases of bear poaching and humanbear conflict, the state forest department has been forced to take actions to control and mitigate them. Strict guidelines have been issued to local people residing on the peripheries and buffer areas of the PA, to safeguard the bear habitat and the dependent resources.

Madhya Pradesh Forest Department (MPFD) has been proactive in confiscating captive sloth bear from the Kalandars. NGO's like Wildlife Trust of India (WTI) and Wildlife SOS has helped forest department immensely by facilitating the confiscation and also providing alternative livelihoods to the community involved in "bear dancing". The confiscated bears have been shifted to the Sloth bear rescue center in Van Vihar National Park, Bhopal. At present 35 sloth bear and one Asiatic black bear are kept in the facility.

ii. Habitat Management

Madhya Pradesh Forest department (MPFD) has envisioned "Project Jamwant-the bear project (currently effective in Shahdol Forest Circle) for the conservation of bear population. The main objectives of the plan are to:

- a) Create safe habitat for bears
- b) Ensure continuous availability of food by planting sufficient wild fruits and tuberous plants to bears and make arrangements for regular water supply in dry months inside the forest.
- c) Substantially reduce Human Bear
 Conflict (HBC) by equipping forest
 frontline staff and villagers under Forest
 Protection Committee (FPC) to mitigate
 primary levels of conflict.
- d) Create awareness among the locals about the importance of sloth bear and precautions to be taken in a bear dominated landscape.

Out of all forest divisions, only few forest divisions have initiated these plans, as part of their overall wildlife habitat management activities.

MPFD declared the year 2010-2011 as Mahua (Madhuca indica) year, wherein each forest divisions would plant mahua saplings inside the forest as well as in the vicinity of the villages. Being multipurpose in its use for humans, mahua is also favored by sloth bears. Though the shared use of mahua often brings sloth bear in direct conflict with humans, the forest department aims to spatially separate human from sloth bear by raising mahua plantations separately.

Through Wildlife Week celebrations, ecological and conservation values of bears are communicated to frontline forest staff, local villagers and school children. Training and

workshops are conducted for the frontline forest staff and Joint Forest Management (JFM)/Forest Protection Committee's (FPC) members on enforcement and conflict mitigation techniques.

iii. Management of bear human interactions

Forest divisions that encounter higher incidences of human bear conflict, has laid emphasis on a holistic approach which not only deals with mitigating conflict but ensuring a viable habitat for the bears. North and South Shahdol Forest Division, Umariya Forest Division and Anuppur Forest Division under the Shahdol Forest Circle has envisioned "Project Jamwant- The bear project" with the objectives of mitigating human sloth bear conflict an management of sloth bear habitat in their respective areas. Human casualties due to bear attack are on the rise in majority of the forest divisions, leading to unrest and retaliatory killing of bear by local people. As a conflict resolution mechanism, the forest department has initiated ex-gratia schemes. Ex-gratia for death due to bear is Rs 1,00,000/- and permanent disability due to bear attacks attracts a relief upto Rs 75,000/- to the victim. In addition to the reimbursement of medical expenses, forest department also provides compensation for the loss of man days incurred by the victim as a welfare scheme.

iv. Research and monitoring

In recent years, there has been an upsurge of research on sloth bears in Madhya Pradesh. MPFD, as part of the All India Tiger Estimation Project in 2010, tried to estimate the bear population in the protected areas of the state by classifying it as a co-predator. Wildlife Institute of India, in association with MPFD had led studies on sloth bear behavior and

conflict. In 2009, MPFD initiated Human Sloth Bear Conflict Mitigation project, which was carried out by Wildlife Trust of India, to develop an action plan to reduce and mitigate the increasing levels of conflict. Several governmental institutes like Indian Institute of Forest Management (IIFM) are also encouraging research on sloth bears in the state of Madhya Pradesh.

v. Limitations

With no reliable estimates of the sloth bear population and distribution in the state, effective conservation management techniques are lacking. The National Bear Action Survey brought to light some of the limitations that are being faced by MPFD.

According to the respondents in the survey, the major challenges in bear conservation in the state are overgrazing, over extraction of non-timber forest produce (NTFP)/ minor forest produce (MFP) and related human disturbance and safeguarding against habitat loss and degradation due to forest fires and developmental activities. Lack of legal support in regulating gun ownership among the locals, shortage oftrained / equipped staff and funds, motivating people to avoid bear habitat are the other limitations the forest department has to live with.

6.13.6 Management action proposed

An effective action plan for sloth bear conservation in the state has to be based on empirical information for making management decisions. Although, past studies have propagated certain measures, most of such responses have been generated in-situ i.e. in PAs and are often driven by local contingencies rather than by good science and planning (Sircar, 2012). Site-specific management plan is the need of the hour, as

variation exists in the way the concepts are understood and applied, as they are too embedded in different ecological, social, cultural and economic connotations. Major strategic points proposed to be undertaken in the Action plan are:

- 1) Research: There is an urgent need to invest in research and monitoring to estimate population and the distribution of sloth bears in Madhya Pradesh. Although baseline information exists in terms of presence or absence in the PAs, its reliability is doubtful, as it is largely based on secondary information. The survey should also include forest outside reserves which also holds sizable population of sloth bear as in the case of Hoshangabad and Shahdol Territorial Forests. The study should, encompass identification and mapping of conflict prone areas and drivers of conflict.
- 2) Creation of State's first sloth bear sanctuary: The Shahdol Forest Circle has extant of ideal bear habitat and seems to possess and support a good population of sloth bear. Areas like these could be declared as bear sanctuaries considering the fact that bulk of the bear populations in the state is distributed outside PA's.
- 3) Policy change: There is an urgent need for management plans of all the PAs and working plans of all territorial forests to incorporate the conservation and management of sloth bear as one of the key priorities. Emphasis should be put on areas where conflict has adverse impact on the bears, as in the case of Balaghat, Seoni, Jabalpur,

Bhopal, Rewa, Panna, Sagar, Hoshangabad, Chhindwarha and Shahdol Forest Circles.

Regulated harvest of NTFPs especially in mahua and tendu season is much warranted in areas that experience higher levels of conflict. To prevent human-bear conflict, forest dwellers should be completely banned from bear habitat during crepuscular hours. By enforcing this, the forest department can ensure that some amount of food resource remains for the bear as well.

One of the most significant threats to a successful action plan is the lack of an organized approach. Poor organization and the inability to implement conservation in a timely fashion is a great threat to bears as any other (Sircar, 2012). It is only a strong and flexible administrative set up, backed by strong political will, adherence to the need of bear as well as locals (i.e. ecological, social and economical values) that will determine the implementation of action points as suggested here.

among MPFD staff: Protected Area managers [Field Directors (FD) as well as the Divisional Forest Officers (DFOs)] of many of the forest divisions (63%) expressed their inability to perform the duties due to shortage of manpower. The vacant posts in the PAs need to be filled at the earliest for better management and increased protection to the wildlife. By filling up the remaining posts (i.e. beat guards), the vigilance could be improved and response time for attending human

bear conflict could be reduced. Long term financial sustainability of those hired, has to be ensured, so that no unforeseen obstacles arise due to lack of funds. Forest and Beat Guards often complained that they faced many challenges in terms of mobility and communication facilities, while patrolling the forest.

State government and MPFD should ensure that frontline staff are equipped and can carry out the task efficiently. Training in tranquilization, trapping, crowd management techniques, forensic studies to investigate bear cases, disease surveillance, monitoring (pug mark, indirect signs etc.), data entry, analysis and reporting need to be introduced at all levels, from forest ranges to forest circles in the Madhya Pradesh Forest Division that would help in better documentation. Emphasis should also be given to enhance efficiency and capacity of the personnel or team in charge of investigation and seizure operations to put an end to illegal trade of live bear cubs or trade in bear body parts and development of a chain of informer network to gather and counter illegal trade

5) Creation of conflict mitigation centre and rapid response teams: In areas of high conflict where bears attack humans or where bear venture into human settlements, immediate response is absolutely critical. A trained Rapid Resource Team (RRT) consisting of an officer not below the rank of Assistant Conservator of Forests/ SDO, experienced driver, one qualified veterinarian, and a minimum

of five trained support staff, both from forest department and local community with a Mobile Intervention Van (MIV), capable of transporting injured or captured problematic bear may be constituted. Specialized Training and state of the art equipment should be provided to them by MPFD. Through FPC, a Primary Response Team (PRT) can also be formed which can help the RRT in tackling the primary levels of conflict.

Such teams can be placed in forest circles or in some cases at the division level for quick reaction to conflict. The forest divisions that require such units are Jabalpur, Hoshangabad, Obaidullahgani, North and South Shahdol, East, West and North Chhindwarha, North and South Balaghat, North and South Panna, Sagar, Damoh, Satna, Singrauli, Dindori & West and East Mandla. Emphasis should also be given to develop capacity of the existing wildlife wing in the PAs that also could deliver the same results in the territorial forests.

6) Habitat management: Large patches of deciduous forests are required to be protected especially in the PAs like Panna, Bandhavgarh, Kanha, Sanjay Gandhi, Satpuda and Pench TR, as these forests act as source nuclear bear population for surrounding smaller patches. Contiguity between forest patches should also be maintained to facilitate movement of bears between patches and dispersal to peripheral areas. Such areas have to be devoid of humans or have minimal human presence. The MPFD should look to not

only increase the extent of the PA network in the state, but also restore the degraded areas where population is perceived to be declining (Chhindwarha, Sagar, Panna, Rewa, Sidhi, Singrauli, Dindori and Katni Forest Divisions). Water is considered an attractant for the bear in the villages during summers. MPFD and watershed developmental authorities should therefore, invest in activities like creating check dams/ water holes to ensure water availability inside forest areas during summer months.

MPFDs and rural developmental agencies should make concentrated efforts to gradually reduce the dependence of forests among the forest dwellers by providing alternative sources of fuel and livelihood options.

7) **Inter-sectoral cooperation:** For an action plan to work efficiently, it is imperative that the concerns of all stakeholders are taken into consideration. In this case the MPFD has to take a lead in bringing all departments, wings and agencies of the government to a single platform to work towards the long term conservation and management of sloth bears in the state. Some of the major departments that MPFD needs to tie up with are healthcare, ecotourism, communication, rural and tribal development, law and judiciary, watershed management and police. Emphasis should also be given to research institutes and environmental and social welfare NGOs in the state or at national level to contribute in the

proper planning and implementation of the action points on the ground.

As many cases of Sloth bear killed by road hits has been witnessed in Seoni (NH-7) and Umariya (near Bandhavgarh NP) districts, MPFD in collaboration with Road development authorities can put up signages to caution drivers about bear presence and movement or can facilitate wildlife movement by building underpasses at the critical sections of the road.

8) Increased awareness and community participation: In areas where threats to bears due to conflict is high [Shahdol, Balaghat, Betul, Seoni Forest circles and Sagar, Panna (North & South), Sidhi, Singrauli, Mandla (West & East), Hoshangabad and Dindori forest divisions], it is crucial to gain the support of villagers if conservation has to be fruitful. Through events like Wildlife Week and Environment Day, MPFD should aim to make communities change from their perception of sloth bear as a pest, to a view of sloth bear as protectors of forest. With most awareness programmes often limiting themselves to the affected locals; a need is felt that awareness should target other sections of the society. Sensitization programmes targeting decision makers, legislature, bureaucracy and other associated sector is vital.

The State and MPFD can also initiate media sensitization programmes. In today's age, both print and digital media can bring about a change in perception for the conservation of bears in the state





MAHARASHTRA

BEAR CONSERVATION ACTION PLAN MAHARASHTRA

2012

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Project team

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Geographical location: 15°35′-22°02′N, 72°36′-80°54′E

Area: 307,713 Km²

Biogeographic zone: 5. Western Ghats, 6. Deccan Plataea zone and 8. Coasts

Biotic Province: 5A: Western Ghats- Malabar Plains; 5B: Western Ghats Mountains;

6A: Deccan Peninsula- Central Highlands;6D: Deccan peninsula- Central Plateau;6E: Deccan Peninsula Deccan South;

8A: West Coast

Forest area: 61,939 Km² (20.13% of the state geographical area)

Bear habitat range: 49,218 Km² **Bear Population estimate:** Not known

Human population: 112,372,972 (2011 census)

Livestock population: 35.95 million

6.14.1 Introduction

Maharashtra lies in the south-west and is the second most populous state of India. It is bordered by the Arabian Sea in the west, Gujarat and the Union territory of Dadra and Nagar Haveli to the northwest, Madhya Pradesh to the north east, Chhattisgarh to the east, Karnataka to the south, Andhra Pradesh to the southeast and Goa to the southwest. The state occupies an area of 307,731 km2 which 9.84% of India.

The Western Ghats, better known as Sahyadri, is a hill range that runs parallel to the coast, at an average elevation of 1,200 m. To the west of these hills lie the Konkan coastal plains, 5080 km in width. To the east of the ghats lies the flat Deccan Plateau. The Western Ghats form one of the three watersheds of India, from which many south Indian rivers originate, notable among them being the Godavari and the Krishna, which flow eastward into the Bay of Bengal. Maharashtra has a typical monsoon climate, with hot, rainy and cold weather seasons. Tropical conditions prevail all over the state March, April and May being the hottest months. Temperature varies between 22°C -

39°C during this season. In winter, cool dry spell, with clear skies gentle breeze and pleasant weather prevails from November to February. Temperature during this season varies between 12°C - 34°C. Rainfall is variable with Thane, Raigad, Ratnagiri and Sindhudurg districts receiving heavy rains of an average of 200 centimeters annually. Others like Nasik, Pune, Ahmednagar, Dhule, Jalgaon, Satara, Sangli, Solapur and parts of Kolhapur get less than 50 centimeters. Sloth bear (*Melursus ursinus*) is the only bear species found here.

6.14.2 Distribution and relative abundance

Within Maharashtra, sloth bear is recorded in all the five regions of the State, namely, Khandesh and Northern Maharashtra, Konkan, Vidarbha, Marathwada and Paschim regions. Presence of sloth bear is reported from 48 forest divisions in the state covering 23 districts (Table 6.14.1, Fig. 6.14.1).

6.14.3 Population estimates

Fifty six forest divisions (FD) in 23 districts were surveyed, of which 8 divisions showed no reports of bears and the rest showed mixed population trends of increase,

decrease, stable and unknown. Maximum population was reported from the Vidharbha region (97%). The population estimates were arrived at by the state forest department based on evidence such as scat, tracks, water hole counts and line transects in 48 of the 56 forest divisions of Maharashtra. The total population of sloth bear in Maharashtra was estimated at 658. However, as indicated in the table 6.14.2, it is obvious that the exercise was not conducted systematically as there seem to be many gaps in data collection or detection. Therefore this estimate needs to be verified with further surveys.

Table 6.14.1. The list forest divisions in Maharashtra where sloth bear is present as reported by the Maharashtra State Forest Department

District	Name of Forest Division		
Amravati	Amravati Terretorial		
Amravati	Sipna Wildlife Sanctuary		
Amravati	Gugamahal Wildlife		
	Sanctury		
Amravati	West Melghat Terretorial		
Amravati	East Melghat Wildlife		
	Division		
Akola	Akola Wildlife Division		
Akola	Akot Wildlife Division		
Buldhana	Buldhana Terretorial		
Satara	Satara Teritorial Division		
Nandurbar	Nandurbar FDCM		
	Division		
Nandurbar	Mevasi Teritorial Division		
Dhule	Dhule Teritorial Division		
Jalgaon	Yaval Wildlife Division		
Jalgaon	Yaval Wildlife Division		
	(Nashik)		
Jalgaon	Jalgaon Teritorial Division		
Aurangabad	Aurangabad Teritorial		
	Division		

District	Name of Forest Division		
Aurangabad	Aurangabad Wildlife		
	Division		
Bhandara	FDCM Bhandara		
Bhandara	Bhandara Territorial		
Gondia	Gondia Wildlife		
Gondia	Gondia Territorial		
Gondia	Gondia FDCM		
Gadchiroli	Wadsa Territorial		
Chandrapur	Bramhapuri Territorial		
Chandrapur	Bramhapuri FDCM		
Gadchiroli	Gadchiroli Territorial		
Gadchiroli	Pranhita FDCM,Allapalli		
Gadchiroli	Allapalli Wildlife		
Gadchiroli	Bhamragarh Territorial		
Gadchiroli	Sironcha Territorial		
Gadchiroli	Allapall Territorial		
Chandrapur	Chandrapur Territorial		
Chandrapur	Central Chanda		
	Territorial		
Chandrapur	TATR Wildlife		
Chandrapur	West Chanda FDCM		
Chandrapur	Central Chanda FDCM,		
	Ballarshaha		
Chandrapur	FDCM Markhanda,		
	Ballarshaha		
Yavatmal	Yavatmal Territorial		
Yavatmal	FDCM Yavatmal		
Yavatmal	Pandharkawada		
	Territorial		
Yavatmal	Pusad Territorial		
Wardha	Wardha Territorial		
Nanded	FDCM Kinwat		
Nagpur	FDCM Nagpur		
Nagpur	Nagpur Territorial		
Nagpur	Pench Tigre Reserve		
	(Tipeshwar WLS)		
Nagpur	Pench Tigre Reserve		
	(Bhor WLS)		
	Pench Tigre Reserve WLS		

Table 6.14.2: Population status (Region-wise) of sloth bear in Maharashtra.

Region	No of	No of					
	Districts	Divisions	2006-07	2007-08	2008-09	2009-10	2010-11
Paschim	3	3	0	0	0	1	0
Vidarbha	10	38	616	564	102	822	640
Marathwada	2	3	11	0	0	0	15
Konkan	2	1	0	0	0	0	0
Khandesh &							
Northern	4	8	0	0	0	15	3
Maharashtra							
Total	21	53	627	564	102	838	658

Source: Survey data collected from the forest department

6.14.4 Conservation Issues

i. Threats to species

There is very little information on the level of threats to the species, but poaching (for bear parts) and retaliatory killings (to reduce livestock and crop depredations) are definitely a major threats. Gall bladders and other body parts from poached bears are exported for the use in the traditional medicines.

The surveys conducted by Wildlife Trust of India in the bear bearing forest divisions of Maharashtra, indicate low poaching levels, no cases of confiscation of live bears or its body parts, one case of retaliatory killing and few cases of killing due to other reasons between 2006 and 2011. The reason for such low levels of threat to the species is due to the excellent protection several areas, intelligence gathering and networking. However, bear-human conflict especially in the districts of Chandrapur, Gondia, Gadchiroli, Bhandara, Akola and Amravati in the Vidarbha region is on the rise. The overall conflict cases recorded from the surveys

conducted, has indicated increased cases from 33 in 2006 - 07 to 102 cases in 2010 11.

The feeding pattern of sloth bear is the same across its habitats in the state. Their habit of feeding on Mahua (*Madhuca indica*) flowers and honey is turning out to be a disadvantage for the species as people compete to collect the same resource.

ii. Threats to habitats

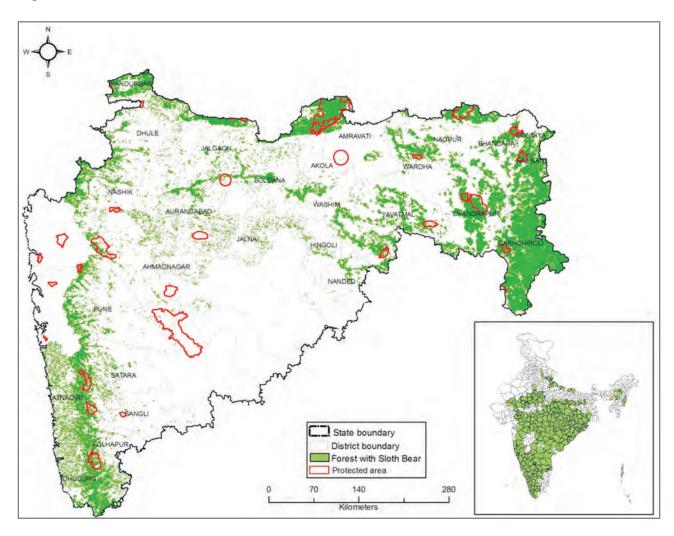
Population fragmentation, due to loss of tree cover in Protected Areas (PAs) and habitat degradation outside the PAs especially those around small PAs are major threats to sloth bear and its habitat. Habitat degradation due to overgrazing, overharvest of forest products, expansion of agricultural areas, and developmental activities such as building of roads, canals, dams and mining are the threats to sloth bear habitats.

In Maharashtra, the sloth bears mostly inhabit dry deciduous forest. Additionally semi evergreen, moist deciduous and scrubland is also used. Out of the 56 divisions surveyed, 26 divisions had some form of

developmental activities such as building of roads, canals, dams and mining or were being planned.

Lack of natural food for bears in their habitats is likely to increase the movement of sloth bear into agricultural landscapes for crops. However, the survey data does not indicate large species dependency on human related food (low number of crop depredation cases). Cases of crop depredation have been reported from only two divisions of Vidharbha region, i.e. Bhandara (Territorial) Division and Gondia (Wildlife) Division.

Fig. 6.14.1 The distribution of sloth bear in Maharashtra



6.14.5 Management actions taken

i. Protection to species

Sloth bears have been accorded the highest protection as it is listed in Schedule I of the Wildlife (Protection) Act, 1972 (as amended in 2002). Internationally, it is listed in Appendix I of Convention on International Trade in Endangered Species of Fauna and Flora (CITES) after upgrading it from appendix III in 1990. The International Union for Conservation of Nature and Natural Resources (IUCN) has listed the species as "Vulnerable" in the Red Data book. The species enjoys the highest levels of protection thereby prohibiting trade in live or its derivatives and illegal killing, nationally and internationally. However, no bear specific management has been taken up in the State. On an average, the protection level in Maharashtra is high and the intelligence gathering and networking is reported as good by state forest department. Survey conducted by Wildlife Trust of India indicates low poaching levels, no cases of confiscation of live bears or its body parts, one case of retaliatory killing and few cases of killing due to other sources, between 2006 and 2011. The state of Maharashtra borders with adjoining states of Goa, Gujarat, Madhya Pradesh, Chhattisgarh, Andhra Pradesh and Karnataka, but no issues have been reported in terms of protection to the species. Few FDs have a conflict management team which comprises of rescue team with trained forest officers and veterinary doctors.

ii. Habitat management

The biggest threat to sloth bear survival is the loss of their forest habitat, especially outside PAs. Degradation of forests due to over-exploitation by humans and use of forest edges by humans and use of agricultural land

by bears for crop feeding, resulting in conflict between bears and humans, which sometimes ends in persecution killings of bears by humans. Sloth bear habitat loss in the state is largely due to developmental projects such as road building, hydro power projects and other human activities. Habitat degradation is also due to unsustainable use such as heavy livestock grazing and local community use.

iii. Management of bear-human interactions

Sloth bear is known for its aggressiveness, both towards humans and towards other large mammals. The survey conducted by Wildlife Trust of India indicates that between 2006 and 2011, Gondia FD has reported the maximum number of human sloth bear conflict cases (65) followed by Chandrapur FD (36) and Bhandara FD (26). The state pays an ex-gratia of Rs. 50,000/-for injuries, Rs. 2, 00,000/- for death or disability. For small injuries, medical bills may be reimbursed. Between 2006 and 2011, 316 conflict cases were recorded out of which 308 applications for ex-gratia were made. The state government sanctioned 304 payments out of these. Few FDs have a conflict management team which comprises of trained forest officers and veterinarians.

iv. Research and monitoring

No research and monitoring exercises focussing on sloth bear in the State have been carried out except for in Chandrapur and Central Chanda FDs of Chandrapur district by local field staff and in Wadsa FD of Gadchiroli district by the Forest Department.

v. Limitations

Most divisions lack management response teams. Another limitation is the lack of bear rescue and conflict management teams, research and monitoring exercises, especially on sloth bear ecology and habitats and the biotic pressure on its habitats. Another limitation is the lack of skilled and trained forest staff, especially the frontline staff. Lack of bear rescue and conflict management teams hamper human-bear conflict mitigations in the field. Low knowledge base on status, distribution and ecology of bear in the State makes it difficult to take informed decisions on bear management.

6.14.6 Management Actions Proposed

1. Human bear conflict

The conflict hotspots in the state need to be identified and mapped. Major reasons for conflict should be identified so that conflicts may be pre-empted. Village response teams may be formed to deal with conflicts as a regular part of Joint Forest Management. This would help reduce conflicts and also ensure local participation in mitigating the issue. Timely ex-gratia for human deaths/ injuries due to sloth bear attacks should be ensured. Such compassionate steps helps to build bridges between the forest department and the local communities whose participation is vital in conservation of all forms of wildlife. Necessary equipment and drugs should be procured by the state forest department to deal with problematic animals. Research may be conducted on planting alternative crops (like cash crops) which do not form a part of bear food so that they are not attracted to a village and thus help in reducing conflict.

2. Habitat degradation and fragmentation

Plantation of fruit trees, which are preferred by sloth bear, should be

planted in bear ranging areas. Habitat linkages should be identified and preserved with special focus on bears. Alternative green livelihood options (bee keeping, village level eco-tourism, etc) should be promoted among villagers. Forest areas along the fringes of sloth bear distributional range and isolated habitats need to be managed specifically for bears. Eco-development program should be undertaken, with an attempt to reduce forest dependence and to compensate local communities in cash and kind as well as through alternative off-farm income-generating opportunities - for the lost access to resources in PAs. Sloth bear sanctuaries may be established and developed. More manpower should be employed to address the habitat management issues.

3. Research and monitoring

The distribution of sloth bear should be mapped in the entire state and population should be estimated. Major factors that affect the bear distribution have to be identified in the state. Bear monitoring exercises should be conducted on a yearly basis. A study should be conducted on trade of bear and bear body parts. The critically threatened bear areas should be identified by matching areas of bear distribution, human bear conflicts and developmental activity. A long term study on genetic deterioration of small populations should be conducted.

4. Awareness campaigning

Location specific protocols should be developed based on human-bear conflict map to avoid confrontation. The protocol should be implemented in major conflict zones. Awareness programs should be conducted on various issues such as garbage management, do's and don'ts with suitable audio-visual material. Well targeted awareness and education programs should be arranged for the local communities around the sloth bear habitats. Management practises to be oriented towards greater acceptance of the species by increasing awareness among the various stakeholders like forest dept, local people, media, politicians, scientists, etc.

5. Capacity building

Specialized training programs should be undertaken to provide training to the forest staff to tackle bear issues.

Additional five veterinary units need to be set up to deal with emergencies. The rescue teams should be equipped with essential and appropriate technology to

deal with bear related emergencies. Project allowance and special incentives should be provided to the forest staff. The vacant positions of the front line staff should be filled up and regular training needs to be given to the recruits and those in services so that their skills are constantly upgraded. Adequate number of veterinarians should be appointed with access to modern equipments for animal capture and rescue.

6. Poaching and trading control

Patrolling camps should be established in different areas and existing camp should be maintained. The wireless networks need to be maintained properly. Surprise raids should be organized at all public transport areas. Special site specific protection measures need to be ensured during monsoon. Informers should be rewarded.



MANIPUR

BEAR CONSERVATION ACTION PLAN MANIPUR

2012

N.P.S. Chauhan¹, Janmejay Sethi², Krishnendu Mondal³, Anil Kumar⁴

Project team N.P.S. Chauhan, Janmejay Sethi, Krishnendu Mondal, Salam Rajesh, Rahul Kaul and Sandeep Kumar Tiwari

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Geographical position: 23°50′ to 25°42′N, 92°59′ to 94°46′E **Area:** 22,327 km² (0.68% of the country)

Biogeographic zone: 9.North-East

Biotic Province: 9b. North-East hills

Forest cover: 17,418 km² (78.01% of the state geographical area)

Bear habitat range: 13000 km² **Bear Population estimate:** No known

Human population: 2.72 millions (2011)

Livestock population: 0.79 million (Livestock census 2007)

6.15.1 Introduction

Manipur, one of the seven sisters of the northeastern region of India, has a geographical area of 22,327 km². Ninety percent of its geographical area (20,089 km²) is covered by hills and the remaining area is a valley. The state has a 352 km long International border with Myanmar and the rest of the 502 km long border is shared with the adjacent states of Nagaland, Cachar district of Assam and Mizoram. The altitude of the state above the mean sea level varies from 790 to 2020 meters. It has sub tropical and temperate climate. The annual rainfall is around 2000 mm.

The Manipur state is encircled by nine hill ranges on all sides with a small oval valley at the center. The state is split up naturally into two tracts viz. the hills and the dales. The hills comprise five districts, namely, Senapati, Tamenglong, Churchandpur, Chandel and Ukhrul. Manipur has a vast area of 17,418 km2 under forest. The vegetation is rich and varied in character mainly because of the different climatic conditions found in the state and its unique physiography. The forest area of the state falls into four distinct zones *viz.* Burma

Border Forest, Ukhrul Pine Forest, Valley Forest and Barak Drainage Forests. Three species of bear are reported from the state. These are the sloth bear, the Asiatic black bear and the Sun bear.

ASIATIC BLACK BEAR

6.15.2 Distribution and relative abundance

There were no recent reports of the species from anywhere in the state (Sathyakumar, 2001). However, during the survey conducted by Wildlife Trust of India, presence of Asiatic black bear has been reported from seven forest divisions, namely North Forest Division (Kangpokpi) Churachandpur Forest Division, East Forest Division (Ukhrul), Western Forest Divisions (Tamenglong), Jiribam Forest Divisions, Tengnoupal Forest Division and Senapati Forest Division by the state forest department (table 6.15.1 and 6.15.2, Fig. 6.15.1). However, this needs further confirmation.

6.15.3 Population estimates

No estimates of Asiatic black bear population is available for the state.

