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Human Wildlife Conflict in Samanden Forest Village, Singalila National Park, Darjeeling – a challenge to livelihood security and conservation.

Summary
The paper highlights the status of human-wildlife conflict (HWC) in Samanden Forest Village Singalila National Park, Darjeeling, West Bengal, India undertaken by DLR Prerna with The Rufford Small Grants Foundation. The findings show the impacts of small mammals, including herbivores and primates, in remote mountainous areas, in contrast to the conflict caused by large mammals in other parts of the world. Also, the general trend indicates huge economic loss due to the damage of vital crops by wild animals as the main source of conflict rather than direct encounters between people and wild animals and resultant injury. The communities live in difficult circumstances far removed from social amenities, thus HWC adds a heavy burden of livelihood and food insecurity. The gravity of HWC does not get reflected in larger debates which results in policy gaps in HWC management, mitigation and redress. Different strategies and measures adopted to mitigate the conflict are also discussed in detail and recommendations have been outlined for better management and mitigation of conflict.

Introduction
Human-Wildlife Conflict (HWC) occurs when wildlife requirements overlap with those of human populations, creating costs both to residents and wild animals. (IUCN World Parks Congress, 2003) Man-animal conflict has been in existence for as long as humans have existed and wild animals and people have shared the same landscapes and resources (Lamarque *et al., 2008)*. Direct contact with wildlife occurs in both urban and rural areas, but it is generally more common inside and around Protected Areas, where wildlife population density is higher and animals often stray into adjacent cultivated fields or grazing areas (Distefano, 2005)

With increasing population and pressure on forest areas, human-wildlife interaction and resultant conflict is also increasing (Zubiri & Switzer, 2001). With depredation and human casualties by elephants to occasional leopard attacks, public response often veers towards retribution, which becomes difficult for the authorities to contain. Darjeeling Himalaya, being a part of a global biodiversity hotspot (Myers et al, 2000), has diverse fauna which live in close proximity to human beings, and although incidences of human injury and death are few when compared to other areas due to absence of megafauna like elephants and tigers, stray incidents involving black bears and leopards are not uncommon.

Fringe communities in the present region have historically evolved on forest resources for their subsistence and livelihood. From the community perceptions across the study areas, it has been observed that majority report an increase in the wildlife population and resultant conflict in the recent past 10 to 15 years.

Therefore, the present paper highlights the exact nature of conflict and its extent in Samanden Forest Village of Singalila National Park, Darjeeling West Bengal along the Eastern Himalayan belt. It also throws light on the existing mechanism of conflict management and suggests steps and policy level interventions for improvements.

Samanden Forest Village (FV), Singalila National Park, Darjeeling, India
The Singalila National Park (SNP) comprises of one of the most important forest covers of Darjeeling District, West Bengal India. It is part of a critical transboundary landscape - the

'Kangchenjunga Singalila Complex' comprising of contiguous forests with Nepal, Bhutan and India. The fringe communities are highly natural resource dependant and marginalized. The settlements evolved as forest workers who were settled by the Forest Department with their land records maintained at the Range Office (3 acres per family with 4 acres for the *mondol*). A formalisation of land deeds is under process under the Forest Rights Act (2006).

Samanden FV, Ramam Beat, Rimbick Range, Darjeeling Forest Division at 27°10'54.17" North and 88°04'20.85" East, 2400 metres above mean sea level with 26 families traces their settlement to 1930s and is the northern most settlement in the SNP.

A focussed study was conducted in Samanden Forest Village from April 2011 to May 2012 on the status and extent of Human Wildlife Conflict. Samanden was chosen among all the fringe villages as it has close proximity to Barsey Rhododendron Sanctuary, Sikkim and community forests of East Nepal. Samanden was also chosen as it was the most affected by human wildlife conflict in community discussions with the 5 fringe communities in 2010-2011. The conflict was mapped intensively for one year using direct observation and verifications as well as secondary information.

