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Prey Selection and Food Habit of Tiger (*Panthera tigris*) in Corbett Tiger Reserve, Ramnagar, Uttarakhand, India

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Abstract:

Tiger is the largest, cutest and very able felids for wild to wild in wild. But it is very difficult to see food and feeding behaviour of tiger in open access or by direct observation. But through scat analysis we can reconstruct the direct or food of tiger. The undigested remain like hairs and bones of prey species provide the food and feeding behaviour of big cat. Total 132 scat were analyzed for food & feeding behaviour of tiger. Final result leads toward critical position regarding prey species for tiger survival.

Keywords: *Undigested remain, scat analysis, prey species, predator-prey relationship*

1. Introduction

Diet & Prey profile of felids depicts the food and feeding behaviour of animal. For easy prey, large felids change their movement pattern. They used to interact human dominated landscape for live stock predation or domestic kill like dog, goat, etc. By the reconstruction of diet through scat analysis provides the scientific evidence of prey species. Undigested remains like hairs and bones of prey in scat provide the clues of prey species and depicts the predator-prey relationship. Because it is very tough and rare to see the tiger in wild. The tiger is the largest obligate terrestrial carnivore in all of the mammalian assemblages in which it occurs in Asia (Seidensticker et.al1999). The analysis of food habit provides practical and immediately useful information for management of a particular species and occasionally aids law enforcement and management need (Korchgen 1971). Hair remains of domestic animal gives the evidence of livestock predation, which ultimately predict the conflict.

2. Material and Methods

Tiger scats are main material for study and scat analysis related to diet and prey profile.

2.1. Study Area

Corbett Tiger Reserve is situated in the Bhabar tract of Siwalik formation at altitude of 400-1200 m. vital statistic of Corbett is Area 1318.54 sq.km Core-520.82 sq.km.) Sonanadi Wildlife Sanctuary -301.18 sq.km) Reserve forest 496.84sq.km. Altitude 400 ml-1, 2010 m above mean sea level. The Rāmgangā river enters the reserve from the northeast and after several zigzag turns emerges out from the southwest. The Palain, Sonanadi, Mandal, and the Rāmgangā rivers are the major perennial water bodies of the reserve that contain water all year round. On the other hand Kosi River formed the eastern boundary of the Reserve. A lot of anthropogenic stress along with Kosi river like hotels & resorts have been erect and vanishing the Kosi corridor day by day. Corbett is surrounded by 5 Forest division i.e. Ramnagar forest division, Lansdowne forest division, Garhwal forest division, Tarai West forest division, and Bijnor forest division. All the scats were collected in this landscape.

2.2. Study Materials

Tiger scats from Corbett Landscape with the help of staff and during field work. The period of collection of scat extends June 2014 to April 2015. Total 132 scats were analyzed for the study of undigested remains. By preparing the hair impression slide identification of prey species were identified and reconstructed the leopard diet. Scat collected nearby Goujra the Gujjar Dera depicts livestock predation

2.3. Methodology

Tiger scats are found to be less coiled and having larger distance between two successive constrictions within a single piece of scat, when compared to leopard which were mostly coiled and have similar distance between constrictions. Generally in wild it is very tuff to see the tiger food and feeding habit even it is very difficult to track out the killing of prey. Some time by luck, it happened. By

indirect method through the collection of scats containing hair as undigested remains, which will reveal the animal preyed upon by the tiger (*Panthera tigris*).

2.4. Procedure

As described by Koppikar & Sabnis (1976). The method was slightly modified in the present investigation. Very first all hair specimens were properly washed in Luke warm water, and then passed through ether or xylol. The fresh slides were smeared with colourless nail polish/ ethyl lactate (having refractive index close to glass slides) then sorted hairs (1 or 2) were passed and kept straight on the smeared slide with the help of forceps. Just after 7-10 minutes the hair was peeled out from the smeared slide and impression of hair observed on the smear slides under compound microscope. Gross appearance, hair length, diameter, and colouration were noted and actual photographs were taken in three different regions of the hair impression on high power (400X) of the microscope, which were used as a key for the identification of a carnivore's diet and feeding habit.

2.5. Calculation of Biomass

The biomass consumed per animal/ day was calculated (Sabnis, 2004) by using the formula -

$$C = \frac{T}{N \cdot n}$$

Where,

C= Biomass consumption

T= Total biomass in kg (determined from hair remains in each scat)

Observation of one type of hair indicates one animal consumed/ killed. Two different types of hairs indicate two different types of animal consumed/ killed. The ideal weights of these animals are considered for biomass calculations).

