Opinion Article

Sloth Bear (Melursus ursinus) Maternity Denning Behavior Observations at Indira Gandhi Zoological Park, Visakhapatnam.

ABSTRACT

The Sloth bear is an average-sized black bear with a long, shaggy coat. a long ruff of hair around the back, and a white V- or Y-shaped mark on the breast. Males that are considered to be "large" often top out around 145 kg and 170 centimeters. An endangered species, the sloth bear (Melursus ursinus) is extensively spread over the Indian subcontinent, including India, Nepal, Bhutan, Sri Lanka, and perhaps Bangladesh. It is found in wooded regions from the Indian peninsula to the foothills of the Himalayas. Despite the species' widespread occurrence, nothing is known about its ecology or behavior. We studied den characteristics and maternity denning behavior in captivity. The den use was more from June to August, possibly to take shelter against heavy rains from the southwest monsoon. (June – September) Breeding observed based on the association of adult females and males as well as the birth of cubs revealed that mating is likely to occur during late summer or early monsoon and cubs are born mostly during November-December. This study presents observations on den site characteristics and maternal denning behavior patterns of sloth bears in captivity at Indira Gandhi Zoological Park, Visakhapatnam.

Introduction:

[1] The International Union for the Conservation of Nature has placed sloth bears on its Red List as a Vulnerable species due to the rising threats posed by a growing human population and other causes (Dharaiya et al., 2016). Therefore, it is becoming more crucial to comprehend the requirements of wild and captive female Sloth bears to ensure effective reproduction. Animals kept in captivity reportedly have limited space for moving around than free-ranging animals. Having to live in such a limited space stresses the animals (Anderson et al. 2010). The animals' physical and mental health suffered as a result of the reduction of natural behaviors like hunting and tracking prey over long distances that resulted from being artificially fed (Rees 2011). Studies on animals in captivity offer knowledge about their management, health, welfare, and display of natural behaviors. It is suggested that straightforward observational studies may be used to document activity time budgets, evaluate whether wild and captive behaviors are similar, and keep a watch for any stereotyped behavior that might have an impact on animal welfare (Pastorino et al. 2017).

[2] Melursus ursinus sloth bears are non-hibernating and live in the subcontinent's milder climes (Ward & Kynaston, 1995; Akhtar et al., 2007). On the other hand, these bears will utilize dens or shallow holes for sleeping and giving birth to pups in a safe and secure setting. Dens may be man-made or carved out of rock or other materials. Sloth bears utilize caverns or hollows in the ground to give birth, and it seems they are quite selective about which ones they choose. The bears seem to like caverns with at least two cavities. [3] Even for the mother bear, getting into the deepest part of the den might be challenging (Seshamani & Satyanarayan, 1997). Despite the lack of comprehensive research, we do know a few important things about how sloth bear mothers den their cubs. Motherly denning in wild Sloth bears were studied by Joshi et al.

(1999) using radio-telemetry. [4]Population surveys have indicated that their numbers are low and possibly declining (Krishnan, (1972): Singh, (1973): Spillet, (1967). [1]IUCN lists the species in vulnerable category (IUCN Red List, 2014), Indian Wildlife Act (1972) in Schedule I, and CITES in Appendix II (Servheen, 1991).[7] Sloth bears typically breed from May to July in India (Gopal, 1991) and Nepal (Laurie & Seidensticker, 1977; Joshi, 1996). However, Laurie and Seidensticker (1977) argued that mating may take place at different times of the year. [8] Some have also hypothesized that the southern part of Sri Lanka does not have a defined breeding season (Phillips, 1984). [9] Cubs are born in the summer in Sri Lanka, according to Norris (1969), which would indicate that mating takes place in the winter.

Study site:

Map 1 : Map showing study location

(Source :www.mapsofindia.com)