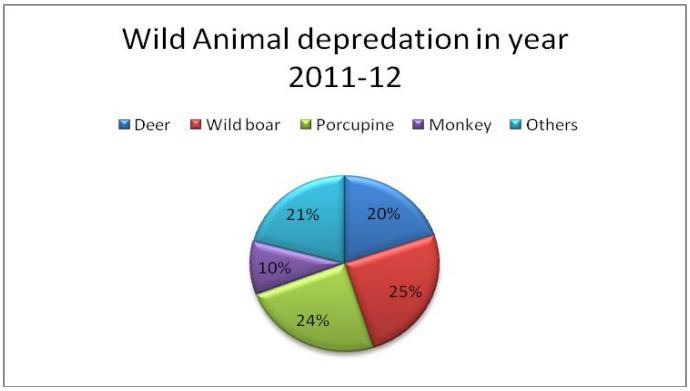
Nature and extent of conflict

Crop damage came out to be the main source of conflict across the different studies, rather than direct encounter between man and animals and resultant injury. The data generated during the project period of April 2011 to May 2012 shows that the major extent of damage of crops are from the months; March to September.

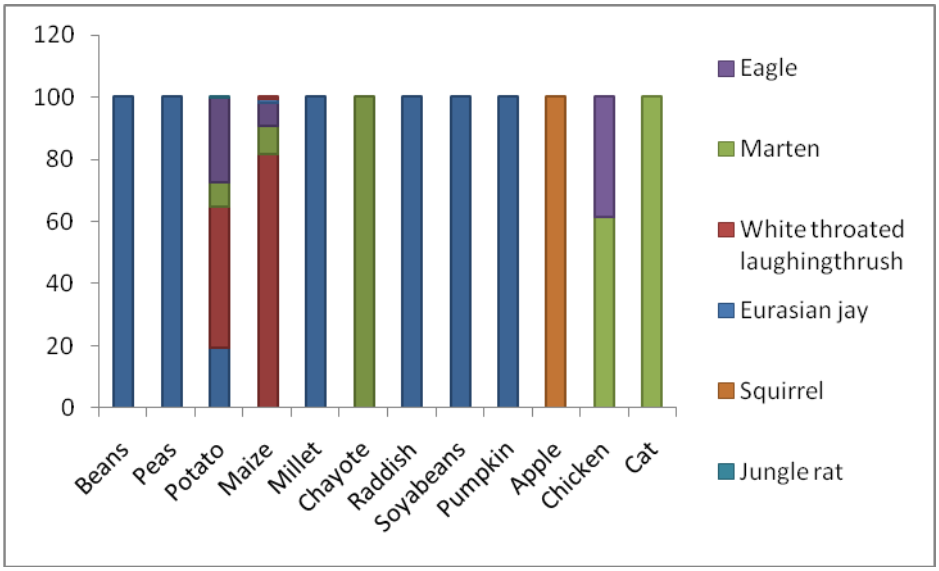
Sparse potatoes after three wildboar raid

Maize eaten by wildboar

Three major crops potato, peas and beans and maize are sown and harvest during this months. Potato, peas and beans are sold to nearest market Rimbick which is 4 to 5 hours walk from Samanden. Maize is the staple food for the community as well as given to livestock (horse, goat, pigs and chicken). Maize is also sold to horse owners during the peak tourist season.



The top three species for crop depredation are wild boar with 25.2% closely followed by porcupine with 24.1% and deer with 20%. .



Deer damages the most number of crops: 100% of beans, peas, raddish, soyabeans and pumpkin in 2011-12 at Samanden FV (crops that bring cash).
100% damage to Chayote is by monkey.
Maximum damage of potato with 45.4% is by wildboar followed by porcupine with 26.9% & 19% damage by deer, where as damage by monkey and jungle rat is 8.1% and 0.3% respectively.
Maximum damage to maize crop is by wildboar with 81.7%, monkey, porcupine and Eurasian jay damage is 8.8%, 7.4% and 1.3% respectively.
Damage caused by squirrel (apple) is just an incident.
Livestock:
61.5% kills of chicken is by yellow throated martens followed by 38.4% by eagles. 100% cats litter is preyed by yellow throated martens.