Table 6.15.1. The presence of bears in different forest divisions in Manipur

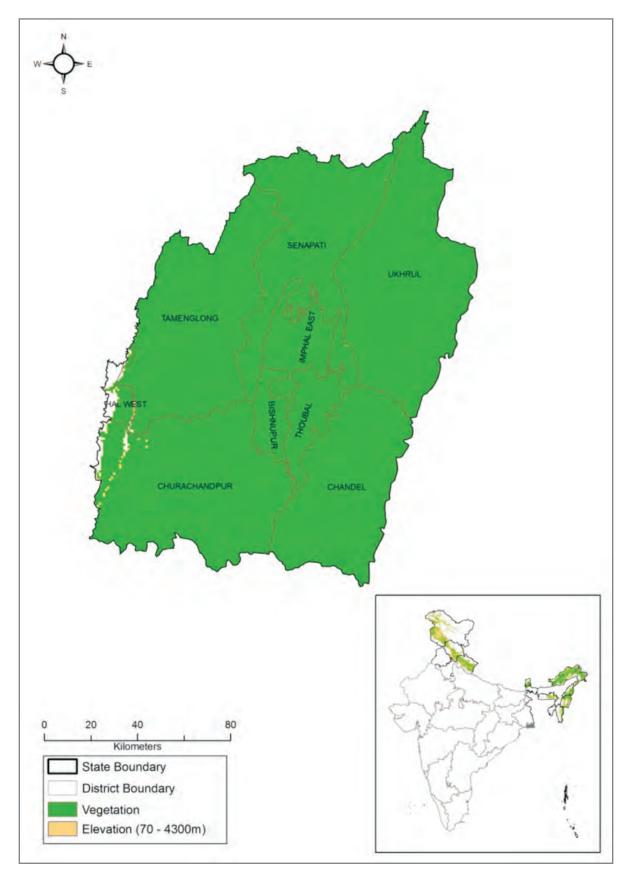
Forest Division	Black bear	Sun bear
Northern Forest Division, Kangpokpi	Yes	No
Southern FD Churachandpur	Yes	No
Bishnupur FD	No	No
Eastern FD, Ukhrul	Yes	Yes
Western FD, Tamenglong	Yes	Yes
Thoubal FD	No	No
Jiribam FD	Yes	No
Tengnoupal FD, Chandel	Yes	Yes
Central Forest Division	No	No
Senapati FD	Yes	No

Source: State forest department

Table 6.15.2. The presence of bears in different protected areas of Manipur

Protected Area	Black Bear	Sun Bear
Yangoupokpi Lokchao WLS	Yes	Yes
Shiroi NP (proposed)	Yes	Yes
Jiri Makru WLS (proposed)	Yes	Yes
Kailam WLS (proposed)	Yes	No
Zeilad WLS (proposed)	Yes	
Buning WLS (proposed)	Yes	

Fig. 6.15.1 The distribution of black bear in Manipur



6.15.4 Conservation Issues

i) Threats to species

Hunting is a threat especially in areas outside PAs. However, no records exist with the forest department to suggest poaching or retaliatory killings.

ii) Threats to habitats

The potential black bear habitats in Manipur are under threat of shifting cultivation and conversion into farmland and encroachment of forest areas by human settlements. Setting up of fire by hunter is another threat.

6.15.5 Management actions takeni. Protection to species

The Wildlife (Protection) Act, 1972 provides the legal protection to black bear (Schedule-I). The state on its part enforces the Act through patrolling of Protected Areas to catch any culprits involved with killing of the species. However, much of such efforts of the state are constrained by lack of manpower and infrastructure.

ii. Habitat management

Major part of potential habitat of the black bear in the State is under various protected areas. However, no bear-specific management and protection measures have been taken by the state forest department for the conservation of black bear, especially in areas outside protected areas.

iii. Management of bear-human interactions

No specific management action has been taken for black bear human interactions in the state. There is no specific report of livestock depredation by black bear and also no specific report of injury to any villager, hunter or wood cutters. Only one case of human injury and one case of human mortality were recorded by the forest department in 2009-2010, but the species of bear in these conflict cases were unknown. Only two applications for compensation have been received by the state forest department during 2009-2010, but no compensation was allocated.

iv. Research and monitoring

No survey or monitoring has been conducted by the forest department or any other research or conservation organisation.

Limitations

Lack of knowledge about the species in Manipur has kept the species in oblivion as far as efforts to conserve it are concerned.

SUN BEAR

6.15.6 Distribution and relative abundance

Wildlife Institute of India has undertaken survey on the status and distribution of sun bears in the state of Manipur (Chauhan and Singh, 2005b, 2006 and WII-NWDB, 2006). Presence of sun bears has been confirmed in the Chandel and Ukhrul districts of Manipur, but it shows a patchy distribution (Table 6.15.1 and 6.15.2, Fig. 6.15.2 and 6.15.3). Both direct and indirect evidences (scats, claw marks and foot prints) of sun bear were observed by inhabitants of these areas (Table 6.15.3). Out of 264 respondents, 17.4% confirmed that they had seen the sun bear, 34.8% had seen signs (Chauhan and Singh, 2005b, 2006). A few cubs were also seen held by the villagers. Sun bear relative abundance seemed to be higher in Chandel forests than Ukhrul district.

Table 6.15.3. Occurrence of Malayan sun bear in forests adjacent to villages of Ukhrul and Chandel districts, Manipur state.

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

Source Chauhan and Singh, 2005b, 2006

6.15.7 Population estimates

No population estimates for sun bear are available for the state.

Nagaland Senapati district Myanmar Chandel district

Fig. 6.15.2 Occurrence of sun bear in Ukhrul district, Manipur

Fig. 6.15.3 Occurrence of sun bear in Chandel district, Manipur state. Ukhrul district Thoubal district 34'20 Churchandpur district Myanmar 24-09 Myanmar Bear occurrence-low Village surveyed District boundary Area of occurrence Roads

941127

54"27

SH SE

10"00"

6.15.8 Conservation Issues

i. Threats to species

Sun bear populations are severely threatened due to loss, degradation and fragmentation of habitats; human-sun bear conflict, poaching for trade in body parts and the tradition of keeping them as pets in villages. Poaching of sun bears is a critical problem in their areas of occurrence in the state. Trade of bear parts: gall bladder, meat, skin, claws and teeth, is severely affecting the existing sun bear populations. Gall bladder is believed to be of medicinal value. Bones, teeth and claws are also used by villagers as trophies or body ornaments and also to ward off evil spirits. Hunting of sun bear for food, sale of body parts and sale of young ones captured after the mothers are killed, has reached alarming proportions throughout its range in Ukhrul and Chandel districts of Manipur.

The villagers suffer from both economic loss due to crop damage (rice, maize, sweet potato, pulses, oilseeds and sugarcane, plum, pumpkin) and human injuries by sun bear. There were reports of some retaliatory killing of crop depredating sun bears in Chandel and Ukhrul districts.

ii. Threats to habitats

The status and distribution of sun bears depend on the extent of availability of lowland forest habitats and biotic pressures. Due to conversion of lowland forests into agricultural areas, plantations and human habitation, most of the erstwhile suitable sun bear habitats have been degraded and fragmented. Sun bear populations are severely affected due to increasing human population and continuous loss of habitat. Habitat degradation and fragmentation resulted from overgrazing,

extraction of non-timber forest produce, illicit cutting and lopping of trees, fruit collection, plantations, expansion of agriculture and developmental activities. Sun bear movement from forest areas into human habitation and crop fields is reported from Chandel and Ukhrul districts of Manipur (Chauhan and Singh 2005b).

6.15.9 Management actions taken

i. Protection to species

The sun bear is listed as "Vulnerable" in the Red Data Book (IUCN 2012) signifying the perceived threat to this species. It's inclusion in Schedule I of the Wildlife (Protection) Act of India, 1972 implies that it is given the top legal protection in the country. Information on status of sun bear and ecological aspects is being collected from Manipur state and there seem to be no records of human-caused mortality although most cases of bear deaths at the hands of humans are probably not reported. Forest department have been able to minimize poaching, but remoteness of some areas and scarcity of staff makes this task difficult.

ii. Habitat management

Forest department has not undertaken any bear specific management of habitat. However, forest department and the local community has undertaken steps to protect and improve wildlife habitats. The local communities have set aside lands for conservation eg. Khambi protected village area. Local communities are also coming forward to declare CCAs in Senapati and Ukhrul.

iii. Management of bear-human interactions

Sun bear is known as a fierce animal when surprised in the forest. Wildlife Institute of India conducted a study on the human-sun bear conflict in Chandel and Ukhrul districts of Manipur state in India during 2004-2005 (Chauhan and Singh, 2005b) and there were reports of sun bear moving out of forests and invading agricultural crop fields located close to forests and causing extensive damage to rice, maize, sweet potato, pulses, oilseeds and sugarcane crops. Local people confirmed that the sun bear attack humans and inflict serious wounds if encountered suddenly. There is also no systematic documentation of such cases. So far, there are no specific management plans for the sun bear-human interactions in the state.

iv. Research and monitoring

The Wildlife Institute of India carried out one detailed survey on status and distribution of sun bear and its conflict with human in few states in northeast India including Manipur (Chauhan and Lalthanpuia 2008). Apart from that there are have been no recent research initiatives on bear in the state.

v. Limitations

The main conservation issue regarding sun bear, it appears, is conflict and poaching for meat and trade. Lack of knowledge about the impacts of human activities on the sun bear habitats, and extraction patterns management of this species is difficult. There is an urgent need to conduct systematic surveys to know the status and population estimates and evaluate threats in order to formulate conservation strategies for sun bears.

6.15.10 Management Actions Proposed

1. Research and monitoring

Systematic division-wise study on status and population of sun bear needs to be carried out on priority basis to develop a database on its presence and absence. Existing bear inhabited areas need to be identified and a realistic sun bear distribution range map needs to be developed. There is a need for sitespecific application of methods to assess distribution, relative density and the impacts of biotic pressure on sun bear populations. The status of its associated plants and animals need to be identified. The habitat use by sun bears should be determined which may help understand dynamics of sun-bear human conflict. The present and potential threats to bears and its habitat in key areas need to be identified.

2. Protection of bear population and its habitat

Poaching of sun bear for trade of bear parts is affecting the existing sun bear populations in the north-eastern states and such extractions and their impacts on wild populations needs to be confirmed. Strict enforcement of the provisions of the Wildlife (Protection) Act of India, 1972 is the need of the hour and in cases where this is not possible, imposition of relevant customary laws may be advisable. Also, control on hunting will require proper intelligence network and greater enforcement efforts. Trade in bear parts or live sun bear and keeping them as pets should be thoroughly discouraged. Adequate staff should be deployed and proper infrastructure and equipments need to

be provided in all protected areas. The bear areas should be brought under PA network or under community protection. Local communities, media, judiciary, enforcement agencies and policy makers should be involved and sensitized for bear conservation to give it a place of prominence and the much needed focus for conservation. Suitable alternate livelihood options need to be offered to the communities to reduce habitat degradation activities in key habitats.

3. Habitat improvement and restoration

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. 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 the increasing demand for fuelwood and non-timber forest produce, afforestation activities in suitable areas are suggested. Bear conservation should be integrated into the management/working plans of various PAs and territorial forests and emphasis on local fruit bearing species planted in key bear habitats using local communities to reduce adverse impacts of Jhum cultivation on key bear habitats. Obnoxious and invasive weed species should be eradicated from key bear habitats. Standard soil and water conservation works should be done.

4. Reducing bear-human conflict

To reduce crop depredation by sun bear, protection measures such as cooperative crop guarding, use of barriers, scaring sounds or frightening devices: scare-crows and dummies, or fire sticks and crackers especially during the crop maturation stage in areas frequently raided by bears are suggested. Public awareness should be spread on various aspects of conflicts conducting various conflict scenarios. The ex-gratia schemes should be strengthened and paid in time. A government tribunal may be formed to address grievances arising out of man-bear conflict. Cultivation of crops that discourage bear movement into farm land should be encouraged. Helpline and grievance reporting system may be created and publicized so that people can call up and get help. People should be educated and discouraged to use bear bile as medicine, meat for their consumption, skull and bones as trophies and other body parts for false religious beliefs.

5. Capacity building

Capacity programs should be undertaken for survey/ estimation, crime detection and control.

Opportunities should be created for increased training of staff at various levels including grass root level bodies (EDC/ JFMCs/ BMCs). Basic survey and patrolling equipments may be provided to the frontline staff including appropriate communication devices. Rewards/ special allowances should be provided to staff working in high conflict/ sensitive areas. A field manual may be developed for frontline staff.

Staff facilities should be improved at place of work.

6. Creating Awareness

Mass public awareness campaign should be organized. Standard publicity materials need to be produced showing virtues of bear conservation. Site specific awareness camps need to be organized. The education and awareness programs about ecosystem, conservation, natural history of bears, habitats, feeding habits, behavior, 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.



MEGHALAYA

BEAR CONSERVATION ACTION PLAN MEGHALAYA

2012

Anawaruddin Chaudhury¹, Clement Budnah² and Sunil Kumar³

Project team

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Geographic location: 25°02′ to 26°07′N, 89°49′ to 92°50′E

Area: 22,429 km² **Biogeographic zone:** 9 North East

Biotic Province: 9B (North East- North east Hills)

Forest area: 9496 Km² and forest cover of 17,275 Km² (77.02% of state

geographical area)

Bear habitat range: 6,000 km² (approx.) **Bear Population estimate:** Not available **Human population:** 29.64 lakhs (2011)

Livestock population: Cattle & buffaloes: 910,000 (2007)

Goat & sheep: 386,000 (2007)

6.16.1 Introduction

Meghalaya is located in the north-east India, the word "Meghalaya" literally implying the Abode of Clouds. The state is bounded in the north by Assam and by Bangladesh to the south. Meghalaya is one of the Seven Sister states of India and is also known as the "Meghalaya Plateau". The elevation of the plateau ranges between 150 m to 1961 m. The central part of the plateau comprising the Khasi Hills has the highest elevations, followed by the eastern section comprising the Jaintia Hills Region. The highest point in Meghalaya is the Shillong Peak. With average annual rainfall as high as 1200 cm in some areas, Meghalaya is amongst the wettest places on earth. The western part of the plateau, comprising the Garo Hills Region with lower elevations, experiences high temperatures for most of the year. The Shillong area, with the highest elevations, experiences generally low temperatures. The maximum temperature in this region rarely goes beyond 28°C (82 °F), whereas sub-zero winter temperatures are common. The town of Cherrapunji in the Khasi Hills south of capital Shillong holds the world record for most rain in a calendar month, while the village of Mawsynram, near the town of Cherrapunji, holds the record for the most rain in a year. Meghalaya has a forest cover of 17,275 km²

(FS1 2003), which is 77.02% of its total geographic area. The Meghalayan subtropical forests are considered to be among the richest botanical habitats of Asia. These forests receive abundant rainfall and support a vast variety of floral and faunal biodiversity. The Nokrek Biosphere Reserve and the Balpakram National Park in Garo Hills are considered to be the most biodiversity-rich sites in Meghalaya. In addition, Meghalaya has three wildlife sanctuaries. These are the Nongkhyllem Wildlife Sanctuary, the Siju Wildlife Sanctuary and the Bhagmara Pitcher Plant Sanctuary.

The state falls within the distribution range of three species of bears, namely the sloth bear (*Melursus ursinus*), Asiatic black bear (*Ursus thibetanus*) and Sun bear (*Helarctos malayanus*).

SLOTH BEAR

6.16.2 Distribution and relative abundance

The sloth bear was rarely reported from Meghalaya and there are no recent records. There is a specimen (skull of a male) at Zoological Survey of India, which was obtained from Umsning, Khasi Hills. It was collected by J. Cockburn (Sclater, 1891). Although there is no subsequent specimen

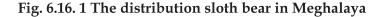
record, hunters near Nongkhyllem Wildlife Sanctuary in Ri-Bhoi district and in West and East Garo Hills could identify from visuals a bear with shaggy hair. Old hunters in Garo, Khasi and Jaintia Hills are familiar with all three species of bears, especially along the southern face of the plateau. There are also unconfirmed reports of the species from Balpakram National Park (Choudhury, 2011). Das et al. (1995) also reported the sloth bear from all the Garo Hills districts, Ri-Bhoi and East Khasi Hills district.

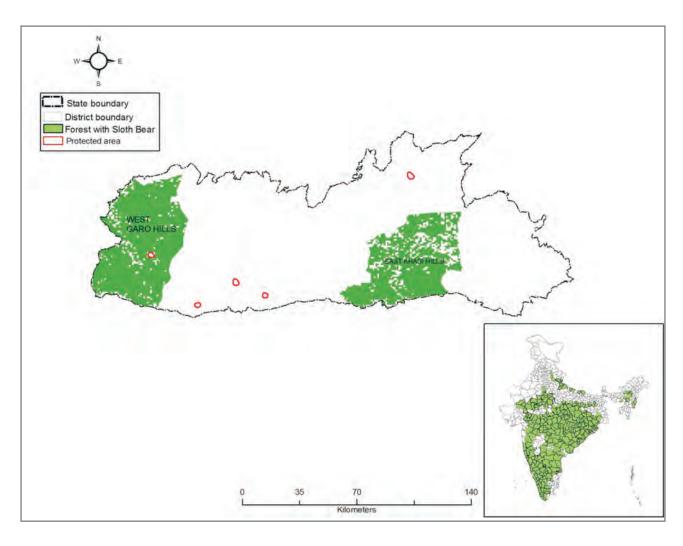
According to a questionnaire survey conducted by Wildlife Trust of India, sloth

bear were reportedly present in two forest divisions of the four present in Meghalaya and these two include PAs such as Nongkhyllem Wildlife Sanctuary and Balpakram National Park (Fig. 6.16.1).

6.16.3 Population estimates

Information is not available on the number of sloth bear in Meghalaya. The results of questionnaire survey indicated that about 25% respondents (out of 180 people interviewed) felt there has been a decline in sloth bear population in Meghalaya.





6.16.4 Conservation Issues

i. Threats to species

Poaching (for bear parts) for sloth bear is not known as it is not reported. The meat of any poached bear is taken as food when available and therefore potential for poaching is always there. Retaliatory killings (to reduce livestock and crop depredations) of any bear are not a major threat in Meghalaya.

ii. Threats to Habitats

The potential sloth bear habitat range in Meghalaya is about 5,000 km2. With the exception of the protected areas, most of the potential sloth bear habitat in Meghalaya is threatened due to slash-and-burn or jhum cultivation, deforestation, 'open cast' and 'rat hole' coal mining. In the plateau area, the mixed subtropical forests are vanishing while some areas are planted with monoculture pine (Pinus kesiya). Construction of roads, cement plants and hydro-power projects have also threatened some of the potential sloth bear habitats. The questionnaire survey revealed that people's dependency on the forest was quite high. Their activities cause major degradation of habitat and are influencing the distribution of sloth bears.

6.16.5 Management actions taken:

i. Protection to species

The only state protection the sloth bear or any other bear is getting is the routine patrolling undertaken by the wildlife wing of the forest department in the protected areas. Other than that, no initiatives specific to bears are being undertaken in the state and it is expected that other conservation work done for wildlife would also benefit the sloth bear and other bear species of the state.

ii. Habitat management

The results of the survey conducted by Wildlife Trust of India indicated that Forest Department does not have required capacity and resources to enforce protection. The survey also revealed that three out of four surveyed divisions felt that staff and financial resources are inadequate to conduct management activities. Two out of four surveyed divisions felt that staff training and skill are inadequate to fulfill management duties.

iii. Management of bear-human interactions

There are a few reports of injury to villagers and forest staff which is however very low and exact species identification is also doubtful. The state also lack in documenting systematically such cases.

iv. Research and monitoring

Some information is available which were from general faunal surveys (Das et al., 1995; Choudhury in press). Apart from this preliminary information, no studies have been undertaken.

v. Limitations

About 80% of all forest land is under the control of the local communities. Although the 'forests' stand transferred as a subject to the District council under the sixth schedule, there is still confusion regarding the responsibilities of wildlife protection and conservation which may be more an issue of interpretation. The district councils are ill staffed, financed and equipped to deal with issues of wildlife protection.

ASIATIC BLACK BEAR

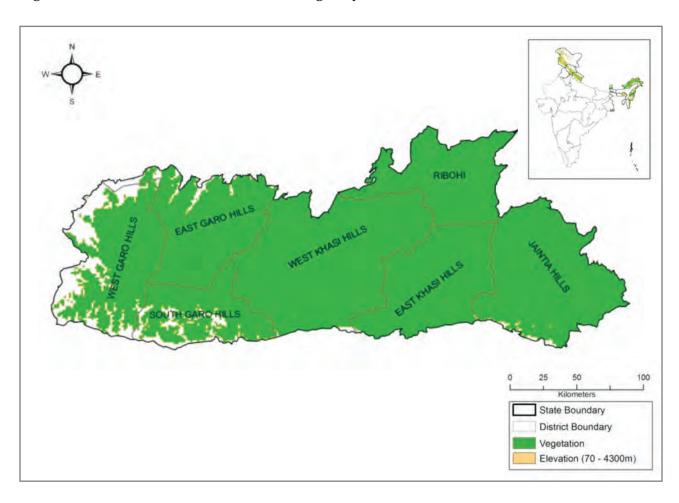
6.16.6 Distribution and relative abundance

In Meghalaya, the black bear occurs widely but patchily from edge of the plains to higher hills including tropical and subtropical forests (60-1,900 m). It has been recorded in all the seven districts of the state (Sathyakumar and Choudhury, 2007). The black bear populations in Meghalaya are present in the protected areas, such as Nokrek National Park, Balpakram National Park, Siju Wildlife Sanctuary and Nongkhyllem Wildlife Sanctuary. It also occurs, probably in low numbers, in some reserved forests such as Narpuh, Saipung, Baghmara, and Nongkhyllem (Choudhury, in press) (Fig. 6.16.2).

6.16.7 Population estimates

Findings of WTI's questionnaire survey indicated that population and abundance data are not available from any forest divisions as no attempt has made to estimate bear numbers by state Forest Department or other institutions. However, responses to questions suggest that in three out of four forest divisions felt that Asiatic black bear population is decreasing based on their relative sighting (direct/indirect) over the years.

Fig. 6.16.2 The distribution black bear in Meghalaya



6.16.8 Conservation Issues

1. Threats to species

Killing for meat and trade is a potential threat but no such killings have been officially recorded by the state forest department. Retaliatory killings (to reduce livestock and crop depredations) have not been reported in recent years, though there are past instances.

2. Threats to habitats:

The potential black bear habitat range in Meghalaya is about 8,000 km². With the exception of the protected areas, large part of the black bear habitat in the state is threatened by slash-and-burn cultivation, deforestation, and mining activities. Also the fact that 80% of forest land is unregulated is potentially harmful.

The questionnaire survey indicated that the dependence of local communities on forests is causing threats to Asiatic black bear and its habitat in Meghalaya. More than 50% of the forest areas are used by local communities for their own purposes.

6.16.9 Management actions taken

1. Protection to species

General wildlife protection activities in the existing PAs are the only activities that the forest department undertakes which are expected to benefit the bear species. The legal protection is provided by the Wildlife (Protection) Act of India 1972.

2. Habitat Management

A sizeable habitat of the black bear in the state is under various protected areas. However, there is a need to further strengthen bear-specific management and protection measures. According to the forest department, about half of the forest divisions enjoy a very good level of protection. However the survey revealed that the current staff numbers are inadequate to enforce the protection in rest of the areas.

3. Management of bear-human interactions

The rescue of two black bear cubs from different parts of Garo Hills, suggests that the human-bear interaction is not uncommon in the state. Livestock (immature cattle, goat and sheep) depredation by black bear was occasionally reported by villagers but no such cases have been reported with the forest department in recent years. There are also reports of injury to villagers which are, however, very low. There is also no systematic documentation of such cases. So far there are no specific management plans for the same in the state.

4. Research and monitoring

No surveys or any other form of research has been conducted on Asiatic black bear in the state.

5. Limitations

It is relatively easier to protect and effect conservation in PAs and reserve forests. However, other forest areas, outside the PA system or those that are not reserve forests are under the community through the district councils and do not have a formal system of protection. This needs to be encouraged.

SUN BEAR

6.16.10 Distribution and relative abundance

In Meghalaya, the sun bear is very rare and occurs possibly in very low densities in

the hills and foothills including tropical and subtropical forests (80-1,500m). Blanford (1888-91) mentioned of its occurrence in Garo Hills. Sclater (1891) mentioned of a male specimen at the Indian Museum from collected from the Garo Hills. Hinton and Lindsay (1926) mentioned of a collection of a juvenile female from Darugiri (mentioned as Duragiri). Darugiri is now a reserved forest located in East Garo Hills District. They also mentioned that 'these bears are frequently seen on the very high trees, seeking berries'. In early 1980s, skin of a freshly killed animal from Balphakram National Park (before declaration as a National Park) was seen by noted conservationist Mrs. Anne Wright (pers. comm. 1987). Interviews with experienced local hunters suggest its presence in Nokrek National Park, Baghmara Reserved Forest and Balphakram National Park (all in Garo Hills), forests in East and West Khasi Hills, and Narpuh and Saipung Reserved Forests in Jaintia Hills (Choudhury, 2011).

The questionnaire survey conducted by Wildlife Trust of India reveals that, Malayan sun bears currently occur in Tura Wildlife Division in East and West Garo hills.

6.16.11 Population estimates

No information is available on the number of Malayan sun bear in Meghalaya as no attempt has been made to estimate bears by the State Forest Department or other institutions. According the questionnaire survey, over 25% respondents felt that the Malayan sun bear population is at its lowest level and continues to decline.

6.16.12 Conservation Issues

i. Threats to species

Poaching (for bear parts) level is not known but must occur. It is reported that the

meat of any poached bear is taken as food. Retaliatory killings (to reduce livestock and crop depredations) have not been officially reported but that does not imply that such occurrences do not happen.

ii. Threats to habitats

The potential sun bear habitat range in Meghalaya is about 6000 km2. Outside the PA system, the rest of the habitats are susceptible to extraction, encroachments and mining. According to the questionnaire survey local people have high dependence on forest for their day-to-day subsistence. Heavy local use was indicated for half of the divisions harboring sun bear in the state.

6.16.13 Management Actions taken

i. Protection to species

No special measures by the state to protect the sun bear in Meghalaya. The staff of the wildlife wing within the forest department patrols the PAs but protection is comparatively less in areas under the district councils.

ii. Habitat management

A sizeable part of the potential habitat of the sun bear in the state is under protected areas. However protection measures need to be strengthened especially in potential habitats such as Nokrek National Park and Balpakram National Park, and Narpuh and Saipung Reserved Forests.

According the questionnaire survey, 75% respondents felt that the frontline staff does not have the necessary capacity and resources to enforce satisfactory protection in monitoring and crime control procedures.

iii. Management of bear-human interactions

Livestock (immature cattle, goat and sheep) depredation by sun bear is occasionally reported by villagers. They also inflict injuries to local villagers who may go into the forest for collecting forest produce. However, there are no proper records maintained by the forest department about such cases. So far there are no specific management plans in place for such conflicts in the state.

iv. Research and monitoring

Research and monitoring on bear species is completely lacking in the state of Meghalaya. Some general review of distribution has been conducted in the past, mainly through secondary surveys (Choudhury, 2003). Recently, a comprehensive status report covering many past records as part of north-east India as a region has been prepared (Choudhury, 2011).

v. Limitations

The limitation to achieving effective conservation is primarily the area under effective control of the forest department is small and the staff is deficient in numbers, skills and equipment to meet the challenge. A larger constraint however is how to organize the areas under the communities and district councils so that effective protection is afforded to these vast forest areas.

6.16.14 Management Actions Proposed

1. Habitat contiguity

Critical bear habitat should be identified within community owned forests for declaration as community reserves. Even if Community Conserved Areas (as envisaged in WPA) is not possible, Smaller village reserves may be encouraged. This has been demonstrated by the work of Wildlife Trust of India in West and South Garo Hills where local communities have come forward with small parcels of jhum land and even forested land which the communities have vowed to set aside for wildlife. Avenues like REDD+ may be explored as a financing mechanism as the forests and the threats to the forests, both lend well to such concepts. The extent of Nongkhyllem Wildlife Sanctuary may be increased and protection measures there and RF strengthened.

2. Management of habitat degradation and fragmentation

Key forest patches need to be selected for non Jhum cultivation and habitats should be improved in already Jhum fallows. The choice of alternate crops (black pepper, passion fruit, coffee, beetle leaves etc.) must be encouraged instead of some of the traditional Jhum crops. Large scale conversion of Jhum areas into commercial plantations of pine, broom stick, rubber, tea, teak, areca nut, should be discouraged around protected areas and critical bear habitats. Alternate green livelihood options (village level eco-tourism) may be promoted. Effort must be taken up to reduce pressure over natural forests from jhum cultivation, deforestation, encroachment and monoculture plantations.

3. Management of developmental activities

Key bear habitats must be protected from all developmental activities outside

PAs. The composition of all environmental impact assessment (EIA) teams for clearance of developmental projects (roads, dams, mines, factories etc.) in the state should contain a representative from Wildlife Institute of India or some leading NGO. All mining activities around PAs, RFs and ecosensitive zones must be stopped. Individual or private mining should be regulated by employing laws/ guidelines or by promoting alternate livelihood options. The possibility of setting aside private forests for carbon trading as an alternative to thwart mining lobbies may be investigated. State should contain a representative from Wildlife Institute of India or some leading NGO. All mining activities around PAs, RFs and eco-sensitive zones must be stopped. Individual or private mining should be regulated by employing laws/ guidelines or by promoting alternate livelihood options. The possibility of setting aside private forests for carbon trading as an alternative to thwart mining lobbies may be investigated.

4. Field survey and monitoring

There is also need for population estimation and systematic monitoring to generate scientific information on the status of bears in the state. Camera trap based surveys should be initiated in the potential areas to verify the presence of sloth bear and sun bear in the state. This will also inform us on the factors limiting the distribution of all the three species of bears in the state. A study should be conducted on trade in bear and bear body parts as well.

