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HUMAN ELEPHANT CONFLICT - AN INTRICATE TALE FROM THE KURSEONG FOREST DIVISION OF NORTHERN WEST BENGAL

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ABSTRACT

Man-elephant conflict is a crucial problem faced all around the world. The association between man and elephant in Northern West Bengal is ancient but over the years it has assumed a severe character due to ever increasing human population, diminishing forests and consequent habitat loss of Asian elephants. As a result, elephant range overlaps with human dominated areas resulting in conflict situations. The evaluation of human-elephant conflict was carried out from January 2015 to December 2015 through the use of structured datasheets covering an area of 250 km^2 approximately. This paper is prepared in the light of the situation's gravity, which demands proper study, so that the causes of the problem can be identified and necessary suggestion can be listed for its solution. Although human-elephant conflict cannot be eliminated altogether, yet every endeavour must be taken to reduce it to tolerable levels.

Key words: Elephant, Human, Conflict, Damage, North Bengal.

Introduction

The Asian Elephant (*Elephas maximus*) is an endangered species categorized under Schedule I and Part I of the Indian Wildlife (Protection) Act, 1972, once found throughout Asia is now restricted to only few regions in the Indian Subcontinent due to various reasons. The estimated global population is around 41,000 - 52,000, out of which 29,300 – 30,700 occur in India and is distributed to a range of 109,500 km^2., Nowadays, the Human – Elephant conflict (HEC) has become a perennial problem. The elephants come out of the forests regularly, some times daily and cause enormous damage to life and property of the people living in and around forests. In the study area, over the last 5 years (2010-2015), 28 people have been killed and 14 elephants have lost their lives due to HEC. Of late, management of human–elephant conflict is one of the most important challenges to the wildlife researchers, conservationists and forest managers.

Pattern of elephant migration

Elephants are long ranging migratory animal that is believed to follow a definite route with a fixed seasonal pattern of movement. But changes in habitat and ever-increasing biotic pressure on existing forests have resulted in changes in their movements and distribution over centuries.

The western most population of these elephants in Northern West Bengal, now separated from its counterparts in the Western and Eastern Dooars, is generally residential but some inward and outward movements occur through contiguous and fragmented landscape within the district and also across Western international boundaries. Four Ranges of Kurseong Division, viz. Bamanpokhri, Tukuriajhar, Bagdogra and Panighata, are considered to be the major conflict zones of India. Big herds also migrate into Nepal, particularly during the crop harvesting seasons (June-July and Nov-Dec), through the Panighata (Kurseong Division) corridor via Mahananda-Lamagumpha-Bamanpokhri. Other two corridors of the Mahananda population on the Eastern side are Mahananda-Mongpong (Kalimpong Division) and Mahananda-Apalchand (Baikunthapur Division) and vice versa (Fig.1). Elephant depredations also take place in the latter stretch. (WWF-India, WBSO Final Action Plan, 2013).

Human-wildlife conflict – the cause

Over the past few decades many developmental and destructive activities of humans have severely fragmented the forests. Being a wide-ranging species, elephants are more susceptible to the loss of natural habitat to agriculture and settlements and thus are in greater conflict than any other animals. Across its home

Kurseong Forest Division experienced 12 human deaths (64% and 36% outside and inside respectively) and 3 elephant deaths over the HECs study area during the period Jan-Dec-2015.

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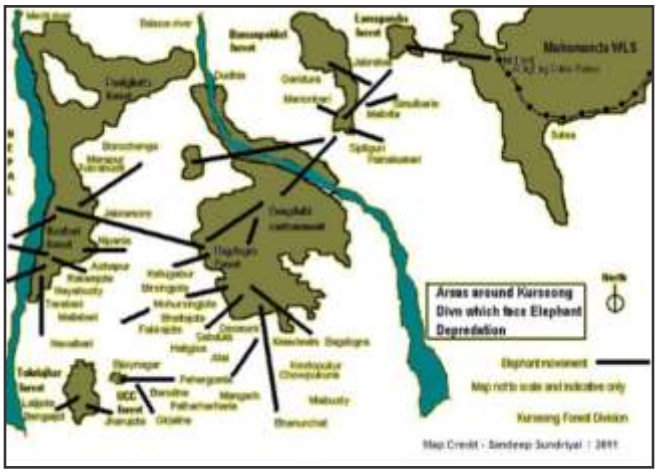

