Project Update: July 2012

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.



Samanden Forest Village

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. Along with the study pilot mitigation measures like biofence were also initiated.

The study was presented to the Additional Range Officer, Darjeeling Forest Division and Range Officer, Rimbick Range and civil society representatives of Darjeeling on 22nd May 2012. The study was also presented at the Indian Mountain Initiative, Sustainable

Development Summit II, Gangtok, Sikkim along with 3 studies undertaken by WWF, India, Sikkim on 25th and 26th May 2012. The Summit had Elected, Bureaucrat and Civil Society representatives from 11 mountain states and Darjeeling Hills. These two presentations followed by discussions gave further depth the understanding and management of HWC.

Limitations:

- The study had no previous base line
- The study was limited to April 2011 to May 2012 and does not incorporate HWC before and after even though there was HWC
- There was an intense fruiting of *lithocarpus* in study period in the forest which diverted wildlife from Samanden. *Lithocarpus* fruiting at this level was not observed in community memory. The project period also had *Castonopsis sps* fruiting.

Socio economical status of the Respondents

The 25 families of Samanden Forest village are subsistence farmers with 3 to 4 acres of land. The residents are also given wage labour work by the forest department which is a source of income.

Agriculture in Samanden is labour intensive. The harsh agro-climatic conditions (winter, monsoon, soil quality and water access) makes agriculture a difficult proposition. 'On an average a person hires 150 mandays in a year for land preparation, sowing, weeding and harvest. The family also has to provide one-time meal, tea and occasionally beverages for the worker'. Mr. Shiva Kr. Rai, 57 years old.

This difficulty is forcing a number of youths to migrate seasonally and long term to work as labourers and service providers.

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.

Transport to the nearest market, Rimbick is expensive due to terrain, lack of motorable road and the distance. The transport option is horse-back only carrying 80 kg per horse. The costs to transport to Rimbick are Rs. 2 per kg for horse-load which makes the monetary benefits minimal in an already exploitative market which does not in any case give a fair price to primary producers. In the earlier days people also used to carry but nowadays due to other engagements and difficulties one does not get anyone to carry the crops.

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.



Left: Sparse potatoes after three wildboar raid. Right: Maize eaten by wildboar

Three major crops potato, peas and beans and maize are sown and harvest during this month. 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.

Human-wildlife conflict impacts in Samanden Forest Village

Total crop damage in Kilogram in 2011-12									
Beans	Peas	Potato	Maize	Millet	Chayote	Raddish	Soya beans	Pumpkin	Apple
303	32	308	850.5	2	3	2	37.5	20	2
Rs. 9090	Rs. 2560	Rs. 4620	Rs. 21250						

Total domestic animal damage in 2011-12					
Chicken	Cat				
13	2				
Rs. 2600					

The monetary value of the crops and livestock is based on the prices at Rimbick, the nearest market but does not take into consideration the transport expenses, which is tremendous for Samanden as Rimbick is 6 hours walk away horse-back the only transport option.



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 greatest 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 wild boar 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 wild boar 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%.



The HWC map showed that there is pronounced more intrusion from the eastern part of Samanden. The eastern part of Samanden is contiguous with the broadleaf forest, while the western part of Samanden has a footpath and contiguous with a conifer forest.



In the 5 communities discussions in 2010-201, 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.

Preventive measures

Sections of the Samanden Forest Village have been fenced using a combination of bamboo fence, barbed wire and a combination of plants which was ineffective.



Left: Pit. Right:Fence with a moat

The bamboo woven fence is made of *maling* bamboo. The average size of a *maling* bamboo fence, one *akhlay* (unit of fence) is 5 to 6 feet high and 14 feet long. 10 *maling* bamboo are required for making. The community collects it from the forest with prior permission from the forest department and also hires labour on daily wages. A person can harvest only 50 *maling* bamboo from the forest and the wage is Rs. 100.00 per day that is exclusive of food and beverages. The size of one *maling* bamboo is an average of 10 feet high. Thus, the community invests a lot in making the *maling* bamboo fence.



Some of the community members with the project initiative have integrated more species to make a bio-fence. With the introduction of tea as one of the species for bio-fence it is creating possible livelihood options as the tea saplings have taken root in Samanden. Physical intervention like moat and traps have been very effective to prevent wild-boar and monkey intrusions as they find it difficult to break the fence once they get in the moat.

Night watch, scarecrows, rattling tins and catapults were also used to some effect.

Wild boar - The most prolific crop damage?

'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.

The fauna documented in the study period are under different schedules of The Indian Wildlife(Protection) Act 1972 and IUCN List Schedule I Leopard or Panther (Panthera pardus) - IUCN - Near Threatened Schedule II Rhesus macaque (Macaca mulatta) Himalayan Crestless Porcupine (Hystrix hodgsoni) Himalayan palm civet (Paguma larvata) Himalayan black bear (Ursus thibetanus)- IUCN - Vulnerable Yellow throated marten (Martes flavigula) Assamese macaque (Macaca assamensis) SCHEDULE III Barking deer (Muntiacus muntjak) Wild boar (Sus scrofa)

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.