

CHAPTER 1: INTRODUCTION

1.1 ABOUT MIRZAPUR

District Mirzapur, Uttar Pradesh (India) has a special historical importance in terms of its cultural as well as natural heritage. Mirzapur (*Mirzapore* as named by British) was one of the key places during British rule and most of the prominent places in the district are named after British officers. For eg. Names of Wellesleyganj, Teliaganj, Duncanganj, Robertsganj (now in Sonbhadra) were all named after British officers. It was also one of the major business port on River Ganga during that time. Most of the administrative buildings till date are ones which are constructed by British officers which shows that the district was once very popular administrative and business centre.

Mirzapur was once the richest wildlife areas of India and has been known for its rich wildlife heritage. Forests of Mirzapur and Kumaon used to be free hunting ground in Uttar Pradesh for British officers and Kings. Lord Wyndham, who served 30 years as a collector of Mirzapur is historically known for killing more than 500 tigers and his associate Mohan was termed as the most knowledgeable tiger expert and hunter at that time. Lord Wyndham was also close friends with Jim Corbett, The Wyndham fall, which is the region's most popular water fall is named after him (*Jaleel, 1997*).

A very good description of the wildlife heritage of Mirzapur can be seen in the book 'In the Districts of the Raj' (1992). The author *Y. D. Gundevia*, who was posted as District Collector of Mirzapur next to Lord Wyndham writes:

“Mirzapur had the reputation of being a first-rate shikar district. Was that why no Indian had been posted to Mirzapur as collector till the October of 1939? In all the tarai districts of south of Nepal there were more than three or four forest reserves which were really nothing but game reserves. Jim Corbett had shot all his man-eaters in Nainital. But I am sure there must have been more tigers in an around Mirzapur than in all the tarai districts put together.....

.... All over the Vindhyan plateau-if one traversed by car from Mirzapur to Robertsganj-there was plenty of game. There was any amount of sambar and cheetal, any amount of wild boar and everything else in the antelope family. As one reached the Kaimur ranges one even came upon the black sloth bear here and there.”



Image 1 Governor Maurice Hallet and Lady Hallet at Wyndham Falls (Source: Gundevia, 1992)

Another historical account of wildlife of Mirzapur can be found in the ‘Journal of Bombay Natural History Society, 1918’, an excerpt quoted here:

“On 28th December 1912, during a sambhar beat in lijiht jungle about 25 miles S. of the Ganges, a small animal that I did not recognize came out at very close range. I blew a large piece of its back away with a 600 Express but it made ofl' and took refuge in a small nala where it was shortly after- wards despatched with a shot gun. It proved to be a female lynx {^F. caracal)

I saw not long ago in the possession of a friend a very fine skin of a cheetah {C.jubatus) that had been killed in 1916 by villagers about 30 miles South of Mirzapur, which is on the Ganges near Benares. I think about 5 have been obtained in the last 25 years, one being shot while it was in the act of stalking a sambhar.”

The district Mirzapur, which used to be a British headquarter of Central India, lost its popularity post-independence and the region underwent heavy pressures from industries and mining groups. While Sonbhadra became power capital of India after construction of Rihand dam (in 1962), district Mirzapur remained under the shadow of politicians and local mafia who mined the hills for the highly valuable Kaimur sandstone.

The district Mirzapur gained national prominence when the south campus of Banaras Hindu University was established in the beginning of 20th century. The areas which were earlier lesser known and biodiversity-rich suddenly faced a kick from variety of developmental activities. Before that, this region was comparatively pristine than its surrounding districts Allahabad, Varanasi and Sonbhadra.

Though, we get glimpses of the wildlife heritage of Mirzapur in historical texts, and have sufficient knowledge among locals but very few or negligible published documented work is found for the wildlife diversity of Mirzapur forests since the British Raj. In fact, very less scientific studies have been done in tropical dry deciduous forests as compared to rainforests and temperate forests (*Raghubanshi & Tripathi, 2009*). Most of the scientific studies on biodiversity in Mirzapur is focussed on medicinal plants and forest ecology, but hardly any published document on wildlife can be traced in modern India. Due to this ignorance, we have already lost several wildlife habitats and species. Sloth bear, being the flagship and the most important animal which has historically inhabited these forests, we decided to do a comprehensive review of the status of sloth bear in Mirzapur and identify their habitats, movement and threats in present time. We have also attempted to suggest few recommendations to improve the wildlife habitat which we believe will help the State and Centre to understand the problem and take the necessary action. We believe this study will be the pioneer in the wildlife history of Mirzapur and will help the authorities and planners taking measures in protecting this species which is not only protected under law but is endemic to Indian subcontinent.