Fig. 1: Pattern of elephant movement in and around Kurseong Forest Division.

range various anthropogenic pressures led to loss habitat quality, which forces elephants to extend their traditional range and raid crops to meet their daily requirements. Further, factors such as, movement pattern, competition for water, palatability and nutritive value of crops also lead elephants to venture into the human dominated landscapes where the confrontations become inevitable.

In April 2015, massive earthquake in the Himalayan belt of Nepal forced Govt of Nepal to shelter the affected citizens in the Terai area of the Jhapa district bordering India. During this time elephants movement from India to Nepal caused havoc to the life of the refugees, damaging camps and ration. To check the elephant depredation over the settlement area of earthquake refugees the Nepal Government took an initiative to erect solar fence across indo Nepal border from in August 2015, which was completed by December 2015. At present movement of migratory elephant herds from India to Nepal through Mechi river has almost come to a halt after erection of the fence. This is causing the elephant herds to split up thereby increasing the zone of depredation in the Indian territories. Moreover, throughout the year presence of 20-25 elephants are noticed in the area. The total length of the fence is about 18 km and it stretches from Jirmale-3, Illam to Mechinagar-10, Jhapa, Nepal. The project was funded by World Bank, coordinated by National Trust for Nature Conservation (NTNC) and implemented by District Forest Office, Jhapa, Nepal. Local villagers monitor the fence and meagre remuneration is also paid to them for the same.

Study area

The Kurseong Forest Division is situated within latitudes of 26° 37' and 27° 0' North and longitudes 88°12' and 88° 34' East. It is bounded on the East by Mahananda Wildlife Sanctuary and on the West by river Mechi, the boundary between India and Nepal (Fig. 2). It covers only the four HEC prone Ranges of Kurseong Division viz; Bamanpkhri, Tukriajhar, Pannighatta and Bagdogra. This area is a highly fragmented with isolated patches of Forests namely, Lamagumpha Reserve Forest (RF), Bamanpokhri RF, Balsan RF, Rakti RF, GTA's Tatari PF, Mechi RF, Lohagharh RF, Dalka RF, UCCF and Tukriajahr RF interspersed with tea gardens, human settlements, agricultural lands, roads and huge army establishments.

Fig. 2: Map of the study area

The climate varies from tropical to subtropical with rise in elevation. It forms the catchment of four important rivers like Mechi, Mahananda, Balason and Teesta. During rainy seasons, large volumes of water are discharged through these rivers while during the dry summer months, these rivers gets reduced to trickles and most of their tributaries flowing through the forest dry up (Yadav, 2013).

The vegetation ranges from 200 ft to 7800 ft above MSL. The major forest types are riverine Khair-Sisoo-Simul, Eastern Bhabar Sal, Eastern Terai Sal, Lower Hill Sal and Pure Sal, intervened by Dry Mixed, Wet Mixed, Lower Hill Dry Mixed, Lower Hill Wet Mixed, Middle Hill forests and grasslands (As per Champion and Seth). There are more than 38 Tea Gardens at present with 12 Forest Villages and 24 Revenue Villages and huge army bases within the study area of Kurseong Division. (Government of West Bengal (2012) 2011-12 State Forest Report) The total human population is above 4 lacks approximately and the economic activities based on agricultural and tea cultivation practices form the main source of livelihood.

Methods

All the data on Human Wildlife conflict were procured from the ground level staffs of Kurseong Division of West Bengal Forest Department. The study period was one year from January to December, 2015. Data was collected for each Range separately using structured data sheets.

Results

All the data on Human Wildlife conflict were procured from the ground level staffs of Kurseong Division of West Bengal Forest Department. The study period was one year from January to December, 2015. Data was collected for each Range separately using structured data sheets.

