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Dynamics and Comparative Analysis of Human-Wildlife Conflict in two forest divisions of Maharashtra, India

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Abstract

Human-wildlife conflict is a burning issue. Shrinkage of wild habitat imparts depletion in ecological needs in one hand like prey biomass while on the other hand adoption of new skills and cognition to survive and adjust in present scenario are the new challenges for mitigation and conservation. Tiger (*Panthera tigris*) is enhancing their skill for survival in human dominated landscapes. Present study imparts the analysis of conflict cases in terms of crop depredation, livestock predation, human kill and injuries of two selected forest divisions of Maharashtra state. Results revealed that there are various factors for HWC in study areas and urgent need a structural scientific long term strategy to mitigate HWC in study areas. Present study depicts the last 5 years data on all aspects of HWC and compensation from Pandharkawada and Pusad Forest Divisions.

INTRODUCTION

Ecological needs and shrinkage of wild habitat are interrelated to each other for wild life management but now in current scenario, the population dynamics playing a key role in most of the conflict cases all over the world. In central Indian counterparts the Blue bull (*Bosephalus tragocamelus*) and wild boar (*Sus scrofa*) are the root cause of crop damages and agro-economic loss of farmers. In the study area most of the agricultural cum economical loss in the form of crop depredation and damages by these two species more. Food quality and food

depletion in the wild habitat compels animals to move from their core habitat to agricultural fields etc. On the basis of population dynamics, the *Sus scrofa* is a prolific breeder having nature of grazer, browsers, forager and digger too, natality rate is very high. In a same way blue bull also imparts the agricultural loss in the study areas. Kumar (2017) had done very similar study in Corbett Tiger Reserve and find out a comparative analysis of crop depredation by wild animal in CTR along with Ramnagar Forest Division & Terai West Forest Division Uttarakhand while on the other hand in same year, Kumar.et.al. (2017) depicted the human-tiger conflict, livestock predation in Corbett landscape. Due to ecological stress and prey biomass scarcity big cats are move out from their home range to lucrative area where they get easy prey like domestic animal. Tiger's behaviour, cognitions and movement pattern is uncommon, due to seasonal variation movement pattern can vary. In the period of 2016-18 total 13 stakeholders were killed by tigress T1 in the Pandharkawada area. The main purpose of this study to explore dynamics of the conflict cases in the area and aware to local peoples for it. To set the priority for efforts in mitigation and conservation these studies play a key role.

MATERIALS & METHODS

Two forest divisions [Pandharkawada Forest Division (PNFD) & Pusad Forest Division (PFD)] are selected for study. Both the division depicted massive conflict cases. Conflict cases details of last 5 years were taken from respective Forest Divisional Offices. Keenly analyzed along with appropriate statistically presented while on the other hand some tiger's scats were collected from both forest division Scat analysis showed the direct scientific evidence of livestock predation was done by modified method of Koppikar and Sabnis (1976). Hair Impression Slide was used for identification of prey species.

RESULTS AND DISCUSSION

Total 42 tiger scats were collected from both forest divisions, in which 23 samples belongs to Pandharkawada and rest 19 samples were collected from Pusad forest division. Undigested hairs were collected to identify the prey species. Result of scat analysis is listed in Table 1 and Table 2. It was observed that 7 prey species were noted from Pandharkawada Forest division, which showed Cow (26.08 %) & Goat (17.39 %) as a prime prey (Figure1). The results of scat analysis from this division showed livestock predation (Table 1). Similar results obtained from the Pusad forest division where Axis axis was prime prey followed by Cow, *Sus scrofa*, *Bosephalus tragocamelus*, Goat and *Cervus unicolor* (Table 2). The above results conclude that tiger move towards the village areas to get easy prey. The analysis of secondary data of selected forest division also showed that there are lots of conflicts happened in last 5 years and 2018 was the most vulnerable year for conflict cases (Table 3) in Pandharkawada Forest Division whereas 2017-2018 was the vulnerable year in Pusad Forest Divisions (Table 4). Pandharkawada is in the outskirt of Tipeshwar Wildlife Sanctuary where noted that tiger movement is very high due to having corridors for areas like Chandrapur and Brahampuri. Dudhapachare (2015) worked on HAC in Chandrapur district of

Maharashtra and documented same problems. In the year of 2017-18 was the year for prey biomass depletion in one hand and ecological stress too so for survival they moved on outskirts from their home ranges. it was noted that sometimes illegal grazing is the main cause of conflict and choice of easy prey were also the root cause of predation etc. Physical illness and incompatibility like broken canine due territorial fight and old age are the also main cause of it to catch easy prey in the areas (Table 5).