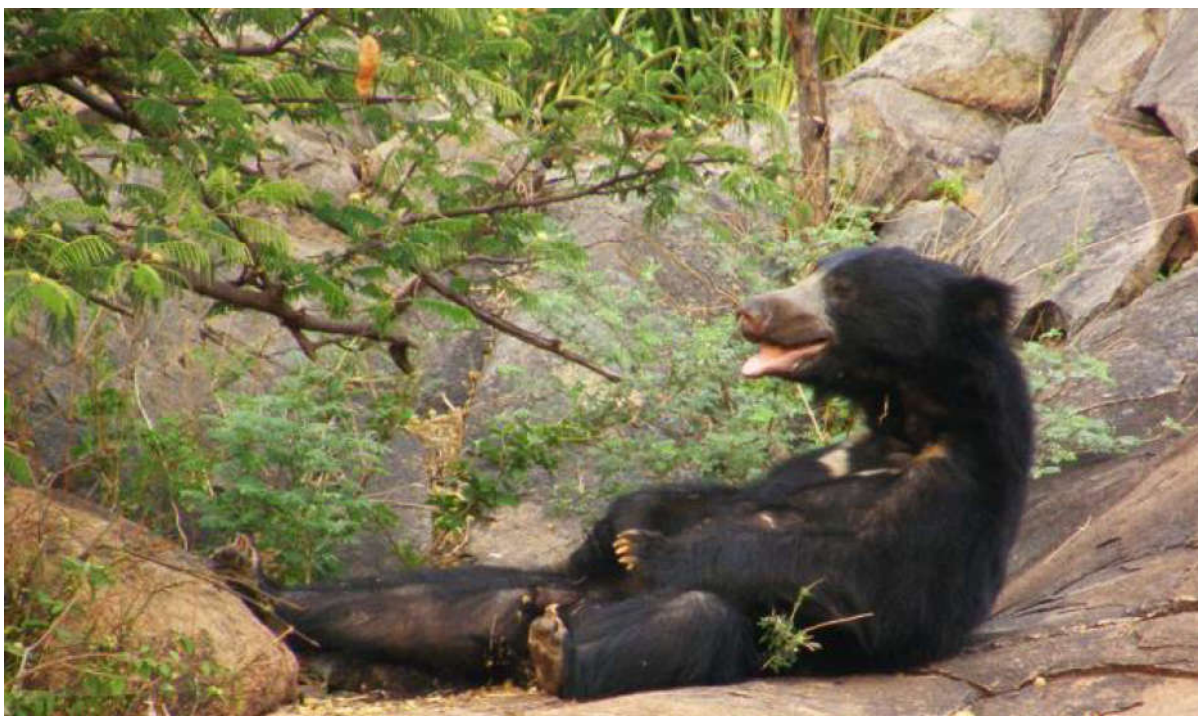


Image 2 A Sloth Bear in Daroji Sloth Bear Sanctuary, Karnataka (Photo: Avijit Ganguly)

1.2 ABOUT SLOTH BEAR

Sloth Bears are classified under carnivorous mammals (Order: *Carnivora*) and subtype Bear (*Ursidae*). There are two subspecies found- *Melursus ursinus ursinus* which is endemic to Indian subcontinent and *Melursus ursinus inornatus* which is endemic to Sri Lanka (Pocock, 1933).

A. DISTRIBUTION

The sloth bear is endemic to the Indian subcontinent, mainly in India, Nepal, Bhutan, and Sri Lanka (Garshelis, 2008). They are now extinct from Bangladesh (Islam, 2013). In India, the sloth bear habitats are mostly found in Deccan Peninsula, Western Ghats and till foothills of Himalayas extending till North Eastern India. They are known to co-exist with Asiatic Black Bears (Northern Himalays) and Malayan Sun Bears (North Eastern Himalayas) as well.

