

Programme for Environmental Enrichment of Sloth Bears (*Melursus ursinus*)

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India has a long history since Mughal period of using dancing Sloth bears (*Melursus ursinus*) to entertain the public. Far from being harmless fun, however, it is a story of poaching and agonized suffering. Each year more than one hundred bear cubs are taken from wild for this purpose, and sometimes their mothers are killed in the process of capture. This is seriously depleting the numbers of Sloth bears in the wild. According to Knight (2002) it is estimated that there are currently up to 1200 bears leading a life of misery in this way.

Wildlife S.O.S, a New Delhi NGO, has constructed a centre at Soor Sarovar Bird Sanctuary, Keetham, Agra for rescued 'dancing bears'. It is the first of its kind in India for the dancing bears. The centre provided naturalistic enclosures in order to encourage bears to behave naturally. The centre was opened to house bears at the end of 2002 and is now home to 34 Sloth bears.

Conservation Status: Listed in Appendix I of the CITES (Convention in International Trade in Endangered Species of Wild Fauna and Flora) and on Schedule I of the Indian Wildlife (Protection) Act, 1972.

Threats: Severe habitat loss, heavy poaching, low reproductive rate, high mortality of cubs which *adivasis* remove from forests for the dancing bear business.

What is Enrichment?

Zoo biologists have accepted the responsibility of collaboration with architects and engineers to design exhibits that enhance the lifestyles of captive animals. Indeed, the growing interest of the public in animal welfare demands that zoos carefully consider programmes and techniques that will contribute to the "psychological well being" of the entire zoo collection.

During the past decade, zoos have become increasingly naturalistic, providing opportunities to exhibit and manage mammals in appropriate social groupings (Coe, 1985; Maple and Hoff, 1982; Ogden et al, 1993).

It is generally recognized that naturalistic, functional behaviours can be promoted in confined animals by increasing the physical complexity of their environments with species-appropriate furnishings, and by adopting methods of feeding that encourage complex feeding behaviours. (Hediger, 1950, 1966; Morris, 1962, 1964; Van Keulen-Kromhont, 1978; Markowitz, 1978; Hancocks, 1980; Forthman Quick, 1984; Hutchins et al., 1984).

As an ongoing study on the environment enrichment models (Table 1), a part of the study is being discussed for zoos and rescue centers.

Enrichment experiments

The following enrichment experiments with enclosure furniture were tested on 41 bears during the winter and the early summer period, at the bear rehabilitation camp of Wildlife S.O.S at Soor Sarovar Bird Sanctuary, Agra.

The behaviour of the bears were categorized according to

The Ursidae family consists of eight species of bear (Spectacled, Sun, Sloth Bear, Giant panda, Black, Brown, Polar & Asiatic Bear (AZAABAG, 1997), most of which are closely related, the evolutionary exceptions being the spectacled bear and giant panda. They are generally omnivorous, have a slow reproductive rate, good climbers and an exceptional sense of smell. They have long maternal dependency, and cubs are born in poorly developed state. Sloth bears are found across eastern India and Sri Lanka. They occupy lowland forests and adapted for feeding upon insects, especially termites. Their lips are flexible, they can close their nostrils, the upper incisors are missing, and they have long blunt claws.



Large trees are being used by bears to rest on top, as in the wild. Photo by Brij Kishor Gupta.

the method proposed by Forthman et al. (1992). Under this the highly investigative foraging, locomotion, auto play and all the activity in a waterfall under "active"; resting, and alert, routine behaviour fall under "passive"; some self stimulation, stereotype or periodic pacing type of unnatural behaviour fall under "abnormal". Table 1 depicts the comprehensive behaviour values observed under the following enrichment experiments.

a. **Elevated wooden platforms:** Utilization of the provided wooden platforms by Bears was 100%. Climbing on platforms give the bears a new dimension to their environment and enable them to escape from potentially aggressive interactions. 70% bears appear to enjoy getting

Table 1. Percentage of behaviour observation (coded as active, passive, abnormal under enriched and unenriched conditions during December 2002 -April 2003)			
Experimental	Condition		
	Active	Passive	Abnormal
Enriched	42.6+	39.6	2.5-
Unenriched	19.3+	71.5+	8.2

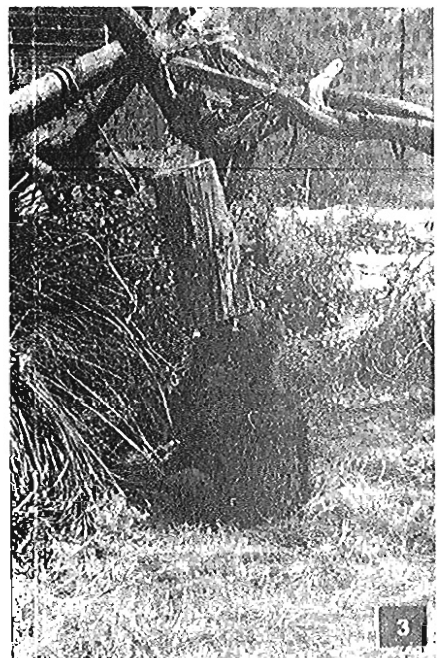
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(Fig. 2) Sloth bears using honey log.
Photo by Brij Kishor Gupta.