5. Awareness campaign

Massive environmental awareness campaign should be initiated against developmental activities which are detrimental to environment and wildlife. Alternately, bears could be included as one of the key species in all ongoing awareness programs. The Ministry of Environment and Forest may consider launching 'Project Bear' at National level to promote the conservation of bears which are otherwise neglected as a group. Good quality audio-visual materials and collaterals (posters, brochures, stickers) in local language may be produced and distributed on bears for awareness. The state can designate one of the day during wildlife week celebrations as BEAR DAY. Public awareness must be increased on the issues surrounding bear ecology, management and human-bear conflict. Good quality audio-visual materials and collaterals (posters, brochures, stickers) in local language may be produced and distributed on bears for awareness. The state can designate one of the day during wildlife week celebrations as BEAR DAY. Public awareness must be increased on the issues surrounding bear ecology, management and human-bear conflict.

6. Capacity Building

Capacity building programs should be undertaken by the state forest department for long-term conservation of bears in Meghalaya. Suitable training modules may be developed for different stakeholders for protection of bears. The efficiency and skill of human resource should be strengthened for increased protection. To activate this, different

stakeholder representatives may be equipped and trained and the frontline staff provided with latest devices and equipments for enhanced protection of bears.

7. Management of hunting and enforcement

The illegal trade and hunting of bear parts and derivatives should be reduced at the primary stage through enhanced enforcement of laws and regulations. Local communities must be involved and motivated to give up consumption of bear meat. Existing network of informers and various law enforcement agencies need to be strengthened. The

state forest department should consider rehabilitation of orphaned bear cubs which are displaced due to various reasons may be rehabilitated. A database can be created on poaching and trade in bear and bear parts. The judiciary can be sensitized on wildlife crimes including bear and a dedicated green bench at state level may be commissioned to deal with all wildlife crimes. bear and bear parts. The judiciary can be sensitized on wildlife crimes including bear and a dedicated green bench at state level may be commissioned to deal with all wildlife crimes. State level may be commissioned to deal with all wildlife crimes.



MIZORAM

BEAR CONSERVATION ACTION PLAN MIZORAM

2012

Krishnendu Mondal¹ and Liandawla² and N. S. Bisht³

Project team Krishnendu Mondal, Vanlalpeka, Rahul Kaul, Sandeep Kr Tiwari and Prajna Paramita Panda **Geographical Location:** 21°58′ to 24°35′ N, 92°15′ to 93°29′ E.

Geographical Area: 21,081 Sq. Km
Biogeographic zone: 9 North-East
Biotic Province: 9B North-East hills

Forest area: 16,717 km² (79.3% of the state geographical area) and forest cover

of 19,117 km²

Bear habitat range:8245 km²Bear Population estimate:Not availableHuman population:1,091,014Livestock population:0.33 million

6.17.1 Introduction

Mizoram, one of the Seven Sister states in the northeastern India, shares its borders with the states of Tripura, Assam, Manipur and with the neighboring countries of Bangladesh and Burma. Mizoram is a land of rolling hills, valleys, rivers and lakes. As many as 21 major hill ranges or peaks of different heights run through the length and breadth of the state, with scattered plains. The average height of the hills to the west of the state is about 1,000 meters. These gradually rise up to 1,300 meters to the east. Some areas, however, have higher ranges which go up to a height of over 2,000 meters. Phawngpui Tlang also known as the Blue Mountain, situated in the south-eastern part of the state, is the highest peak in Mizoram at 2,210 meters. Most prominent hill ranges are oriented in a northsouth fashion providing two prominent aspects, the east facing and the west facing. Mizoram has a geographical area of 21,081 km2. Ninety one percent of its geographical area (19,117 km²) is covered by forest (Department of Environment and Forest, Mizoram; 2012). It has sub tropical and temperate climate. The annual rainfall is 2000-3000 mm. Mizoram has a mild climate, comfortable in summer 20 to 29 °C, never freezing during winter, with temperatures from 7 to 21 °C.

Based on past studies as well as from the field observations, Singh et al. (2002) described the forest types of the state based mainly on altitude, rainfall and dominant species composition. The classification is as follows: 1) Tropical Wet Evergreen Forest, 2) Montane sub-tropical Forest, 3) Temperate Forests, 4) Bamboo Forests, 5) Quercus Forests and 6) Jhumland.

Two species of bears are reported to occur in the state and these includes the Asiatic black bear and the sun bear. Sloth bear was reported from Dampa TR, but the current studies and consultation with state forest officials indicates that the species in not present.

ASIATIC BLACK BEAR

6.17.2 Distribution and relative abundance

The current survey conducted by Wildlife Trust of India indicates presence of Asiatic black bear from all 14 forest divisions and 10 protected areas (Table 6.17.1 and 6.17.2, Fig. 6.17.1) suggesting a reasonably widespread distribution.

6.17.3 Population estimates

Population estimates for Asiatic black bear is not available and no efforts have been made by the state forest department or any other organisations.

6.17.4 Conservation Issues

i. Threats to species

The black bear population in Mizoram is under threats of poaching and hunting for

local consumption. The level of bear human conflict is also high in the state as reported in 47% of the forest divisions of the state. The protection of black bear populations outside protected areas is almost absent. Almost 85% of the forest division indicated Low intelligence network affecting the protection of the species.

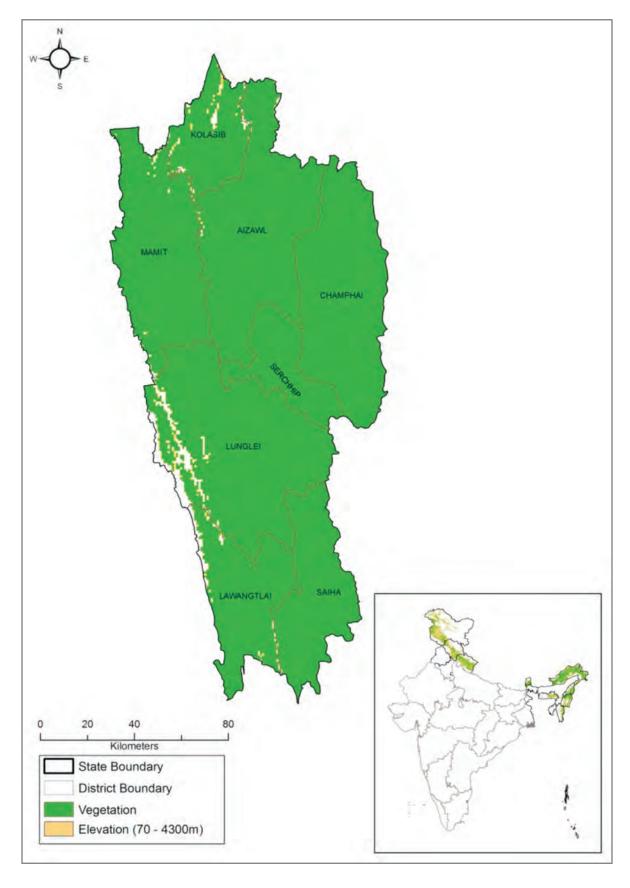
Table 6.17.1. The presence of bear species in different forest divisions in Mizoram

	District	Forest division	Black Bear	Sun Bear
1	Mamit	Mamit	Yes	Yes
2	Champhai	Khawzawl	Yes	Yes
3	Lunglei	Lunglei	Yes	Yes
4	Mamit	Dampa	Yes	Yes
5	Lawngtlai	Lawngtlai	Yes	Yes
6	Lunglei	Tlabung	Yes	No
7	Mamit	Kawrthah	Yes	Yes
8	Aizawl	Aizawl	Yes	Yes
9	Serchhip	N.Vanlaiphai	Yes	Yes
10	Aizawl	Darlawn	Yes	Yes
11	Serchhip	Thenzawl	Yes	Yes
12	Champhai	Champhai	Yes	Yes
13	Saiha	MADC	Yes	Yes
14	Kolasib	Kolasib	Yes	Yes

Table 6.17.2. The presence of bear species in different protected areas in Mizoram

	Protected Area	District	Black Bear	Sun Bear
1	Phawngpui Blue Mountain NP	Lawngtlai	Yes	Yes
2	Lengteng WLS	Champhai	Yes	Yes
3	Murlen NP	Champhai	Yes	Yes
4	Ngengpui WLS	Lawngtlai	Yes	Yes
5	Pualreng WLS	Kolasib	Yes	Yes
6	Dampa TR & WLS	Mamit	Yes	Yes
7	Khawnglung WLS	Lunglei	Yes	Yes
8	Tawi WLS	Aizawl	Yes	Yes
9	Thorangtlang WLS	Lunglei	Yes	Yes
10	Tokalo WLS	Saiha	Yes	Yes

Fig. 6.17.1 The distribution of Asiatic black bear in Mizoram



ii. Threats to habitats

The potential black bear habitats in Mizoram are under threat of habitat degradation and fragmentation due to slash-and-burn or jhum cultivation, deforestation and human settlements in forest areas. Large part of the black bear habitat in the state is threatened due to lack of fund and infrastructure for protection and habitat management as reported by a majority of the forest department officials. There is also lack of manpower in the state Forest Department affecting habitat protection and management.

6.17.5 Management actions taken

i. Protection to species

The black bear is "Vulnerable" to extinction (IUCN, 2012). It is also listed in the Appendix I of CITES (GOI, 1992) and on Schedule II (pt. II) of the Indian Wild Life (Protection) Act, 1972.

ii. Habitat management

Black bear populations in the state are reported to occur in all the 10 protected areas as a result of which a substantial part of their distribution range seems to be under protection. However, no black bear specific management action has been taken by the state forest department.

iii. Management of bear-human interactions

A total of ten conflict cases have been recorded by the state forest department in last five years. The forest department has been providing ex-gratia to victims of unprovoked human-bear conflict in the state. Eleven applications for compensation have been received in last five years, out of which six applications got sanctioned. Two hundred and

forty two cases of crop depredation by black bear and sun bear have been recorded by the state forest department between 2006 and 2011. Eight cases of human attack by black bear and sun bear, including one mortality, has been recorded during this period. However, none of the forest divisions has a conflict management team or specific management plan to mitigate conflict.

iv. Research and monitoring

No specific Asiatic black bear related work in the state has been reported although some information has been generated as a result of work on other species and habitats.

v. Limitations

Lack of data precludes formulation of any effective management or protection plans.

SUN BEAR

6.17.6 Distribution and relative abundance

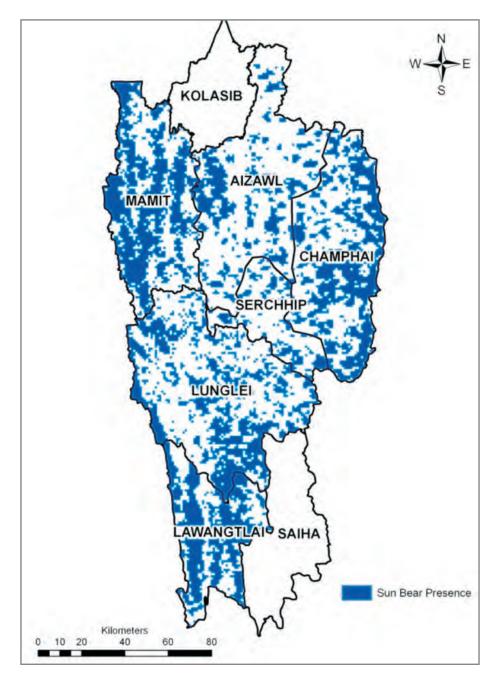
Probably the earliest reference to the presence of the Sun Bear close to Mizoram was by Lewin (1869) who mentioned of its occurrence in Chittagong Hill Tracts. In one of the sites, south of Assam's Cachar district, a sun bear was photographed through camera trap set up by the state forest department in February 2009. This area is now in Pualreng Wildlife Sanctuary in the Kolasib and Aizawl districts. Prior to that, the species had been photographed by camera trap in Dampa Tiger Reserve in November 2006. Forest staff and experienced hunters familiar with the species have reported its presence in Lengteng Wildlife Sanctuary, Murlen National Park, Ngengpui Wildlife Sanctuary and Phawngpui (Blue Mountains) National Park, besides unclassed forests scattered all over the state including Thorangtlang, Tawi and Pualreng

Wildlife Sanctuaries. During the survey conducted by Wildlife Trust of India, 13 forest divisions and 10 protected areas reportedly possessed sun bears in their areas (Table 6.17.1 and 6.17.2, Fig. 6.17.2).

6.17.7 Population estimates

No population estimation of Sun bear has been carried out by the State Forest Department or any other institutions in the state. However, relative estimates may be available through camera trapping exercises that were undertaken as part of the All India Tiger Estimation exercise.

Fig. 6.17.2. The distribution of sun bear in Mizoram



6.17.8 Conservation Issues

i. Threats to species

In Mizoram, sun bear populations are severely threatened due to hunting as well as poaching for trade in its body parts. Live bear cubs area also kept as pets in villages. In some cases the sun bear suffers from human retaliation as a result of human-sun bear conflict. Poaching of sun bears is a critical problem in their areas of occurrence and was reported by about 25% respondents comprising of forest officials in questionnaire interviews conducted by Wildlife Trust of India.

Many villagers suffer from both economic loss due to crop damage and human injuries by Sun bear. The questionnaire interviews conducted by WTI also suggested severe crop depredation by sun bears in Lawngtlai and Thenzawl Forest Divisions. In such cases, locals may resort to retaliatory killings impacting sun bear populations. Conflict is reported as a threat to the bear population in Mizoram in 47% forest divisions.

ii. Threats to habitats

Large part of the Sun bear habitat in the state is threatened due to slash-and-burn (jhum) cultivation. This activity causes deforestation and fragmentation of habitats. The status and distribution of sun bears depends on the extent of availability of lowland forest habitats. Due to conversion of lowland forests in to agricultural areas, plantations and human habitation, most of the suitable sun bear habitats got degraded and fragmented. Bears invade agricultural crop fields for their food requirement and attack people when encountered suddenly. There is also a lack of funds and infrastructure

(reported by over 70% forest divisions) and manpower (reported by 30% forest divisions) for protection and habitat management within state Forest Department.

6.17.9 Management actions taken

Protection to species

Sun bear is found only in the northeastern states in India, and very little management is practiced for protection of its populations. The sun bear is listed as "Vulnerable" in the Red Data Book (IUCN, 2012). It is also listed on Appendix I of CITES (GOI, 1992) and on Schedule I of the Indian Wild Life (Protection) Act, 1972. Other than this legal protection, no active measures are in place to protect sun-bear populations.

ii. Habitat management

No habitat management practice exists for sun bears in Mizoram. Sun bears are at times poached for trade in body parts, and they are also killed by villagers in retaliation against crop damage. No specific management action has been taken up by the state forest department for the protection of Sun bear and its habitat. However, all protected areas in the state have sun-bear populations and thus their habitats are relatively protected. iii. Management of bear-human interactions Human-sun bear interactions include crop depredation by sun bear and retaliatory killing of bear by aggrieved people, poaching of bears for trade in body parts, meat consumption, sale of cubs, human injuries by bear and impacts of human activities or non-timber forest produce collection on bears and habitats. There is also no systematic documentation of such cases. So far, there are no specific management plans for the sun bear-human interactions in the State.

iv. Research and monitoring

There are no regular surveys or monitoring by the State Forest Department or any other institutions/ organization.

v. Limitations

Lack of knowledge and absence of a concerted plan for the species hampers its conservation in a coordinated manner.

6.17.10 Management Actions Proposed

1. Research and monitoring

Surveys should be conducted as a first step to estimate the population of all three bear species. The distribution of bears should be mapped in the entire state. Threats in terms of anthropogenic pressure on habitat, poaching/ hunting pressure must be identified within key bear areas.

2. Protection of bear species

Awareness should be created among local communities on bear conservation. Civil society, security personnel and line departments must be involved for better protection. Adequate skilled and equipped staff must be deputed in all bear ranging areas. Relevant acts like the Wildlife Protection Act (1972), Mizoram Forest Act, Autonomous DC rules and arms act must be strictly enforced. A wildlife crime control cell must be created to help fight wildlife crime. Enforcement agencies such as police, customs and judiciaries must be sensitized. Shifting cultivation may be reduced in key bear areas and degraded areas should be restored. Appropriate incentives may be required to wean people away from unwanted Jhum. Reward incentives may be institutionalized to community based

groups achieving conservation/ protection of important animals including bears.

3. Managing human-bear conflict

Ways how people can co-exist with bears should be propagated through a customised publicity / awareness campaign with clear role for local communities. Ex-gratia payments should be made with faster dispensation which may be possible with creation of a pool of funds. The conflict needs to be managed properly in areas of high conflict with adequately trained teams providing prompt support in situations.

4. Capacity building and infrastructure

The manpower requirements in different protected areas should be met immediately. A cadre of community based foresters may be created to achieve on ground protection. Capacity building programs should be undertaken for frontline staff and community based foresters so that they are technically proficient. Adequate infrastructure may be provided to the staff so that they are able to discharge their duties properly. Rewards/ incentives should be institutionalized to frontline staff for outstanding performance in bear conservation (wildlife conservation).

5. Rescue and rehabilitation

The bear cubs, which are fit for rehabilitation, must be rehabilitated following standard protocols. A rehabilitation/ life time care facility may be created in the state. Rehabilitation staff must be trained properly. The holding facility in the Aizawl Zoo should be increased until life time centre created.





NAGALAND

BEAR CONSERVATION ACTION PLAN NAGALAND

2012

N.P.S. Chauhan¹, Janmejay Sethi², Krishnendu Mondal³ and T.Lotha⁴

Project team

N.P.S. Chauhan, Janmejay Sethi, Krishnendu Mondal, K. Rijingkhum Yimchunger, Rahul Kaul, Sandeep Kumar Tiwari, Dilip Deori and Prajna Paramita Panda Geographical location: 25°06′ to 27°04′N, 93°20′ to 95°15′E

Area: 16,579 km2 (0.68% of the country)

Biogeographic zone: 9 North-East

Biotic Province: 9B (North-East hills)

Forest area: 9,222 km2 (55.62% of the state geographical area)

Bear habitat range: Not known
Bear Population estimate: No known

Human population: 1.98 millions (2011)

Livestock population: 1.42 million (Livestock census 2007)

6.18.1 Introduction

Nagaland is a mountainous state of north-east India of which the Naga hills are the most prominent physiographic feature. The elevation in the state varies from 250 m to 3000 m. Nagaland supports a fascinating array of flora and fauna. The forest types occurring in the state are the Tropical wet evergreen forest, Upper Assam valley tropical evergreen forest, Cane and Bamboo forests, semi evergreen forests, Cachar tropical semievergreen forest, moist deciduous forest, secondary moist mixed deciduous forest, sub tropical hill forest and wet temperate forest (Chauhan et al., 2011). There are eight districts in Nagaland. Agriculture is the main occupation of the people in the state. Physio-graphically, the state has vast undulating terrain and mountainous landscapes that include high hill slopes, hilly dissected terrains, denudated hill slopes, undulating upland, and narrow valleys with presence of perennial streams and moisture supporting rich biodiversity.

Three species of bears are found in Nagaland. These are the Asiatic black bear, the sloth bear and the sun bear.

SLOTH BEAR

6.18.2 Distribution and relative abundance

A survey conducted by Wildlife Trust of India suggests that the sloth bear occurs in three forest divisions (Kiphire Forest Division, Kohima Forest Division and Peren Forest Divison) of Nagaland but these need further confirmation (Table 6.18.1). The species has been reported from Intanki National Park (Choudhury, 2011). Perhaps the species occurred along the foothills near Assam-Nagaland border in the past as most of the old hunters identify it and also differentiate it from the other two species. The shooting near Jorhat in Assam also indicates its presence in the past near Assam-Nagaland border. In eastern Nagaland, especially along the India-Myanmar border, experienced hunters are familiar with the sun and Asiatic black bears but not with the sloth bear. A wildlife census team of the Nagaland Forest Department encountered 11 Sloth bears in Intanki National Park, during a census operation in 1978 (Choudhury, 2011).

6.18.3 Population estimates

No population estimation of sloth bear has been carried out by the State Forest Department or any other institutions in the state.

Table 6.18.1. The presence records of bears in different forest divisions in Nagaland

Forest Division	Black bear	Sun bear	Sloth Bear
Mokokchung	Yes	No	No
Kiphire	Yes	Yes	Yes
Zunheboto	Yes	Yes	No
Tuensang	Yes	Yes	Yes
Phek forest division	Yes	No	No
Wokha	Yes	No	No
Mon Forest Div	Yes	Yes	No
Kohima FD	Yes	No	Yes
Peren FD	Yes	No	Yes
Dimapur FD	Yes	No	No

6.18.4 Conservation Issues

i. Threats to species

Threat of poaching (for bear body parts) is always high but as the species is not very common, not many instances of poaching of sloth bear is known. Officially also there are no reports of any retaliatory killing (to reduce livestock and crop depredations) of sloth bear in Nagaland.

ii. Threats to habitats

The lowland forest areas of Nagaland are threatened by encroachment leading to habitat degradation and fragmentation.

6.18.5 Management actions taken

i. Protection to species

The sloth bear is listed as "Vulnerable" (IUCN, 2012). It is also listed on Appendix III of CITES (GOI, 1992) and on Schedule I of the Indian Wildlife (Protection) Act, 1972.

ii. Habitat management

No bear-specific management and protection measures have been undertaken by the state forest department. However, being present in Intanki Wildlife Sanctuary, the habitat is under legal protection. However, area outside protected area needs to be protected. State forest department has relocated three settlements from Intanki NP to outside the park.

iii. Management of bear-human interactions

No specific management action has been undertaken for sloth bear human interactions in the state. No specific reports of livestock (cattle, goat and sheep) depredation by sloth bear exist in the state.

iv. Research and monitoring

No surveys or monitoring exercises have been conducted in the state by any organisation. Choudhury 2011 has recently undertaken study of the species in the state. Wildlife Institute of India recently carried out

questionnaire surveys to understand the abundance and distribution of the species.

v. Limitations

Lack of focus, understanding of its distribution and abundance, resources and low priority of the species as well as inaccessibility of certain areas have prevented in preparing a bear specific conservation plan in the state.

ASIATIC BLACK BEAR

6.18.6 Distribution and relative abundance

Although Sathyakumar (2001) indicated that there were no recent reports of the species from anywhere in the state, Wildlife Trust of India during the survey undertaken as part of this action plan recorded the presence of Asiatic Black Bear from all ten forest divisions (Table 6.18.1, Fig. 6.18.1).

6.18.7 Population estimates

No population estimation of black bear has been carried out by the State Forest Department or any other institutions in the state.

6.18.8 Conservation Issues

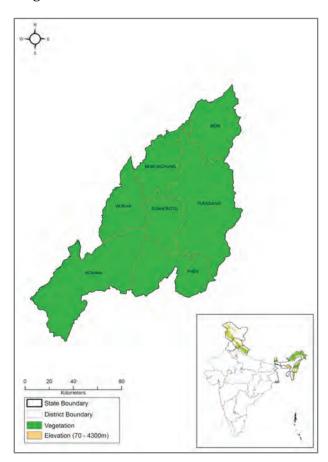
i. Threats to species

Poaching (for bear body parts) levels of black bear in Nagaland is high. A total of 61 poaching cases of black bear and sun bear have been recorded by the state forest department in last five years. Four cases of retaliatory killing of black bear have also been recorded in the state in last five years. Besides, two cases of black bear confiscation have been recorded in 2006-07 in Nagaland.

Ii. Threats to habitats

The potential black bear habitats in Nagaland are under threats of habitat degradation and fragmentation resulted from overgrazing, extraction of non-timber forest produce, illicit cutting and lopping of trees, fruit collection, plantations, expansion of developmental activities.

Fig. 6.18.1. The distribution of black bear in Nagaland



6.18.9 Management actions taken

i. Protection to species

The black bear is "Vulnerable" to extinction (IUCN, 2012). It is also listed in the Appendix I of CITES and is on the Schedule II (pt. II) of the Wild Life (Protection) Act of India, 1972. Besides, the mandatory protection that the law offers, protection activities are being undertaken by the wildlife staff for overall wildlife conservation. However, outside the protected areas the patrolling activities may not be as intense or even non existence.

ii. Habitat management

The four protected areas where Asiatic black bears are found in the state confer legal protection on the habitats of these four areas. Although the territorial forest divisions are mandated to patrol and take cognizance of a wildlife crime in areas outside protected areas, this is often not followed.

iii. Management of bear-human interactions

No specific management action has been taken for black bear human interactions in the state. Twenty cases of bear-human conflict have been recorded by the state forest department in last five years. Ten cases of human injury and a couple of cases of human mortality have also been recorded by the department in last five years. Crop depredations have been recorded on 123 occassion in last five years. However, no application of compensation has been submitted to forest department.

iv. Research and monitoring

No targeted work is being undertaken on the species in the state. The Wildlife

Institute of India carried out questionnaire surveys to understand the abundance of the species. However, results of this are not known.

v. Limitations

Although knowledge about the species in the state is sparse, no efforts have been made to remedy this, perhaps reflecting the priorities of the department in terms of the species under focus.

SUN BEAR

6.18.10 Distribution and relative abundance

The distribution of sun bears is patchy and has been confirmed in the Intanki and Fakim National Parks (Chauhan and Sethy, 2011). In villages situated in the vicinity of these two national parks, sun bears were reported to have been sighted a few times by villagers and indirect signs were also recorded. Both direct and indirect evidences (scats, claw marks and foot prints) of sun bears were observed by inhabitants of these areas. Out of 245 interviewed respondents, 28.2% confirmed presence of sun bear. There were no reports of occurrence of sun bear in Puliebadze and Rangapahar Wildlife Sanctuaries. A questionnaire survey conducted by WTI suggests that this species occurs in four of the ten forest divisions of the state. These are Kiphire, Zuheboto, Tuensang and Mon Forest Divisions.

6.18.11 Population estimates

No population estimation of Sun bear has been carried out by the State Forest Department or any other institutions in the state.

6.18.12 Conservation Issues

i. Threats to species

Poaching of sun bears is a critical problem in their areas of occurrence in Nagaland. Trade of bear parts: gall bladder, meat, skin, claws and teeth, is severely affecting the existing sun bear populations. The villagers suffer from both economic loss due to crop damage (rice, maize, sweet potato, pulses, oilseeds and sugarcane, plum, pumpkin) and human injuries by sun bear in the state. Many of the people in these villages were reported to be involved in illegal hunting of bears and other wild animals, and sale of the body parts (based on surveys).

ii. Threats to habitats

In Nagaland state, sun bear populations are severely affected due to increasing human population and continuous loss of habitat. Habitat degradation and fragmentation has resulted from overgrazing, extraction of nontimber forest produce, illicit cutting and lopping of trees, fruit collection, plantations and expansion of agriculture. Bears invade agricultural crop fields apparently in search of food and attack on people due to sudden encounter.

6.18.13 Management actions taken

i. Protection to species

After the survey conducted by Wildlife Trust of India, the State Forest Department is planning to undertake a survey in different forest divisions to collect information on status of sun bear and its ecological aspects. The sun bear is listed as "Vulnerable" in the Red Data Book (IUCN, 2012). It is also listed on Appendix I of CITES (GOI, 1992) and on Schedule I of the Indian Wild Life (Protection)

Act as amended in 2003. Although the sun bear enjoys legal protection under the Act, the enforcement leaves much to be desired.

ii. Habitat management

Sun-bear habitats within the protected areas are relatively secure but the same cannot be said about important areas outside the PA network. Remoteness of these areas and militancy and law and order problem also make management of wildlife in such areas difficult.

iii. Management of bear-human interactions

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

There are no specific management plans for the sun bear-human interactions in the State and no report of human causalities as a result of sun-bear attacks although it is likely that mutilations may have gone unreported.

iv. Research and monitoring

There are no regular surveys or monitoring by the State Environment and Forest Dept. The Wildlife Institute of India carried out one detailed survey on status and distribution of sun bear and its conflict with human in few states in North East India (Chauhan and Lalthanpuia, 2008; Chauhan et al., 2011).

v. Limitations

Lack of knowledge about the impacts of human activities on the sun bear habitats and vice-versa precludes better management.

6.18.14 Management Actions Proposed

1. Restoration and protection of habitat

Habitat of the bears in Nagaland is threatened on account of shifting cultivation and therefore permanent cultivation may be encouraged wherever possible. It is also imperative for the bear habitats to be managed by identifying and prioritizing areas so that these may then be managed and protected more intensively. Also local communities may be encouraged to declare a few areas as community reserves for better protection. Habitat enrichment should be carried out in key bear habitats. Habitat restoration/ protection should be encouraged as a part of eco-development projects.

Keeping in view of the landholding system in the State, Community-based conservation of bears has to be evolved by declaring Community Bears Conservation Areas (CBCA) or Community Reserve with bear as its flagship after identifying the known habitats of the bears in the State.

Shifting Cultivation is the main factor responsible for destruction of Bears' habitats. It would be the State's endeavor to encourage the Jhumias to take up permanent cultivation instead of shifting cultivation to be supported with incentives as permanent cultivation involves a high investment initially.

2. Removing threats to bear species

Un-regulated hunting of bears for its meat, fur, gall-bladder is responsible for depletion of bears population. Hunting needs to be regulated with the help of village authority. Do's and Don'ts are to be framed by Villages for protection of the bears in their jurisdictions. In other words, regulated hunting will save the bears from indiscriminate destruction. For this, sensitization, workshops, wildlife education, seminars would be essentially required. Anti-poaching camps should be set in those areas and these may involve local communities. Alternative livelihoods can be provided to people to give up hunting. Emphasis should be given on customary laws, rules and procedures for better enforcement. A community based enforcement network may be established at village level.

3. Improvement of enforcement

Wildlife crime control cell must be strengthened. For better mobility, appropriate vehicles and communications, patrolling and monitoring equipments should be provided to frontline staff. Manpower has been a problem in most areas generally and this should be rectified if impacts have to be made.

4. Research and monitoring

All known bear habitats should be surveyed and mapped in the state. Bear population must be estimated and monitored in key areas. Community level management practices should be developed. A standard protocol must be developed for bear population

estimation. Capacity building should be done among local communities for monitoring bear populations in key bear areas. Justifying the diversity of Bears in the country and their vulnerability, it would be most appropriate to take up Bears conservation in Project Mode like that of Project Tiger and Project Elephant, etc. to protect the gene pool of the Bears in the country.

