

REPORT WRITING -
STUDY ON THE BEHAVIOR OF LESSER
CARNIVORES MAMMALS IN DARJEELING
ZOO



Submitted to:

The Director
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Zoological Park
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ABSTRACT:

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Smaller carnivores mammals like Asian palm civet (family- Viverridae), jungle cats and leopard cats (family- Felidae) are some of the lesser known species of the world; however they represent an important part of the world fauna. The present study was done to observe the daily behavior of three species of lesser carnivores mammals; Asian palm civet, jungle cat and leopard cat in captivity. Daytime observations on the behavioral pattern of three specimens of lesser carnivores mammals in captivity were carried out at the Padmaja Naidu Himalaya Zoological Park, Darjeeling, during the month of May, 2014 from 3rd -28th May.

INTRODUCTION:

Small carnivores, as defined by International Union for Conservation of Nature (IUCN) includes nine families worldwide. Despite their diversity and global distribution many small carnivores have received little scientific attention; consequently there is often little information on their distribution, ecological role and conservation status. Prater has stated a list of lesser carnivore mammals of India, of which I have studied two species i.e, Jungle cat and leopard cat.

Jungle cat (*Felis chaus*), has long legs and slender build. Local names include- ban beral, janglii billi, ban bilao, khattas. Males are markedly larger than females (Pocock 1951). Threats to this animals are; ongoing reclamation and destruction of natural wetlands particularly in the arid areas (Dugan 1993),jungle cat furs are illegally traded and disposed in India (Shomita et al., 2004).

Leopard cat (*Prionailurus bengalensis*), is a small wild cat of family Felidae, found in South and East Asia. The leopard cat's name is derived from the leopard-like spots prevalent in all subspecies, but its relation to the leopard is distant. Since 2002 it has been listed as Least Concern by IUCN due to its wide distribution, but now it being threatened by habitat loss and hunting in large parts of its range. *Prionailurus bengalensis* is listed in CITES Appendix II. In Hong Kong, the species is protected under the Wild Animals Protection Ordinance Cap 170. WAZA Conservation Project 11011 is being implemented by Marcus Aik Hwee Chua from the National University of Singapore, with support provided by Wildlife Reserves Singapore and involvement of National Parks Board Singapore (www.wrscf.org.sg).

Asian palm civet (*Paradoxurus hermaphrodites*) also called *toddy cat* is a small member of the Viverridae family native to South and Southeast Asia. In 2008, the IUCN classified the species as Least Concern as it is tolerant of a broad range of habitats. Threats to it are; hunting for its meat, medicine and the famous Kopi luwak, coffee made by ingestion and fermentation of the coffee beans in the gastrointestinal tract of Asian palm civet. *Paradoxurus hermaphroditus* is listed on CITES Appendix III. There is a quota in Indonesia, which is largely ignored by hunters and traders and is not enforced by authorities.



Leopard cat



Asian palm civet



Jungle cat

THREATS:



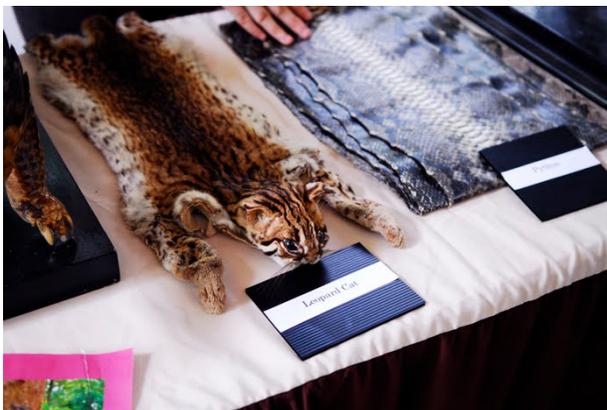
Civets caged for coffee production



Road accidents



Civet meat



Leopard cat fur



Jungle cat hunted

Importance of Behavioral Study:

Behavior is a pervasive and fundamental property of living organisms, ranging from the simple responses of bacteria to the intricate social interactions of humans. Behavior is the link between organisms and environment and between the nervous system, and the ecosystem. Study of animal behavior is vital due to various reasons-

A. Animal behavior and the environment, conservation and resource management:

1. The behavior of animals often provides the first clues or early warning signs of environmental degradation. Studies of natural behavior in the field are vital to provide baseline data for future environmental monitoring.
2. The conservation of endangered species requires that we know enough about natural behavior in order to develop effective reserves and effective protection measures. Relocation or reintroduction of animals is not possible without detailed knowledge of a species' natural history. With the increasing importance of environmental programs and human management of populations of rare species, both in captivity and in the natural habitat, animal behavior research becomes increasingly important.
3. Basic behavioral studies on reproductive behavior have led to improved captive breeding methods for whooping cranes, golden lion tamarins, cotton-top tamarins, and many other endangered species. Captive breeders who were ignorant of the species' natural reproductive behavior were generally unsuccessful.