Human killed: During the study period (Jan-Dec, 2015) Kurseong Forest Division experienced 12 Human deaths due to HEC out of which 64% and 36% took place outside and inside the forest respectively. The killings occurred almost throughout the year, but clustered mostly with the Maize (May-June) and paddy (October-December) harvesting seasons. Ex-gratia applications of 6,25,000 (INR) (Fig. 6) have been received. And most of the killings took place during late evening and night hours, mostly between 19.00 hours to 04.30 hours (Fig. 3)

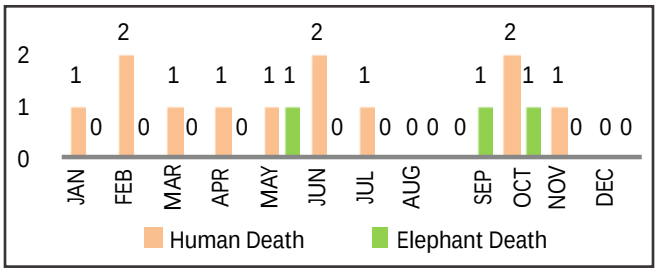

Fig. 3: Monthwise elephant death and Human killed by wild elephants over the study area in an year

Elephant death: A total of 3 elephant death cases were reported during the period of study (Jan-Dec, 2015) (Fig. 3). All the death cases were presumably natural and took place inside the forest patches. Detailed description is provided below (Table 1).

Livestock damage and Property damage: During the study period (Jan-Dec, 2015), overall 142 huts, houses and shops were damaged and 33 livestock have been killed (Fig. 4). Incidences of Property damage and livestock kills occurred almost throughout the year but clustering mostly occurred during the Maize (May-July) and paddy (Oct.-Dec.) harvesting seasons. Killing of livestock's mostly occurred indirectly/accidentally. For instances, in these areas, grains are mostly stored above cattle sheds, therefore when elephants attempt to get access, it ends up breaking the shed thereby injuring cattle, which can be sometimes be fatal. Cattles are being killed by leopards also. Besides livestock killings have also been reported inside the forest and agricultural fields during livestock grazing. Ex-Gratia applications of 4,36,800 (INR) and 71,600 (INR) (Fig. 6) have been received for property and livestock killings respectively.

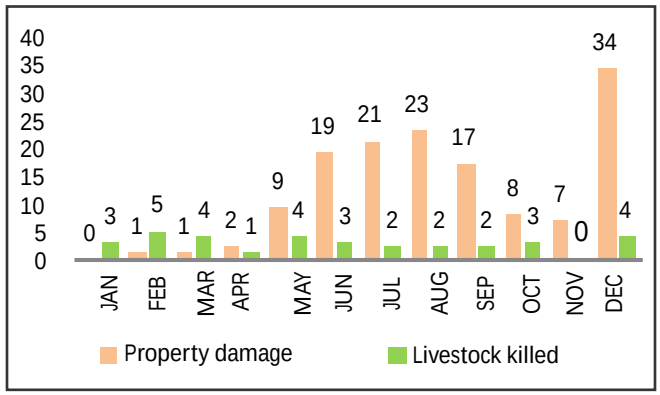

Fig. 4: Month wise property damage and livestock killed by wild elephants.

Table 1: Details of Elephant death in the region.

Date	Location		Age (yrs)	Sex (M/F)	Cause of death (as per post-mortem reports)
18.05.2015	Locations = Kolabari R/F		7	M	The cause of death may be due to Cardio-respiratory failure.
	Inside forest	Outside forest			
	✓				
19.09.2015	Locations = 16 FAD, Boiranti Block, Bengdubi Beat, Bagdogra Range Geo-coordinates: N 26°44'26.2" E 88°17'53.9"		25	F	The cause of death may be due to Cardio-respiratory failure.
	Inside forest	Outside forest			
	✓				
29.10.2015	Locations = Bengdubi Block, Bengdubi Beat, Bagdogra Range Geo-coordinates: N 26°44'25.9" E 88°16'32.7"		12	M	Hypo-Volumetric shock, resulting from dehydration and less air intake from lungs resulted from lung disease.
	Inside forest	Outside forest			
	✓				