5. Creating Awareness

For wildlife conservation, involvement of local people, field managers, staff and their support is necessary. Through education and awareness programmes, conservation ethics can be inculcated among these local people. Mass public awareness campaign should be organized in the state. Standard publicity materials need to be produced. By affording bears an important status in the conservation agenda of the state, its conservation can be integrated with that of other more focal animals.

Constitution of village committees would help in confidence building and awareness messages will help to gain community support for anti-poaching endeavors.

6. Improvement of funding

Financial resources should be generated for bear conservation. Separate provision may be created for financing bear conservation within MoEF. Utilization of appropriate channels of funds (REDD+ etc.) may be employed gainfully for the conservation of habitats and the bears and other species.

7. The rescued abandoned

Bear Cubs are being brought frequently to the Zoo by the villagers and the zoo does not have enough infrastructures to host these animals. There has to be a synergy between in-situ and ex-situ conservation of bears to tackle this problem.



ODISHA

BEAR CONSERVATION ACTION PLAN ODISHA

2012

Usham Singh¹, Sandeep Kumar Tiwari², Krishnendu Mondal³ and J.D. Sharma⁴

Project team

Rudra Mahapatra and Prakash Mardaraj, Rahul Kaul, Sandeep Kumar Tiwari, N. V. K. Ashraf, Prajna Paramita Panda, Krishnendu Mondal

Geographic location: 17° 49'N to 22° 34'N, 81° 27'E to 87° 29'E

Biogeographic zones: 6. Deccan Peninsular, 7. Gangetic plain, 8. Coasts

Biotic province: 6b.Deccan Peninsular -Chota Nagpur, 6C. Deccan Peninsular

Eastern highlands 7b. Gangetic plan-lower gangetic plan and 8b

Coast- East coast

Forest Area: 48,903 km² (31.41% of the geographical area)

Bear habitat range: 36,264 km²

Bear population estimate: NA

Human population: 41,947,358 (2011 Census)
Livestock population: Cattle: 14,280,559 (2003)
Buffaloes: 14,38,875 (2003)

Goats: 59,73,919 (2003)

6.19.1 Introduction

The state of Odisha is located on the east coast of Indian Peninsula and occupies a total area of 155,707 square kilometers. It is bound on the east by the 450 kilometer coastline of the Bay of Bengal; in the south by the state of Andhra Pradesh; in the west by the state of Chhattisgarh and in the north by the states of Jharkhand and West Bengal. With a blend of several physiographical features in Orissa, the state is divided into five morphological units: the Orissa Coastal Plain in the east, the Middle Mountainous and Highlands Region, the Central plateaus, the western rolling uplands and the major flood plains (http://www.odisha.gov.in). Odisha is drained by three major rivers, namely Mahanadi, Brahmani and Baitarani apart from few small ones. The State forest cover is represented by four forest types, viz., Northern Tropical Semi-evergreen Forests, Tropical Moist Deciduous Forests, Tropical Dry Deciduous Forests and Tidal Mangrove Forests. The diverse forest type supports several unique, endemic, rare and endangered floral and faunal species.

The climate of Odisha that hugs the coast of the Bay of Bengal is represented by tropical monsoon weather. Searing hot summers with considerably high monsoon downpours and cool and pleasant winters mark the Odisha climate. The weather of Odisha can be classified under three heads namely, summer, monsoon and winter. Odisha, being a coastal state is also subjected to the strong cyclonic gales and winds that hail from the Bay of Bengal. Consequently, voluminous rains drench the coast every year during the peak months of July-August followed by another spell in October-November. Winters are pleasant and more or less dry, save a little rainfall of about 2.5 cm to 5 cm in the northern fringes of Odisha.

Sloth bear (*Melursus ursinus*) is the only bear species found in Odisha. Previously, the distribution of sloth bear covered almost the entire state, but in last two decades, its distributional range decreased to half due to massive habitat destruction by mining and deforestation (Dutta S.K. pers comm.).

6.19.2 Distribution and relative abundance

Of 30 districts, in the state of Odisha, the distribution of sloth bear is recorded in 12. These are Angul, Sambalpur, Khordha, Koraput, Malkanigiri, Rayagada, Dhenkanal, Nayagad, Boudh, Ganjam, Nabarangpur and Puri. Out of 50 forest divisions in the state, bear presence has been recorded from 44 forest divisions (including wildlife divisions and territorial divisions) (Table 6.19.1, Fig. 6.19.1). Bear occurs in 14 out of 19 protected areas of the state, namely Simlipal Tiger Reserve, Satkosia Tiger Reserve, Chandaka Wildlife

Sanctuary, Sunabeda Wildlife Sanctuary,
Baisipalli Wildlife Sanctuary, Karlapat Wildlife
Sanctuary, Kuldiha Wildlife Sanctuary,
hadagarh Wildlife Sanctuary, Kapilash
Wildlife Sanctuary, Bamra Wildlife Sanctuary,
Debrigarh Wildlife Sanctuary, Khalasuni
Wildlife Sanctuary, Kotagarh Wildlife
Sanctuary and Lakheri Valley Wildlife
Sanctuary. Nandankanan National Park is
reported to have captive sloth bears in their
facility.

The contiguous habitat between Odisha, Andhra Pradesh and Chhattisgarh allows

Table 6.19.1. Presence of sloth bear in different forest divisions in Odisha

	Division	Presence	S.No	Division	Presence	S.No	Division	Presence
1	Satkosia WL	Yes	18	Cuttack	Yes	35	Bamra WL	Yes
2	Rairakhol	Yes	19	Boudh (T)	Yes	36	Simlipal	
3	Hirakud WL	Yes	20	Paralekhemundi	Yes		Tiger Reserve	Yes
4	Athamalik	Yes	21	Berhampur	Yes	37	Ghumsur North	Yes
5	Angul teritorial	Yes	22	Puri	?	38	Ghumsur South	Yes
6	Bhubaneswar city	No	23	Khariar	Yes	39	Phulbani	Yes
7	Chandaka WL	Yes	24	Sunabeda (WL)	Yes	40	Baliguda	Yes
8	Koraput teritorial	Yes	25	Sundargarh	Yes	41	Mahanadi	No
9	Nabarangpur (T)	Yes	26	Deogarh	Yes	42	Kalahandi (North)	Yes
10	Jeypore (T)	Yes	27	Keonjhar	Yes	43	Kalahandi (South)	Yes
11	Malkanigiri (T)	Yes	28	Keonjhar (WL)	Yes	44	Subarnapur	Yes
12	Rayagada (T)	Yes	29	Baripada	Yes	45	Bolangir	Yes
13	Khurdha (T)	Yes	30	Karanjia	Yes	46	Bonai	Yes
14	Chilika WL	No	31	Rairangpur	Yes	47	Rourkela	Yes
15	Dhenkanal	Yes	32	Balasore (WL)	Yes	48	Bargarh	Yes
16	Nayagad (T)	Yes	33	Sambalpur North	Yes	49	Mangrove FD	No
17	Athagarh	Yes	34	Sambalpur South	Yes	50	Bhadrak	

6.19.3 Population estimates

No scientific study that would determine the population of sloth bear in Odisha has been carried out by the Odisha State Forest Department or any other organisations. Population estimates of sloth bear , carried out by the state forest department are available from only three forest divisions such as Jeypure (n=78), Malkinigiri (n=600) and Khariar (n=107) for the year 2010-2011. However, these estimates have to be validated.

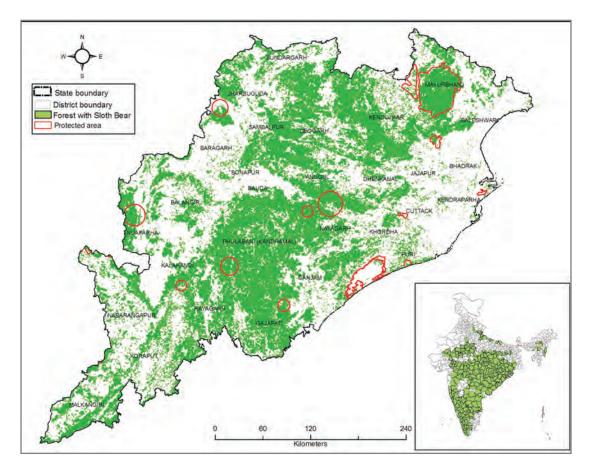
6.19.4 Conservation Issues

i. Threat to the species

Out of the 500 plus human attack cases reported in Odisha in last five years, sloth bears were killed in five instances. However,

combining other sloth bears death cases (Including poaching), the total death was recorded to be 26. In most parts of the distribution range of sloth bear, poaching has been recorded, mainly due to its demand of gall bladder. Nine sloth bears are reported to have been poached in the state in last five years. Hence, based on only the recorded cases by the forest department, the total number of sloth bears killed is over 30 in last five years. A number of sloth bears (n=8) died in the state due to road and train accidents in last five years as reported by the state forest department. It is also reported that the bears might be poached/hunted in some areas but access to these areas is limited due to security issues. Trade of live bear cub and bear body parts poses a direct threat to the animal and its future survival in the state.

Fig. 6.19.1. The distribution of sloth bear in Odisha



i. Threat to the habitat

The wildlife habitat in Odisha is under constant threat of degradation and shrinkage due to encroachment, fragmentation and developmental activities to cater to the need of the increasing human population. This has lead to marked reduction of productive habitat for bears and declining sloth bear population in the state. Mining and stone quarrying have been recognized as a major threat to the habitat, severely disturbing the eco-system and making it sub-optimal for the sloth bear.

6.19.5 Management actions taken

i. Protection to Species

The sloth bear is listed as "Vulnerable" in the Red Data Book (International Union for Conservation of Nature and Natural Resources IUCN 2012). Sloth bear is also protected in the state under Schedule I of the Wild Life (Protection) Act as amended in 2003 (GOI, 1972; 2003). No specific measures have been taken up so far by the Odisha State Forest Department for the protection of sloth bear in particular. However, some pro-active conservation actions taken by various Govt. and non-Govt. agencies have been effective in checking trade of bear cub and body parts to some extent.

ii. Habitat management

No concrete conservation and management plan for the species is in place due to lack of baseline information and absence of any research on the habitat, distribution and threats to bears. However, declaration of large number (1 notified NP, 1 proposed NP and 19 sanctuaries) of protected areas by Odisha Government has provided considerable protection to sloth bear habitats in the state.

iii. Management of bear-human conflict interaction

Odisha State Forest Department has undertaken compensation schemes to mitigate human-bear conflict cases. A total of 480 cases of human injuries and 63 cases of human death due to bear-human conflict have been recorded in last five years. Against the total of 537 compensation application filed between 2006 and 2011, the Govt. has approved 484 compensations and awarded ex-gratia fund of Rs. 1,04,00,140 between 2006-2011.

iv. Research and Monitoring

Limited research work aimed specifically at conserving sloth bear has been done in Odisha. The survey conducted by Wildlife Trust of India, however, brings out valuable information with respect to sloth bear-human conflict.

v. Limitations

a) Presence of armed conflict

One of the prime limitations in conserving sloth bear in Odisha is the wide-spread and large scale conflict with naxals, in the sloth bear distribution areas mainly in Malkanigri. Managers often face challenges in implementing conservation program in naxal affected areas and naxalites' presence invites security forces and their large scale presence may have an impact on the movement and behavior of the animal.

b) Mining and stone quarrying

Mining and stone quarrying, not only cause an irreversible damage to the habitat, but their operational activities and blasting of stones affect the animal's behavior and ecology. The mining activities have affected the bear habitat adversely in the areas of

Sambalpur, Angul and Keonjhar. Hence, mining issue in the state is now a serious environmental problem as it threatens the few remaining forest areas.

6.19.6 Management actions proposed

1. Create Baseline and planning Statewide survey

A state-wide survey on the status and population of sloth bear, together with sampling of vegetation to understand quality of habitats is urgently required. The exercise would help identify potentially significant areas for conservation of sloth bear, areas that are highly suitable but threatened due to developmental activities and areas that have good habitat which otherwise can be recovered with suitable population recovery program and other management interventions. Key bear habitats should be identified and mapped along with the conflict hotspots. Local Universities/ NGOs/ Institutions/ communities should be collaborated in the areas of bear research and management.

2. Habitat management

Potential bear habitats should be identified, assessed and mapped in the entire state. Key habitats may be prioritized and recognized. Eco development activities should be strengthened in fringe areas of key bear habitats. Site specific habitat restoration plan should be formulated and executed in bear habitats.

It is often identified that the locals collecting NTFP and unsustainable dependency to forest, have been a cause for habitat loss. However, the fact is that the issue of forest conservation and

provision of livelihood should be addressed collectively. When locals become the primary party, only then forest can be effectively protected and this can be achieved when the need of locals are fully understood and met through appropriate measures.

3. Human Bear Conflict

The dynamics of conflict should be assessed in conflict hotspots in the entire state. The rapid response teams may be constituted including the local communities at the divisional level, especially in high conflict zones. Awareness activities should be undertaken to involve communities in conflict management. A corpus fund can be created in each division to mitigate conflicts. Bear mauling should be properly assessed and an intermediate category may be created between death and injury to provide proper compensation to the victims. Adequate infrastructure should be created for addressing conflict scenarios. Separate guidelines should be provided to the officers to declare habitual problematic individuals as rogue (for capture and rehabilitation).

4. Protection of bear

Baseline information should be generated on bear trade and the communities involved in the poaching activities and their modus operandi. An intelligence network should be developed to deter instances of bear poaching and trade. Better coordination between stakeholders mainly the forest department officials and law enforcement agencies can help check animal poaching and control mob during man-animal conflict situation.

Training on legal and enforcement aspects on bear ranging divisions should be made mandatory to strengthen protection mechanism for crime control. Legal cell should be created and prosecution mechanism should be strengthened. A panel of green lawyers could be created in the state by engaging eminent legal practitioners. Stray and problematic bears should be reported and properly monitored. Information should be shared to appropriate enforcement authorities with emphasis on inter-state network. There is an urgent need to form patrolling units, comprising of experts in veterinary, animal sciences, managers and ground staff who would rescue the animals, taking consideration of the animal's well being and provide rapid actions in conflict cases in the state.

5. Training and capacity enhancement

To check the rising trend of sloth bearhuman conflict and its poaching, forest officials especially the ground staff are required to be effectively trained. Policy should be put in place that requires the forest officials posted in identified high conflict areas or areas prone to poaching should first receive adequate training. Often, it is found that staff are caught unaware in a conflict situations and most of the time the angry mob blames the forest department for the injuries they have suffered or the loss of lives that occur due to conflict. Capacity of the forest department staff should be enhanced to put an end to illegal trade to live bear cubs and body parts. Young and dynamic staff may be employed in naxalite prone areas. Periodic evaluation of capacity building programs should be done. Rewards/ incentives may be

provided to frontline staff and local communities for outstanding performance in bear conservation.

Dedicated rescue vehicles design for the purpose of conflict mitigation should be provided to the state.

Forest officials are often given the task of monitoring the large administrative areas with limited travel and logistic support. In order to effectively patrol the area, adequate man-power and good infrastructure are the prime requisites.

6. Awareness and education

Where there is a man-animal conflict, the attitude of the locals towards the animal has been often found negative as they are the one who suffer the damage either in the form of injury or death and/or loss of crops. They put blame entirely on the state forest department and believe that the department is the only owner of sloth bear and they should check the animal from entering into human dominated space. In such a scenario, education drive has been regarded as an effective tool in shaping the local's attitude and in integrating local people in various conservation programs. Informing them about Do's and Don'ts becomes an effective means to self-protection from potential animal attack. Hence, village level institutions should be trained to spread and promote sloth bear conservation. Corporate sector/ NGOs/ NGIs could be involved in funding and undertaking certain components of the sloth bear conservation plan. A mechanism for local community participation in bear conservation in aspects of planning, decision making and execution should be developed. Effective and responsible media coverage on

threats and conservation initiatives of bear will help sensitize people.

7. Bear welfare

A holding facility/centre with state of the art facilities for bears should be developed. Bear rescue data may be maintained using well designed protocol and used for designing the conservation of the species. The possibilities of rehabilitating rescued bears should be explored.



RAJASTHAN

BEAR CONSERVATION ACTION PLAN RAJASTHAN

2012

Anil K. Nair¹ and A. C. Chaubey²

Project team
Rakesh Chourey, Anil K Nair, Rahul Kaul, Sandeep Kumar Tiwari,
Prajna Paramita Panda, Krishnendu Mondal

Geographical location: 23° 3′ - 30° 12′ N, 69° 30′ - 78° 17′E

Area: 3,42,239 Km²

Biogeographic zones: Zone 3 - Indian Desert and Zone 4- Semi Arid

Biotic Province: 3B Thar Desert, 4A Punjab Plains and 4B Gujarat Rajawara

Forest Area: 32,639 Km² (9.54% of the state geographical area)

Bear habitat range: 10,402 Km² **Bear Population estimate:** Not known **Human population:** 6,86,21012 (2011)

Livestock population: 56.66 million (Livestock census 2007)

6.20.1 Introduction

Rajasthan is located in the northwestern part of the subcontinent. It is bounded on the west and northwest by Pakistan, on the north and northeast by the states of Punjab, Haryana, and Uttar Pradesh, on the east and southeast by the states of Uttar Pradesh and Madhya Pradesh, and on the southwest by the state of Gujarat. The state has an area of 342,239 km2. (http://rajasthan.gov.in).

In the west, Rajasthan is relatively dry and infertile; this area includes some of the Thar Desert, also known as the Great Indian Desert. In the southwestern part of the state, the land is wetter, hilly, and more fertile. The climate varies throughout Rajasthan. On average winter temperatures range from 4° to 28° C and summer temperatures range from 25° to 48° C. Average rainfall also varies; the western deserts accumulate about 100 mm (about 4 in) annually, while the southeastern part of the state receives 650 mm (26 in) annually, most of which falls from July through September during the monsoon season (http://rajasthan.gov.in).

The remarkable feature of Rajasthan is the Aravalli range, the oldest folded mountain range in the world. It intersects Rajasthan from end to end, diagonally running from Delhi to the plains of Gujarat for a distance of about 692 km. The forest area of the State is 32,639 Km² which is 9.54% of the state geographical area. The forest cover is 16,087 Km². This includes very dense forest 14 km², moderate dense forest 4,456 km² and open forest 11,380 km² (FSI, 2005). The State has two forest types, Tropical Dry Deciduous (88.30%) and Tropical Thorn Forests (6.18%) and the remaining 5.52% are Plantation/TOF (FSI, 2011). Only one species of bear is present in Rajasthan i.e. sloth bear (*Melursus ursinus*).

6.20.2 Distribution and relative abundance

Rajasthan is the western most limit of sloth bear's global distribution, where temperature ranges up to 480 C. Sharma (2002) provided first hand information on the distribution of the sloth bear in Rajasthan including information from the wildlife census reports of 23 Protected Areas and from secondary sources such as gazetteers, other published information and personal communication from PA Managers and Range officers. Sloth bear has been confirmed from 15 PAs and Sharma quoted Adams (1900) confirming the historical records of sloth bears upto Sirohi, Jaswantpura (Sirohi), Jalore and Sewana in Barmer.

During the recent survey conducted by Wildlife Trust of India in different wildlife divisions of Rajasthan for preparation of the State Action Plan, the sloth bear population was found to be distributed in 14 districts;

Chittorgarh, Kota, Bundi, Baran, Bhilwara, Sawai Madhopur, Sirohi, Jalor, Karauli, Dhoulpur, Pali, Ajmer, Rajsamand and Udaipur. The sloth bear population was reported as highest in Udaipur, Mt. Abu and Sawai Madhopur (State Census data 2010-11) (6.20.1). The total area of bear distribution in the State is 10,402 km². Jhala et al. (2011) had estimated sloth bear distribution range in the State as 640 Km² in 2010 but no estimates are available for the earlier years. The presence of sloth bear in different protected areas (PA) is given in table 6.20.1.

6.20.3 Population estimates

The population estimate for sloth bear in different Forest Divisions (FD) for 2010-11 was made by the State Forest Department which includes Udaipur (n=244) followed by Mount Abu (n=182), Ranthambore (n=130), Sirohi (n=46), Karoli (n=45), Kota (n=39), Dholpur (31), Jalore (n=27) and Bhilwara (n=5). These estimates were based on waterhole count census method, and hence could be at the best considered as relative abundance index. Validations of these counts have to be made.

Fig. 6.20.1 The distribution of sloth bear in Rajasthan

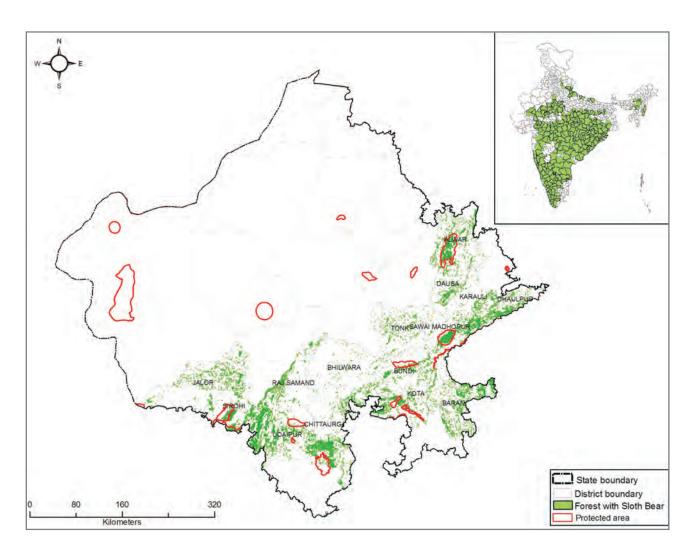


Table 6.20.1. The presence records of sloth bear in different protected areas in Rajasthan

	Protected Area	District	Presence of sloth bear
1	Jamwa Ramgarh WS	Jaipur	No
2	Jawahar Sagar WS	Kota	Yes
3	Bandh Baretha WS	Bharatpur	No
4	Bassi WS	Chittorgarh	Yes
5	Sawai Mansingh WS	Ranathambore	Yes
6	Mount Abu WS	Mt. Abu	Yes
7	Nahargarh WS	Jaipur	No
8	National Chambal WS	Kota	No
9	Shergarh WS	Baran	Yes
10	Ramgarh Visadhari WS a	Bundi	Yes
11	Sajjan Garh WS	Udaipur	No
12	Sitamata WS	Udaipur	Yes
13	Kela Devi WS	Karoli	Yes
14	Jaisamand WS	Udaipur	Yes
15	Kumbhalgarh WS	Udaipur	Yes
16	Bhainsrodgarh WS	Chittorgarh	Yes
17	Darrah WS	Kota	Yes
18	Desert NP	Jaisalmer	No
19	Sariska TR	Sariska	No
20	Todgarh Raoli WS	Ajmer	No
21	Phulwari Nal WS	Udaipur	No
22	Kesar Bagh WS	Dholpur	Yes
23	Tal Chappar WS	Churu	No
24	Van Vihar WS	Dholpur	Yes
25	Ram Sagar WS	Dholpur	Yes
26	Ranathambore NP	Sawai Madhopur	Yes
27	Keoladeo NP	Bharatpur	No

6.20.4 Conservation Issues

i. Threats to species

The Sloth Bear in Rajasthan doesn't have any major threat of poaching or live cub trade neither have been any incidences of bear body part recovery by the anti poaching teams of the State Forest Department or other law enforcement agencies till date. This is largely due to the conservation ethics of the people of this State who revere wildlife. The species do face threat due to increased Human Bear Conflicts (HBC) in Mt. Abu and Jaswantpura (Sirohi district). The first incidence of retaliatory killing of one sloth bear was reported very recently in Jaswantpura (Sirohi district), besides there have been sparse incidences of conflicts in Tonk, Kota, Baran, Pratapgarh and Dholpur as reported by the State Forest Department.

ii. Threats to habitats

The biggest threat to the species in the State is habitat degradation, fragmentation and habitat loss leading to increased conflicts with humans. Construction of highways and roads through wildlife habitats is also one of the factors contributing to fragmentation of the bear habitat with reports of sloth bears being killed on these highways.

6.20.5 Management actions taken

i. Protection to species

The sloth bear is protected under Schedule I of the Indian Wildlife (Protection) Act (1972). Most of the PA management plans in the State are made with larger cats in focus. So far, there is no sloth bear specific management or restoration plan prepared or being undertaken by the department even for non tiger PAs. There are no dedicated anti

poaching units operational under any of the wildlife division's, as most of the anti poaching operations are carried out by the flying squads in the divisions together with other law enforcement agencies. Most of the wildlife divisions don't have the required infrastructure and logistics like vehicle, equipment and trained manpower for an effective flying squad to conduct patrolling of the important wildlife areas.

ii. Habitat management

Sloth bear habitats are protected inside different protected areas (PA) of the State. However, there are no bear specific habitat management plans being implemented by the State Forest Department. Degradation of forests due to over-exploitation by humans and use of forest edges by humans are the major issues which need to be managed efficiently in the State.

iii. Management of bear-human interactions

There have been no incidences of rescue or rehabilitation of sloth bears but Bear Human Conflicts (HBC) are prominent in two of the bear distribution ranges of the State i.e. Mt. Abu and Jaswantpura in Sirohi district and Sunda Mata in Jalore district besides occasional conflict reports from other bear distribution ranges. There has been no specific training for wildlife staff of the State to manage bear-human conflicts. All the forest and wildlife managers have been authorized to dispense compensation cases for bearhuman conflicts at the divisional level. The highest numbers of compensation claims were in 2010 from Jalore (Sunda Mata) where 10 cases of conflicts were reported. There have never been incidences of rescue or rehabilitation of Sloth Bears from the State.

iv. Research and monitoring

Only one study on bear ecology and conflicts in Mount Abu was carried out by the Wildlife Institute of India. The State of Rajasthan does not have scientific information on sloth bear distribution, abundance and conflicts; hence it is strongly recommended that the State must initiate research projects on sloth bear population estimation and habitat evaluation on priority basis with technical support of research institutions/organizations.

v. Limitations

The lack of scientific database on bear status, distribution, population and its habitat is the primary limitation for the bear conservation in the state.

6.20.6 Management Actions Proposed

1. Research and monitoring

There is a need to conduct a scientific study on the distribution, population, habitat and behaviour of sloth bear in Rajasthan at the earliest. The current and potential threats need to be identified. A protocol for future monitoring should be developed in the State. Awareness on bear conservation should be spread to local communities, managers, policy makers and media.

2. Habitat management

The potential sloth bear habitats with low or no bear population should be identified in the State and prioritized for protection. Habitat restoration activities have to be taken up in the bear habitats that have been identified by the State Forest Department in Aravalli and Vindhyan hill ranges.

3. Protection of the species

Adequate manpower should be provided in different FDs for the protections of sloth bear. Infrastructure, mobility and communication facilities should be given to the frontline forest staff for better protection. Incentives should be given to the staff who is working in wildlife areas. A nodal agency should be appointed at central and state level with appropriate expertise. Required financial resources should be ensured for the protection of sloth bear. More intensive protection maybe provided in Jalore, Sirohi and Pali districts for conserving the bear population in these areas.

4. Managing human bear interactions

Awareness should be spread to local communities on human bear interactions. Provision of compensation/ ex-gratia for human injuries, death and crop loss in areas outside protected area should be ensured. Food and water sources for sloth bears in degraded habitats should be managed during lean season. Ecodevelopment activities should be taken up by the state forest department in fringe bear areas.

5. Awareness and education

The communication with the local communities should be strengthened for sensitizing locals. Village level interactions may be organized and local people can be trained on conflict scenarios to spread and promote sloth bear conservation. The corporate sector, NGOs and NGIs should be involved in funding certain components of the sloth bear conservation plan. Training programs should be organized for forest

department staff to deal with bear conflict emergencies at divisional level.

6. Capacity building

Regular training program should be organized for frontline staff on animal

crime detection and investigation. All the capacity building programs should be evaluated timely. The capacity of frontline forest department staff should be enhanced. An information network may be developed in the state to ensure better protection of sloth bear.



SIKKIM

BEAR CONSERVATION ACTION PLAN SIKKIM

2012

S. Sathyakumar¹, Pradeep Kumar² and Anil Mainra³

Project team
S. Sathyakumar and Sushant Sharma

Geographical location: 27° 05' to 28° 09' N, 88° 56' to 88° 56' E

Area: 7,096 Km²

Biogeographic zone: 1 Trans-Himalaya and 2 Himalaya

Biotic Province: 1B Tibetan Plateau and 2C Central Himalaya

Forest area: 5841.39 Km²

Bear habitat range: 2882Km² (81.31% of state geographical area) and forest cover of

3359 Km²

Bear Population estimate: Not Known **Human population:** 607,000 (2011)

Livestock population: Cattle & buffaloes: 186,473

Goat & sheep: 109,143

6.21.1 Introduction

Nestled in the Himalayas and endowed with exceptional natural resources, Sikkim is a hotspot of biodiversity and development. Though small in size, yet Sikkim has been identified world over as an important repository of germplasms of unknown dimensions. Sikkim is a small (7,096 km²) landlocked Indian State located in the eastern Himalayan Mountains. The state shares its borders with Nepal to the west, China's Tibet Autonomous Region to the north and east, and Bhutan to the southeast. The Indian State of West Bengal lies to the south. With around 607,000 inhabitants (2011), Sikkim is the least populous State in India.