Sloth bears inhabit a wide variety of habitats, including grasslands, thorn scrub, sal (*Shorea robusta*) forest and moist evergreen forest (Garshelis et al., 1999). In terms of area, over 90% of the area where Sloth Bears occur is Moist and Dry Deciduous forests. About 30% of the forest remaining in India are of dry deciduous type, and these forests hold about 50% of the sloth bear population. The Western Ghats range and central India are the only strongholds of distribution, in terms of population abundance and habitat availability (Yoganand et al., 2006).

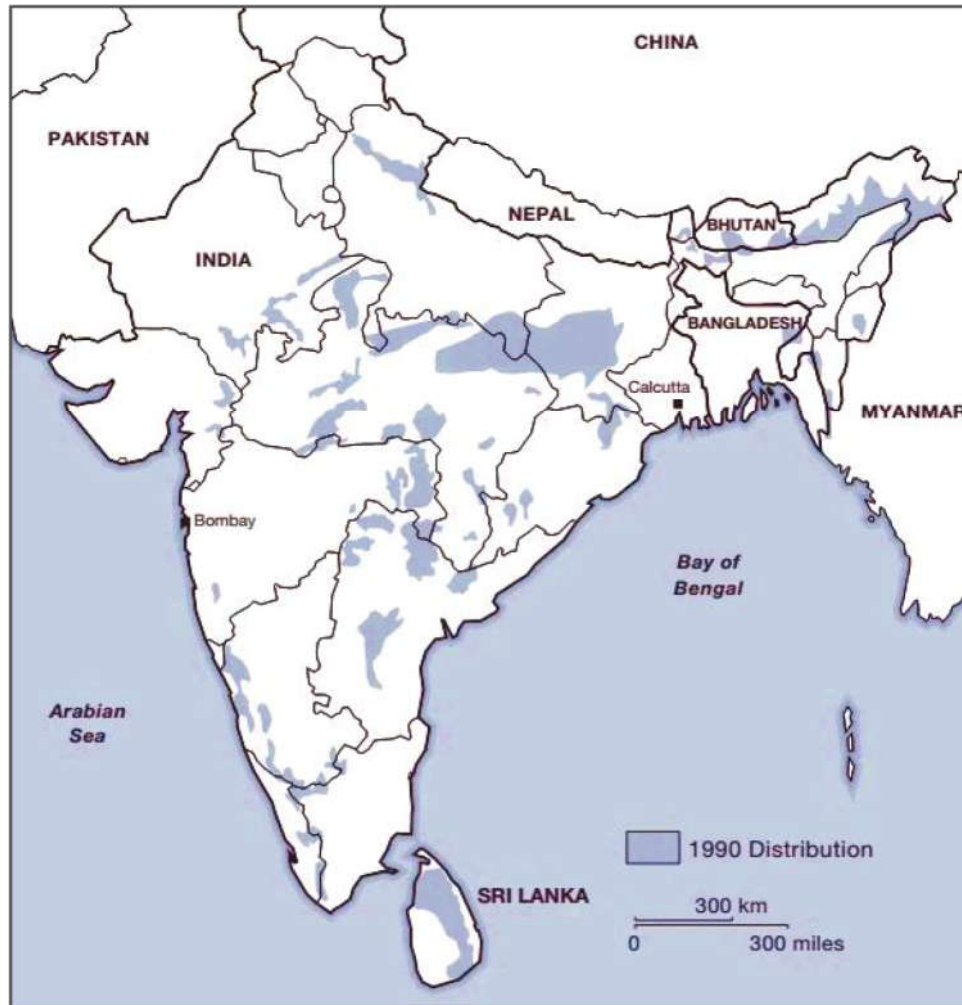


Image 3 Sloth Bear Distribution Map (Garshellis et.al. 1999)

B. FEEDING HABIT

Sloth bears subsist primarily on termites, ants, and fruits. This is the only species of bear adapted specifically for myrmecophagy i.e. ant and termite-eating (Laurie and Seidensticker 1977, Joshi et al. 1997, Sacco and Van Valkenburgh 2004). The ratio of insects to fruits in the diet varies seasonally and geographically (Baskaran et al. 1997, Joshi et al. 1997, Bargali et al. 2004, Sreekumar and Balakrishnan 2002). The diet of the sloth bear consists mostly of social insects and fruits. These are predominantly ground-living ants and termites that are common and found in large colonies, and sugar-rich fruits of commonly occurring plants that produce large fruit crops. They climb trees to feed on honey-bee hives and sometimes to feed on fruits (Laurie and Seidensticker 1977). But usually fallen ripe fruits are eaten off the ground. Sloth bears break into termite mounds with their front claws, suck in the termites and blow away the debris, and also feed on the 'cartons' which hold the termite brood. They turn over rocks and logs to feed on ant and termite colonies. They also dig as deep as 1.5 m into ground to feed on large underground colonies of social insects.

