

TERRITORIALITY AND SOCIAL BEHAVIOUR IN SPECTACLED BEARS (*Tremarctos ornatus*)*

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ABSTRACT

A pair of 11 year old spectacled bears and their 21 month old twin cubs at Jersey Wildlife Preservation Trust, Jersey were studied for their enclosure use and social interactions. Observations were recorded at an interval of 3 minutes (n = 276) between 9.15 am and 5.15 pm.

There is a significant difference in terms of the substrate use among different animals, the male showing dominance over certain items. The adult male exhibits aggressive behaviour over the male cub while having positive interactions with the other three. All the four animals exhibit maximum social interactions at midday. The proximity study indicates that the male cub is distantly placed to both the father and mother.

INTRODUCTION

Bears are one of the most attractive animals in any zoo. Spectacled Bears, the only bears native to South America, are exposed to various threats in their native habitat and their dwindling numbers has lead to their placement in the "Vulnerable" list of IUCN Red Data Book. Though they are adapted to a wide range of habitat types the best suited habitat according to Peyton (1980) is the montane or cloud forest in Peru ('ceja de selva').

Though the Jersey Zoo has been maintaining these animals since 1961, the breeding programme became active only in 1972 (Bloxam, 1977). Presently there are four animals at Jersey Zoo - Adult male (M1346) Wolfgang, procured from Leipzig and on display since 15th October, 1987. The adult female Barbara (M1245) brought from NZP - Washington and on display since 9th June,

1987. The male cub Gerry and female cub Margo are twins born to Wolfgang and Barbara in Nov. '94.

Spectacled bears have been little studied in the wild. During the course of our short project period, we could not find any references on the territoriality and social interactions on spectacled bears though there were a few summer school project reports on general behaviour and enclosure use. The American Black Bears were observed to have definite home ranges in the wild which do not overlap one another for males (Poelker and Hartwell, 1973). It was also observed in these animals that the sexes come together briefly during the mating season and the young, though weaned at around 6 to 8 months of age, remain with the mother and den with her during their second winter of life. Upon emergence in the Spring they usually depart in order to avoid aggression of the adult males (Nowak and Paradiso, 1983).

Bears are neophilic, always looking for new objects and are thus susceptible to problems in confinement (Markowitz, 1982) leading to competition among various individuals in the enclosure. Forthman and Bakeman (1992) in a study on captive Sloth bears observed that the activity patterns were influenced by group composition.

This study aims at providing some data on territorial behaviour in terms of enclosure use by these four animals and also attempts to provide some understanding on their social behaviour with respect to positive and negative interactions.



*Spectacled bears at JWPT enjoy climbing a dead tree which has been kept in their enclosure for them.
Photo by Phillip Coffey*

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METHODS

The spectacled bear enclosure (Fig. 1) comprises a spacious enriched enclosure with an open area of 267m. surrounded by a 2.7m. high wall with 14 viewing glass windows. The substrate resources consist of a 32.5m.x1.5m. deep water pool, strategically placed logs, boulders, upright poles and two hammocks (green and yellow) tied at 1.5m height at the left and right sides of the enclosure. Besides these substrate, the grassy ground is also used frequently by all the animals. The animal house consists of three inter-connected unheated dens of 3.7x3.0x2.7m. high each with independent access to open area. For the study purpose the enclosure use has been categorised into 8 types viz., Ground, Hammock yellow, Hammock green, Logs, Water, Poles, Den and Boulders.

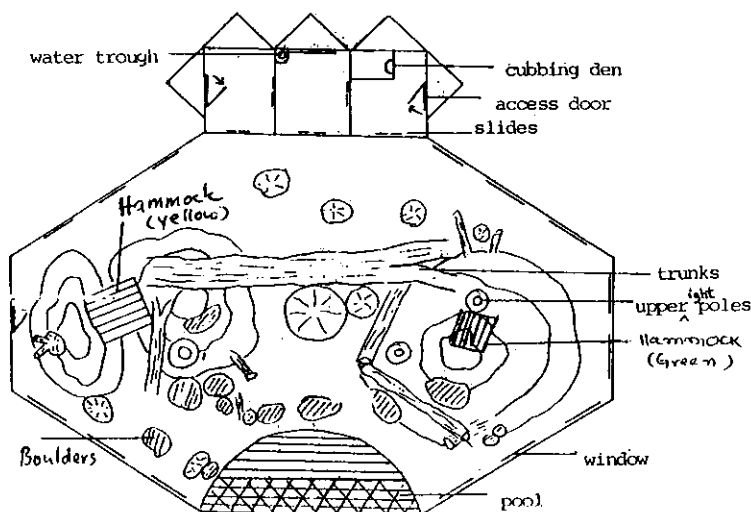


Fig. 1. The spectacled bear enclosure at JWPT

Observations were noted every 3 minutes for four days (N = 276) that spread from 9.15am to 5.15pm. Each subject was simultaneously scored for substrate use (location), social encounter, the type of behaviour exhibited during the encounter and the proximity relationship i.e., the observed distances between different animals estimated in meters. The type of social behaviours noted were categorised as