(http://www.sikkimipr.org). Almost the entire State is hilly, with an elevation ranging from 280 m to 8,585 m. Sikkim, in the west is bound by the north-south spur of the Great Himalayan Range which includes the world's third highest peak, situated on the border between Sikkim and Nepal

(http://www.sikkimipr.org). Sikkim's climate ranges from sub-tropical in the south to tundra in the northern parts. The tundra-type region in the north is clad by snow for four months every year, and the temperature drops below 0 °C (32 °F) almost every night. The peaks of north-western Sikkim are perpetually frozen. Most of the inhabited regions of Sikkim,

however, experience a temperate climate, with the temperatures seldom exceeding 28 °C (82 °F) in summer or dropping below 0 °C (32 °F) in winter; the mean monthly summer temperature is 15 °C. The average annual temperature for most of Sikkim is around 18 °C (64 °F)

(http://www.sikkimtourism.travel). Sikkim is one of the few states in India to receive regular snowfall. The snow line ranges from 20,000 feet in the north of the state to 16,000 feet in the south (http://www.sikkimtourism.travel). Owing to its altitudinal gradation, the State has a wide variety of flora and fauna, from tropical species to temperate, alpine and tundra ones, and is perhaps one of the few regions to exhibit such diversity within such a small area. Nearly 81% of the area of Sikkim comes under the administration of its forest department (Anon, 2009). In Sikkim, only Asiatic black bear is distributed as the Tibetan brown bear (*Ursus arctos pruinosus*) that was earlier reported as 'present' in the upper reaches of Khanchendzonga NP and in suitable undisturbed alpine areas in Sikkim (Gee, 1967; Sathyakumar, 2001) is possibly locally extinct now. With the exception of two unconfirmed reports, there has been no recent confirmation of the brown bear in Sikkim (Sathyakumar, 2006). This has been confirmed by the PA managers during the recent

consultations carried out by Wildlife Institute of India.

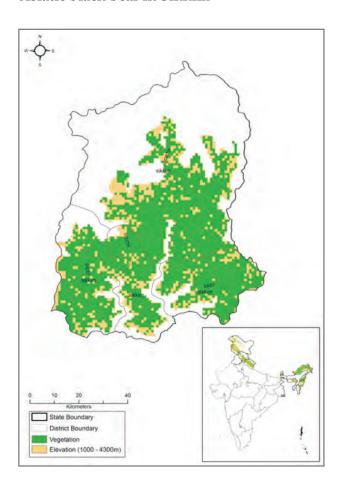
6.21.2 Distribution and relative abundance

Black bear is distributed widely in Sikkim as it occurs in suitable undisturbed forested areas up to 4,300 m (Sathyakumar and Choudhury, 2008). Recent consultations with protected area (PA) managers of the four districts of the State revealed that the black bear is present in 11 forest/wildlife ranges (Fig. 6.21.1). Black bear was reported to be 'fairly common' in Khanchendzonga National Park (NP) and as 'rare' in Pangolakha Wildlife Sanctuary (WS) and Fambong Lho WS during 2005 (Sathyakumar and Choudhury, 2008). However, recent information from Khangchendzonga NP indicates that black bear were recorded up to 4,000 m and that this protected area has black bear in low densities. A three years study using camera traps in Prek chu catchment (182 km2) of Khangchendzonga NP resulted in low numbers of photo captures (N=24) and bear signs (Sathyakumar et al., 2011). These evidences and captures of black bear were recorded in temperate and subalpine areas mainly (1,950 m to 3,600 m) but also a single capture at 4,280 m which could be an exception. The black bear photo capture rates (# captures/100 trap days) in Prek chu were similar in temperate (1.19 + 0.69) and subalpine 0.93 ± 0.49 during spring, whereas they were in temperate zone only (0.94 ± 0.42) during autumn (Bashir et al., 2011).

6.21.3 Population estimates

The PA reported that there have been no exercises to estimate population of black bear by the Department of Forest, Environment and Wildlife Management (DFEWM), Government of Sikkim or other institutions. However, an increasing trend in black bear visual encounters and bear signs has been reported

Figure 6.21.1. The distribution of Asiatic black bear in Sikkim



for the North, East and South districts during the last five years which may be due to: increased incidences of human-bear encounters/conflicts as a consequence of increased use of bear habitats and human habitations by humans and black bears respectively; or habitat loss; or shortage of bear food in natural habitats. There are four bears in Gangtok zoo and four bears in rescue centres of the State.

6.21.4 Conservation Issues

i. Threats to species

There is very little information on the levels of threats to black bears in Sikkim. There has been no official report on poaching or confiscation of bear parts in Sikkim during

the period 2006-2011 but only one case of retaliatory killing of black bear was reported from South District. Nevertheless, poaching (for bear parts) and off lately retaliatory killings (to reduce livestock and crop depredations) are threats to black bears in Sikkim. Due to high levels of protection and no reports of any trans-boundary issues, there are no reports of illegal bear trade or possible trade routes. However, with growing demand for bear parts, monitoring the long, high and rugged international borders may pose serious challenge to this State.

ii. Threats to habitats

The potential black bear habitat range in Sikkim is estimated to be about ca. 1,300 km² which includes tropical moist deciduous, semi-evergreen mixed forests, temperate and subalpine mixed and coniferous forests (up to 4,000m), and private lands within these elevation zones. Plant species that were reported to be in the diet of black bear include: bamboo Shoots, Quercus, Castanopsis, Machilus, Ficus, Avacado, Elcocarpus, Symplocos, wild berries and other species. During late summer and early winter, black bears were reported to feed on cultivated crops such as maize, vegetables and fruits as well as livestock/farm animals. With the exception of some remote areas, most of the bear habitats are subjected to low to moderate use by people for meeting their day-to-day requirements, livestock grazing, and ecotourism. The extent and magnitude of such use in bear habitats depends upon factors such as proximity to villages, trekking routes and roads. Developmental activities such as hydropower projects and road building have threatened the black bear habitats, leading to habitat loss and degradation.

6.21.5 Management actions taken

i. Protection to species

The Asiatic Black Bear is listed as "Vulnerable" in the Red Data Book (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 and on Schedule II of the Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972). The Forest Conservation Act (1980) and the National Wildlife Action Plan (1983) afford protection to the habitats of this species (GOI, 1980; 1983). Creation of a network of PAs has afforded protection to black bear habitats in Sikkim.

ii. Habitat management

Asiatic black bear habitat loss in the State is largely due to developmental projects such as infrastructure development, road building, hydro power projects and other human activities. Habitat degradation is mostly due to natural resource extraction by local communities, livestock grazing and other human uses. No bear specific habitat management action has been taken by the DFEWM.

iii. Management of bear-human interactions

An assessment of black bear-human interactions made during the period September 2009 to November 2009 using questionnaire survey and secondary information revealed that there were 302 instances of interactions (207 crop depredation, 75 livestock depredation and 20 bear attacks on humans) from 50 localities of the State (Bashir et al., 2011). According to forest/wildlife managers, there were reports of black bearhuman interactions prior to 2008

as well but were unreported largely due to lack of (a) communication facilities, (b) awareness on compensation schemes, and (c) lack of funds for settlement of compensation cases. Only after 2008-09, some budget was made available for payment of ex gratia payment for victims of bear attacks. During the period 2008-2012, 13 reports of human injuries due to bear attacks have been reported and amounts ranging from Rs. 900 to Rs. 2,000 and in some cases up to Rs. 5,000 have been paid to individuals attacked by black bear to meet the costs of medical treatment. Such budget head was 5 to 10% of the total budget allocation for a Division. About 11 problem bears were removed by the DFEWM to the State zoo or rescue centres with the help of bear rescue teams comprising of range officer, block officer, zoo veterinarian and front line staff. In some cases, members of the Police, other Forest Wings, Village Eco-development Committees and general public have also provided the necessary support. Regular meetings with the local communities for awareness creation, rapid communication of problems related to bear-human interactions, monitoring of bear-human interactions, and joint patrolling along with members of the Eco-development Committee in problem areas are some of the activities carried out by the DFEWM in the State. Recent Investigations (WWF-India, unpublished report) on the perceptions of local communities on humanwildlife conflicts in East Sikkim revealed that black bears cause crop damage in fringe villages of Pangolakha WLS and Fambonglho WLS. (WWF-India in prep.) iv. Research and monitoring Research activities of the Wildlife Institute of India have provided information on distribution, relative abundance, habitat use and behaviour of black bears in Khangchendzonga NP and BR and on bearhuman interactions during the year 2009

(Sathyakumar et al., 2011; Bashir et al. 2011). The Sikkim unit of WWF-India has carried out an assessment of the bear-human interactions in south district, and proposes to monitor the same in the future along with some investigations on the ecology of the black bear in Sikkim. More than 30% crop damage in the state has been done by black beer as reported by WWF-India (WWF-INDIA unpublished)

v. Limitations

Lack of scientific information on black bear distribution, status, threats, human use in bear habitats, ecological aspects particularly causes for the movement patterns of bear during late summer and early winter towards villages leading to crop/livestock depredations; and maintenance of data base on bear-human interactions for regular monitoring. There is lack of trained man power and equipment such as bear snares, chemical immobilization, transportation cages, and vehicles to deal with bear-human interaction situations in the state and also lack of adequate funds for timely settlement of compensation claims.

6.21.6 Management Actions Proposed

1. Bear-human interactions

Awareness camps should be organized on bear behaviour and ways to minimize bear-human interactions at the JFM/EDC levels. Wildlife rapid action and rescue teams may be created at District level to manage bear-human interactions. A fully equipped bear rescue/ rehabilitation center may be created in the State with facilities of immobilization equipment, drugs, animal holding boxes/cages and transport vehicles. A database on wildlife-human conflict should be

maintained in the state. The current mechanism of assessment of economic losses of crop/ livestock depredation by bear/ other wildlife should be improved at the state level. The indigenous methods of crop protection and provision of fuel wood/ fodder requirements to villagers should be strengthened from alternate sources during periods of high incidence of bear movements in the forest-village interface.

2. Habitat management

The protection should be continued to natural bear habitats in the State. Bear habitat restoration programs should be taken by the DFEWNM based on findings and recommendations of scientific studies. The bear corridors outside PAs should be identified and managed in the State.

3. Research and information

The presence/ absence of bear in potential habitats should be confirmed by camera trapping. Population estimation of bears should be done using non-invasive methods. An investigation may be carried out on bear human interactions in the State. The scientific study on bear habitat evaluation and food habits should be conducted in Sikkim. Movement and ranging pattern of bears may be studied in the State using GPS/ satellite telemetry studies.

4. Communication and education

The awareness may be enhanced for all stake holders on bear/wildlife conservation about the philosophy of coexistence through appropriate

communication materials. The judiciary, public representatives, Officials of the Line Departments including military, Para-military forces may be sensitized on wildlife crimes and conservation. One day of the Wildlife Week may be celebrated as the "Bear Day". Special focus on bear conservation should be ensured in Wildlife Interpretation centers.

5. Capacity development

The frontline staff of DFEWM should be fully equipped with latest devices and equipment for management of bear/ other wildlife and humans during interactions. Specialized training modules may be developed for forest personnel in wildlife management. Training courses may be conducted in the State on wildlife-human conflict management for local communities (members of EDC). A wildlife health center may be established by creating proper infrastructure and engaging wildlife veterinarians. The wildlife researchers of the DFEWM should be trained in biodiversity assessment and monitoring.

6. Protection to bears from illegal wildlife trade

The existing network of informers and various law enforcing agencies should be strengthened in collaboration with Para-military forces. A survey or study need to be conducted on illegal trade on bear parts in the State. Monitoring of wildlife crimes in the State should be strengthened through posting of wildlife inspectors at Inter State check posts. Incentives may be provided to the wildlife staff and informers in Sikkim.

7. Policy and legislation

The State Forest Development Agency should be allocated funds and powers at the Division level to disburse compensation amount for cases dealing with crop depredation and human injuries/ deaths due to bear or any other wild animal. The corporate and developmental sectors should be involved in biodiversity conservation as part of corporate social responsibility. A regional office wildlife crime control bureau should be established in Siliguri.

Trans-boundary cooperation and collaboration should be established with Nepal, Bhutan and China for conservation of bears in this region. Inter-state cooperation should be established with West Bengal for controlling wildlife crimes and wildlife-human interactions in the region. The technical inputs should be enhanced and research, management and conservation plans should be implemented through specialized institutions/ experts in the concerned field.



TAMIL NADU

BEAR CONSERVATION ACTION PLAN TAMIL NADU

2012

K. Ramkumar¹, B. Ramakrishnan², R. Gunasekaran³ and Rakesh Vasisht⁴

Project team

G. Gokulakrishnan, B. Vinoth, K. Ramkumar, B. Ramakrishnan, N. V. K. Ashraf, Rahul Kaul and Prajna Paramita Panda

Geographical Location: 08°05′-13°35′N, 76°15′-80°20′E

Area: 1,30,058 km²

Biogeographic zone: Deccan Peninsula, Western Ghats, Coasts

Biotic Province: Deccan South, Western Ghats mountains, East coast **Forest Area:** 22,877 km² (17.59% of the state geographical area)

Bear habitat range: Min 4006.2 km²

Bear Population estimate: NA

Human population: 7,21,38,958 **Livestock population:** 3,04,56,882

6.22.1 Introduction

Tamil Nadu is the southern-most state in India and sloth bear (*Melursus ursinus*) is the only bear species found here. The forests of the Western Ghats and the central Indian highlands are currently the two strongholds of the sloth bear, but the species is believed to have disappeared from a few isolated forests in the northern Western Ghats and adjoining areas (Yoganand et al., 1999). The proper management of the sloth bear population in Tamil Nadu therefore has a bearing on the conservation of this unique species in the country.

Sloth bears are found in a variety of habitats ranging from wet evergreen forests to dry deciduous and degraded scrub forests. In terms of forest types, dry and moist deciduous forests together hold the major proportion of the sloth bear population (about 90%). In India, about 30% of the forests remaining are of dry deciduous type, and these forests are known to hold about 50% of the sloth bear population (Yoganand et al., 1999). The distribution of the species in Tamil Nadu in such diverse habitats only substantiates the adaptability of this species. However, their relative abundance would vary across these vegetation types, as indicated by their higher abundance in deciduous forests, followed by dry deciduous, scrub and evergreen forests

(Yoganand et al., 1999). According to Baskaran (1990), sloth bear signs were more frequent in dry deciduous forests in Mudumalai Wildlife Sanctuary in southern India, as this habitat supported greater fruit abundance, more cover and less human disturbance than in other vegetation types in the park. The species has been scantily studied in Tamil Nadu as most of the studies on the ecology of the sloth bear come from Madhya Pradesh, Chhattisgarh and Nepal (Joshi et al., 1995; Joshi et al., 1999; Yoganand et al., 1999; Bargali et at., 2004). Considering the scarcity of published information on the species in the state, a rapid questionnaire survey was conducted by the Wildlife Trust of India in collaboration with Wildlife Institute of India at the behest of the Ministry of Environment and Forests. The aim was to gather information on the species' distribution, threats and status that would help in the formulation of an action plan for its conservation in the state.

6.22.2 Distribution and Relative Abundance

The existing information indicated the prevalence of sloth bears in the forested areas of 15 districts, which include Vellore, Thiruvannamalai, Villupuram, Dharmapuri, Salem, Erode, Nilgiris, Coimbatore, Thiruchirappalli, Dindikal, Theni, Madurai, Virudhunagar, Thirunelveli and Kanyakumari (Fig. 6.22.1), comprising 21 territorial forest

divisions and six protected areas (Table 6.22.1). This information was then cross-checked by contacting researchers, NGOs and wildlife enthusiasts of the concerned forest areas. The survey thus identified additional

forest divisions which were not known to harbour sloth bear. These include Viluppuram, Kallakurichi, Vellore, Thiruvannamalai, Thirupathur, Trichy and Attur divisions.

W SELDINE

SALEN
BINAN

ERODE
BINAN

COMBATORE

DMINGUL

TEU WADURA

AVAILABRI

AVAILABRI

Protected area

State boundary

District boundary

Fig. 6.22.1 Sloth bear bearing districts of Tamil Nadu

6.22.3 Population estimates

Like in most states of the country, there is no clarity and consistency on the sloth bear population estimation method being followed in the state. The highest population of sloth bear has been reported from Thirunelveli Forest Division (n=141), followed by Mudumalai Tiger Reserve (n=52), Erode Forest Division (n=26), Gudalur Forest Division (n=18),

Sathyamangalam Wildlife Sanctuary (n=16), Srivilliputhur Grizzled Squirrel Wildlife Sanctuary (n=10), Attur Forest Division (n=4), Vellore Forest Division (n=3) and Dindigul Forest Division (n=2). The available records also indicate that the numbers have gone up from 65 animals in 2006-07 to 310 animals 2010-11 in the few forest divisions and protected areas from where information could be gathered.

Forest with Sloth Bea

Table 6.22.1. Forest Divisions (FD) and Protected Areas (PA) of Tamil Nadu with reported sloth bear occurrence

No	Name of the Forest Division	No	Name of the Forest Division	
1	Attur Forest Division	16	Thirupathur Forest Division	
2	Coimbatore Forest Division	17	Thirunelveli Forest Division	
3	Dharmapuri Forest Division	18	Thiruvannamalai Forest Division	
4	Dindigul Forest Division	19	Trichy Forest Division	
5	Erode Forest Division	20	Vellore Forest Division	
6	Gudalur Forest Division	21	Viluppuram Forest Division	
7	Harur Forest Division			
8	Hosur Forest Division			
9	Kallakurichi Forest Division	No	Name of the Forest Division	
10	Kodaikanal Forest Division	1	Anamalai Tiger Reserve	
11	Madurai Forest Division	2	Kalakkadu-Mundanthurai Tiger Reserve	
12	Nilgiri North Forest Division	3	Kanyakumari Wildlife Sanctuary	
13	Nilgiri South Forest Division	4	Mudumalai Tiger Reserve	
14	Salem Forest Division	5	Sathyamangalam Wildlife Sanctuary	
15	Theni Forest Division	6	Srivilliputhur Grizzled Squirrel Sanctuary	

6.22.4 Conservation Issues

i. Threats to the Species

Only one poaching case was recorded across the state during the past five years in Gudalur Forest Division. Apart from this, two more bears were killed possibly due to conflict in 2010 -11. A total of 20 cases of conflict have been recorded in the state in last five years (2006-2011) including 19 cases of human injuries and one case of human death. However, much information on human-bear conflict is lacking from this State.

ii. Threats to the Habitats

Most of the bear occupied habitats are within the protected areas in the state. The unprotected status of some bears inhabiting private mountainous terrains like the Sathgar Hills, Thirupathur Forest Division is matter of

concern to conservationists. Fragmentation of forest land is another issue disrupting their movement in places like Gudalur Forest Division. Proliferation of exotic weeds is also adversely affecting bear habitat in areas like Mudumalai Tiger Reserve and many other forest divisions. Forest fires cause displacement of bears and all other forms of wildlife in forest areas of the state.

6.22.5 Management Actions taken

i. Protection to the species

The sloth bear is listed in Appendix I of CITES, Vulnerable (A2 cd+4cd; C1) category of the IUCN Red List of threatened species (Garshelis et al., 2008) and protected under Schedule I of Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). More than 50% of the protected areas in Tamil Nadu

have anti-poaching squads to prevent poaching of bear or any other wildlife species.

ii. Habitat Management

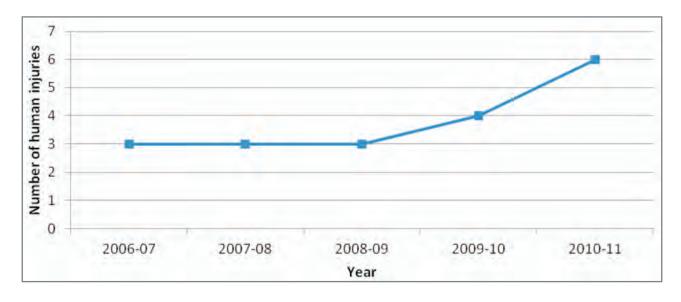
Regular patrolling is undertaken in all territorial forest divisions and protected areas of Tamil Nadu for protecting forests and wildlife. General habitat management strategies are being followed in most of the forest divisions and protected areas.

iii. Management of Bear-Human Interactions

Incidents of poaching, confiscation and retaliatory killings seem to be few in the state. Only one case of poaching and two cases of bear killing was reported in 2010-11 in last five years. Human injuries caused by sloth bear attacks were reported from six forest divisions

of Tamil Nadu i.e. Nilgiri North, Nilgiri South, Sathyamangalam Wildlife Sanctuary, Kalakkad Mundanthurai Tiger Reserve, Anamalai Tiger Reserve and Srivilliputhur Grizzled Squirrel Sanctuary. In the last five years most cases of human injuries were reported from Nilgiri North FD (8) followed by Sathyamangalam WLS (6). The incidents of human attacks by bears have shown an increasing trend in last five years (Fig. 6.22.2). No claims of compensation for crop depredation by bears have been made in the last five years. Most of the forest patches in the upper plateau of Nilgiris are surrounded by tea gardens which are being used by bears to some extent, further increasing prospects of bear-human interactions. Thirupathur Forest Division has also recorded bear straying outside of the Reserve Forests in recent years.

Fig. 6.22.2 Number of reported case of human injuries caused by sloth bear in Tamil Nadu as reported during 2006 2011.



Awareness programs are being conducted in almost all territorial forest divisions and protected areas during the wildlife week celebrations targeting school and college students and general public on the importance of forests and wildlife. Apart from this annual event, few awareness programs have also been conducted mostly in protected areas to sensitize people on humanwildlife conflict, especially on elephant and leopard. Such programs however have not been conducted exclusively for bears. The forest department personnel, especially the front line forest staff, have also been trained in wildlife law and crime control from time to time.

i. Research and Monitoring

The major problem that the forest department faces in Tamil Nadu in conserving sloth bear is the lack of information on the factors limiting distribution of the species. Apart from the short-term studies conducted on the food habits of sloth bear by Baskaran (1990), Gokula et al. (1995), Desai et al. (1997), Ramesh et al. (2012), no study has been carried out on abundance, distribution, and ecological requirements of the species.

Baskaran (1990) studied the dietary composition and habitat utilization of sloth bear in Mudumalai and Gokula et al. (1995) looked at food habits in Mundanthurai plateau. Desai et al. (1997) looked at the behavioral ecology of sloth bear in Mudumalai Tiger Reserve. A small work on the feeding habits of sloth bear comes from Korakundha range of Nilgiris South Forest Division (Deepalakshmi, 2012 unpublished). Some of the earliest records of feeding habits of the sloth bear could be found in Tamil Sangam literature (Circa 200 B.C. to 300 A.D.). The fact that the diet of sloth bear is dominated by a combination of social insects and sugar-rich

fruits have been recorded in some of the Eight Anthologies of the Sangam period (Akananuru, 81, 331; Natrinai, 125, 336). All these short-term studies indicate that there is a need for a long-term study on the behavioral ecology of sloth bear in the state employing contemporary methods.

6.22.6 Management Actions Proposed

1. Habitat Management

Biotic pressures especially collection of Non Timber Forest Produces (NTFP) should be reduced in all bear range forest divisions. Vital sloth bear habitats need to be declared as sanctuaries. Adequate number of firewatchers should be deployed in all sloth bear habitats including those outside the project elephant and project tiger areas. Degraded sloth bear habitats should be identified and the same need to be enriched by planting native species using high intensive technology. Soil moisture regime should be augmented through appropriate measures including protection of existing water sources along with establishment of artificial water sources.

2. Human-bear interaction

Though conflicts with bear are reported, there is a need to survey and map bear conflict areas in the state and develop and institute suitable conflict mitigation strategies wherever necessary. Displaced orphan bear cubs should be rescued and rehabilitated in their own habitat using standard protocols. Existing enforcement mechanisms should be strengthened to prevent illegal trade in sloth bear or its parts.

3. Research & Monitoring

A tri-annual synchronized census operation using an appropriate population estimation methodology should be continued in the state. An occupancy survey based on field investigations is essential to know and map the distribution of sloth bears in the state. This will also provide information on the habitat quality available for the bears in the state. Status of bears outside the reserved forest areas should also be assessed, especially those reported from Sathgar hills of Vellore district, tea estates and other private plantations.

4. Communication, Education and Community Participation

Community participation on sloth bear conservation should be ensured by establishing different community development programs and ecodevelopment committees. The government should extend its support to existing committees that provide alternative livelihoods among local

communities to reduce dependency on sloth bear habitat. Awareness programs on the importance of bears should be organized for children among the communities living in and around bear habitats.

5. Capacity development

Frontline forest staff of all bear bearing forest divisions should be well equipped and trained. Infrastructure should be provided to all existing forest protection squads of bear range areas and build squads in areas where it does not exist.

6. Regulation of Development activities

Creation of new roads and rail lines that may affect the survival prospect of sloth bears should be prevented or regulated. Inviolate areas need to be protected free off community dependency for long-term conservation of sloth bear in Tamil Nadu. Changes in land use that affect sloth bears in landscapes comprising bear habitats should be prevented or regulated.



TRIPURA

BEAR CONSERVATION ACTION PLAN TRIPURA

2012

Atul K. Gupta¹ and Krishnendu Mondal²

Project team
Atul K Gupta, Partha Pratim Bhattacharjee, S. Sathyakumar,
Prajna Paramita Panda, Krishnendu Mondal

Geographical location: 22° 56′-24° 32′N, 90°10′ 92°21`E

Area: 10,491.69 km² **Biogeographic zone:** 9.North East

Biotic Province: 9B. North East Hills Province

Forest area: 6294 Km² (60.02% of state geographical area)

Bear habitat range: 7545 Km² **Bear Population estimate:** not available

Human population: 36,71,032 (2011 census)

Livestock population: 1.87million (Livestock census 2007)

6.23.1 Introduction

Tripura is the 2nd smallest state in terms of area, but the 2nd most populous state in the North Eastern Region (http://tripura.nic.in). It is surrounded by Bangladesh on its north, south and west and Mizoram and Assam on the east (http://tripura.nic.in). Tripura's geography is characterized by several north-south hill ranges with intervening valleys and plains in the western part of the State (http://en.wikipedia.org/wiki/Tripura).

The State bears a very close affinity and resemblance with the floral and faunal components of Indo-Malayan and Indo-Chinese sub-regions of Oriental Region, besides, having close affinities with Ethiopian and Palaearctic Zoogeographical Regions also. This unique zoo-geographical location of the State makes up for smallness so far as the biological diversity is concerned.

Hill Ranges, Highland and Plateau, and Alluvial Valleys determine the physiographic features of the State. The State has typical warm and humid tropical climate with four distinct seasons, i.e. winter (December to February), summers (March to May), South West monsoon (June to September) and post monsoon (October to November). The average rainfall is 2100 mm. Tripura has diverse

ecosystems ranging from forests and grasslands to freshwater wetlands. There are 408 wetlands, of which, the water logged (seasonal) type is the most numerous followed by oxbow lakes and lakes/ponds. The State has 10 major rivers running through a total length of 903 km across the State. These have a combined watershed/catchment area of over 9400 ha covering six major hill ranges. A total of 30 Conservation Hot Spots (CHS) have been identified and assessed based on four major values, namely, Biodiversity, Taxa, Socioeconomics, and Conservation Feasibility (Gupta, 2000). The only species of bear found in Tripura is the Asiatic black bear (*Ursus* thibetanus).

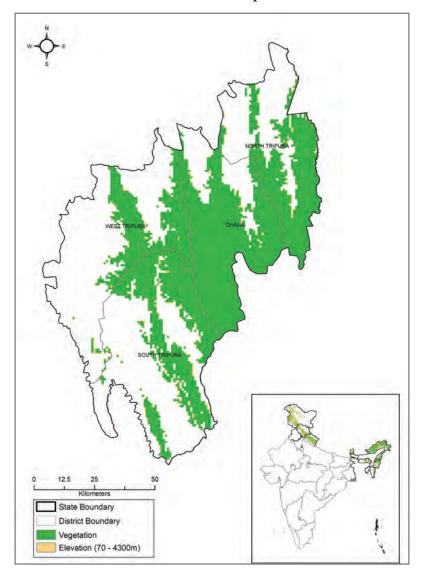
6.23.2 Distribution and relative abundance

Asiatic black bear populations are scattered in different forest patches and hilly tracts practically across the State. However, no systematic population estimation has been conducted in the State so far. A small survey was conducted by engaging an NGO, Dishari through a project by Dr. A K Gupta, the then CCF, Tripura in collaboration with the Dhaka University, Dhaka, Bangladesh in the year 2006-07. The Wildlife Trust of India also conducted questionnaire survey in the State in 2011. Sparse information on human-bear conflicts, mainly on injuries, deaths and

capturing of bears by the locals for keeping as pets confirmed the presence of Asiatic black bear and its interactions with humans in different parts of the State. The Sepahijala zoo reported to have 23 bears which were rescued from different parts of the State in the last 20 years. However, in most of the cases the rescued bears were released back into the wild very near to the place from where they might have been caught. Secondary information collected from local people inhabiting forested areas across the state confirmed the presence of bear in good numbers irrespective of official

systematic enumeration. According to Sathyakumar (2001), the hill ranges in Tripura hold small scattered populations of Asiatic black bear due to the contiguity of hill ranges of Mizoram. Local respondents have confirmed presence of bear in Manu Forest Division (FD), Kanchanpur FD, Longthorai Reserve Forest, Ambasa FD, Teliamura FD, Gumti FD and probably present in Trishna Wildlife Sanctuary and its adjacent areas (Fig. 6.23.1). During the survey conducted by Wildlife Trust of India, 11 Forest Divisions of Tripura reported to have black bears in their respective areas.

Fig. 6.23.1 The distribution of Asiatic black bear in Tripura



6.23.3 Population estimates

No population estimation of black bear has been carried out by the State Forest Department or any other institution in the State.

6.23.4 Conservation Issues

i. Threats to species

Poaching (for bear body parts) of black bear in Tripura is unknown. No case of poaching, killing of retaliatory killing of black bear has been recorded by the State Forest Department in last five years. Four cases of human bear conflicts were recorded in the last five years by the State Forest Department.

ii. Threats to habitats

The potential black bear habitats in Tripura are under threat due to habitat degradation and fragmentation as a consequence of overgrazing, extraction of nontimber forest produce, illicit cutting and lopping of trees, fruit collection, plantations, and expansion of developmental activities.