Fruits of *Zizyphus mauritiana*, *Ficus glomerata*, *Diospyros melanoxylon*, *Buchanania lanzan*, *Cassia fistula*, *Aegle marmelos*, *Lantana camara*, *Grewia asiatica*, *Cordia domestica*, *Syzgium cumini*, *Phoenix humilis*, and flowers of *Bassia latifolia* are eaten frequently where these plants occur commonly. The availability of fruits varies with the season as do abundance and nutrient quality of social insects. The diet of the sloth bear follows these patterns of food availability (Yoganand *et.al.* undated).

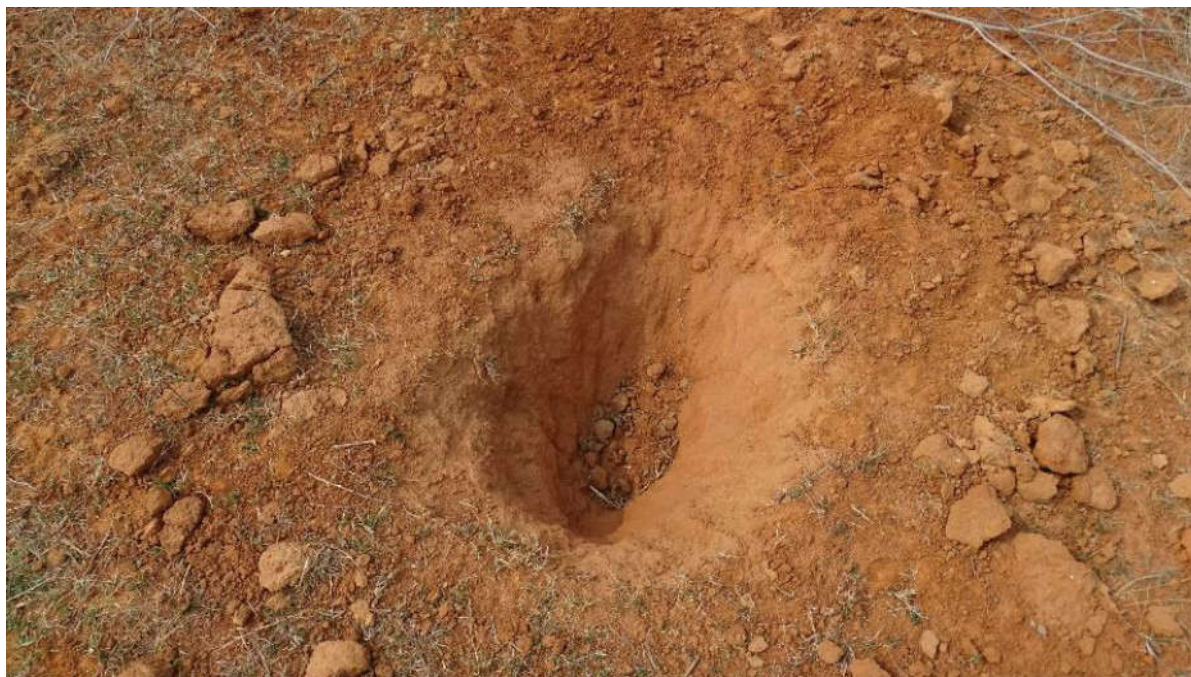


Image 4 Remains of soil dug out by Sloth Bear during the survey (Photo: Debadityo Sinha)

C. HOME RANGE AND BEHAVIOUR

Very less studies have been done on home range of Sloth Bears in India. However, studies on sloth bear home range has been done for Royal Chitwan National Park, Nepal (Joshi *et.al.* 1995). The annual home range for male and female sloth bears at Chitwan National Park was found to be 14.4 sq.km and 9.4 sq.km respectively. The lowest home range in male sloth bear was found to be 2.2 sq. km (dry season) and 2.3 sq.km (wet season) while the female counterparts had lowest home range of 1.6 sq.km (dry season) and 2.3 sq.km (wet season). The maximum home range of male sloth bear was found to be 13.5 sq.km (dry season) and 21.8 sq.km (wet) while the female counterparts had 13.6 sq.km (dry season) and 18.2 sq.km (wet season). The Home range length were found to be ranging from 2.8 km to 6.9 km in the same study.

