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Human-Sloth Bear Conflict: Causes and Mitigation Measures in Kota, Rajasthan, India

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ABSTRACT

The sloth bear (Melursus ursinus) is now considered as endangered by IUCN red list of 2011. In wild habitat it is considered as the most dangerous wild animal because it is unpredictable and often attacks on human in forests. In the present investigation human sloth bear conflicts were studied in Kota district of Rajasthan, using forest department records, interviews with villagers and surveys within sloth bear habitat. Most of the casualties can be reduced by restricting human entries into sloth bear habitats, avoiding camping and housing in their habitats especially near water sources. Road accidents are also very common in the present study area as there is a National Highway near the forest area. Active management with local inhabitants will support the conservation of sloth bear.

Keywords: *Melursus ursinus*, Conflicts, Endangered, Interviews, Forests

INTRODUCTION

Wildlife conservation is a challenging task in India as there is a need to uphold a balanced approach between natural resource conservation and meeting the growing needs of human population and development. There is a base requirement to evolve strategies for conservation of endangered species and their natural habitats on one hand and on the other hand they have to successfully deal with wildlife and Human conflicts. Although previous stories and literatures reveals that Human and wildlife have a long time co-existence but due to competition for resources at different levels human-wildlife conflicts are increasing day by day. They typically compete directly with people for resources such as space, food, security and cover. All bear species can kill or injure livestock, damage agricultural or horticulture crops, or otherwise directly compete with people [1].

The distribution of the sloth bear (*Melursus ursinus*) in India has been decreased since the 1950s to <10,000 bears in 1998. This decrease was due to increased human populations, which have altered forests and harassed bears [2]. The sloth bear is now classified as endangered by the Government of India (Wildlife Protection Act, 1972 Amended). The sloth bear is an omnivorous animal. Habitats of sloth bear are destructing and degrading continuously as a result sloth bears have been extirpated in some areas of India [3]. Meanwhile humans compete directly with bears by consuming the bears' food resources [4].

In India, sloth bear occur frequently in moist and dry deciduous forest (42% and 33%, respectively) and less frequently in wet evergreen (13%) and dry scrub (6%) forests [5]. In India sloth bears are reported to exist in 14 protected areas including 46 National Parks and 128 Wildlife Sanctuaries [6].

The Chambal River passes through a deep gorge created by a great boundary fault in the Vindhyas on the Hadauti Plateau of Rajasthan. The upper tier plateau land from the river bed ranges from 60-65 m. The river flowing through the gorge drops 87 m. Along a length of 48 km. 3 dams and barrage have changed the flow of the Chambal, which was once a torrentially fast flowing stream as it poured through the deep gorge. The Chambal River valley was strong

hold of Big Cats in the pre-independence era, possibly the only area where trigger and leopard hunts were routinely organized from boats. The flat plateau land over the gorge is interspersed with dry deciduous forest of *Anogeissus pendula* (Dhonk) and *Boswellia serrata* (Salar). The plateau land near Kota is stony scrub land with scattered *Zizyphus* sp. (Ber) and Cappparis (Jal) bushes, which explains why bears are so plentiful. The vistas are generally sparse and the vegetation is coarse. But a glimpse into the valley offers a sticking contrast. Here the valley is evergreen with a profusion of trees, bushes and semi aquatic grasses. There is a rare clump of Musa superb (Jungli Kela), a western Ghat's element that show arrived this far north. Vast stretched of bamboo also clothe the valley floor with intermediate outcroppings of *Sterculia urens* (Gumkaraya), *Mitragyna parviflora* (Kalam), *Terminalia arjuna* (Arjun), *Lannea coromandelica* (Gurjan), *Cassia fistula* (Amaltash), etc. The topography of the valley continues to be ideal for several species that have learned to use its ledges, nooks and rocky crannies to their advantages. Long billed vultures, Egyptian vultures, brown fish owls, dusky eagle owl and Indian eagle owl all breed here The bears of the Chambal have Leopards, Hyena, Porcupine, Blue Bull, Chinkara, langoor and an occasional wolf for company. Sometimes any illusive Fishing Cat or a family of Smooth Indian Otters may be encountered at the water edges.

Present study was undertaken to study the following objectives:

1. To study the incidence of road accident, human attacks and ingress of bears in areas of human settlement/outside the forest areas.

2. To study mitigation measurements of Human-Sloth Bear conflicts.

METHODOLOGY

To study the Bear-Human conflict in the study area following methodology were chosen:

FIELD SURVEY

Regular field visits were done to determine sloth bear presence or absence and to study its ecology and behaviour in the present study area from 2010-2016.

QUESTIONNAIRE SURVEY

Informal interviews using semi-structured questionnaires were carried out in affected the villages located on and beyond the periphery of forest areas of Kota district.

In the first phase of survey five villagers were chosen randomly from each exaggerated village. They were interviewed to record the frequency of conflicts, probable causes and local desire for easing of attacks.

In the second phase of survey those people were interviewed personally who faced sloth bear attack, so they were the real victims and eye witness. It will helpful to assess the circumstances during attack and in formulations of probable management tactics.