Crop damage: Elephants are among the most versatile of all herbivores. Being both browsers and grazers, they are able to switch from a diet of leaves of trees and shrubs to grasses. Being non-ruminants, elephants have evolved a digestive system that enables them to consume a wider variety of food than other herbivores. Paddy and maize are the most preferred food when the plants are ripe and are ready for harvesting. Even if the agricultural fields are protected against elephant depredations, paddy and maize are still consumed, after harvesting, when stored in houses. During the study period (Jan-Dec, 2015) approximately 181 ha of crops have been lost due to elephant depredation, either eaten or destroyed during stampede. The depredation of crops was at peak during the maize (May-July) and paddy (October-December) harvesting seasons (Fig. 5). Ex-gratia applications for around 27,10,500 (INR) (Fig. 6) have been received.

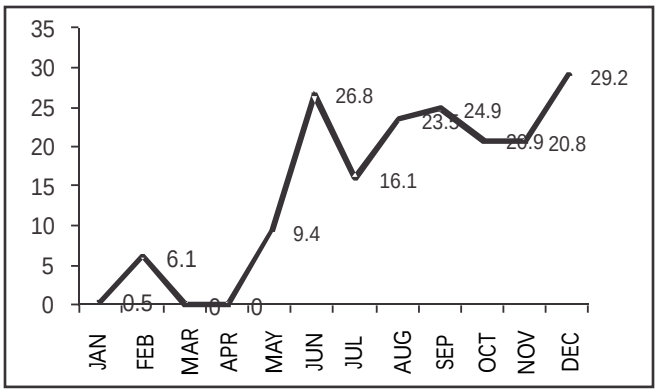

Fig. 5: Month wise crop damage (ha.) by wild elephants.

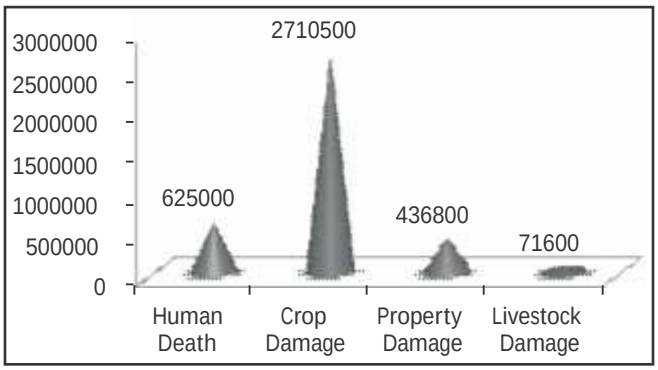

Fig. 6: Compensation paid by West Bengal Forest Department for each category (Human death, crop damage, property damage, livestock damage).

Interventions to mitigate human elephant conflict

Over the years several measures have been adopted by the by Kurseong Division to mitigate the collateral damages due to HEC. Some of them are as follows.

- Deployment of Anti-Depredation Squads: At present Kurseong Forest Division have 5 functional squads (1 in Bagdogra and 4 Range squads) that act as a rapid response team during times of emergency all year round. From the year 2015 WWF-India, WBSO has extended its support in the form of two more Anti-Depredation Squads that functions only during the high depredation seasons.
- Habitat improvement: Almost 13 ha. of fodder plantation have been created to improve wild habitats and ensure green fodder availability. Besides, monoculture plantations have stopped over the years.
- Solar Fencing: Installation of solar fences at Central forest village.
- Development of communication network: Once information has been received on the presence of elephant herds in the area, villages are alerted via sms and calls.
- Farmer support services: The Forest Department provides elephant safety equipments to farmers besides ex-gratia payment for the affected community. Ten watchtowers have been constructed at strategic locations, 7 inside and 3 outside forest area.
- Awareness campaigns: Awareness program are organised to sensitize the villagers. Several entry point activities have been taken up for Forest Villages and JFMCs.
- Orientation programs: Training program for forest department staffs and people from conflict prone areas are organised to deal with the problem in a better way.
- Connection: Liaison is maintained with Electricity boards, Railway, BSF, SSB, Police Department and local panchayats for emergency situations. Beside, constant communication is maintained with the DFO, Jhapa, Nepal to get reliable information on elephant movement for advance planning for driving activity.
- Coordination meetings among Indo Nepal Forest officials, NGOs and other stakeholders have been conducted to highlight the problems owing to the erection of solar fencing along the Indo-Nepal border, restricting elephant movement from India to Nepal. The matter has been brought up with the MOEF and CC GOI, through State Forest Department West Bengal.