1. Suckling
2. Antagonistic
3. Playful
4. Sniffing, grooming, licking

RESULTS AND DISCUSSION

The analysis of data (Table 1) clearly indicated distinct preferences for different substrate by the animals (Chi-

square = 314.38; df=21). While the den was used by all the animals for rest and sleeping, the adult male had the exclusive usage of water pool inside the enclosure. Similarly the hammock (yellow) was used only by the adult male and the female cub. The adult female did not use either any of the hammocks or the water pool.

The study on social interactions (Table 2) indicated that the bears are socially more active at midday and least active in the evenings (Chi-square = 24.7; df = 9). Of the 106 social interactions recorded, the male and female cub exhibited the maximum number (70) and the female the minimum (6).

The female cub is the most active of the four interacting with all the other three. It exhibited playful behaviour with the male 8 times, interacted with the mother 26 times but instigated encounter with the male cub only twice. The adult female was observed to be least interactive of all

Table 1. Use of Substrates by spectacled bears at Jersey Zoo

Sustrate	male	% usage	female	% usage	ma cub	% usage	fe cub	% usage	S.D.
ground	106.00	38.41	74.00	26.81	64.00	23.19	72.00	26.09	27.67
hammock (y)	20.00	7.25	0.00	0.00	0.00	0.00	54.00	19.57	18.61
hammock (g)	0.00	0.00	0.00	0.00	48.00	16.67	8.00	2.90	15.79
log	28.00	10.14	36.00	13.04	48.00	17.39	24.00	8.70	12.43
poles	10.00	3.62	38.00	13.77	34.00	12.32	18.00	6.52	11.80
water	8.00	2.90	0.00	0.00	0.00	0.00	0.00	0.00	2.81
den	102.00	36.96	110.00	39.86	84.00	30.43	94.00	34.06	31.52
boulders	2.00	0.72	18.00	6.52	0.00	0.00	6.00	2.17	5.97
Total	276.00		276.00		276.00		276.00		
S.D.	41.03		37.28		30.01		32.43		
Mean	34.50		34.50		34.50		34.50		

Table 2. Social Interaction in Spectacled Bears

	9.15 -11.15	11.15 -1.15	1.15 -3.15	3.15 -5.15	TOTAL	MEAN	SD
MALE	2	18	14	0	34	8.5	7.66
FEMALE	0	4	2	0	6	1.5	1.66
MALE-CUB	12	10	8	0	30	7.5	4.56
FEMALE-CUB	10	8	14	4	36	9	3.61
TOTAL	24	40	38	4	106		
MEAN	6	10	9.5	1			
SD	5.10	5.10	4.97	1.73			

that it interacted only 6 times twice with each of the other three animals.

All the 34 antagonistic behaviours recorded during the study were observed only between adult male and male cub all of them instigated by the adult male. The male cub is submissive to the adult male and leaves the place if the male wants to be on top of a pole or near a hammock. While the male cub avoided any sort of interaction with the male, it showed 20 interactions with the female and 10 with the female cub.

It is interesting to note that in a similar study conducted on these cubs when they were 8 months old, the cubs were observed to have spent time with the mother, father and alone by themselves in a similar manner, though the cubs spent more time with the mother (Dogra and Ellman, 1985). In the same study it was also observed that the cubs spent the same time in four locations of the enclosure (Ground, Tree, Pool, Den) and did not exhibit any major behavioural differences, contrary to the present findings which indicated significant differences among the four animals in terms of substrate usage and also in the manner they interact with each other. As the cubs grow up they tend to be more independent especially the male cub which always tries to avoid the father. The adult male's aggressive behaviour towards male cub also explains the development of territoriality and competition among males with the increase in age of the male cub. Howell's (1988) observation that there is distinct dominance behaviour exhibited by male over the females even when they are sub adults with regard to dominance over substrate confirms the above observations.

The proximity relationships recorded (in m.) were as follows:

	Male to			Female to		Male cub to
	F _i	M cub	F cub	M cub	F cub	F cub
MEAN	3.83	5.99	4.24	5.13	3.31	4.68
STD	3.10	3.63	3.35	4.14	3.21	3.7

The study on proximity relationships indicates that the male cub is distantly placed to both male and female and the female cub show the closest proximity (Fig-3).

CONCLUSIONS

There is significant difference between different animals with reference to the use of substrate resource available in the enclosure, the male showing dominance over its choice. The adult male and the male cub show antagonistic behaviour and maximum spacing which coincides with the observations made on wild American black bears that the cubs leave the mother and den during their second winter of life to avoid aggression of the adult males. This may suggest the separation of the male cub from the group.

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