6.23.5 Management actions taken

i. Protection to species

The black bear is classified as Vulnerable (IUCN 2012). It is also listed in the Appendix I of CITES (GOI, 1992) and on Schedule II (pt. II) of the Indian Wild Life (Protection) Act as amended in 2003 (GOI, 1972; 2003). The black bear population in Tripura seems to be protected inside protected areas. However, black bear population outside PAs is under severe threat.

ii. Habitat management

Major part of potential habitat of the black

bear in the State is under various protected areas. However, no bear-specific management and protection measures have been taken by the State Forest Department for the conservation of black bear.

iii. Management of bear-human interactions

No specific management action has been taken for black bear-human interactions in the State, though the State has an ex-gratia scheme for compensation for human injury/death. In last five years, three applications for human injuries were received by the State Forest Department of which one was sanctioned.

iv. Research and monitoring

No regular survey or monitoring has been done by the State Forest Department or any other institution/ organization.

v. Limitations

So far there has been no scientific field survey specifically targeting this species in the state, hence, exact status of black bear in different areas, density estimates, information on bear habitats and other details are not available.

6.23.6 Management Actions Proposed

1. Bear-human interactions

Awareness camps could be organized at the village Panchayat Levels/Biodiversity management Committees on bear behaviour and ways to minimize bear-human interactions. Wildlife rapid action and rescue teams should be created at district level to manage bear-human interactions. Community confidence building

measures should be initiated in and around wildlife areas. A fully equipped bear rescue/ rehabilitation center may be created in the State with immobilization equipment, drugs, animal holding boxes / cages and transport vehicles. A database may be created on wildlife-human conflicts.

2. Habitat management

The protection should be continued in natural bear habitats. Large scale conversion of forest lands into monoculture/ commercial plantations and jhum cultivation/ urbanization should be monitored and discouraged. PA network should be consolidated through corridors. Critical wildlife areas should be identified for declaration as Conservation/ Community Reserves. Special Wildlife Management Plans should be developed as part of working plans to manage critical wildlife habitats outside PA network.

3. Research and monitoring

Presence/absence of bears should be confirmed by camera-trapping studies in potential areas. Population estimation of bear species should be done in all the forest divisions in Tripura. Bear-human interaction needs to be investigated. The limiting factors governing the distribution of bears should be studied in the state. Wildlife research may be promoted by engaging students/researchers from Universities/Institutions and NGOs.

4. Communication and education

Awareness on bear/wildlife conservation should be enhanced

through audio-visual aids of all stake holders. State Government may be sensitized for initiation of professional courses related to biodiversity conservation in Universities/ Colleges. The judiciary, public representatives, officials of the Line Departments including Para-military forces may be sensitized on wildlife crimes and conservation. One day may be celebrated as 'Bear Day' in Wildlife week. Local communities may be sensitized through enhanced campaigning on co-existence with bears/other wildlife and discourage rearing of bear cubs as pets.

5. Capacity development

Frontline forest staff should be fully equipped with latest devices and equipment for enhanced protection of bear and other wildlife. Specialized training modules may be developed for forest personnel in wildlife management. Bears and other lesser known fauna of the State should be given special focus in regular courses for frontline staff. Local communities (members of EDC, JFMC, BMC) should be given training on wildlife-human conflict management. Wildlife health center may be established by creating infrastructure and engaging Wildlife Veterinarians.

6. Policy and legislation

A commission of a dedicated Green Bench may be constituted at State level to deal with all wildlife crimes and environmental issues. Corporate/ Developmental Sectors may be involved in biodiversity conservation as part of corporate social responsibility. A policy may be developed on reintroductions and rehabilitation of bears in the State. Trans-boundary cooperation and collaboration may be enhanced with Bangladesh for conservation of bears in the region. Inter-State (Assam & Mizoram) cooperation should be extended for controlling wildlife crimes and wildlife-human interactions in the region. Technical Inputs may be enhanced for implementation of research, management and conservation plans through specialized institutions/experts in the concerned field.

7. Protection to bears from illegal Wildlife Trade

Existing network of informers, and various law enforcing agencies should be strengthened in collaboration with Para-military forces. Illegal trade on bear parts in the State may be surveyed. State Forensic Laboratory should be involved in dealing with wildlife poaching/illegal trade and also in research (population estimation of bears using non-invasive methods). Monitoring of wildlife crimes may be strengthened through posting of wildlife inspectors at airport, railway stations, Land Customs Stations, and Inter State check posts. Being on the Bangladesh border this could be a major route for trade and needs specific inputs.



UTTARAKHAND

BEAR CONSERVATION ACTION PLAN UTTARAKHAND

2012

Subrat Kumar Behera¹, Anil Kumar Singh² and S.S.Sarma³

Project team
Subrat Kumar Behera, Anil Kumar Singh, S. Sathyakumar,
Harendra Singh Bargali, Rahul Kaul,
Sandeep Kumar Tiwari and Krishnendu Mondal

Geographic location:Latitude: 28o 43' to 31o 27' N, 77o 34' to 81o 02' E

Biogeographic zone: 2 Himalaya

Biotic Province: 2B West Himalaya

Forest area: 34,651 Km² (64.48% of geographical area of the state)

Bear habitat range: 25,830 Km² (approx.)

Bear Population estimate: NA

Human population: 101.17 lakhs (2011)

Livestock population: Cattle & buffaloes: 3,454,634 (2007)

Goat & sheep: 1,625,717 (2007)

6.24.1 Introduction

The northern Indian Uttarakhand state is often referred to as the "Land of the gods" due to its many Hindu temples and pilgrimage centres. Known for its forests and natural beauty it is was created in 2000 out of Uttar Pradesh. It borders the Tibet Autonomous Region on the north; the Mahakali Zone of the Far-Western Region, Nepal on the east; and the Indian states of Uttar Pradesh to the south and Himachal Pradesh to the northwest. Uttarakhand has a total area of 53,566 km², of which 93% is mountainous and almost 64% is covered by forest. Most of the northern part of the state is covered by high Himalayan peaks and glaciers. Two of India's largest rivers, the Ganges and the Yamuna, originate from its glaciers (http://en.wikipedia.org /wiki/Uttarakhand). Uttarakhand lies on the southern slope of the Himalayas, and the climate and vegetation vary greatly with elevation. The highest elevations are covered by ice and bare rock. Below them, between 3,000 and 5,000 meters are the western Himalayan alpine shrub and meadows. The temperate western Himalayan subalpine conifer forests grow just below the tree line. At 3,000 to 2,600 meters elevation they transition to the temperate western Himalayan broadleaf forests, which lie in a belt from 2,600 to 1,500 meters elevation. Below 1,500 meters

elevation lie the Himalayan subtropical pine forests. The Upper Gangetic Plains moist deciduous forests and the drier Terai-Duar savanna and grasslands cover the lowlands along the Uttar Pradesh border in a belt locally known as Bhabhar (http://en.wikipedia.org /wiki/Uttarakhand). In Uttarakhand, climate ranges from subtropical in the southern foothills, averaging summer temperatures of about 30° C (86° F) and winter temperatures of about 18° C (64° F). Cool temperate conditions dominate the higher areas of the Middle Himalayas, where the summer temperatures are usually around 15 to 18° C (59 to 64° F) and winters drop below the freezing point. The eastern flanks of the Himalayan ranges are subject to heavy rainfall while the western section is relatively dry (http://www.mapsofindia.com).

Uttarakhand has three of the four species of bears found in India. The sloth bear (*Melursus ursinus*) is endemic to Indian subcontinent and has its distribution in India, Sri Lanka, Nepal and Bhutan. Recently, the species was extirpated from Bangladesh. In India, the black bear (*Ursus thibetanus*) is reported from the Himalayan region and hills of north-eastern India in altitude ranging from 1200-3300 m. The Asian range of brown bear (*Ursus arctos*) 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 (Sathyakumar, 2001). The Himalayan brown bear is largely confined to the rolling uplands and alpine meadows above timberline, ecologically separated from forest dwelling black bear (Schaller, 1967; Sathyakumar, 2001). But in the north-western Himalayas, the Himalayan brown bear is reported to occur in the subalpine forests.

SLOTH BEAR

6.24.2 Distribution and Relative Abundance

The sloth bear in Uttarakhand is reported from the Terai region and Shivalik hills and these are the areas which overlap the Asiatic black bear's range (Fig.6.24.1). The sloth bear is reported to have its distribution both in protected areas (Rajaji National Park and Corbett Tiger Reserve) and territorial

forest divisions namely Dehradun, Haldwani, Haridwar and Terai-East. The species exists in patches and in low density (Table 6.24.1).

6.24.3 Population estimates

Unlike most states, Uttarakhand has formal estimates of Asiatic black bear and sloth bear. None of these records however, give any indication of the method employed for estimating bear numbers. According to the State Forest Department census report, there were 240 sloth bears in year 2005, out of which 82 were inside Protected Areas and rest outside. The 2008 census showed a decline in numbers at 172, of which 60 were inside and rest outside the protected areas (Anon, 2012). Detailed division-wise census figures were not available. However, State Forest Department reported 56 and 32 sloth bears from Haldwani and Terai-East forest divisions respectively (2008-09 census).

Table 6.24.1. Distribution of bears in protected areas and forest divisions in Uttarakhand

Sl. No	Name of forest division/Protected	Sloth Bear	Asiatic	Himalayan
	Areas (NP & WLS)		Black Bear	Brown Bear
1	Almora	No	Yes	No
2	Almora Civil and Soyam	No	Yes	No
3	Badrinath	No	Yes	Yes
4	Bageshwar	No	Yes	No
5	Chakrata	No	Yes	No
6	Champawat	No	Yes	No
7	Dehradun	Yes	No	No
8	Garhwal	No	Yes	Unknown
9	Govind National Park	No	Yes	Yes
10	Haldwani	Yes	Yes	No
11	Haridwar	Yes	Yes	No
12	Corbett Tiger Reserve	Yes	Yes	No
13	Kalshi	No	Yes	No
14	Kedarnath Wildlife Sanctuary	No	Yes	Yes
15	Lansdowne	No	Yes	No
16	Mussoorrie	No	Yes	No
17	Nainital	No	Yes	No
18	Nandadevi Biosphere Reserve	No	Yes	Yes
19	Valley of Flowers National Park	No	Yes	Yes
20	Narendranagar	No	Yes	No
21	Pithoragarh	No	Yes	No
22	Rajaji National Park	Yes	Yes	No
23	Ramnagar	No	Yes	No
24	Rudraprayag	No	Yes	Unknown
25	Tehri	No	Yes	Unknown
26	Terai Central	No	No	No
27	Terai East	Yes	No	No
28	Terai West	No	No	No
29	Tons	No	Yes	No
30	Uppar Yamuna	No	Yes	No
31	Uttarkashi and Gangotri National Park	No	Yes	No

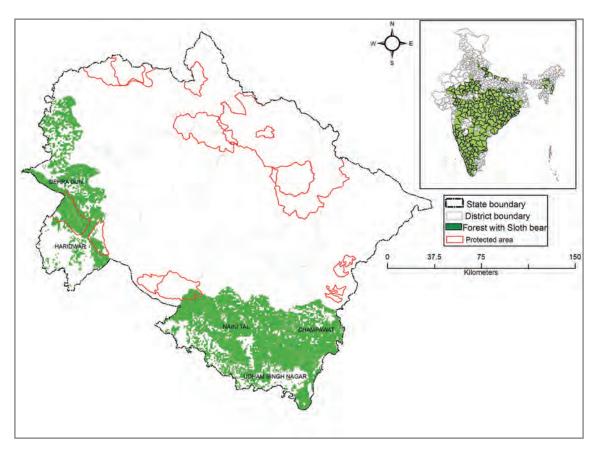
6.24.4 Conservation Issues

i. Threats to the species:

The sloth bear distribution in Uttarakhand roughly matches the tiger and elephant habitats in the state. However, the body of information on threats is scanty. The Forest Department has confiscated bear body parts along with tiger body parts from poachers from time to time. However, it has been difficult to trace the source and identify the species of bear involved. Since populations outside Protected Areas are patchy and occupy fragmented habitats, it is difficult to assess the impact of trade on the population without conducting a scientific study. However, census figures of the State Forest Department have shown a decline in sloth bear population, from 240 in 2005 to 172 in 2008.

Uttarakhand shares its boundary with Himachal Pradesh in the north-west, Uttar Pradesh in the south, and internationally with China in the north and Nepal in the east. Pithoragarh District shares its boundaries with Tibet Autonomous Region of China on the north, Nepal on the east, district Almora on the south and districts Almora and Chamoli on the west. Local Shoka tribe of Darma and Johaar valley of the district are aware about the traditional use of bear bile for curing a number of diseases (Negi and Palyal, 2007). Since significant bear populations exist in territorial forest divisions that share its boundaries with other countries where the bear body parts are used in traditional medicines, the likelihood of all three species being involved in trade is high.

Fig.6.24.1. The distribution of sloth bear in Uttrakhand



ii. Threats to the habitats:

As in other parts in its distribution range, bear habitats are under threat in the state of Uttarakhand as well. Forests other than Protected Areas are interspersed with villages and crop fields with high human and cattle populations. Various human settlement and development activities have taken place in these areas to meet the demand of increasing human population. The sloth bear habitats in Haldwani, Dehradun, Terai-East and Haridwar forest divisions are already part of or near major townships.

6.24.5 Management Actions Taken

i. Protection to species:

The sloth bear and black bear are listed in Appendix I of CITES, Vulnerable (A2 cd+4cd; C1) category of the IUCN Red List of threatened species (Garshelis et al., 2008). Sloth bear is also protected under Schedule I of Indian Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). The sloth bear has benefitted by the declaration of Corbett Tiger Reserve and Rajaji National Park which are mainly targeted at the conservation of tiger and elephant.

ii. Habitat Management:

Though, sloth bear is protected inside Protected Areas but its distribution outside protected areas needs to be studied in detail and updated on a regular basis. Detailed information on sloth bear distribution within territorial divisions or protected areas is lacking. Usually protected areas have specific management plans considering the primary target species such as tiger and elephant. However, this also helps in the protection of sloth bear and its habitat. In case of territorial forest divisions where managers have limited

resources, there is growing pressure from the interspersed communities, developmental activities and poachers (Bargali, 2009).

iii. Management of bear human interactions

Since sloth bear distribution in the state is patchy, few incidents of human mauling or killing by sloth bear have come from Terai-East forest division during past few years. The state has a policy for compensation in case of injury or death by bear attack.

iv. Research and Monitoring

Only a few studies to understand bear distribution in the state have been carried out so far (Sathyakumar, 2001; Bargali, 2009). No scientific information on parameters such as bear ecology, human- bear conflict and threats within or outside protected areas is available. Presence of sloth bear in territorial divisions or protected areas has also been recorded by the camera traps deployed for the tiger census by Wildlife Institute of India, National Tiger Conservation Authority and State Forest Department periodically.

v. Limitations

The lack of information on the distribution and abundance of all three bear species in the entire state is the primary limitation. Proper documentation of human-bear conflict in territorial divisions is also lacking.

ASIATIC BLACK BEAR

6.24.6 Distribution and Relative Abundance

The Asiatic black bear is more abundant in the state than the sloth bear. Within the altitudinal range of its distribution (1200-3300 m) it occurs throughout the

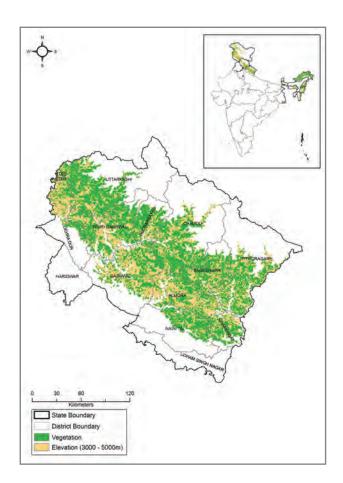
Himalaya and Shivalik region and overlaps with Himalayan brown bear and sloth bear distribution in Himalayas and Shivaliks respectively (Fig.6.24.2). Out of the total 31 forest divisions in the state, 25 divisions reported to have Asiatic black bear, ranging from snow covered peaks in the north to the plains of Terai in the south. The species has been reported from Protected Areas such as Nandadevi National Park, Valley of Flowers National Park, Govind National Park, Gangotri National Park, Askot Wildlife Sanctuary, Kedarnath Wildlife Sanctuary, Rajaji National Park and Corbett Tiger Reserve. Moreover, territorial forest divisions such as Badrinath, Rudraprayag, Garhwal, Tehri, Uttarkashi, Bageshwar, Pithoragarh, Nainital, Almora and Champawat are reported to sustain good populations of Asiatic black bear (Bargali, 2009). Forest divisions such as Haldwani, Haridwar and Rajaji National Park and Corbett Tiger Reserve have reported both black and sloth bear (Table 6.24.1).

6.24.7 Population estimates

The State Forest Department reported 1678 black bears in their 2005 census report, of which 259 and 1419 black bears were said to be inside and outside the Protected Areas respectively. The 2008 census showed increased population -1935 black bears, of which 332 and 1603 bears were said to be inside and outside the protected areas respectively (Anon, 2012). These figures present significant populations of black bears outside the protected areas in territorial forest divisions. According to 2008-09 estimates, Pithoragarh forest division reported highest number of black bears (286) followed by Garhwal (278), Tehri (196), Govind National Park and Wildlife Sanctuary (151), Kedarnath Wildlife Sanctuary (94), Champawat (87),

Bageswar (28), Mussoorrie (23), Upper Yamuna (19), Rudraprayag (16), Lansdowne (14), Almora (13) and Valley of Flower National Park (01). The 2005-06 census figures showed a sizable population of 227 individuals in Gangotri NP and Uttarkashi forest division. In 2009-10, population estimate of black bear is available only from Valley of Flowers National Park (13). In 2010-11, estimates of black bears are available from Kadarnath WLS (105), Bageshwar (47) and Upper Yamuna (09).

Fig. 6.24.2. The distribution of Asiatic black bear in Uttrakhand



6.24.8 Conservation Issues

i. Threats to the species

Although not much information is available on retaliatory killings due to human-bear conflict and poaching for trade in body parts, the Forest Department has confiscated bear body parts along with tiger body parts from poachers regularly. However, as it is difficult to trace the source and identify the species of bear involved, its impact, if any, is not measurable.

Cases of bear poaching and trading have been recorded from Nandadevi National Park, Govind Wildlife Sanctuary, Tehri, Pithoragarh and Chakrata forest division. An Asiatic black bear was poached in Nandadevi NP in 2008-09. Bear bile and gall bladder seizures have been recorded from Govind Pashu Vihar, Askot Wildlife Sanctuary of Pithoragarh forest divisions and Chakrata forest division (2010-11), and the Tehri forest division (2006-07). Besides this, a gall bladder was confiscated by State Police department from Uttarkashi in 2011-12. There have also been a few incidents of people killing black bears in self defense in Pithoragarh forest division.

ii. Threats to the habitats

The widely distributed Asiatic black bear inhabits broad leafed oak and coniferous pine forests in the state. Significant population of the species exists in territorial forest divisions where resources available to the managers to protect the species and its habitat are limited. Territorial forest divisions such as Pithoragarh, Tehri, Uttarkashi, Champawat, Nainital, and Badrinath support large populations of black bear (Bargali, 2009). These habitats are interspersed with villages, crop fields and small towns. Degradation of

habitat due to anthropogenic pressures and developmental activities are the main threats to black bear habitats in the State.

6.24.9 Management Action Taken

i. Protection to species:

The black bear are listed in Appendix I of CITES, Vulnerable (A2 cd+4cd; C1) category of the IUCN Red List of threatened species (Garshelis et al., 2008). The species is included in Schedule II, part II of Wildlife Protection Act, 1972 (GOI, 1972; 2003). The level of protection, the bear enjoys outside the protected area is undoubtedly low.

ii. Habitat Management:

Though, black bear is legally protected both inside and outside Protected Areas, their distribution outside protected areas, which is in significant numbers, needs to be studied in detail and monitored and updated on a regular basis. Since detailed information about their habitat and behavioral ecology is lacking it has been difficult to suggest management measures, which have been largely lacking.

iii. Management of bear human interactions

Black bears are reported to be involved with crop damage, human injuries and cattle lifting. The nature and intensity of human-black bear conflict varies between divisions. A total of 358 incidents of human-bear conflict were recorded in 5 years between 2006-11 (excluding Corbett National Park, Champawat and Tehri forest division). Of these 346 were due to black bear and 12 due to sloth bear. Pauri Garhwal is the worst affected division in terms of human casualties attributed to the black bear (Bargali, 2009). A total of 85 incidents were recorded from this division followed by Badrinath (52), Rudraprayag (36),

Kedarnath Wildlife Sanctuary (34), Nandadevi National Park and Valley of Flowers (30), Narendranagar (22), Uttarkashi and Gangotri National Park (19), Pithoragarh (15), Lansdowne (14), and Govind National Park and Wildlife Sanctuary (12). Livestock depredation was high in Askot Wildlife Sanctuary of Pithoragarh forest division (13), followed by Bageshwar (5) and Nandadevi (1) during 2006-11. Crop damage and raiding of orchards has been reported from Badrinath, Kedarnath, Nandadevi, Tehri and Pithoragarh forest divisions. Apple, pear, pea, cabbage, wheat, maize, potato, rajma, Himalayan finger millet, rice, beans are the crops reported to be damaged by black bear.

The state forest department has a policy for financial reimbursement in case of human mauling or killing by bears. The state has recorded 352 cases of human injuries and six cases of human death in last five years. The state has received 357 applications seeking compensation in last five years of which 351 have been sanctioned. A sum of Rs. 56,65,000 have been disbursed by the state forest department as compensation in the last five years.

iv. Research and Monitoring

Only a few studies to understand bear distribution in the state have been carried out so far (Sathyakumar, 2001; Bargali, 2009). No scientific information on parameters such as bear ecology, human-bear conflict and threats within or outside protected areas is available. Detailed research on distribution and ecology of black bear need to be undertaken in the state.

v. Limitations

The lack of information on the distribution and abundance of black bear in

the entire state is the primary limitation. Proper documentation of human-bear conflict in territorial divisions is lacking.

HIMALAYAN BROWN BEAR

6.24.10 Distribution and Relative Abundance

The Himalayan brown bear populations in Uttaranchal are present in and near PAs such as Nanda Devi National Park and Biosphere Reserve (Lamba, 1987), Kedarnath WS (Sathyakumar, 1994; Sathyakumar, 2001), Valley of Flowers NP, Govind WS, Askot WS, and in alpine regions of Yamunotri, Gangotri, Badrinath, Mana, Almora, and Pithoragarh (Table 6.24.1, Fig. 6.24.3). Himalayan brown bears are rare in Kedarnath WS (Sathyakumar, 1994); and their relative abundance in other areas is not known (Sathyakumar, 2001).

6.24.11 Population estimates

Though brown bear populations are recorded largely in protected areas, no population estimate of this species is available from Uttarakhand.

6.24.12 Conservation Issues

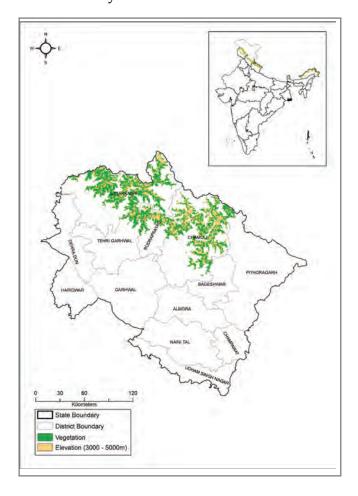
i. Threats to the species:

Though detailed information on threats due to live bear trade, retaliatory killing and poaching for trade in body parts is lacking, the Forest Department has confiscated bear body parts along with tiger body parts from poachers from time to time. However, it is difficult to trace the source and identify the species of bear involved. Since the populations outside Protected Areas are patchy and occupy fragmented habitats, it is difficult to assess the impact of trade on the population without conducting a scientific study.

ii. Threats to the habitats

Himalayan brown bear is reported only from protected areas in the state. No population of Himalayan brown bear has been reported from outside protected areas. Though there are potential habitats of brown bear outside protected areas, the population may have been exterminated from these areas due to habitat fragmentation and anthropogenic pressure.

Fig. 6.24.3 The distribution of Himalaya brown bear in Uttarakhand



6.24.13 Management Actions Taken

i. Protection to species:

Himalayan brown bear is listed in Appendix I of CITES and in the endangered category of the IUCN Red List of threatened species. This species is also protected under Schedule I of Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). The level of protection, the bear enjoys outside the protected area is low.

ii. Habitat Management:

In case of territorial forest divisions where managers have limited resources there is growing pressure from the interspersed communities, developmental activities and poachers (Bargali, 2009). Detailed information on the distribution of brown bear, their habitat and interaction with surrounding atmosphere is completely lacking. Considering threats such as habitat degradation, human-bear

conflict, poaching for gall bladder, there is a need to study all the species in detail.

iii. Management of bear human interactions

No incident of human death or human injury or crop damage by Himalayan brown bear has been recorded by the Uttarakhand State Forest Department. However, the state forest department has a compensation policy for financial reimbursement in case of human mauling or killing by bears.

i. Research and Monitoring

Only a few studies to understand bear distribution in the state have been carried out so far (Sathyakumar, 2001; Bargali, 2009). No scientific information on parameters such as bear ecology, human-bear conflict and threats within or outside protected areas is available. Detailed research on distribution and ecology of brown bear needs to be undertaken in the state.

ii. Limitations

The lack of information on the distribution and abundance of brown bear in the entire state is the primary limitation. Rigorous documentation of human-bear conflict in territorial divisions is lacking.

6.24.14 Management Actions Proposed

1. Habitat management

The key habitats of bears should be identified through proper survey, both in and outside protected areas. The protection of these areas needs to be sustained and continued, besides restoring degraded habitats. Peripheral areas of bear distribution should be identified and specifically managed.

Sloth bear habitats outside the Protected Areas such as Dehradun, Haldwani, Haridwar and Terai-East forest division are under tremendous anthropogenic pressures, impacts of developmental activities, sand mining/quarrying and threats from poachers. Special attention is required to protect the species and its habitat in these areas.

2. Protection from poaching and illegal trade

The nature and extent of poaching and illegal trade in the state should be ascertained by a systematic monitoring program. An effective local forest intelligence, networking and institution mechanism should be created. Adequate infrastructure and provision of hi-tech equipments needs to be available with the department. Existing network of information should be strengthened and enforcement initiatives of other law enforcing agencies should be done in collaboration with the forest department. Local communities, field staff and law enforcing agencies may be sensitized. Investigation process in the state should be strengthened to increase conviction rate. Awards and incentives may be given to the field staff and informers for outstanding performances in conservation. In case of sloth bear habitats where locals are aware about the use of body parts in traditional medicines and areas near international boundaries, it is recommended to study bear distribution and trends in humanbear conflict in these vulnerable areas. There is a need to develop a more effective system to prevent killing of bears by poachers for its gall bladder.

3. Population management

Baseline survey and periodic estimation of bear population in the entire state should be conducted. The ideal sex ratio and breeding status should be determined. A monitoring protocol for bear population may be prepared in the state.

4. Bear-human conflict mitigation

The areas of conflict, their types and cause of conflict should be identified and a database can be created on that. A corpus fund can be created in the division head quarters for timely disbursement of ex-gratia claims. The sanctioning power of ex-gratia payments should be given to divisional level. The economic losses of crop/ livestock depredation by bears should be quickly assessed and compensation timely disbursed. Wildlife Rapid Action and Rescue Teams (RRT) may be created at divisional level. A fully equipped bear rescue/ rehabilitation centre may be created with immobilization equipment, drugs, animal holding boxes and transport facilities. Forest divisions supporting sizeable population of black bears (40-200) such as Pithoragarh, Tehri, Uttarkhashi, Champawat, Nainital and Badrinath have reported varying degree of human-bear conflict. Studies on ecology and bear habitat in these divisions can help in managing the population in the long run.

5. Research and Management

Research needs should be identified in the state and appropriate institutions/ organizations may be selected for realizing this need. A proper infrastructure may be created for research on bears in the state. A mechanism should be developed to apply research findings at the field level. Movement and ranging patterns of bears may be studied using GPS/Satellite telemetry. Bear habitat should also be evaluated and food habits of all three bear species studied in detail. DNA profiling of bears of the state needs to be done to know the genetic diversity and closeness with other sympatric species.

6. Capacity development

Awareness of all stakeholders on bear/ wildlife conservation and the philosophy of co-existence may be enhanced through appropriate communication materials. Proper infrastructure, resource person and specialized training module for capacity building should be developed. These should be a special focus on bear conservation in the interpretation centers of the state. Field staff needs to be trained and equipped with latest devices for bear management. Training and sensitizing local communities will help in minimizing retaliatory killings in conflict areas. Forest personnel and communities may be sent to exposure visit to different areas. In areas, where sloth bear and black bear overlap, there is need to train field staff to differentiate them.

7. Policy and legislation

State level consultation programs should be held and a bear conservation policy may be prepared. The judiciary in the state may be sensitized regarding the bear conservation. Corporate sectors may be involved in conservation as part of corporate social responsibility. Transboundary cooperation and collaboration with neighboring states and countries should be initiated for conservation of bear and wildlife crime control.