N= Number of scats collected

n= Number of animals consumed/ killed.

3. Result

132 scats of leopard from Corbett Tiger Reserve and its periphery were analyzed for any undigested remains. The results of scat analysis of tiger are summarized in Table 1, 2. The analysis of these tiger scat revealed remains of 9 prey species with high preponderance of langur (*Semnopithecus entellus*), Sambar (*Cervus unicolor*), Goat, Cheetal (*Axis axis*). Daily consumption each tiger was found to be 0.966kg/day and annual consumption was 352.59kg. But the result shows depletion in prey species on the basis of biomass consumption.

S.No	Prey species	No. of animals	% occurrence	Animal weight Considered (kg)	Biomass (kg)	% Biomass
1	Semnopithecus-entellus (langur)	12	27%	21	252	1.4%
2	Axis axis (Cheetal)	20	12%	85	1700	11%
3	Cervus unicolor (Sambar)	21	13%	225	4725	3%
4	Sus scrofa (Wild boar)	21	11%	230	4830	29%
5	Muntiacus muntjak	12	5%	28	336	2%
6	Hog Deer	8	12%	55	440	3%
7	Macaca mulata	9	10%	11	99	0.6%
8	Hystrix indica (Porcupine)	14	5%	18	252	1%
9	Boselaphus tragocamelus (blue bull)	15	5%	280	4200	25%
	TOTAL	132			16834	

Table 1: Percentage occurrence of undigested remains recorded in the leopard scat from Corbett and its periphery

Considerer wt of animal in kg according to Vivek Menon: A field guide to Indian mammals and Prater-Book of Indian mammals.

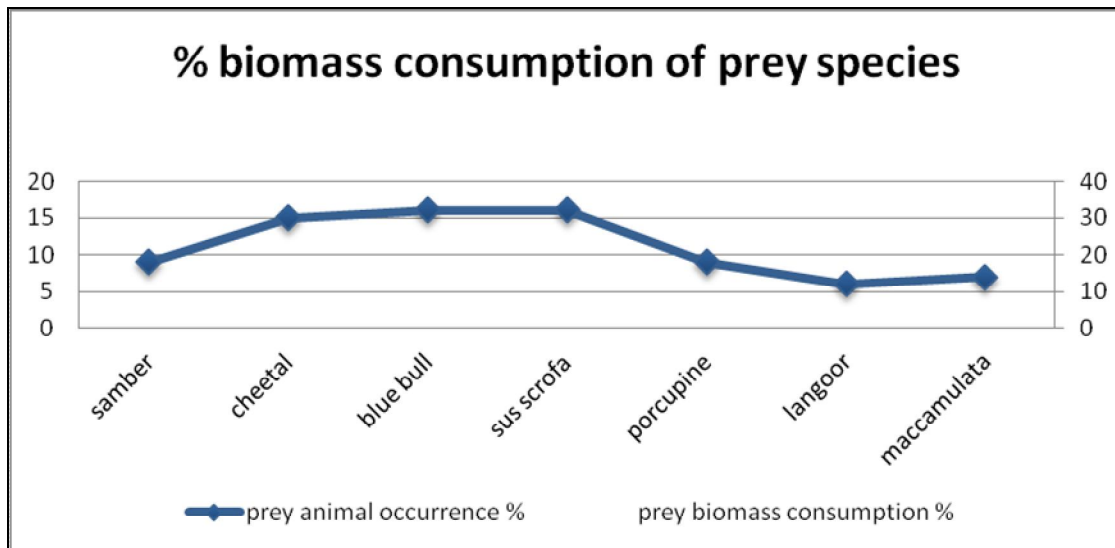


Figure 1: Graphical representation of Biomass consumption of prey.

Formula	Total biomass of Faecal contents in Kg (T)	Year and number of scats	No. of animals	Daily consumption in Kg.
$C = \frac{T}{N \times n}$	16834	2014-2015 132	132	0.966 kg/day

Table 2: Daily consumption by Leopard (*Panthera pardus*) in Corbett landscape-

$$C = \frac{T}{N \times n} = \frac{16834}{17424} = 0.966 \text{Kg. / day / Tiger}$$

Annual Consumption: $0.966 \times 365 = 352.64 \text{Kg.}$

4. Discussion

Present study depicts the very important issues of wildlife conflict and tiger conservation. Livestock predation leads the conflict and ultimately it introduces the negative attitude towards tiger. Tiger preyed on domestic animal like cow, goat etc. due to movement in human dominated areas if the vital food requirements are not fulfilling in core areas. At least if we analyze the percentage of biomass consumption by tiger this study indicates that less consumption of prey biomass. Such a critical habit and choice of food compel to big cat to move in buffer and other human dominated area. Ringora, Kiyari, Sunderkhal, Mohan, Goujra and in Tarai West Forest region linked to Corbett Tiger Reserve where human settlement with Gujjar Deras are prone to livestock predation.

