



# Ecological Stress in form of Prey Depletion in Corbett Tiger Reserve, A Case Study in Dry Season: Livestock Predation and Conflict Management

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## Abstract

*Corbett Tiger Reserve is an excellent place for roar of tiger and other wildlife. During in dry summer season the fulfillments of vital need become tight and tough to tiger and its sympatric species like Leopard. Dry summer season depicts the extra efforts to catch the prey by big cats. Different dynamics of Predator-Prey relationship is recorded in this season. Total 8 cases of elephant's mortality with tiger attack sign were ceased. Porcupine, *Hystrix indica* are also recorded as undigested remains in tiger's scat s. Total 86 scats were analyzed. Now ecological stress leads conflict situation always. This case study based on scat analysis to detect the food and feeding profile of tiger in these two months. During these two months of May- June the chance of conflict cases are more recorded than other month. Live stock predations are found more in these months. Ecological stress in the form of prey depletion in the area develops the strong habit in carnivores to move around human-settlement which leads conflicts?*

**Keywords:** Predator-prey relationship, conflict, ecological stress, scat analysis.

## Introduction

Food and feeding behavior or choice of food of tiger more or less depends upon the natural habitat. Availability of prey which is major ecological factor<sup>1</sup> for any wild animal depicts the richness of habitat<sup>2</sup> in one hand while on the other hand it also determines the movement pattern.

Corbett itself a very suitable place for roar but during the dry season like in month of May, June, July are hot and depicts the negative movement of prey species away from the tiger territory<sup>3</sup> and nearby water bodies. Different type of predator-prey relationship and choice of foods are reported during these months with die heart situation. Scarcity of food and prey species leads tiger movement in the human settlement<sup>4</sup> or the livestock predation.

This study depicts the porcupine is dominant in food profile. Some cases depict attack on elephants i.e. physical examination during official postmortem Caracas show scars and attacking sign on body of elephants. On the other hand the langoor is also found as major dependence sign in diet<sup>5</sup> through scat analysis. Tiger is very intelligent animal and equipped with all skill to survive anywhere. Porcupine is also found in the major quantity in diet profile of big cat during this piece of season i.e. May, June. Direct observation of food and feeding of big cat<sup>6</sup> in wild is very tough and rare, we can captured the same moment with eye blinking camera shoot just luck by chance. Tiger is very adaptable animal; he is very able to live anywhere in any situation and condition.

## Methodology

Major component of study material is tiger scat to get the food and feeding data of big cat. Scats collection is also very tough but during field work it is collected.

**Study Area:** Corbett Tiger Reserve had been selected for this study. The Corbett Tiger Reserve itself a well known place for the roar& trumpet for the tiger and other wild animals. This Reserve is confined to the Bhabar tract of Siwalik range at altitude of 400-1200 m. Total area of CTR is 1318.54 sq.km (core 520.82 sq. km. Sonanadi Wild life Sanctuary: 301.18 sq.km). Reserve forest 496.54 sq. Longitude 78°5' E to 79°5' E. Latitude 29°25' N to 29°40' N. Altitude 400 m-1, 2010 m above mean sea level. River Kosi an important river in the foot hills of kumaun runs parallel to eastern boundary of the reserve. This boundary depicts a huge human settlement in the form of hotels and Resorts. And this area is depicting edge between two vital regions i.e. CTR & Ramnagar Forest Division.

**Study Materials:** Total 86 tiger scats were collected with the officials' staff during field work in the month of May, June, July in the year of 2015. By preparing hair impression slide identified the prey species and reconstructed the tiger diet.

**Methodology:** Direct observation of food and feeding of tiger in the wild almost impossible it's very rare or can say luck by chance. For this study scat analysis had applied as described by Koppikar and Sabnis<sup>7</sup> and the method was slightly modified for the present investigation. By the preparation of hair impression slides identification of prey species were conducted along with

reconstruction of tiger diet were taken place which depicts the food and feeding profile. In case of attack on elephant had been observed during the postmortem of elephant carcass along with officials' staff.