UTTAR PRADESH

BEAR CONSERVATION ACTION PLAN UTTAR PRADESH

2012

Subrat Kumar Behera¹, Anil Kumar Singh² and Rupak De³

Project team

Subrat Kumar Behera, Anil Kumar Singh, S. Sathyakumar, Harendra Singh Bargali, Rahul Kaul, Sandeep Kumar Tiwari, Prajna Paramita Panda and Krishnendu Mondal **Geographical location:** 23°52′ N 30°24′ N, 77°05′ E 84°38′ E

Area: 240,928 km²

Biogeographic zone: 4A-Punjab, 4B-Gujurat Rajputna, 6A-Central Highlands and

7A-Upper Gangetic Plain

Biotic Province: 4-Semi-arid, 6-Deccan Peninsula and 7-Gangetic Plain

Forest Area: 16,583 km² (6.88% of the geographical area)

Bear habitat range: 2060 km² **Bear Population estimate:** NA

Human population: 19,95,81,477 Livestock population: 9,27,98,760

6.25.1 Introduction

The state of Uttar Pradesh (U.P.) is surrounded by Bihar in the East, Madhya Pradesh in the South, Rajasthan, Delhi, Himachal Pradesh and Haryana in the west and Uttarakhand in the north and Nepal touch the northern borders of Uttar Pradesh (http://upgov.nic.in). Two of the largest river networks Ganga and Yamuna, pass through it creating the vast Gangetic Plains with fertile alluvial soil, leaving the smaller Southern hill Plateau as the other physiographic zone. The State experiences humid temperate climate and has four seasons, viz., winter (January to February), summer (March to May), monsoon (June to September), and post monsoon (October to December). Summers are extreme with temperatures fluctuating anywhere between 0°C and 50°C in parts of the State. The Gangetic plain varies from semi-arid to sub-humid. The mean annual rainfall ranges from 650 mm in the southwest corner of the State to 1000 mm in the eastern and southeastern parts of the state (http://upgov.nic.in).

Recorded forest area of the State is 16,583 km² (6.88% of its geographical area) (FSI, 2011). Uttar Pradesh has one National Park namely Dudhwa which is well known for tiger (*Panthera tigris*), swamp deer (*Rucervous duvaucelli*), reintroduced one horned

rhinoceros (*Rhinoceros unicornis*), and 23 Wildlife Sanctuaries (WS) including Chandraprabha, one of the oldest wildlife sanctuaries and an earlier Asiatic lion reintroduction site.

In U.P, sloth bear is the only bear species that is reported to occur. Sloth bear inhabits a wide variety of habitats including moist deciduous forests of terai landscape and open forest patches in central highlands of Deccan Peninsula. This species was once widely distributed over most of the forested areas in U.P. Sloth bear is now extirpated from Katerniaghat WS where it was present just 25 years ago. Only surviving populations remain in places where it was once abundant (Fig. 6.25.1).

6.25.2 Distribution and abundance

In Terai region, sloth bears occur in isolated patches. Sloth bear population in Pilibhit forest division and Kishanpur is believed to be continuous through the forest stretches of North Kheri and South Kheri Forest Divisions (FD). Dudhwa NP is no more continuous with Kishanpur and Katerniaghat WSs. About 25 years ago, sloth bear was once reported from Motichur and Kakraha range of Katerniaghat WS. In Bijnor and Najibabad FD, sloth bear population is contiguous with that of Corbett Tiger Reserve (TR).

Discussion with former staff of Sohagiburwa WS revealed that sloth bear was once present in North Chauk, Sheonpur and Nichlaul range. Now it's reported to be present only in Sheonpur range which is continuous to Valmiki TR. In Tulshipur range of Suhelwa WS, death of a person due to sloth bear attack confirmed the occurrence of sloth bear in this WS. There was no estimate of sloth bears in these areas.

Central Highland regions of U.P hold scattered populations of sloth bear but are in continuous threat from mining activities and increasing anthropogenic pressures. Sloth bear is reported to occur in good numbers in Kaimoor WS, Ranipur WS, Kashi WS, Chandraprabha WS and areas of Mirzapur FD.

We could obtain very little information on the status of bears in Kashi and Kaimoor Wildlife Division.

In Obra FD, although the sloth bear presence was not confirmed, it is reported to be present in Kone and Taria range. These two ranges are contiguous with bear occupied areas of Renukoot and Mirzapur FDs. Sloth bears were earlier reported to be resident from Renukoot FD which is now largely confined to seasonal movements of a few sloth bears from adjoining forests of Madhya Pradesh, Chhattisgarh and Jharkhand for foraging on madhuca flowers during Feb-March. The distribution of sloth bear in different forest divisions in Uttar Pradesh is given in table 6.25.1.

Table 6.25.1: Distribution of sloth bear in different Forest Divisions in Uttar Pradesh

Sl. No.	Name of Forest/Wildlife Divisions	Protected Areas	Bear presence
1	Dudhwa FD	Dudhwa NP	Yes
		Kishanpur WS	Yes
2	Kaimoor WD	Kaimoor WS	Yes
		Ranipur WS	Yes
		Mahavir Swami WS	Yes
		Vijay Sagar Bird Sanctuary	No
3	Kashi WD	Kashi WS	Yes
		Chandraprabha WS	Yes
4	Katerniaghat WD	Katerniaghat WS	No
5	Mirzapur		Yes
6	Najibabad		Yes
7	North Kheri		Yes
8	Obra		No
9	Pilibhit		Yes
10	Renukoot		Yes
11	Sohagibarwa WD	Sohagiburwa WLS	Yes
12	Sonabhadra		Yes
13	South Kheri		Yes
14	Suhelwa WD	Suhelwa WLS	Yes
15	Shahjehanpur		Yes
16	Bijnor, Bijnor		Yes
17	Bijnor, Najibabad		Yes
18	Jhansi		No
19	Lalitpur		Yes
20	Banda		No
21	Hamirpur		No
22	Mahoba		No
23	Shivalik FD		No

6.25.3 Population estimates

Information on sloth bear population size was available from eight FDs for three census years (Table 6.25.2). Population of sloth bear has been perceived as increasing in Bijnor, Kashi and Pilibhit, and decreasing in Mirzapur, Renukoot and Suhelwa. Population trend is unknown in North Kheri, South Kheri,

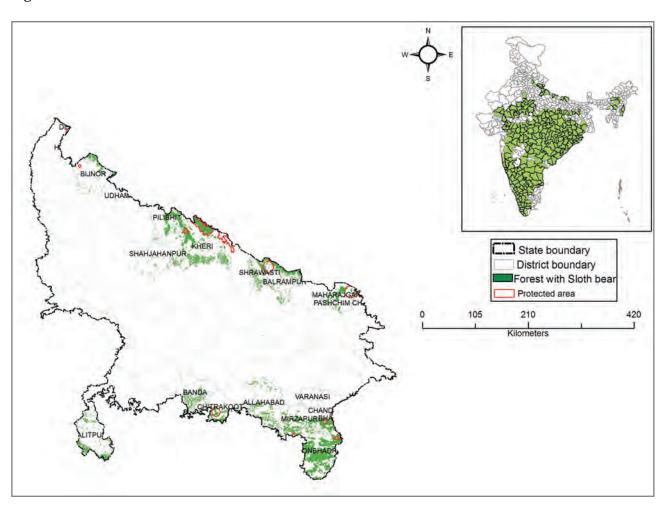
Sonebhadra and Sohagiburwa divisions. In Dudhwa and Kishanpur, sloth bear population is perceived as stable. We could not assess information from Kaimoor FD which is reported to hold a population of 119 individuals that is based on estimation exercises carried out in 2011-12. But, these estimates could not be validated due to methodological issues.

Table 6.25. 2: Population size of sloth bear in different Forest Divisions (Source UP State Forest Department)

Sl. No.	Forest Division Name	2007-08	2009-10	2011-12
1	Bijnor FD	0	0	3
2	Dudhwa National Park and Kishanpur Wildlife Sanctuary	16	32	8
3	Kaimoor Wildlife Division	*	*	19
4	Kashi Wildlife Division	72	*	*
5	Mirzapur	*	83	10
6	Najibabad Division	0	0	8
7	Pilibhit	0	2	1
8	Renukoot	1	1	1

^{*} Census not conducted

Figure 6.25.1 The distribution of sloth bear in Uttar Pradesh



6.25.4 Conservation Issues

i. Threats to species

Sloth bear populations in the state are threatened due to poaching for trade in bear bile and body parts. Local extinction of sloth bear from Katerniaghat WS is believed to be a consequence of hunting, habitat fragmentation and isolation. However, only one bear was reported to have been poached from Churk range of Sonebhadra FD during December 2009. Two trade routes are suspected to exist in Uttar Pradesh: a) Bijnor-Kotdwar-Lansdowne and b) Dudhwa-Delhi and Dudhwa Nepal.

Kalandars in U.P. were involved in using sloth bears for performing in the streets to a greater extent prior to 2004-05. Efforts of State Forest Department and intervention of various organisations significantly minimised this prohibited activity. Sloth bears rescued from Kalandars are kept in a rehabilitation centre established in Agra. Few cases of performing bears is at times reported from eastern UP and on the Nepal border. In the last five years (2006-11), 44 cases of human death/ injuries were reported from six FDs (out of 13 bear occupied FDs); that includes Kaimoor (n= 25), Pilibhit (n=8), Kashi (n=4), Mirzapur (n=4), Bijnor SFD (n=2) and Najibabad (n= 1). The details of human death and injury in last five years are given in table 3.

ii. Threats to habitat

Habitat loss and fragmentation of remaining habitats are the main threats to the sloth bear populations in U.P. Other than PAs, sloth bear habitat in other FDs are facing habitat degradation due to various activities including anthropogenic pressures from local communities, severe encroachments, construction of roads and other developmental

structures, diversion of forest land for nonforestry purposes and illegal cultivation by local communities (Semwal, 2005). The effects of anthropogenic pressure in terms of percentage use of bear habitat by local communities and livestock were moderate to high as reported by the officers of different forest divisions. Tourist movement does not seem to have any significant impacts on prime sloth bear habitat.

Existing roads and 106 km long stretch of Gonda-Mailani railway track in Dudhwa TR (including Dudhwa NP, Kishanpur WS and Katerniaghat WS) is a major threat to sloth bear population and other large animal. Official records showed death of two sloth bears by train accident in Dudhwa NP (one each in 1995 and 2000).

Large scale stone mining and stone crusher plants in districts of Mirzapur, Varanasi, Chandauli, and Sonabhadra are destroying prime habitat of sloth bears where this species was reported to be abundant in the past. Besides stone mining, thermal power plant in Renukoot and cement factory in Sonebhadra FD are among the major factors threatening bear habitats. Subsequent growth of human population, infrastructure, road network and increased motor vehicle movement altered and fragmented remaining bear habitats.

6.25.5 Management actions taken

i. Protection to species

The sloth bear is listed in Appendix I of CITES, Vulnerable (A2 cd+4cd; C1) category of the IUCN Red List of threatened species (Garshelis et al., 2008) and protected under Schedule I of Wildlife (Protection) Act as amended in 2003 (GOI, 1972; 2003). There are a number of PAs in U.P which afford protection

to sloth bear populations in the State.

ii. Habitat management

Information on activities aimed specifically at sloth bear conservation is lacking. The sloth bear populations are protected inside PAs but their distribution outside PAs require specific attention. No bear specific management has been taken up by the Forest Department of U.P., however, areas that are protected and managed under Project Tiger have benefited sloth bears as well.

iii. Management of bear-human interactions

The State forest department has a policy for paying compensation or ex gratia to humans mauled or killed by wild animals. Of the 13 bear occupied FDs, 44 cases of humansloth bear conflicts in the form of human death (n=4) and injuries to humans (n=40) were reported from six FDs during the period 2006 to 2011 (Financial Year). Human-Sloth bear conflict was highest in Kaimoor (25) followed by Pilibhit (08), Kashi (04), Mirzapur (04), Bijnor (02) and Najibabad (01) Forest Divisions (Table 6.25.3). Of the 42 applications received for compensation by the State Forest Department, 30 were processed and settled.

Table 6.25.3: Human-sloth bear conflict details in Uttar Pradesh during 2006-2011

	2006-07	2007-08	2008-09	2009-10	2010-11
No. of human-sloth bear conflict cases	7	5	13	8	11
No. of applications for compensation	7	5	13	8	9
No. of applications sanctioned compensations	7	2	6	7	8
No. of cases of crop depredation cases	0	0	0	0	0
No. of cases of human injuries	7	4	10	8	11
No. of cases of human deaths	0	1	3	0	0
Compensation towards human-sloth bear					
conflict (in Rs)	35000	60000	120000	35000	80000

iv. Research and monitoring

Till date, there have been no studies on sloth bear ecology or management in the State either by the Forest Department or by any other institutions/ organizations. Some supplementary information is available from different studies on tiger and rhinoceros from a few PAs.

v. Limitations

We could obtain only little information from Kaimoor FD, which hold substantial number of sloth bears. So far, there is no survey specifically targeting this species, hence, its current status in most areas including density estimates and other details are not available. Lack of information has hampered the management and protection of the bear habitat and its population.

6.25.6 Management Actions Proposed

1. Habitat improvement and restoration

Habitat restoration plans for sloth bear habitats are required to be developed and implemented. Sloth bear food plant species could be planted in degraded bear habitats. Eco-development activities may be strengthened in fringe areas of bear habitats to reduce anthropogenic pressures. Commercial activities should be regulated judiciously inside the bear habitats. Legal status should be provided to prime bear habitat outside the PA coverage.

2. Human-bear conflict mitigation

A study should be conducted to evaluate availability and use of Non Timber Forest Produce (NTFP) in relation to sloth bear distribution and habitat use. The dynamics of humanbear conflict should be assessed and conflict hotspots should be identified. Alternate income generation activity for forest dependent communities should be developed using Joint Forest Management. Ex-gratia and compensation to victims of bear attacks should be streamlined for quick delivery in conflict prone areas. Area specific conflict mitigation plan needs to be developed to reduce cases of retaliatory killings of bears, and loss to human life and property. Awareness activities should be undertaken to involve communities in conflict management. Trained manpower need to be ensured for restraining and rescue of bears in conflict scenario in key bear areas. A rapid response unit should be constituted in participation with local

communities in high bear-conflict areas.

3. Curbing illegal trade

Baseline information on bear trade, communities involved in the activities and their modus operandi should be generated in the State. Awareness needs to be spread among cross-section of the society to discourage illegal trade and use of bear products in identified hotspots. Adequate manpower should be appointed and site specific infrastructure needs to be created. Training on legal and enforcement aspects may be imparted in bear ranging divisions to strengthen protection mechanism and for crime control. Staff and other stakeholders should be felicitated for bear protection. Intelligence network should be strengthened to deter instances of bear poaching and trade. Liaison with various enforcement agencies should be improved in the state. Interstate and trans-boundary coordination need to be improved on trade control.

4. Awareness building for promotion of community participation

Resources like JFMC and EDCs should be used to reduce human bear conflict. NGOs operating in wildlife, forestry and natural resources sectors in the State should be involved in awareness activities. Under Corporate Social Responsibility schemes, corporate sectors should be involved in awareness activities. Government schemes should be integrated towards bear habitat frontline areas. Activities for various target groups should be organized periodically to improve understanding on bears and conservation issues.

Timely and effective media coverage should be ensured regarding conservation projects and issues on bears. Seminars should be organized on issues related to bears in different parts of the state.

5. Research and monitoring

Monitoring protocols should be developed for sloth bear survey and the frontline staff trained in bear sign surveys and monitoring. A survey needs to be undertaken to generate baseline information on occupancy, abundance and threats of sloth bears in the State. Critical bear populations and habitats have to be identified. Research

on ecology of sloth bear with reference to conflicts has to be carried out in selected protected areas and high human interference areas through research institutions, universities, NGOs and other organizations.

6. Capacity building of staff

The frontline staff should be provided adequate exposure in bear management particularly bear-human conflicts. The frontline staff should be trained in monitoring bear populations and law enforcement. Awards/Incentives should be given to wildlife staff and informers. Selected person should undergo skill development.



WEST BENGAL

BEAR CONSERVATION ACTION PLAN WEST BENGAL

2012

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Project team
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Geographic location: 21°20′ and 27°32′ N, 85°50′ and 89°52′ E

Biogeographic zone:2. Himalaya, 6. Deccan Peninsular, 7. Gangetic plain, 8. Coasts **Biotic Province:**2. Himalaya, 6b.Deccan Peninsular -Chota

Nagpur, 7b. Gangetic plan-lower gangetic plan and 8b Coast

East coast

Forest Area: 12,995 Km² (14.64 % of geographical area of the state)

Bear habitat range: approx 5450 Km²

Bear Population estimates: NA

Human population: 91,347,736 (2011)

Livestock population: Cattle & Buffaloes: 40,000,000

Goats: 188,00,000

6.26.1 Introduction

The State of West Bengal extends from the Himalayas in the north to the Bay of Bengal in the south. Physiographically, the State is divided into two distinct natural divisions, the North Himalayas and the South Alluvial Gangetic plains. The State forest cover is represented by eight forest types, *viz.*, Tropical Semi-evergreen, Tropical Moist Deciduous, Tropical Dry Deciduous, Subtropical Broadleaf Hill, Subtropical Pine, Himalayan Moist Temperate, Montane Wet Temperate, and Littoral and Swamp Forests.

West Bengal's climate varies from tropical savanna in the southern portions to humid subtropical in the north. The main seasons are summer, rainy season, a short autumn, and winter. While the summer in the delta region is noted for excessive humidity, the western highlands experience a dry summer like northern India, with the highest day temperature ranging from 38 °C to 45 °C. Monsoons bring rain to the whole state from June to September. Heavy rainfall of above 250 cm is observed in the Darjeeling, Jalpaiguri and Cooch Behar district. The diverse habitats support diverse flora and fauna including two of the four species of bears found in India viz.,

the Asiatic black bear (*Ursus thibetanus*) and sloth bear (*Melursus ursinus*).

SLOTH BEAR

6.26.2 Distribution and relative abundance

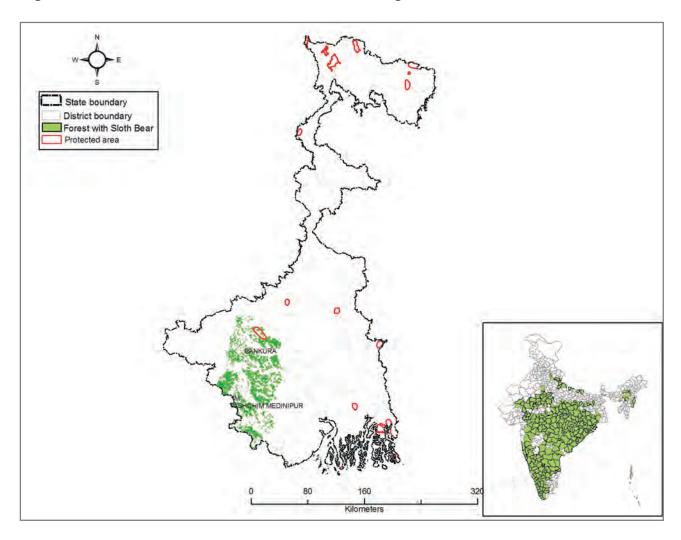
The Sloth bear is distributed both in North and South Bengal (Fig. 6.26.1). Blanford (1891) mentioned that the Sloth Bear appears to be found, though not commonly, in eastern and northern Bengal. Between 1981 and 1907, the hunting parties of the Maharaja of Cooch Behar had shot 133 bears in a part of northern West Bengal and western Assam. In West Bengal, the main hunting sites were in Cooch Behar and Jalpaiguri districts. Unfortunately he did not specify how many were Asiatic black bears and how many were Sloth bears as both the species were common in the area. This indicates that in northern Bengal it used to occur widely but now confined to a few protected areas owing to habitat alteration and opportunistic hunting (Choudhury, 2011). Currently the species is reported from six Forest Divisions (FD), that includes Buxa Tiger Reserve (TR), in North Bengal and in the forests of Purulia, Jhargram, Bankura south, Medinipur and Kangsabati North FDs in South Bengal (Choudhury, 2011; Sanyal et al,

2012; Anon 2012). sloth bear presence was recorded from Gorumara NP and Jaldapara WS in past.

The important sloth bear areas in

Purulia FD are in the forest ranges of Ajodhya hills, Bagmundi, Kotsila (Simli, Nawhatu, Jabor and Haratan), Matha and Sirkabad. In Bankura south FD it is mainly found in Raniband and Jhilmil ranges.

Figure 6.26.1. The distribution of sloth bear in West Bengal



6.26.3 Population Estimates

Very little information is available on the population or relative abundance of sloth bears in the State. The 2004 census of the State Forest Department indicates a population of about 200 sloth bears in south Bengal [Purulia FD (133), Kangsabati south FD (14), Bankura South (05), East Midnapore (48)]. However, these estimates have to be validated. No information on number is available from any Protected Areas (PA) of North Bengal. The sloth bear population is declining in all bear occupied FDs (except in Purulia) as indicated by more than 50% forest officials during the recent survey conducted by Wildlife Trust of India.

6.26.4 Conservation Issues

i. Threats to the species

The sloth bear in West Bengal is threatened by shrinkage and fragmentation of habitat, poaching for bear parts, and bearhuman conflicts. Although, human-bear conflicts are reported from the area, no cases of retaliatory killings have been officially reported. The bears are also killed by tribals during their annual hunting festival in Purulia and Jhargram FDs. Some of them are also killed for the illegal bear trade. Some of them also find their way to neighboring states of Jharkhand and Orissa. These areas are also prone to smuggling of live bears and bear parts.

ii. Threat to the habitat

The habitat within the PAs is more or less secured but areas outside the PA network are under constant threat of degradation and shrinkage due to encroachment, fragmentation and developmental activities, especially in south Bengal where most of the bear population is outside Protected Area. Encroachment of forest area is a major problem. Almost 34.9 ha in Wildlife II Jalpaiguri division, 98.5 hectares in Buxa Tiger Reserve East FD, 2300.4 ha in Bankura south FD, 582 ha in Medinipur FD, 1577.75 ha in Jhargram FD, 519.3 ha in Purulia FD and 524.96 ha in Kangsabati North FD is under encroachment (Anon 2011).

6.26.5 Management actions taken

i. Protection to species

The sloth bear is included in Schedule I of the Wildlife (Protection) Act, 1972, and Appendix I of CITES. It is listed as "Vulnerable" by IUCN A2 cd+4cd; C1 (2008).

The sloth bear population in PAs of North Bengal is largely protected but severely affected in areas outside PA network. Cases of bear killing/poaching are reported from areas in Purulia and Jhargram. Almost 66.7% of the FDs have moderate level of protection. Most of the FDs are moderately equipped (> 50%), but under-staffed. The officials also reported lack of training and capacity building to keep pace with the modus operandi of the illegal bear trade. Lack of knowledge about bear and protection is another hindrance to conservation of bears in South Bengal.

ii. Habitat Management

Due to lack of baseline information and absence of any research on the habitat, distribution and threats to bears, no concrete conservation and management plan for the species is in place. More than 50 km2 of forest area in sloth bear habitat is encroached (Anon 2011). Successful implementation of the Joint Forest Management has been able to reduce the pace of degradation and habitat loss in south Bengal and rejuvenation of degraded forests. These management steps along with the formation of Eco-development Committees (EDCs) and Forest Protection Committees (FPCs) have been able to get the support of the local villagers to protect and manage the forest.

iii. Management of Bear-Human Interactions

The incidence of bear-human conflict is comparatively less in West Bengal. Very few cases of rescue and rehabilitation of bears in the wild have been reported from the State. Almost all FDs have conflict mitigation teams, but they are mostly for human-elephant conflicts and the team is not trained to handle bear-human situations. The State has a bear rescue centre in Kangsabati North FD in

Purulia that was established on 1st September 2007 in collaboration with the Wildlife SOS. The centre currently houses three sloth bears (2 females: 1 male).

iv. Research and Monitoring

So far there has been no survey specifically targeting this species, hence, its current status, density estimates and other details are not available. Most of the bear population estimates are opportunistically collected in censuses for other large mammals.

v. Limitations

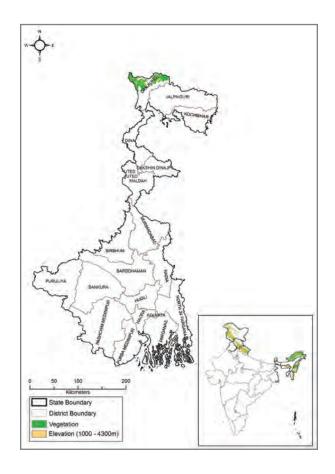
The state lacks information about sloth bear distribution, number and abundance. There are no regular surveys or monitoring by the State Forest Department or any other Institute/ organization.

ASIATIC BLACK BEAR

6.26.6 Distribution and relative abundance

The Asiatic black bear is reported only from the hills of northern parts of the State in the districts of Darjeeling and Jalpaiguri. The present survey and review of literature revealed that Asiatic black bear is found in the hilly forest and PAs of seven FDs in the State, Darjeeling, Kalimpong, Kurseong, Jalpaiguri, Wildlife Division-I, Wildlife Division-II and Buxa East covering approximately one third of the forest areas of North West Bengal, as reported from the survey conducted by WTI.

Figure 6.26.2. The distribution of Asiatic black bear in West Bengal



The PAs with Asiatic black bear populations includes Neora Valley NP, Singalila NP, Senchal WS, Mahananda WS and Buxa TR (Sathyakumar, 2001; Sathyakumar and Choudhury, 2008; NEWS, 1996; Islam and Rahmani, 2004; Jha and Rai, 2009; Choudhury, 2011; Sanyal et al., 2012; Anon, 2012; WWF, 2012) (Fig. 6.26.2). Recent studies by WWF India and the state forest department indicates widespread distribution of bears in both east and west ranges of Senchal WS, especially in Topkhana and Gaddikhana forest blocks.

6.26.7 Population Estimates

Very little information is available on the population or relative abundance of Asiatic black bears in the State. The 2004 census of the State Forest Department indicates a population of about 65 Asiatic black bears in the following areas [Singalila NP (03), Senchal WS (20), Neora valley NP (18), Darjeeling FD (24)]. However, this estimate needs to be validated. Systematic surveys are expected to reveal the reliable estimates for bears in the State although there are reports of increase in bear populations over the years in Neora Valley NP, Senchal WS and forested areas of Kalimpong FD.

6.26.8 Conservation Issues

i. Threats to the species

Not much information is available on poaching, retaliatory killing or live cub trade from the state. However, between 2002-03 and 2009-10, five seizures of Himalayan black bear/sloth bear and one case of bear parts has been officially reported (Annual report, W.B. Wildlife Wing, 2009-10). Black bear is mostly poached for its gall bladder and skin, although other parts are also used by the tribals in traditional medicines. The local communities indicated that hairs (62%), nails (31%), teeth

(7%), etc are mostly used locally for medicine. Almost 40% of the divisional forest officials indicated that there is possible trade of bear and bear parts to neighboring countries like Bhutan, Nepal and Bangladesh with Siliguri and Sikkim as main trade centers from where they find their way to neighboring countries. Similar opinion was reflected by few villagers from Darjeeling and WL Division-I. Trade study of Asiatic black bear as well as sloth bears by WTI (unpublished report 2005) indicates Siliguri and Kolkata to be an important trade centre for bear parts. Managers from more than 50% of the bear forest division indicated that the intelligence gathering mechanism and the team is in place and has been able to prevent large scale poaching and trade of bear parts. Although human-bear conflict is reported from the area, no cases or retaliatory killing has been reported.

ii. Threat to the habitat

The Asiatic black bear is distributed in Darjeeling and Jalpaiguri districts, mostly in the PAs namely Neora Valley NP, Singalila NP, Senchal WS, Mahananda WS and Buxa TR. The habitat within the PAs are more or less secured but areas outside the PA network are under constant threat of degradation and shrinkage due to encroachment, fragmentation and developmental activities. Almost 41.44 hectares in Darjeeling division, 34.9 ha in Wildlife II division, 103.4 ha in Jalpaiguri division and 98.5 hectares in Buxa Tiger Reserve East division is under encroachment (Anon, 2011). In the last one decade, the human population in Darjeeling and Jalpaiguri districts have increased by almost 14% thereby adding further pressures on natural resources. Habitat loss along with anthropogenic pressures have further degraded and fragmented the habitats

resulting in increased interface between the bears and human population leading to conflicts, although the level of conflict is comparatively less. Recent studies by WWF indicated a similar trend from fringe areas of Senchal WS. Almost 42% of the FD reported incidences of human-bear conflict. These were mostly in Wildlife Division-I and II and in Kalimpong FD. Senchal WS and Neora Valley NP reported maximum conflict cases. One of the main reasons for conflict between bears and humans is because of locals venturing into the PA to collect fodder for their livestock. Interview with local communities indicated that lack of land-use planning and use of forest resources due to increased human population have threatened the bear habitats in the State. Increasing human and livestock populations, expansion of residential areas and roadway networks in forest areas not only cause reduction and fragmentation of bear habitats, but also degrade the habitats by depleting bear food plants. These big mammals face environmental and genetic stress which occurs in isolated subpopulations (Sathyakumar, 1999).