B. Animal behavior and Animal welfare:

1. Our society has placed increased emphasis on the welfare of research and exhibit animals. Animal welfare without knowledge is impossible. Animal behavior researchers look at the behavior and well-being of animals in lab and field.
2. Further developments in animal welfare will require input from animal behavior specialists. Improved conditions for farm animals, breeding of endangered species, proper care of companion animals all require a strong behavioral data base.

C. Animal behavior and Human society:

1. Research by de Waal on chimpanzees and monkeys has illustrated the importance of cooperation and reconciliation in social groups. This work provides new perspectives by which to view and ameliorate aggressive behavior among human beings.
2. Charles Darwin's work on emotional expression in animals has had an important influence on many psychologists, such as Paul Ekman, who study human emotional behavior.
3. The comparative study of behavior over a wide range of species can provide insights into influences affecting human behavior.

METHODOLOGY:

The behavioral study was done by referring to the journal, 'Observational Study of Behavior-Sampling Method', Jeanne Altmann 1973.

- Study area- The present study was done in Padmaja Naidu Himalayan Zoological Park, Darjeeling.
- Time spent on the study- 42 hours/week for one month
- Sample number- A total of five samples studied.

Leopards cat- 1 male, Kishan

Jungle cat- 2 male, Paras and Pawan

Asian palm civet- 1:1, Dhurva and Durga. (General behavior of one more female Asian palm civet(Kavita) was observed which had just given birth to three cubs)

All specimens were adults and different species had distinct physical appearance and showed typical behavioral differences at individual level. The observation was done in three parts of the day- morning (6:30-9a.m), afternoon (11-1p.m) and evening (4:30-6:30/7 p.m). Focus was given to feeding, any stereotypic behavior, aggression, their normal- daily activities and enrichment of the animals. Enrichment was done by following methods:

Leopard cat- Addition of more logs to climb on, hiding of feed,

Jungle cat- Placing of more logs and a pot of doob grass for their natural medicinal instincts (Tehsin 1996)

Asian palm civet- Placing their feed in different places in the logs

RESULT:

Before enrichment (3rd - 22nd May)

- Leopard cat-

	WALKING	FEEDING	SLEEPING	OUT OF SIGHT
Morning	Nil	Nil	69.93%	42.22%
Midday	Nil	Nil	63%	0
Evening	80%	42%	12%	49%

▪ Jungle cat- Paras

	WALKING	PACING	SITTING	SLEEPING
Morning	30%	60%	20%	15%
Midday	16%	20%	40%	52.47%
Evening	51%	55%	32%	20%

▪ Jungle cat- Pawan

	WALKING	PACING	SITTING	SLEEPING
Morning	32.40%	Nil	8.5%	23.1%
Midday	25%	Nil	42%	62%
Evening	45.1%	20%	20%	10%

▪ Asian palm civet- Dhurva

	WALKING	FEEDING	SITTING	SLEEPING
Morning	23.14%	3.2%	15%	79.2%
Midday	Almost Nil	Almost Nil	Nil	81%
Evening	42%	22%	5.1%	40%

▪ Asian palm civet- Durga

	WALKING	FEEDING	SITTING	SLEEPING
Morning	42%	32%	12%	70%
Midday	22.3%	13.54%	26.7%	45%
Evening	17.21%	13%	13%	69%

After enrichment (23rd- 28th May)

Observations were done primarily in the evening after enrichment.

Leopard cat was seen to walk and search for its feed. The next day it was seen that it had eaten all the feeds that were hidden. Hiding feed seems to be a good practice, as whole day the animal sleeps so it would be like an activity for the animal.