off the ground and viewing their area.
(Fig 1.). Active 82%

b. Scented logs: Scented log with 1 inch/2.5 cm hole drilled into it and filled with small pieces of fruit, seed and insects. Alternatively one can fill the holes with scented herbs like mint etc. The size of the hole is important so that animals do not get their tongue or claws stuck in it. The logs were suspended on thick ropes from trees



(Fig. 3) Sloth bear engaged in sucking honey. Photo by Brij Kishor Gupta.

so the animal kept rolling them around (Fig 2). Active 70%

c. Honey Logs: According to Chhanganl (2002), Sloth bears often can be observed feeding on honey and honey bees in the wild. A honey log, created for the enrichment of the bears, has an interior chamber used to hold bottled honey. The log was hung with a climbing structure in an enclosure with thick rope. The honey log has a sort of sucking pipe, inviting the bear's attention to suck and get the honey, to stimulate as in sucking honey in the wild. A rabbit laboratory water bottle with the top cut off was used for sucking process initially. The narrow spout allowed a thin trail of honey to trickle through a small hole drilled in

their own individual pattern. The young bears were more keen in this activity. Active 42%

f. Scattering of feed: All the bears were provided with both food and entertainment by scattering ground nuts and seeds in the enclosures, which kept them busy all the time in searching food. Active 35%

g. Water pools: all the bears utilized the small pool provided in the enclosure, enjoying the water by leaping about, splashing and falling without hurting themselves. Some boulders were placed at the pool base to provide a natural grip for climbing out. The maximum depth of the pool was 3 feet in the centre. Active 40%



(Fig. 1) In a large naturalistic enclosure, wooden ramps are being used by sloth bears. Photo by Brij Kishor Gupta.

the tree trunk. Once the bottle of honey is placed, the honey log was firmly placed and with a lid sealed by way of locking (Fig 3). Active 100%

d. Natural substrates for instinctive behaviour: Normally Bears enjoy digging and removing bark from tree trunks. The response to natural substrate supplements such as large wooden logs with bark was that these items were readily accepted. Active 38%

e. Bedding/nesting materials: All bears were given straw or hay to sleep on it and form bedding/nesting material which they modified, interestingly, in

1. Observation Data

During the study period data on behaviour observations was collected and analyzed. The details of data follows in Table 1.

Discussion

Today environmental enrichment should be an integrated part of any daily animal routine of the zoo and rescue centers. Enrichment supplements should be changed or rotated so that the animal should not feel any boredom of living in an enclosure. In the above study, the "enriched" bear is relatively more active and therefore, is less likely to exhibit aberrant stereotype behaviours, and

according to Cowan (1999), may be less likely to succumb to certain diseases. The traditional method for keeping bears in barren concrete pits is no longer acceptable. According to Landrigan *et al.* (2001) bears kept in captivity are notorious for exhibiting stereotypic behaviour. Therefore while building enclosures with the animal's perspective in mind, behavioural outcomes began to be considered in the design of enclosures.

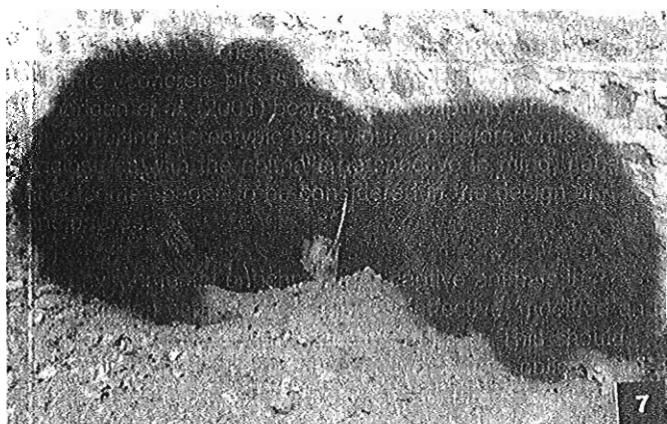
For environmental enrichment for captive animals in rehabilitation camps or zoos is cost-effective, modified and designed in a simple and effective manner. This should become a part of all zoos and captive centers policy as this provides stimulus and environment simultaneously for physical and mental acceptance of the enclosures as natural home.



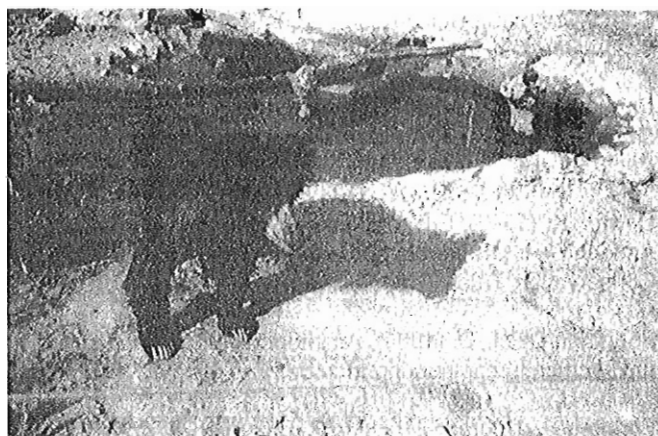
(Fig. 6) Bedding material used by bears in play.
Photo by Brij Kishor Gupta.

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Bears searching for scattered and hidden food.
Photo by Brij Kishor Gupta.



Water pools are being used by bears to relax, splash water, and play inside it. Photo by Brij Kishor Gupta.

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Modified bedding material. Photo by Brij Kishor Gupta.

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