Figure 1: Tiger attack nearby Tipeshwar Wild life Sanctuary at Pandharkawada

Table 1: Percentage occurrence of undigested remains recorded in tiger scat from PNFD

Prey Species	Number of scats	% of occurrence in scats	Approx Biomass (Kg)	Biomass (%)
Axis axis	3	13.04 %	225	6.0 %
Sus scrofa	3	13.04 %	300	10.0 %
Macaca mulata	2	8.69 %	22	0.6 %
Cattle (Cow)	6	26.08 %	1800	48.0 %
Goat	4	17.39 %	180	5.0 %
Cervus unicolor	3	13.04 %	675	18.0 %
Bosephalus tragocamelus	2	8.69 %	560	15.0 %

Table 2: Percentage occurrence of undigested remains recorded in tiger scat from PUFD

Prey Species	Number of scats	% of occurrence in scats	Approx Biomass (Kg)	Biomass (%)
Axis axis	5	26.31 %	425	13.36 %
Sus scrofa	4	21.05 %	400	12.57 %
Bosephalus tragocamelus	3	15.78 %	840	26.41 %
Goat	2	10.52 %	90	2.83 %
Cattle (Cow)	4	21.05 %	1200	37.73 %
Cervus unicolor	1	5.26 %	225	7.07 %

Table 3: Livestock loss data of Pandharkawada Forest Division

Period	Conflict cases	Compensation
2014-15	124	11.35
2015-16	98	8.69
2016-17	128	13.20
2017-18	105	12.39
April 2018-Nov.18	182	20.22
Total	637	65.85

Table 4: Livestock loss data of Pusad Forest Division

Period	Conflict cases	Compensation
2014-15	21	1.49
2015-16	39	3.06
2016-17	20	1.8
2017-18	48	4.77
April2018-Nov.18	27	2.30
Total	155	13.42

Table 5: Data analysis of Human killed/ injured of both forest divisions

Date	Village	Killed Person(s)	Compensation in Lac
1-6-2016	Borati	Sonbai Vaman Bhosle	8
3-9-2016	Khairgao	Maroti Vithoba Nagoshe	8
4-9-2016	Jhotigdhara	SakharamLaxman.Tekam	8
30-10-2016	Tezni	Praveen Pundlik Sonvare	8
22-7-2017	R.Zira Mira	Laxmibai Ajabrao Rampur	8
25-8-2017	Sarati	Gajnan Shamrao Pawar	8
16-9-2017	Sakhi	Santosh Pandurang Kove	8
15-10-2017	Zira	Shankar Mahadev Aatram (Mundali)	8
9-12-2017	Viheergao	Chendku Godu Futki (Aatram)	8
27-1-2018	Loni	Ramji Kondba Shendre	8
5-8-2018	Vedeshi	Gulab Sadashiv Mokashe	10
11-8-2018	Viheergao	Vaghu Kandhari Raut	10
28-8-2018	Pipalshenda	Nagorao Sadashiv Junghare	10

Overall all data analysis imparts that there are severe conflict in terms of human loss/ injured, crop depredations, livestock predation in the both forest divisions. This study showed the critical situation in the study areas. Table 5 showed the total of 1 crore 30 lac rupees as compensation amount provided to victim's family and tigress kill 13 people in the Pandharkawada area. Table 3 and Table 4 depicts the data of both forest division as in PNDF 637 cases of conflict and 65.85

lac rupees as compensation as same as in PUDF showed 155 cases along with the 13.42 lac rupees. Table 5 showed a massive number of cases in last 5 years. Total 15 killed and 340 cases of injuries are recorded in the area as secondary data collected from both the forest divisions while total 130 lac rupees distributed as compensation amount for kill/ injuries in the area. Alone 13 people were killed by tigress T1 from Pandharkawada from 2016-2018 with 1 crore 10 lac rupees as compensation.

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