RECORD SURVEY

Data allied to aspects such as road accidents of sloth bear were intensively surveyed. Five year records were documented since March 2010 to March 2016 so the accidental prone zone can be identify around the study area.

Review of previous studies which were conducted in earlier decade were also studied to comprehend the behavioral ecology of sloth bear in various situations viz. in wild and while encountered with human.

PERSONAL INVOLVEMENT

Involvement in rescue operation of sloth bears with forest department were the most effective method to predict the behavior of bear and contemplations of local people for these sort of wildlife encounters.

OBSERVATIONS

Ecology and behavior

Sloth bear is a forested animal found in areas with dense canopy cover where human disturbance is limited or restricted. It is typically semi-nocturnal, although occasionally it is active during day time. Post monsoon when food is aplenty across a larger landscape, sloth bears tend to leave the Chambal river valley, only to return in the summer when their favorite trees *Ziziphus* sp., *Madhuca indica* (Mahua), *Syzygium cumini* (Jamun), etc. are in fruit, bee hive are available to raid and termite mounds are stocked with insects, food that relish bears. During an observation any encounters between the sloth bears and leopards, hyenas or wolves were not observed [7]. This was an account of the sheer abundance of food and relatively low population densities of carnivores.

Interestingly Bears and Langoors living in close proximity displayed no hostility towards each other at all. Nor did pea fowl seem to bother the bears, thought they did always maintain a safe flight distance.

The reason for the thriving sloth bear population the Chambal area is hardly surprising. The area is rich in forage, with an abundance of termite mounds and Jujube bushes on the plateau. Honey combs are plentiful in the valley, which also offers a reliable source of water, but most critically, the area enjoys protected status and humans and animals are not allowed to compete for resources. There is little more that sloth bears, all most other wild animals for that matter, really need to survive.

Over the past 5 years, sightings of bears have increased palpably, with multiple groups of adults, and sub adults occupying the habitats. In winter, solitary adults and sub adults can be seen all through the day, scouring the plateau for food. In summer, family seemed to be closely knit and one can able to spot them only at dawn and dusk.

Sloth bear-human conflicts

Intensive five year's study and Forest (Wildlife) Department documents illustrates that Sloth bear conflicts are occasional in this area (Figure 1). According to the preliminary studies the possible causes for these incidences of Human-Sloth bear conflicts are:

1. Hustle vehicular movement on National Highway-76 in close proximity of bear habitat is a ground cause for road accidents.
2. Shrinking habitat due to extension of agricultural lands and anthropogenic encroachment are the core causes of habitat degradation.
3. Increased dependency on natural resources leading to increased frequency of bear-human encounters.
4. Increasing human and livestock population in and around the Protected Areas and forest areas through a direct pressure on sloth bear movement.

Figure 1: Map showing study area

CONFLICT TYPES

Road accidents

National Highway-76 via Kota city can be considered as a channel between Rajasthan to Gujarat states. So it has a huge traffic burden especially in peak hours of night. In a very close proximity of highway Jawahar Sagar Sanctuary and National Chambal Sanctuaries are situated, which are cradle home for Sloth Bears since long. As a habit bears wander for their food mainly at night and cross this highway regularly. A speedy vehicle passes through the highway and strike with these animals is the main cause of unintended death (Figure 2).

Human attacks

Increasing human population is directly proportional to increased dependence on forests resources; as well as it leads increased frequency of conflicts of two mammalian species viz. Human and sloth bear in and around the forest area. In the present study area villagers move inside the forest boundary legally and illegally to collect fuel wood and for mining purpose. Hence they are considered as disturbing elements by sloth bear in their close vicinity. Bear generally doesn't attack people unless and until, it feels threatened. Especially a female bear with her cubs offers a sudden encounter in the course of their protection. This might be fatal for any one in front of her.

Ingression of sloth bear inside the city

Sloth bear are voracious feeder as they have great sense of smell they are attracted by cuisines prepared nearby human settlements of sloth bear habitat. It offers sloth bear doorway inside the human residential areas (Figure 3).

RESULTS AND DISCUSSION

Field work and questionnaire survey was conducted to prepare final findings regarding human-sloth bear conflicts in

Figure 2: Sloth bear rescue

Figure 3: Road accident

study area. Almost all the villages within that area are surveyed and villagers from each village were interviewed to know their perception towards the presence of bear in the area. Survey was conducted in 19 villages of study area to inquire about sloth bear. Approximately 71% of interviewees reported that they had regular sightings of sloth bears on their farms and nearby water sources. About 25% of the interviewees reported that they have not seen sloth bears in nearby areas and 4% were uncertain about the presence or absence of bears in the adjoining areas.

The bear ingression in nearby villages were also analyzed on the basis of time of attack, which shows that majority of incidents occurred during the day time. Further it was also recorded that maximum conflicts occurred in winter season (Table 1). Winter is the fruiting season of most of the plants occurring in the study area, these fruits are consumed by sloth bears. Result shows that maximum conflicts are in the form of road accidents (Figure 4).