In another study done on sloth bear species found in Wasgomuwa National Park, Sri Lanka (Ratnayeke *et.al.* 2007) shows that the mean 95% fixed kernel home ranges were 2.2. sq.km and 3.8 sq.km for adult females and males, respectively.

The reason for such small home range in above two studies as compared to other obligate myrmecophages can be attributed to its highly flexible feeding habits. Being mobile and opportunistic, ursids shift their area of use in accordance with changes in abundance and

distribution of foods. Home range shifts, corresponding with changes in food availability, have been documented for brown bears (*U. arctos*) (LeFranc *et al.* 1987), polar bears (*U. maritimus*) (Ramsay and Andriashek 1986, Garner *et al.* 1990), Asiatic black bears (*U. thibetanus*) (Hazumi and Maruyama 1987, Reid *et al.* 1991), and American black bears. Seasonal shift in home range is observed in Chitwan, but still the ranges were small as compared to other ursids. This may be because social insects remained dominant diet in sloth bear as observed from scats in Chitwan (98% in dry season, 80% in wet season).

For bears that remained in alluvium throughout the year, expansion of home range boundaries during the wet season may have been necessary to compensate for the loss of feeding sites that became saturated. For bears that moved to the sal forests, migration back to alluvium for the dry season may have been spurred by dry, hard soil conditions in the uplands that, like saturated soil in lowlands during the monsoon, impeded bear's ability to excavate termites, including those in mounds (Davidar 1983, Iswariah 1984) and underground colonies. Despite sloth bear's adaptations for digging, their foraging efficiency may be affected by mound hardness and depth of termites, as these factors seem to influence diet selection even among more specialized myrmecophages (Redford 1985). Range shifts of bears at the end of the wet season also may have been prompted by a greater biomass of prey in alluvium, compared with sal, especially during the dry season (Joshi *et al.* 1995).

It has also been found that sloth-bears, though solitary by nature are quite tolerant to other sloth bears within their home range and they are known to live in harmony with each other's even in absence of food. Sloth Bears are very vocal, using a wide repertoire of sounds. They use howls, roars, yelps and squeaks. They also use facial expressions and body language for communication with one another. One of their vocal calls is very rarely used and may be a long distance communication signal. A "huffing" sound is used as a warning and a "chuffing" sound is used as a non-aggressive "voice" when the bear is distressed. High intensity threats include roars, squeals and screams. Cubs yelp when distressed and a female with cubs uses a grunting "whickering" sound to communicate with them. (Hadley, 2008)

Though above cited studies have been done on sloth bears in Himalayan region and Sri Lankan forests where the topography has some similarity but given the differences in abundance of food, soil quality, hardness, climate and protection regime-the same cannot be guaranteed to be same for Mirzapur. However, these studies help us understand the behaviour pattern of sloth bears and also raise hopes of their survival in harsh conditions and fragmented habitats due to their small home range.

D. BREEDING

Sloth bears typically breed during June–July, and cubs are born during November–January (Jacobi 1975; Laurie and Seidensticker 1977; Garshelis 1999; Joshi 1999), after a period of delayed implantation (Puschmann *et al.* 1977). However, breeding and birthing may occur at other times of the year (Laurie and Seidensticker 1977; Gopal 1991). Cubs

are born in protected dens (e.g., excavated holes or natural hollows). Females remain in dens for 2–3 months, and during this period rarely come out to eat (*Jacobi 1975; Joshi 1996*). A litter size of two is most common (*Laurie and Seidensticker 1977; Phillips 1984; Gopal 1991; Joshi 1996*); litters of one have been observed, although some may represent two cub litters with early mortality (*Joshi 1996*). Cubs are routinely carried on the mother's back from the time they leave the den until they are about nine months old (*Heath and Mellon 1983; Joshi 1996*). Cubs stay with their mothers for 1.5 or two years, splitting up just before the breeding season (*Joshi 1996*). Thus, females breed at either two or three year intervals. Females may breed first when four years old, but do not necessarily produce cubs following their first breeding season.