**Calculation of Biomass-** The biomass consumed per animal/day was calculated by using the formula:

$$C = T / N.n$$

**Value:** C= Biomass Consumption, T= Total biomass in kg (determined from hair remain in each scat).

Finding out of one type of hair indicates one animal consumed/killed. Two different types of hair indicate two different types of animal consumed/ killed. The ideal weights of these animals are considered for biomass calculation. N= Number of scats collected and, n=Number of animals consumed / killed.

## Results and Discussion

Total 86 tiger scats were collected and analyzed. Undigested remain like hairs were collected to identify the prey species. Result of scat analysis for diet profile is summarized in Table 1-2. The scat analysis of collected 86 tiger scat reveals 8 prey

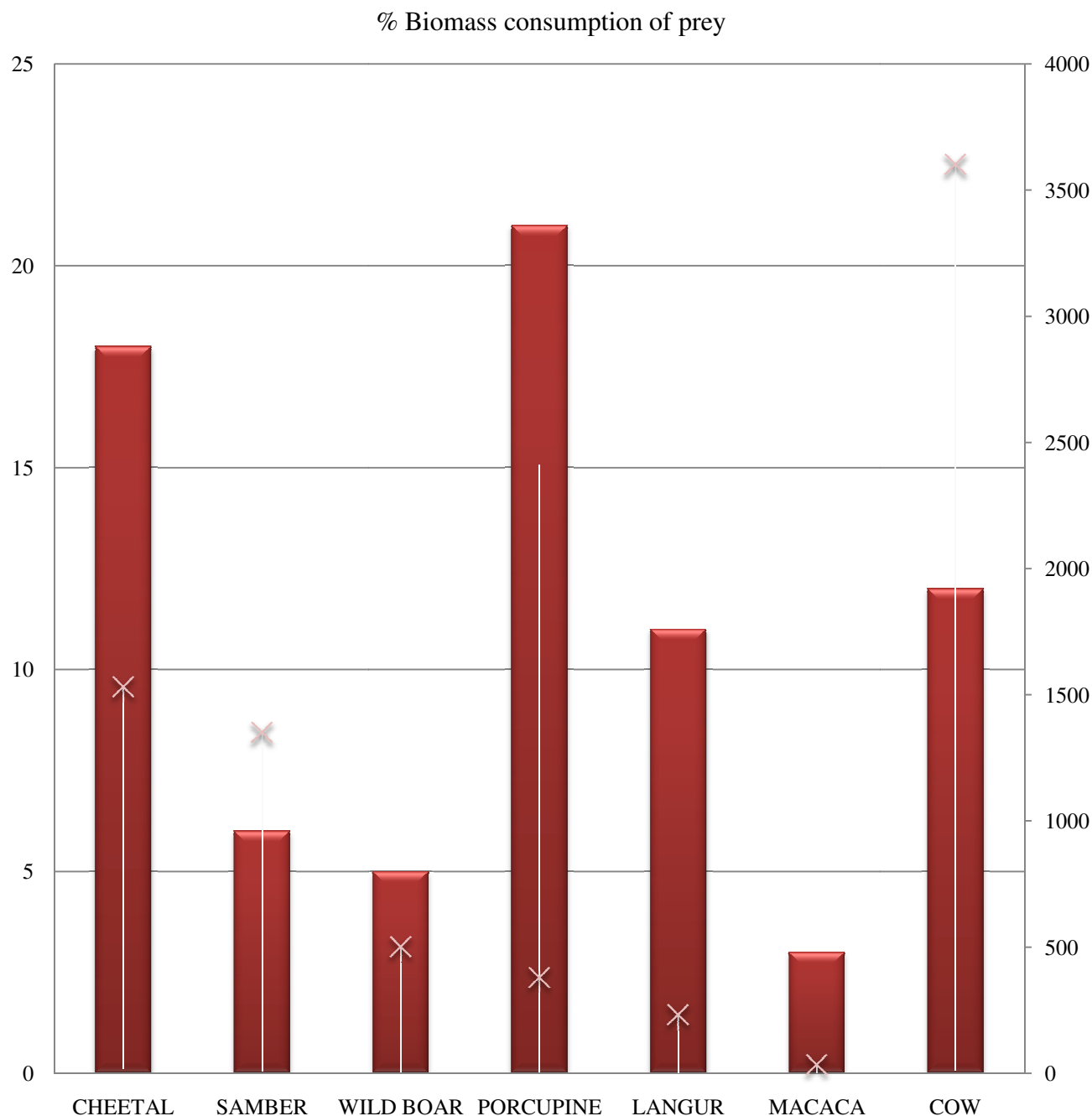
species with high presence of Cheetal than Porcupine and other preys like Cervus unicolor (Samber), Sus scrofa, cow, langoor, goat etc. Daily consumption of tiger is resulted 1.09 kg/day and annual consumption according to this study is 397.85 kg which are very less and not up to mark for survival of a wild tiger. At least 4-5 kg food is required per day to a wild tiger ecologically. So here different type of predator-prey relation is depicted in these months of dry season. Sometime it has been noticed that tiger attacks on the elephant as a unusual choice of food. Hystrix indica is found to be the choice of food in diet profile of big cats since a long time so result shows that high preference and availability of porcupine in this ecological study i.e. scat analysis shows at all.