PROBABLE MANAGEMENT PRACTICES FOR HUMAN-SLOTH BEAR CONFLICTS

Based on questionnaire and field surveys carried out in the 7 villages of 3 ranges of Jawahar Sagar sanctuary, some basic understanding of the human-sloth bear conflicts in this region has been obtained. Some of the preliminary recommendations for understanding and mitigating human-sloth bear conflicts are given below.

CREATION OF CONFLICT MANAGEMENT TEAM

A fully equipped, well trained and motivated 'Conflict Management Team' comprising of wildlife staff, veterinarians, staff of related line departments or institutions, and wild life NGOs has to be formed at the wild life division level to respond to conflict situations, including bear rescue, treatment, translocation and monitoring.

CONTROL ROOMS

At district level control rooms and management teams should be established by the department for handling wildlife-human conflict cases.

AWARENESS CREATION

Knowledge of sloth bear behavior is essential for the villagers who live near bear habitats and are vulnerable to bear

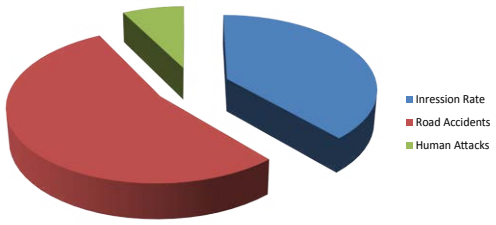

Figure 4: Percent occurrence of different conflicts in the study area

Table 1: Occupancy of conflicts in different months in different areas

Site of Incidence	Month of Incidence	Ingression Rate	Road Accidents	Human Attacks
Khadipur	August 2009		2	
Khadipur	October 2009		1	
Karondi	June 2011		2	
KTPS	July 2013	1		
Karmi Mata Temple	October 2013	1		
Nanta	December 2013	1		
Bhainsroadgarh	February 2014		1	
KTPS	April 2014	1		
Nanta	December 2014	1		
Doliya	March 2016			1
Ganeshpura	May 2016		1	

attacks. Awareness creation through elected bodies at village or block levels, religious or educational establishments, and other government or non-governmental agencies needs to be explored. Simple precautionary measures such as avoiding moving singly during dawns and dusks in crop fields or forests during summer and autumn could reduce bear attacks on humans.

MONITORING OF CONFLICT AREAS

Use of passive and preventive actions is an important step in conflict management. There should be proper monitoring of sloth bear-human conflict areas where at least one of the employees is present at the problem site until the situation is resolved. While monitoring the bear, information such as number, age, location, bear behaviour and the direction of the movement of the conflicting animal has to be recorded and reported. Movement of the people should be restricted to give safe passage to the bear.

TRANSLOCATION AND MARKING OF PROBLEM BEAR

The problem bear that are captured and translocated from the conflict areas should be marked by radio collar, fluorescent collar or by ear tags prior to their release back into the wild so that the movement and the ranging patterns of these animals could be studied. This will be very helpful in better understanding of problem bears and ultimately help in mitigating the problem.

FENCING AND UNDERPASS

NH-76 is the major problem for the life of wild animals as it is a lethal highway. Most of the accidents occur in the morning hours and in late evening as many animals are nocturnal and they left their home for the feeding purpose and got accidental death. So there should be fencing on both the sides of Highway and if possible there should be a protocol of underpass in and around the forest areas.

OTHER PRACTICES

Signage boards on roads regarding speed control should be present on the highways. Slogans on forest walls indicating importance of wildlife can aware peoples regarding the safety of these wild animals.

CONCLUSION

Present study reveals that Sloth Bear-Human conflict in the form of human attack, crop loss and livestock damage is very low but on the other hand death of wild animals in road accidents is very high mostly in rainy and winter season. But well-designed human-wildlife conflict management plans which amalgamate different techniques and are adjusted based on the nature of predicament can heighten co-existence. Impending solutions should be well thought-out and selected based on their efficacy, cost and adequacy by the society. These practices can reduce the negative attitudes of communities towards wildlife and preservation.

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REFERENCES

[1] Charoo SA, Sharma LK, Sathyakumar S. Asiatic black bear-human conflicts around Dachigam National Park, Kashmir. Technical report, Wildlife Institute of India, Dehradun, India. 2009.

[2] Cowan IMcT. The status and conservation of bears (Ursidae) of the world-1970. International Conference on Bear Research and Management. 1972, 2: 342-367.

[3] Singh HS. Natural heritage of Gujarat. Gujarat Ecological Education and Research Foundation, Gandhinagar, India. 2001.

[4] Rajpurohit KS, Krausman PM. Human-sloth bear conflicts in Madhya Pradesh. *Wildl Soc Bull*, 2000, 28: 393-399.

[5] Yoganand K, Rice CG, Johnsing AJT, Seidensticker J. Is the sloth bear in India secured? A preliminary report on distribution, threats and conservation requirements. *J Bombay Nat Hist Soc*, 2006, 103: 172-181.

[6] Chauhan NPS. The Status of sloth bear in India. In understanding Asian bears to secure their future. Japan Bear Network, Ibaraki, Japan. 2006.

[7] Vyas R, Tomar RS, Arya M. Call of the wild sanctuary Asia Bear necessities. *Hornbill*, 2014, 84-87.