Highest Percentage of crops damaged by different animals; **Deer**: beans 66.5% followed by potato **Wildboar**: maize 83.2% followed by 16.7%. **Monkey**: maize 72.8% followed by potato 27.2% and **Porcupine**: potato 56.8% followed by maize 43%.

In the 5 communities discussions in 2010-2011(Namla, Gurdum, dara Gaon, Bich Gaon and Samanden Forest Villages), 13 species of animals were recorded but in the one year period of April 2011 to April 2012 only 9 species of animals were found damaging crops and livestock in Samanden.

Compensation for damage
It was found that the there is no space for compensation for HWC in the Hills even though there is compensation in same state of West Bengal for elephant damage from the Forest Department under Project Elephant. It was also found out that there is compensation available for HWC in Sikkim for the same animals found in Samanden. In both the cases of elephant and in Sikkim it was found that the compensation is inadequate, arbitrary and slow in delivery.

Wild boar - The most prolific crop damager?

'There were no wild boars entering our fields 14 -15 years ago. People used to say that it looks like pig. One herd of wild boars can destroy 2 to 3 mans (1 man = 40 kg) of potato in

one night. Himalayan black bear used to be a major problem during maize harvest before wild boars started coming.' Mr. Pasang Sherpa, 64 years old, Samanden Forest Village.


Maize damaged by boars


Footprints of boars on potato field


Fence broken by boar

In Samanden Forest Village with 45.4% and 81.7% of total damage to potatoes and maize respectively 2011-12, it is undoubtedly clear that wild boars rank among the topmost conflict causing animals. This trend is seen in the neighbouring state of Sikkim too in the fringe villages of Barsey Rhododendron Sanctuary (WWF-India & North Eastern Regional Institute of Science & Technology June- July, 2011). Thus for the higher mountain villages wild boar needs to be featured in the HWC discourse.

HWC in Eastern Himalaya- conservation and livelihood challenges

From the case study it is clear that the general nature of conflict in the region follows a similar pattern, the gravity of the situation and regular economic loss to the villagers needs to be recognised at a larger level with mitigation and management interventions undertaken. Within the discourse of conservation, bio-diversity hotspots and protected areas, communities such as in the study area are bearing the brunt of conservation efforts and their voices and difficulties are going unheard and unattended in these global and national movements. While the absence of large mammals like elephants and tigers means that incidences of direct conflict and human casualties are fewer, the presence of myriad smaller animals inflicting various degrees of damage on both crop and livestock creates a complex situation for managing and mitigating conflict.

Traditionally, communities residing in the fringe areas of forests in the region have depended on agriculture and agro forestry as their main source of livelihood. Due to their challenging socio-economic status these communities cannot access adaptive measures involving high investment to manage HWC. In this situation the Forest Department is continuing to play its traditional role and other departments and stakeholders have not risen to the occasion to address HWC.

Recommendations

- **Recognise Human Wildlife Conflict in Mountain Regions at all levels**

- There exists lack of information and baseline data on the exact nature and extent of human-wildlife conflict in many of the fringe areas along the sanctuaries and reserve forests in the region. Studies should be undertaken to understand the situation and focus on the following aspects:
    a) Baseline study regarding nature of conflict and problem animals
    b) Studies on the socio economic status of villagers, impacts of HWC and their adaptive capacities.
    c) Population studies of identified problem animals to understand the present status.

d) Studies on the effectiveness of existing and new and innovative mitigation measures.

- Guidelines and policies for compensation should be revised according to the present situation and the main damage inflicting animals should be included in the list of problem animals.

- New and innovative mitigation measures should be explored and encouraged. Such measures can be tested on a pilot basis and depending on the effectiveness, can be mass distributed with investment from relevant departments and agencies.

- Emphasis should also be given for developing effective bio-fences which have multiple uses so as to be easier for mass implementation.

- In case of severely affected and displaced victims, possibilities of alternative livelihoods should be explored and encouraged with market linkages.

- Linkages and cooperation between various departments and agencies should be enhanced to address HWC beyond Forest Department only.

- Community empowerment and participation in conflict management should be enhanced.

- Broadleaf forest needs to be expanded with a long term action plan replacing plantation conifers.

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