5. Conclusion

The present work shows the depletion in prey species, i.e. fig 1 ,which indicates the conflict and daily consumption is 0.966 kg/ day / tiger, it also leads towards the scarcity of food availability. These are the important factor which compels a tiger from core to buffer. Both the big cat are sympatric to each other and preys upon nearly the same species, so chances of conflict will take place. At least finally we can predict that study depicts the critical condition for tiger food and feeding. For future perspective, we must be aware for prey species conservation rather than tiger conservation. If there is enough prey than ultimately tiger will flourish well by all means. So prey nursery is recommended for future perspectives.

6. References

- i. Fundamental of Wildlife. Rajesh Gopal , Natraj Publication.2012
- ii. Alldredge,J.R., and RattiJ.T.,(1998).Comparison of some statistical techniques for analysis of resources selection. The Journal of Wildlife Management. 56:1-9.
- iii. Bagchi,S. and Mishra, C.,(2006). Living with large carnivores:predation on livestock by the snow leopard (*Uncia uncia*). Journal of zoology 268(2006). The Zoological Society of London.
- iv. Andheria,A.P.,Karanth,K.U. and Kumar, N.S.,(2007).Diet and prey profiles of three sympatric large carnivores in Bandipur Tiger Reserve, India.Journal of Zoology(2007).Doi: 10.1111/j.1469-7998.2007.00310.x.

- v. Aragona, M.; Setz, E. Z. (2001): Diet of maned wolf, (*Chrysocyon brachyurus*) (Mammalia:Canidae), during wet and dry seasons at Ibitipoca State Park, Brazil. *J. Zool.* 254: 131 – 136.
- vi. Arnold, L.A. and Drawe, D.L. (1979): Seasonal food habits of white tailed deer in the south Texas plains. *J. Range Mgmt.*, 32: 175-178.
- vii. Arora, B.M. (1992) : Impact of parasitic diseases on wild mammals. *Indian Zoo. Bulletin VI (1-2)* : 15 – 18.
- viii. Avinandan, D. and Intern, P.G. (2003): Prey selection by tigers (*Panthera tigris*) in Sariska tiger reserve. (Project Name: - “Food habits of Tigers in Sariska Tiger Reserve Rajasthan”) funded by National fish and wild life foundation, U.S.A. and wildlife Institute of India.
- ix. Bagchi, S.; Goyal. S.P. and Sankar, K, (2003): Prey abundance and prey selection by tigers (*Panthera tigris*) in a semi-arid, dry deciduous forest in Western India. *J.of Zoology*, 260: 288-290.
- x. Bailey, T.N., (1993): *The African leopard Ecology and behaviour of a solitary field.* Columbia University Press, New York.
- xi. Ashraf, N.V.K., (1992). *Procedures for monitoring wildlife health and investigating diseases.* Wildlife Institute of India.
- xii. Baskran N. (1990): An ecological investigation of the dietary composition and habitat utilization of sloth bear (*Melursus ursinus*) at Mudumalai Wildlife Sanctuary, Tamilnadu, M.Phil. Dissertation, A.V.C. College, Mannampandal, Tamilnadu.
- xiii. Koppiker, B.R. and Sabnis, J.H. 1976. Identification of hairs of some Indian mammal. *J. Bomb. Nat. His. Soc.* 78:299-302.
- xiv. Seidensticker, J. Christie. S and Jakson. P. 1999. Introducing, the tiger. In: *Riding the Tiger: Tiger Conservation in human-dominated land scapes.* Cambridge University Press London 1-3 pp.
- xv. Korschgen. L.J. 1971. Procedures for food-habits analysis. In: *Wildlife Management Techniques. Third Edition: Revised* (Eds. R.H. Giles) The Wildlife Society, London. pp. 233-258.
- xvi. Sanjeev Kumar. Livestock predation by Tiger (*Panthera tigris*) in Corbett Landscape, Conflict and Conservation Implication. *Research Journal of Animal, Veterinary and Fishery Sciences* Vol.3(4), 1-5, April (2015).