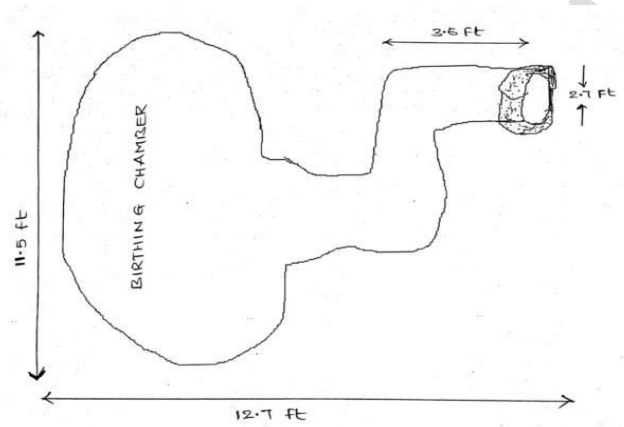
Indira Gandhi Zoological Park, in the Visakhapatnam district of Andhra Pradesh (India), has an area of 625 acres inside the Seethakonda Reserve Forest, which is a part of the stunning Eastern Ghats. Lies between 17.7691 north latitude and 83.3500 east longitude On three sides it faces the Eastern Ghats, while on the fourth it faces the Bay of Bengal which is 20 meters above from mean sea level and has a subtropical and dry climate._*68°F* to *96°F* is the average yearly temperature, while humidity ranges from 60% to 80%. Indira Gandhi Zoological Park Visakhapatnam has Two Female Sloth Bears Named Divya, Bhavya, and a Male sloth Bear Vajra, which is wild and rescued from Srikakulam District. Were kept in one moat to facilitate matting among them and allow into a one-night kraal cubicle. On 5th may 2018 keeper reported that the female sloth bear is mating with the male sloth bear Vajra which continued for nearly two weeks. The Sloth bears at the Indira Gandhi Zoological Park in Visakhapatnam were able to live in a cage that mimicked their natural environment, allowing researchers to study and record their behavior. An intensive study on den site characteristics and maternity denning behavior was carried out between May 2018 to December 2018.

Den Description

Divvy's maternity den had a single, oval-shaped entrance that faced northwest (Fig. 1) and was surrounded by huge boulders on its top and lateral sides. The main hallway, which has a low ceiling and grows gradually further into the den, is where the one-chambered den opens. Due to the presence of urine and feces, the chamber, which is near the den's entrance and is located at the back, seems to have been used just for waste. Since shallow maternity caves for sloth bears

had not been seen, it is probable that the female's inexperience from spending a substantial portion of her life in captivity played a role in her decision to choose this particular den. Further, it is observed that the female sloth bear Divya has dug deeper into the existing den which is made by the previous occupants of this moat and used as a maternity den.

Lay out of Maternity den for Sloth bear at Indira Gandhi Zoological Park, Visakhapatnam (Fig.1)



Original Den (Fig-2)

Maternity Denning Behavior:

Direct observation is the only way to identify pregnancy in sloth bears due to their thick fur and the fact that they don't show any outward behavioral changes. and also by observing the enlargement of the nipple size before the parturition period as there were no behavioral indications for pregnancy until they gave birth. Although the female sloth bear had been slightly depressed during the pregnancy was observed based on the comparison of her consumption rate to that during normal days. She only displayed one additional outward sign of pregnancy, the sheen of her coat, which was smooth and bright, unlike the dreary look of non-pregnant bears' coats. [10] Protective shelter from the environment and possible predators are provided by maternity dens for mothers and their cubs (Oli et al., 1997; Linnell et al., 2000). For some bear species, using already excavated dens is not rare (Judd et al., 1986). [4] Dens made by sloth bears are smaller than those made by polar bears (Ursus maritimus) and brown bears (Ursus arctos), but they are equivalent (Judd et al., 1986; Durner et al., 2003). It is observed that the female sloth bear Divya has dug deeper into the existing den which is made by the previous occupants of this moat and used as a maternity den. Since 24th of November 2018, it is observed that she had been spending most of the time in and around the Den and started entering the den every few hours. For one week she used to come during night time for feeding into the night kraal, which is kept open, she retained in the den from 5th December onwards and on the 9th it was observed soiling of a perennial region with hanging mucus secretions and abdomen also came to normal condition, which gave indications of the parturition on that day, i.e after completion of the gestation period of 215 days.

After showing signs of parturition, stayed in the den without eating solid food and drank roughly 5 liters of water mixed with Powder Glucose, Honey, and Syrup polyion for nutritional support, and quickly returned to the den. This routine was repeated by her, and after observing for nearly 60 days it did not show any signs of cubs inside the den either by cub sounds or vocalization of the mother. [9] One caged sloth bear reportedly skipped meals from day 7 to day 70 and two others from day three to day 36 after giving birth, according to Jacobi (n.d.). These early findings suggest that the female either stays with the young and does not feed during this time, or feeds but is unable to move around much. Later this situation is explained to the curator and obtained permission to close the mother in the night kraal cubicle and to check for cubs in the den on 05-02- 2018. On verification of the den, it is found that there is a dried dead cub carcass in front of the den covered with soil. Then it is decided to keep the mother in the night kraal for necessary medication.

(Fig-3)

A dead fetus was found at the entrance of the Den.

Conclusion:

It is noted that due to heavy rain immediately after the birth of the cub, water might enter the den and the mother tried to rescue her cub by bringing the cub outside the den and trying to dig a new den adjacent to the existing den. But unfortunately, the cub has died. But she continued to remain in the den even after the death of the cub as she habituated to living in the den. . A more detailed study using radio telemetry to evaluate den use by bears would give us a better understanding if zoo management needs to make artificial dens for captive sloth bears in future.

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