**Discussion:** This two month of dry season are sometimes critical for the tiger<sup>8</sup> and depicts the different type predator-prey relationship and its dynamics. Scarcity of food depicts the tiger movement in human settlement for livestock predation<sup>9</sup> in one hand while attack on elephant, an unusual choice of food for survival on ground of extreme ability to survive is in other hand. Tiger need at least 4-5 kg per day but this study depicts very less amount of per day diet by scat analysis which is not up to mark ecologically.

**Table-1**  
**Percentage occurrence of undigested remains recorded in tiger scat**

S.No	Prey Species	No. of animals	% Occurrence	Animal weight in kg	Biomass in Kg	% Biomass
1	Axis axis	18	21%	85	1530	19%
2	Cervus unicolor	06	7%	225	1350	17%
3	Sus scrofa	05	6%	100	500	6%
4	Hystrix indica	21	24%	18	378	5%
5	Semnopithecus entellus	11	13%	21	231	3%
6	Macaca mulata	03	3%	11	33	0.4%
7	Cattle ( cow)	12	14%	300	3600	45%
8	Goat	10	12%	45	450	6%
TOTAL		86			8072	

Nb. Considered weight of animal in kg according to Vivek Menon. A field guide to Indian mammal and Prater- Book of Indian mammal.



**Figure-1**  
**Graphical representation of Biomass consumption of Prey. (High dominance of porcupine in diet)**

**Table-2**  
**Daily consumption by Tiger (Panthera tigris)**

Formula	Total biomass of Faecal contents in Kg (T)	Year and Number Of scats	No. of animals	Daily consumption In Kg.
$C = T/N \times n$	8072	2015 and 86	86	1.09 kg

Daily consumption (c):  $C = T/N \times n = 8072 / 7396 = 1.09 \text{ Kg/day/Tiger}$ . Annual Consumption:  $1.09 \times 365 = 397.85 \text{ Kg}$ .





**Figure-2**  
Shows the scar, sign of tiger attack on elephant Caracas



**Figure-3**  
Elephant Caracas shows tiger attack sign

Above two photographs showing the tiger attack on elephant, it depicts that in the heart situation or scarcity of food tiger feed on unusual choice of food in one hand and on the other hand when carrying capacity<sup>10</sup> of the concerned habitat is affected or not able to full fill the daily ecological requirements of the animal than enter-specific as well as the intra-specific struggle are very inevitable as a demand of struggle to survive in a wild. Present study depicts tiger can attack for food and feeding in critical situation as a high adaptability to survive in any situation.

## Conclusion

At the end the study depicts the severe situation in the dry season of these dry months depletion of prey biomass to feed upon are very less. Result shows that daily consumption is very less as scat analysis resulted. Table 1 depicts the livestock predation (cow & goat). Depletion in prey biomass leads tiger to move in buffer or in human settlement to preyed the domestic animal.

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