For jungle cats, new logs were put up and it was seen that Pawan was making use of the new logs, sitting and scratching it. It was climbing up and down the new logs.

For Asian palm civets, by hiding the feed, their basic instinct of smelling and locating the feed could be observed. Male was seen to be better at finding the hidden feed than the female. Feeds were hidden in better logs, grasses, ground, hollow trunk and places where they generally sit.

CONCLUSION:

The animals under study were mostly nocturnal in habit (Leopard cat and Asian palm civet), jungle cat being crepuscular. Therefore not much active behaviors could be noticed during the daytime for leopard cat and Asian palm civet. Leopard cat showed practically no walking, feeding or pacing during the daytime. It slept almost whole day in the cave structure of the enclosure. But at dusk it showed active movements like walking, climbing up the logs and scratching its paw nails, sitting on top of the logs etc. It was also seen to be playing with its feed occasionally. No stereotypic behavior could be observed for the leopard cat during the study.

For the jungle cats, distinctions were made between the two by the appearance of their fur coat. Paras had a bit unkempt fur, with clusters of fur here and there, whereas Pawan had smooth fur. Both the cats were very active during the morning and evening. At midday they mostly slept on top of the grass on the ground or on the cave structure. Paras, showed an unusually high degree of pacing behavior than Pawan. It could be seen pacing near the enclosure gate and near the left side of the enclosure especially during morning and evening. Sometimes it could pace upto 2-3 hours straight. During early morning the pace was almost 40/minute, but during visitors hour the pacing drastically increased to about 57/minute. Pawan, showed very little pacing tendency. It walked around the enclosure, climb up and down the logs. Pawan frequently scent marked the nearby grasses and made loud 'mewing' sound when doing so. During feeding, the jungle cats could finish the feed in just 15 minutes, without even leaving a scrap of bone. The cats were not very friendly with each other (jungle cats being solitary in nature) and each made peculiar sounds when coming near sometimes. During the course of study, Paras was seen to be injured in its left forelimb and was sneezing incessantly. With the aid of zookeepers and veterinarians antibiotics was injected and ointment was applied and he was kept secluded for few days, after a week he seemed to recover.

The female Asian palm civet was found to be more active during the day than the male, walking, feeding, climbing up and down the enclosure cage, grooming and again sleeping briefly. Male generally slept on top of the log or inside the hollow of the trunk during daytime. Sometimes it did not even wake up for the morning feed. During dusk, male could be seen walking continuously, even pacing around the enclosure sometimes. Sexual dimorphism was distinct in Asian palm civets. They mostly defecated on top of the logs, rarely on the ground.

The nursing civet (Kavita) had given birth to three cubs on the 18th of April 2014. Signs of pregnancy (as noticed by the zookeepers) were- lethargy, no movements, did not eat well and slept most of the day. She was kept inside the den enclosure and was seen mostly to be sleeping with her cubs, waking up only during feeding in the evening. There was no signs of cub rejections, she could be seen grooming and milking all her cubs. After almost 32 days the cubs were seen to be able to walk around and climb in and out the cot easily. The longitudinal stripes were very distinct on the young cubs.

DISCUSSION:

Encounter with a Feline wildcat is an exceptional rarity. Relatively few people can name wildcat species, and fewer still have laid eyes upon one outside of zoos. As with lions, tigers, and leopards, most small cats' conservation status wavers between threatened and critically endangered. However, there's a huge disparity in the amount of funding small cat conservation receives vs. big cat conservation. In all, there are 36 known feline species in the wild, spanning continents and habitats. Nearly three-fourths of these are near the size of a domestic house cat or slightly larger. Very little is known about most of these small cat species, which is partly why it's hard to get funding for conservation projects dedicated to them. The small cats' plight speaks to a larger trend in conservation. Iconic species take the spotlight, receiving attention and funding, and the lesser-known species fall through the cracks. According to the United Nations Environment Program, an estimated 150 to 200 species go extinct every day. The International Union for Conservation of Nature estimates that a staggering 36 percent of Earth's species are threatened by extinction.

More research and studies on these wonderful creatures should be promoted. Perusal of literature reveals that little attention has been paid to the study of the behavioral pattern of these lesser carnivores animals, both in captivity as well as in the wild. Not much research has been done to study the population size, distribution or the ecological niche occupied by these animals. Enrichment programmes should be done every now and then for these smaller animals.

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