Conclusion and Suggestions

Blockage of elephant's migratory routes due to constructions coupled with cultivation of highly preferred crops along forest ranges attracts elephants to venture into human dominated landscapes leading to constant conflict with humans.

To tackle this crisis the following are suggested:

i. Management of elephant habitat through enforcement of stringent laws, proper emphasis to develop a more variable and feasible dense forest cover with availability of sufficient green fodder and water.
ii. Establishing of alternate cash crops such as Turmeric (*Curcuma longa*), Ginger (*Zingiber officinalie*), Bay leaf (*Cinnamomum tamala*), Black Pepper (*Piper nigrum*), Mustard (*Brassica juncea*), Jute (*Corchorus capsularis*), Sunflower (*Helianthus annuus*).
iii. Crop insurance schemes should be introduced and practiced extensively.
iv. Creating alternative source of livelihood / augmenting the source of income through poultry farming, sericulture, bee keeping could be developed in the high Conflict prone zones. This will reduce the dependency of the people on forests and agricultural crops and there by decrease the intensity of man-elephant conflict in the region.
v. A buffer zone can be created between the forest and the settlement area by planting unpalatable crops like chilly, citrus and tobacco, etc along with thorny bushes.
vi. It is necessary to derive a solution to open up the elephant corridors for free movement.
vii. The locals generally use various unscientific measures (like throwing stones and bursting fire crackers) to control elephant depredation. This aggravates the problem rather than solving it. Therefore, proper training should be provided to drive elephants in a planned and scientific manner to reduce the retaliation in the long run.
viii. Sensitizing people sharing space with elephants is eminent to increase the tolerance level and reduce conflict in the long run.

The present mitigatory measures provide only short term and temporary relief. For a long term solution, exhaustive research is crucial to identify viable ways to resolve the conflict.

मानव-हाथी संघर्ष-उत्तर पश्चिम बंगाल के कुर्सीयोंग वन प्रभाग से एक जटिल विवरण

एम.आर. बालोच, एस. शेरपा एवं ए. चक्रवर्ती

सारांश

मानव–हाथी संघर्ष विश्वभर में महसूस की जा रही एक अहम समस्या है। उत्तर पश्चिम बंगाल में मनुष्य एवं हाथी के मध्य संबंध पुरातन है किन्तु वर्षो में इसने वर्धमान मानव आबादी, विलुप्त हो रहे वनों और परिणामस्वरूप एशियाई हाथियों की आवास क्षति के कारण गंभीर स्वरूप हासिल कर लिया है। फलस्वरूप हाथी रेंज ने मानव प्रधान क्षेत्रों को आच्छादित कर लिया है जिसके परिणामस्वरूप संघर्ष की स्थिति पैदा होती है। लगभग 250 वर्ग कि.मी. का क्षेत्र कवर करके संरचित आँकड़ा शीटों का उपयोग करके जनवरी 2015 से दिसम्बर 2015 तक मानव–हाथी संघर्ष का मूल्यांकन किया गया। यह शोधपत्र स्थिति की गंभीरता के आलोक में तैयार किया गया, जिसमें उपयुक्त अध्ययन की आवश्यकता जताई गई ताकि समस्या के कारणों की पहचान की जा सके और इसके समाधान के लिए आवश्यक सुझाव को सूचीबद्ध किया जा सके । हालाँकि मानव–हाथी संघर्ष को एक साथ नहीं खत्म किया जा सकता है, फिर भी इसे सहनीय स्तरों तक कम करने के लिए हर संभव प्रयास किए जाने चाहिए।

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