6.26.9 Management actions taken

i. Protection to species

Asiatic black bear is included in Schedule II, part 2 of Wildlife Protection Act, 1972 and Appendix I of CITES. It is listed as "Vulnerable" by IUCN (2008). In spite of its conservation status and protection under various wildlife laws, the species does not attract the attention it deserves. Although a majority of the forest divisions (85%) indicated that the species has been provided an adequate level of protection, however, trade of bear parts is reported from the area. Cases of bear killing/poaching are reported from Singalila NP, Neora valley NP and Mahananda WS. About 42% of the FDs have

conflict management teams, but most of these teams have been formed for mitigating human-elephant conflict and/or humanleopard conflicts. Many of the FDs are moderately equipped (> 50%) and are under staffed (57% area). The officials also reported lack of training and capacity building to keep pace with the challenges of the illegal bear trade. Another reason of increased humanbear conflicts is lack of awareness among the locals about the threat to the species and precautions to be taken while living in and near bear habitats. Bear centric awareness campaign is being undertaken only in a few areas, such as Neora valley NP and surrounding areas.

ii. Habitat Management

More than half of the potential black bear habitat range (56%) in the State has been included in the PA network. However, due to lack of research related to black bear no concrete conservation and management plan is under implementation. Almost 16.3% of the people interviewed feel that there should be a proper land use planning. About 7% of the people interviewed feel that the pressure on the bear habitat could be reduced by minimizing use of PAs and other bear habitats by human, while 4% suggested preventing deforestation, and 2.33% felt need for better protection. The recent proposal of the State Government to increase the area of Neora Valley NP, one of the important black bear habitats in the State by including the forest blocks of Ambiok, Mo, Khempong, Kolrong, Lava, Rhenok, Russet, Pangkhowa and Ruka to the NP in Kalimpong sub division will help in strengthening the conservation of bears and other species in the area.

iii. Management of Bear-Human Interactions

No rescue and rehabilitation of bears in the wild has been reported in the State despite reports of human-bear conflicts, majority of them from Wildlife Division I and II and Kalimpong FD. Forest Department provides compensation only for attacks by species such as the elephant, tiger, leopard, Gaur, and crocodile. There is no compensation for crop damage by bears. However, the Government of West Bengal pays one lakh rupees as ex gratia to the victim's family in case of death due to a bear attack. Although the State is making efforts to manage human-bear conflicts in certain areas, this is being hindered due to insufficient and well trained staff. Proper monitoring of human-bear conflicts, community participation and awareness would lead to reduction in such conflict cases.

iv. Research and Monitoring

A major hurdle for the conservation of Asiatic black bear is the lack of information in terms of its distribution, number and abundance. There are no regular surveys and monitoring by the State Forest Department or any other Institute/ organization. Most of the population estimates for bears are made opportunistically along with other large mammals. The last published data by State Forest Department is for the year 2004 from very limited areas. More than 72% of the bear range division informed that no research is being carried/or was carried out on bears. Jha and Rai (2009) undertook behavioural study for the conservation breeding of Asiatic black bear in Padmaja Naidu Himalayan Zoological Park, Darjeeling. WWF India has undertaken camera trap study investigate the status of bear numbers in different habitats of Senchal WS during 2011-12 (WWFunpublished). The long-term aim of the

camera trap study and village survey is to determine the scale of conflict, how to solve it and ultimately help develop a conservation plan for Senchal WS in partnership with the State Forest Department. Sanyal et al. (2012) assessed distribution of Asiatic black bear in the State. No long-term bear research has been undertaken in the state.

v. Limitations

The current status of black bear in most areas including density estimates and other details are not available. Lack of information has hampered the management and protection of the bear habitat and its population.

6.26.10 Management actions proposed

1. Research and monitoring

One of the major hurdles in preparing a conservation and management plan for black bear habitat is lack of information in terms of its ecology, distribution, number and threat analysis. Almost 71% of the FDs reported no research in their area. Most of the earlier bear population estimates were based on opportunistic survey while undertaking elephant/ tiger population estimation exercises. It has been proposed to undertake specific survey and research targeting bears to understand the impact of habitat fragmentation and degradation on bear population and to look into the dynamics of bear-human conflict and mitigation measures. A simple protocol for bear surveys should be developed for use by field staff to generate baseline information on occupancy, abundance, habitat, and threats. Training of field staff in the use of these monitoring protocols is another important requisite. Suitable bear habitats which lack bear

presence should be identified, to implement conservation measures such as protection, and habitat restoration involving local communities. Local universities, NGOs and other national research organizations may be invited to carry out projects on bear research and conservation.

2. Habitat management

The effects of deforestation, encroachment, changed landscapes due to tea plantations and agricultural fields have already impacted bear habitats and therefore needs to be controlled. Most PAs in north Bengal are islands of forested habitats surrounded by human populations that are dependent on forest for livestock grazing, fuel wood, NTFC collection, and other natural resource use and have also encroached land for agriculture and settlement. More than 280 ha of bear habitat is under human encroachment which should be freed (Anon, 2011). Potential bear habitat needs to be identified and included in the PA network. The quality of existing bear habitats needs to be evaluated and improved in terms of food quality and quantity. Also to facilitate larger habitat availability and exchange of genetic material, the important wildlife corridors connecting major habitats have to be identified, secured and strengthened. Green livelihood for people in fringe villages depending on the forest could be provided to strengthen livelihood that would reduce their dependency on forest. This will also help in gaining their support for wildlife conservation. A habitat restoration plan could be formulated and executed in bear ranging FDs and that should be incorporated in management plans of PAs. Ecodevelopment activities should be strengthened in fringe areas of key bear habitats to reduce anthropogenic pressures. The commercial activities must be judiciously regulated inside the bear habitats. Legal status should be provided to prime bear habitat outside the PA coverage.

3. Trade and poaching control

Most PAs and FDs are understaffed or staffed by inactive individuals and therefore, it is strongly recommend that the work force of the State Forest Department be enhanced by new recruitments on a priority basis. Front line forest staff should be well equipped with modern equipment and trained in use and application of modern techniques of patrolling and communications. Anti-poaching squad should also be properly trained in recording evidence of poaching and wildlife crime to strengthen the case in court and better conviction. Baseline information should be generated on bear trade, communities involved in the activities and their modus operandi. Forest department personnel should take up joint patrolling with paramilitary forces along the international boundaries (Nepal and Bhutan). Inter-state coordination should be strengthened and joint patrolling of transition areas (Sikkim, Assam and Bihar) could be planned. Regular intelligence gathering should be carried out along with monitoring of poachers and smugglers involved in illegal bear trade. Local villagers/ tribals/ could be employed as informants and to give incentives against each successful information leading to seizures/raids. As a motivation measure, the anti-poaching squad

should be properly insured so that in cases of any eventualities, assistance reaches their family at the earliest. Provision should also be kept to employ an able member of the family in case of deaths. Enforcement agencies such as police and customs should be sensitized and trained in wildlife crime prevention especially around sensitive areas. Incorporate forest, wildlife conservation and wildlife crime prevention training as an important aspect of induction training program as well as in service training program. An information sharing mechanism may be developed and regular interactions should be performed between forest department, police, customs and non governmental agencies working on this issue through the Wildlife Crime Bureau.

4. Human-bear interactions

The incidence of human conflict with bear, elephant, tiger, and leopard is reported to be on the increase in north Bengal due to shrinkage, fragmentation and degradation of wildlife habitats due to human habitation, agriculture and tea gardens. Though the State has antidepredation squads, these are not trained to handle bears. These teams also need to be operative in bear areas to handle conflict cases. Apart from the Rapid Response team/ anti-depredation squad, other aspects leading to conflict also need to be researched to plan mitigation measures. The villagers in fringe villages are dependent on the forest for fuel wood, livestock grazing, and other natural resource uses. Some of these impacts could be minimized by developing pasture lands and woodlands on community and

Government land outside the forest. Also eco-development activities in these villages need to be undertaken to reduce their dependency on forest. The ex-gratia support should be expedited in bear ranging areas. An emergency corpus may be created in each division for exgratia support. Area specific conflict mitigation plan may be developed to reduce cases of retaliatory killings of bears and loss of human property and life. Awareness activities should be undertaken to involve communities in conflict management. A rapid response unit can be constituted in participation with local communities in high bearconflict areas especially in the hills.

5. Awareness and education

Another major hurdle to bear conservation is the lack of awareness among the locals about the ecological significance of the species and the do's and don'ts in bear habitat. This needs to be undertaken in fringe villages, especially around Senchal WS, Neora valley and Singalila NPs. Although, most of these activities are carried out during wildlife week there is a need to make these a regular affair. Awareness activities for various target groups should be organized periodically to improve understanding on bears and conservation issues. A bear conservation education network may be developed in the state. Timely and effective media coverage should be done regarding conservation projects and issues on bears. Seminars could be organized on issues related to bears. Coordination and cooperation with media should be strengthened for promotion of bear conservation.

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APPENDIX I

List of Protected Areas in India with bear species

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
Andhra Pradesh	Kawal WS	2			
Anunra Frauesn	Pranahita WS	√ √			
		1			
	Sivaram WS	1			
	Pakhal WS	√ 			
	Papikonda WS	√ 			
	Pocharam WS	√			
	Nagarjuna Sagar Srisailam TR	√ /			
	Gudla Brahmeswara WS	√ 			
	Kaundinya WS	V			
	Sri Venkateswara NP	V			
	Kinnerasani WS	$\sqrt{}$			
	Sri Lanka Malleswaram WS	$\sqrt{}$			
	Sri Peninsula Narsimha WS	$\sqrt{}$			
Arunachal Pradesh	Pakhui WS	$\sqrt{}$			
	Dibang WS		V		V
	Eagle's Nest WS		V		V
	Itanagar WS		V		V
	Kamleng WS		V		V
	Kane WS		V		V
	Mehao WS		V		1
	Mouling Ws		V		V
	Namdhapa TR		V		V
	Sessa Orchid WS		V		V
	Taley Valley WS		V		V
	Pakke TR		V		V
	D'Ering WS	√			
Assam	Kaziranga NP	√			
	Manas NP	√			V
	Nameri NP	V	√		√
	North Karbi Anglong WS	V			V
	Sonai Rupai WS	, 			1
	Barnadi WS	√ √	•		
	Nambor WS	√ √			
	2 131210 02 110	,			

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
Nagaland	Fakim WS		<i>\$.</i>		V.
Orissa	Baisipalli WS	1			
	Chandak Dampara WS	V			
	Karlapat W5	V			
	Khalasuni WS	V			
	Kotagad WS	N			
	Kuldiha WS	V			
	Satkosia Gorge WS	V			
	Sindipal NP & WS	V			
Rajasthan	Bandh Baratha WS	V			
	Bassi	4			
	Bhensrodgarh WS	N.			
	Darrah WS	V			
	Jawahar Sagar W5	V			
	Kela Devi WS	V			
	Kumbhalgarh WS	V			
	Mount Abu W5	V			
	National Chambal WS	V			
	Phulwari Ki Nal WS	1			
	Ramgarh Vishdhari WS	4			
	Ranthambhore NP	V			
	Sariska NP	4			
	Sawai Man Singh WS	4			
	Sitamata WS	1			
	Tadgath WS	N			
	Van Vihar WS	1			
Sikkim	Fambong LhoWS		i/		
	Khangchendzonga NP		V		
	Pangolakha NP		4		
	BarseyWS		4.		
	Singba WS		V. —		
	Kyongnosla Alpine W5		W.		
	Menam WS		4		
Tamil Nadu	Indira Gandhi (Annamalai) NP	N	7.		
	Kalakad WS	N			
	Mudumalai NP & WS	y.			
	Mundanthurai NP	ý		1	
Tripura	Trishna WS		V		1
Uttarakhand	Corbett NF	¥	4		

Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
Nambor-Doigrung WS	√			
East Karbi Anglong WS	√	V		V
Marat Longri WS	√	V		V
Barail WS	√ V	V		V
Bhimbandh WS	√			
Valmiki NP & WS	√			
Kaimur WS	V			
Gautam Budha WS	√			
Rajgir WS	√			
Achanakmar WS	√			
Badalkhol WS	√			
Barnawapara WS	V			
Bhairamgarh WS	V			
Gomardha WS	V			
Guru Ghasi Das NP	V			
Indravati NP	V			
Kangerghati NP	V			
Pamed WS	√ √			
Semarsot WS	√			
Sitanadi WS	√			
Tamorpingla WS	√			
Udanti WS	√			
Cotigao WS	√			
Mollem NP & WS	√			
Shoolpaneshwer	√ \			
	√			
	√			
Jessore	√			
Balaram Anbaji	√			
Bandli WS		√		
Chail WS		√		
Churdar WS		√		
			√	
			√	
Kias WS		V	√	
		√ ·	V	
	Nambor-Doigrung WS East Karbi Anglong WS Marat Longri WS Barail WS Bhimbandh WS Valmiki NP & WS Kaimur WS Gautam Budha WS Rajgir WS Achanakmar WS Badalkhol WS Barnawapara WS Bhairamgarh WS Gomardha WS Guru Ghasi Das NP Indravati NP Kangerghati NP Pamed WS Semarsot WS Sitanadi WS Tamorpingla WS Udanti WS Cotigao WS Mollem NP & WS Shoolpaneshwer Jambughoda Ratanmahal Jessore Balaram Anbaji Bandli WS Chail WS Churdar WS Daranghati WS Gamgul Siahbehi WS Great Himalayan NP	Nambor-Doigrung WS East Karbi Anglong WS Marat Longri WS Barail WS Bhimbandh WS Valmiki NP & WS Kaimur WS Gautam Budha WS Rajgir WS Achanakmar WS Badalkhol WS Valmida Das NP Indravati NP Kangerghati NP Pamed WS Semarsot WS Sitanadi WS Valmida WS Valmiki NP & Valmiki NP Valm	Nambor-Doigrung WS East Karbi Anglong WS Marat Longri WS Barail WS Bhimbandh WS Valmiki NP & WS Kaimur WS Gautam Budha WS Rajgir WS Achanakmar WS Barnawapara WS Bhairamgarh WS Gomardha WS Guru Ghasi Das NP Indravati NP Kangerghati NP Pamed WS Semarsot WS Sitanadi WS Udanti WS Cotigao WS Mollem NP & WS Shoolpaneshwer Jambughoda Ratanmahal Jessore Balaram Anbaji Bandli WS Chail WS Chail WS Camyul Siahbehi WS Canawar WS Kanawar WS	Nambor-Doigrung WS East Karbi Anglong WS Marat Longri WS Barail WS Bhimbandh WS Valmiki NP & WS Kaimur WS Gautam Budha WS Rajgir WS Achanakmar WS Badalkhol WS Barnawapara WS Bhairamgarh WS Gomardha WS Gomardha WS Guru Ghasi Das NP Indravati NP Vamed WS Semarsot WS Sitanadi WS Vamorpingla WS Udanti WS Cotigao WS Mollem NP & WS Shoolpaneshwer Jambughoda Ratanmahal Jessore Balaram Anbaji Bandli WS Chail WS Chail WS Camgul Siabbehi WS Garet Himalayan NP Kias WS Kalatop-Khajjiar WS Kanawar WS Kanawar WS V

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
	Kugti WS		V	√	
	Lippa Asrang WS		V	√	
	Majhatal WS		V		
	Manali WS		V		
	Nargu WS		√		
	Rupi Bhaba WS		V	√	
	Sangla (R/Chitkul)WS		V	√	
	Sechu Tuan Nala WS		V	√	
	Shikari Devi WS		V		
	Talra WS		$\sqrt{}$		
	Tundah WS		$\sqrt{}$	√	
Jammu & Kashmir	Ajas CR		V		
	Bran-Harwan CR		V		
	City Forest (Salim Ali) NP		V		
	Dachigam NP		V	V	
	Gulmarg WS		V	V	
	Hirapora WS		V	√	
	Kanji			V	
	Khiram-Shikargarh-Panyar-		V		
	Khangund CR		V		
	Khrew-Khonmoh CR		V		
	Kistwar NP		V	√	
	Lachipora WS		V	V	
	Limber WS		V	V	
	Naganari CR		V		
	Overa-Aru WS		V	V	
	Rajparian (Daksum) WS		V		
	Thajwas (Baltal) WS		V	V	
	TattaKuti-Kalamund WS			V	
	Wangat CR				
Jharkhand	Palamau WS	V			
	Betla NP	√			
	Dalma WS	V			
	Hazaribagh WS	√			
	Koderma WS	√			
	Palkot WS	√			
	Topchanchi WS	√ √			
Karnataka	Adichunchanagiri WS	√ √			
	Anshi NP	√			

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
	Arabithittu WS	√			
	Bandipur NP	√			
	Bannerghatta NP	√			
	Bhadra WS	√			
	Biligiri Rangaswamy Temp	le WS√			
	Brahmagiri WS	√			
	Dandeli WS	√			
	Doraji Bear WS	√			
	Kudremukh NP	√			
	Melkote Temple WS	√			
	Mookambika WS	√			
	Nugu WS	√			
	Nagarahole NP	√			
	Sharavathi Valley WS	√			
	Shettihalli WS	√			
	Someshwara WS	√			
Kerala	Chendurang WS	√			
	Chimmony WS	√			
	Chinnar WS	√			
	Eravikulam NP	√			
	Idukki WS	√			
	Neyyar WS	√			
	Parambikulam WS	√			
	Peppara WS	√			
	Periyar NP & WS	√			
	Silent Valley NP	√			
	Wayanad WS	√			
Madhya Pradesh	Bagdara WS	√			
, , , , , , , , , , , , , , , , , , ,	Bandhavgarh NP	√			
	Bori WS	1			
	Fossil NP	√			
	Kanha NP	√ V			
	Kheoni WS	V			
	Panna NP	1			
	Madhav NP	1			
	National Chambal WS	1			
	Noradehi WS	1			
	Pachmarhi WS	1			
	Palpur Kuno WS	1			
	Taipui Ruilo W3	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
	Panpatha WS	$\sqrt{}$			
	Pench (Priyadarshini) NP & W	5 √			
	Phen WS	√			
	Ratapani WS	√			
	Sanjay NP	$\sqrt{}$			
	Sardarpur WS	$\sqrt{}$			
	Satpura NP	√			
	Singhori WS	$\sqrt{}$			
Maharashtra	Andhari WS	$\sqrt{}$			
	Bhamragarh WS	$\sqrt{}$			
	Bor WS	$\sqrt{}$			
	Chandoli WS	V			
	Chaprala WS	√			
	Gautala WS	V			
	Gugamal NP	V			
	Katepurna WS	V			
	Melghat WS	V			
	Nagzira WS	√			
	Nawegaon NP	V			
	Painganga WS	V			
	Pench NP	V			
	Tadoba NP	V			
	Wan WS	V			
	Yawal WS	V			
Manipur	Kailam WS		V		V
Meghalaya	Balphakram NP		V		
	Nokrek NP		V		
	Nongkhyllem WS		$\sqrt{}$		
	Siju Ws		V		
Mizoram	Phawngpui Blue Mountain NP		$\sqrt{}$		V
	Lengteng WLS		$\sqrt{}$		$\sqrt{}$
	Dumpa TR	$\sqrt{}$	$\sqrt{}$		$\sqrt{}$
	Murlen NP		√		V
	Ngengpui WLS		√		V
	Pualreng WLS				V
	Khawnglung WLS				V
	Tawi WLS				V
	Thorangtlang WLS				V
	Tokalo WLS				V

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
Nagaland	Fakim WS		<i>\$.</i>		V.
Orissa	Baisipalli WS	1			
	Chandak Dampara WS	V			
	Karlapat W5	V			
	Khalasuni WS	V			
	Kotagad WS	N			
	Kuldiha WS	V			
	Satkosia Gorge WS	V			
	Sindipal NP & WS	V			
Rajasthan	Bandh Baratha WS	- V			
	Bassi	4			
	Bhensrodgarh WS	N.			
	Darrah WS	V			
	Jawahar Sagar W5	V			
	Kela Devi WS	V			
	Kumbhalgarh WS	V			
	Mount Abu W5	V			
	National Chambal WS	V			
	Phulwari Ki Nal WS	1			
	Ramgarh Vishdhari WS	4			
	Ranthambhore NP	V			
	Sariska NP	4			
	Sawai Man Singh WS	4			
	Sitamata WS	1			
	Tadgath WS	N			
	Van Vihar WS	1			
Sikkim	Fambong LhoWS		i/		
	Khangchendzonga NP		V		
	Pangolakha NP		1		
	BarseyWS		4.		
	Singba WS		V. —		
	Kyongnosla Alpine W5		W.		
	Menam WS		4		
Tamil Nadu	Indira Gandhi (Annamalai) NP	N	7.		
	Kalakad WS	N			
	Mudumalai NP & WS	y.			
	Mundanthurai NP	ý		1	
Tripura	Trishna WS		V		1
Uttarakhand	Corbett NF	¥	4		

State	Protected Area	Sloth Bear	Black Bear	Brown Bear	Sun Bear
	Rajaji NP	√	$\sqrt{}$		
	Askot WS		√		
	Govind NP		√	√	
	Kedernath Ws		$\sqrt{}$	$\sqrt{}$	
	Mussourie WS		$\sqrt{}$		
	NandaDevi NP and BR		$\sqrt{}$	$\sqrt{}$	
	Valley of Flowers NP		$\sqrt{}$	√	
	Sonanadi WS	√			
Uttar Pradesh	Chandraprabha WS	√			
	Dudhwa NP	√			
	Katerniaghat WS	√			
	Kishanpur WS	√			
	National Chambal WS	√			
	Ranipur WS	√			
West Bengal	Buxa NP & WS	√	$\sqrt{}$		
	Mahanada WS		$\sqrt{}$		
	Gorumara NP	√			
	Neora Valley NP		√		
	Singalila NP				
	Jaldapara WS	√			

APPENDIX II

Annexure Table 1. Records of Asiatic Black bear (Ursus thibetanus) in Indian zoos

S.No.	Zoo Name	Male	Female	Unsex	Total
1.	Aizawl Zoo (Mizoram Zoo), Aizwal	5	3	0	8
2.	Alipore Zoological Garden, Kolkata	1	2	0	3
3.	Arignar Anna Zoological Park , Vandalur,				
	Chennai	2	0	0	2
4.	Assam State Zoo Cum Botanical Garden,				
	Guwahati	6	4	2	12
5.	Bellary Childrens Park-Cum-Zoo, Bellary	0	1	0	1
6.	Bhagwan Birsa Biological Park, Ranchi,	1	3	3	7
7.	Biological Park, Itanagar,	5	3	0	8
8.	Centre For Bear Rehabilitation And				
	Conservation, Pakke	2	2	0	4
9.	Deer Park, Narain Tewari Dewal, Almora	1	0	0	1
10.	Dhauladhar Nature Park, Gopalpur	5	2	0	7
11.	Dr. Shyamaprasad Mukharjee Zoological				
	Garden, Surat	1	0	0	1
12.	Gandhi Zoological Park, Gwalior	0	2	0	2
13.	Himalayan Nature Park, Kufri	3	0	0	3
14.	Himalayan Zoological Park, Bulbuley,				
	Gangtok	1	1	0	2
15.	Indira Gandhi Zoological Park,				
	Visakhapatnam	1	1	0	2
16.	Jaipur Zoo, Jaipur	1	1	0	2
17.	Jammu Zoo, Ramnagar	1	1	0	2
18.	Jawaharlal Nehru Biological Park, Bokaro	2	1	0	3
19.	Jodhpur Zoo, Jodhpur	1	0	0	1
20.	Kamla Nehru Prani Sanghrahalaya Zoo,				
	Indore	1	1	0	2
21.	Kamla Nehru Zoological Garden, Ahmedabad	1	1	0	2
22.	Kanpur Zoological Park, Kanpur	2	1	3	6
23.	Kapilash Zoo, Dhenkanal	1	1	0	2
24.	Kashmir Zoo, , Srinagar	1	3	0	4
25.	Lady Hydari Park Animal Land, Shillong	3	2	0	5
26.	Lucknow Zoological Park, Lucknow	1	2	0	3
27.	Ludhiana Zoo, Ludhiana	1	1	0	2

S.No.	Zoo Name	Male	Female	Unsex	Total
28.	Mahendra Chaudhury Zoological Park,				
	Chhatbir, Chandigarh	4	7	0	11
29.	Maitri Baagh Zoo, Bhilai	1	1	0	2
30.	Manipur Zoological Garden, Imphal	8	4	0	12
31.	Miao Mini Zoo, Miao	0	0	4	4
32.	Mini Zoo,Bhiwani, Bhiwani	1	1	0	2
33.	Nagaland Zoological Park, Rangapahar,				
	Dimapur	5	2	3	10
34.	Nandan Van Zoo, Raipur	2	2	0	4
35.	Nandankanan Biological Park, Bhubaneshwar	1	2	0	3
36.	National Park, Bannerghatta Zoological				
	Garden, Bangalore	4	2	0	6
37.	National Zoological Park, Delhi	2	3	1	6
38.	Nehru Park Zoo, Danakgre,Tura,				
	Akhongini Tura	1	3	0	4
39.	Nehru Zoological Park, Hyderabad	1	3	0	4
40.	Padmaja Naidu Himalayan Zoological Park,				
	Darjeeling	2	2	0	4
41.	Pt. Govind Ballabh Pant High Altitude Zoo,				
	Nainital	0	2	0	2
42.	Rajkot Zoo, Rajkot	1	1	0	2
43.	Renuke Mini Zoo, Sirmur	1	2	3	6
44.	Rescue And Rehabilitation Home, Tutikandi	2	3	3	8
45.	Rewalsar Mini Zoo, Mandi	4	1	0	5
46.	Sakkarbaug Zoo, Junagarh	1	0	0	1
47.	Sanjay Gandhi Biological Park, Patna	3	1	0	4
48.	Sayaji Baug Zoo, Vadodara	1	1	0	2
49.	Sepahijala Zoological Park, Tripura, Agartala	5	7	0	12
50.	Sri Chamarajendra Zoological Gardens, Mysore	3	2	0	5
51.	State Museum & Zoo, Thrissur	1	1	0	2
52.	Thiruvananthapuram Zoo,				
	Thirunvananthapuram	0	1	0	1
53.	Udaipur Zoo, Udaipur	1	1	0	2
54.	Van Vihar National Park Zoo, Bhopal	1	0	0	1
55.	Veermata Jijabai Bhosale Udyan & Zoo, Mumbai	0	1	0	1
	Total	106	95	22	223

Annexure Table 2. Records of Sloth bear (Melursus ursinus) in Indian zoos

S.No.	Zoo Name	Male	Female	Unsex	Total
1.	Agra Bear Rescue Facility, Agra	139	129	0	268
2.	Alipore Zoological Garden, Kolkata	1	2	0	3
3.	Amtes Animal Ark, Wardha	1	2	0	3
4.	Arignar Anna Zoological Park, Vandalur,				
	Chennai	4	4	0	8
5.	Aurangabad Municipal Zoo, Aurangabad	1	1	0	2
6.	Bhagwan Birsa Biological Park, Ranchi	5	3	0	8
7.	Bondla Zoo, Usgao	2	2	0	4
8.	Children Park & Zoo, Gadag	1	0	0	1
9.	Dr. K.Shivarma Karanth Pililkula Biological Park,				
	Mangalore	0	1	0	1
10.	Dr. Shyamaprasad Mukharjee Zoological Garden,				
	Surat	2	2	0	4
11.	Gandhi Zoological Park, Gwalior	0	1	0	1
12.	Indira Gandhi Park Zoo, Rourkela	1	1	0	2
13.	Indira Gandhi Zoological Park, Visakhapatnam	2	6	0	8
14.	Indira Priyadarshini Sangrahalaya, Anagodu,				
	Davangere Taluk	0	1	0	1
15.	Jaipur Zoo, Jaipur	3	1	0	4
16.	Jhargram Zoo, Jhargram	0	4	0	4
17.	Kamla Nehru Prani Sanghrahalaya Zoo, Indore	1	1	0	2
18.	Kamla Nehru Zoological Garden, Ahmedabad	1	0	0	1
19.	Kanan Pandari Zoo, Bilaspur	4	3	0	7
20.	Kanpur Zoological Park, Kanpur	1	1	0	2
21.	Karuna Society For Animals And Nature-Rescue				
	Centre, Dist. Anantapur	2	2	0	4
22.	Lucknow Zoological Park, Lucknow	1	2	0	3
23.	Maharajbag Zoo, Nagpur	1	1	0	2
24.	Mahendra Chaudhury Zoological Park,				
	Chhatbir, Chandigarh	3	2	0	5
25.	Maitri Baagh Zoo, Bhilai	2	1	0	3
26.	Mini Zoo A. M. Gudi Balvana, Chitradurga	0	2	0	2
27.	Nandankanan Biological Park, Bhubaneshwar	4	3	0	7
28.	National Park, Bannerghatta Zoological				
	Garden, Bangalore	59	45	0	104
29.	National Zoological Park, Delhi	2	2	0	4
30.	Nehru Zoological Park, Hyderabad	5	4	0	9
	· ,				

S.No.	Zoo Name	Male	Female	Unsex	Total
31.	Pt. Govind Ballabh Pant High Altitude Zoo,				
	Nainita	0	0	0	0
32.	Rajiv Gandhi Zoological Park And Wildlife				
	Research Center, Pune	3	1	0	4
33.	Ramnabagan Mini Zoo, Burdwan	1	1	0	2
34.	Sakkarbaug Zoo, Junagarh	3	2	0	5
35.	Sanjay Gandhi Biological Park, Patna	4	2	0	6
36.	Sri Chamarajendra Zoological Gardens, Mysore	5	5	0	10
37.	Sri Venkateswara Zoological Park, Tirupati	3	2	0	5
38.	Tata Steel Zoological Park, Jamshedpur	1	2	0	3
39.	Thiruvananthapuram Zoo,				
	Thirunvananthapuram	1	1	1	3
40.	Tiger & Lion Safari, Shimoga	1	1	0	2
41.	Van Vihar National Park Zoo, Bhopal	19	17	0	36
42.	Vanavigyan Kendra, Hunter Road,				
	Hanamkonda, Warangal	1	1	2	4
43.	Wild Animal Conservation Center,				
	Mothijharan,Sambalpur	2	3	0	5
	Total	292	267	3	562

Annexure Table 3. Records of Himalayan brown bear (Ursus arctos) in Indian zoos

S.No.	Zoo Name	Male	Female	Unsex	Total
1.	Himalayan Nature Park, Kufri	3	1	1	5
	Total	3	1	1	5

Annexure Table 4. Records of sun bear (Helarctos malayanus) in Indian zoos

S.No.	Zoo Name	Male	Female	Unsex	Total
1.	Aizawl Zoo, Aizawal	0	1	0	1
2.	Nehru Zoological Park, Hyderabad	1	2	0	3
	Total	1	3	0	4

Annexure Table 5. Records of European brown bear (Ursus arctos arctos) in Indian zoos

S.No.	Zoo Name	Male	Female	Unsex	Total
1.	Arignar Anna Zoological Park , Vandalur, Chennai	1	0	0	1
	Total	1	0	0	1

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NATIONAL BEAR CONSERVATION AND WELFARE ACTION PLAN 2012

This is the first comprehensive state-specific attempt to produce a National Conservation and Welfare Action Plan for bears of India following the IUCN (2008) guidelines that involved participatory processes ensuring ownership that are expected to improve prospects for implementation and ultimately to sustained conservation successes. Apart from updates on the current status and distribution of bears, this plan proposes specific actions and time frames for their implementation. This Plan is expected to evolve over time to include new learnings from its implementation. The release of this Action Plan during the 21st International Conference on Bear Research and Management, New Delhi, marks a singular change in the way India has looked at its species.







