HUMAN-WILDLIFE CONFLICT AND COEXISTENCE IN PARSA NATIONAL PARK

Kanchan parajuli
Central Department of Zoology
Tribhuvan University
Kritipur, Kathmandu Nepal.
kanchanparajulimsc@gmail.com

Abstract

The study was conducted with the aim of understanding the extent of human-wildlife conflicts and coexistence scenario in Parsa National Park. A total of 1000 people belonging to different disciplines like local farmers, key informants, community forest user groups, herders etc. were selected randomly. People of different religions, caste and ethnic groups were found living in the area. Population occupational structure showed that agriculture, livestock farming and remittance were the main sources of income. Poor ethnic groups living nearby forests were found dependent on forest resources for livelihood. Elephants, Tiger and Leopard were found most violent species that cause most loss by property damage, crop depredation, livestock depredation, human fatalities and injury. A total of 31 serious wildlife attacks to humans with 11 deaths and 20 serious injuries were recorded between 2012 and 2018. More human deaths (73%) occurred by Elephant attack compared to Tiger. Carnivores (Tiger and Leopard) were the cause of more than 90% of recorded livestock depredation. According to the victim's family report, there were losses of NPR.17,67,000 from livestock depredation and NPR 49,82,100 from crop damage since the last two years. Increasing trend of retaliatory killings of wildlife was also recorded. It was reported that local people adopted locally available techniques to mitigate conflict. Almost all the respondents agreed that the wild animal's population is increasing recently due to effective conservation measures but at the same time they were unhappy because of increasing conflict with wildlife making coexistence complicated. People complained that the procedure for compensation is also lengthy and time consuming and also the amount of compensation in comparison to damage was very low. Therefore, we concluded that coordinated and collaborative action plans are required to promote the communities from conflict to coexistence with wildlife.

Key words: Coexistence, Human-wildlife conflict, Parsa National Park, Socioeconomic, mitigation

Introduction

Human interaction with wildlife are well known issues since ancient times and people living close to wildlife particularly in the region with high biodiversity are well aware of it. Many social and ecological factors influence conflict risk at various scales; some of the most important underlying drivers of conflict include growing human populations and associated increases in agriculture, land and resource use, technology, transportation, and energy (Nyhus 2016). Continuous shrinkage of natural habitat due to rise in human population have results in increasing human and wildlife coming into conflict over living space and food. Conflicts between people and wildlife have been widely recognized as one of the most challenging issues for wildlife conservation worldwide (Dowie 2011; Woodroffe et al. 2005). Although the issues of human wildlife conflict is well known for many years, the problem still remains unchanged and there is an urgent need of appropriate strategy that benefits both humans and wildlife which ensure their long-lasting mutual co-existence. Conflict occurs in a variety of contexts, when

wildlife species raid agricultural crops, damage property, kill people or livestock or spread diseases. Human–wildlife interactions vary on a continuum from positive to negative, in intensity from minor to severe, and in frequency from rare to common (Soulsbury and White 2015). Conflict causing wildlife species mainly includes mammals such as Asian Elephant, Bengal Tiger, Great One-horned Rhinoceros, Wild Boar, Common Leopard, Sloth Bear, Deer, Blue Bull, Monkey etc. Conflicts become extremely controversial when people are attacked by species that are endangered and legally protected (Acharya et al. 2015). First, attacks by wildlife are life-threatening and thus are not acceptable to society, so people often retaliate by killing the animals involved in the conflict (Treves and Bruskotter 2014). Second, large mammals are generally involved in the conflicts, and most of these species are threatened with extinction, so the retaliatory killings of threatened mammals further increases their extinction risk (Madhusudhan 2003; Paudel et al. 2015). Third, the penalties for illegally killing endangered animals may further escalate hostile attitudes towards conservation efforts (Sillero-zubiri et al. 2007). Human conflict with wildlife has contributed to the decline and extinction of many species, particularly large terrestrial carnivores (Nyhus 2016). Hence the appropriate solution is essential to mitigate and compensate for the conflict, if not local support for conservation will decline.

There are two major factors that generate conflict which are push and pull factors (Saaban et al. 2011). The push factor occurs when the wildlife habitat is destroyed by humans for urbanization or economic activities. The over-hunting activities also make wildlife feel insecure to stay in their own habitats. However, the pull factors occur when wildlife itself intrudes into the human area because they are attracted to agriculture crops and livestock's that have been freed randomly (Saaban et al. 2011).

Parsa national park is a home for many endangered and globally threatened species; however, associated human-wildlife conflicts are not well documented. Conflicts and poaching associated with globally threatened mega fauna like Bengal Tiger, Asian Elephant, One-horned Rhinoceros, and Common Leopard, followed by Wild Boar, Chital and Antelope species etc. are commonly witnessed and read in the daily newspapers and on television. This is because many people live in the buffer zone and outside the buffer zone of Parsa national park and depend on farming and livestock rearing. Crop raiding is one of the serous issues of all farmers living nearby protected area. Farmers only source of livelihood is the crops he planted. The heard of Elephant and other animals arrive and within a couple of minutes, destroy not only a farmers seasons work and investment, but more seriously takes the food off the table that he was hoping to sustain his family with. This will cross the level of tolerance and in response retaliatory killing takes place. The major reasons for increasing human-wildlife conflicts are the lack of awareness and communication gaps between park and local people. Several measures, ranging from the distribution of compensation and the promotion of wildlife deterrents to support the livelihoods of people, have been implemented to foster the co-existence of humans and wildlife (Woodroffe et al. 2005; Dickman et al. 2011; White and Ward 2011; Gore et al. 2008). However, the efficacy of such measures is largely uncertain due to the absence of information about the patterns of conflicts across various landscapes. Therefore it is necessary to document all associated human-wildlife conflicts to evaluate the economic loss and find ways to conserve the threatened animals. This study aims to understand the pattern in human-wildlife conflicts and their coexistence through direct field evidence and semi-structured questionnaires with local people, community forest user groups, and government officials.

Material and methods

Questionnaire survey was conducted to understand the cause, extent and pattern of human-wildlife conflicts and coexistence. Questionnaire survey for data collection was done in two phases; first data were collected from the villagers and direct victims of conflict. In the second phase, data were collected by interviewing representatives in decision making from the department of wildlife and national park, village development and security committee, district forest office. A total of 1000 people belonging to different disciplines like local farmers, key informants, community forest user groups, herders etc. were selected randomly. Questionnaires for the interview were categorized in different sections that covered the data regarding- general background of the people socio economic condition of people, peoples dependencies on national park resources, associated human-wildlife interaction (both positive and negative interaction), ways implemented by local people for mitigating conflicts etc. Besides interviewing people, the data registered in the park headquarter and district forest office since the last ten years were also reviewed. Besides these various literatures were reviewed relevant to the interaction of wildlife and local people.

One day workshop was organized in the school with students, teachers, community forest users group, and researcher. Workshops were focused on gathering information on human-wildlife conflicts through presentations on their findings and discussing the ways of mitigating the conflicts.

Study area
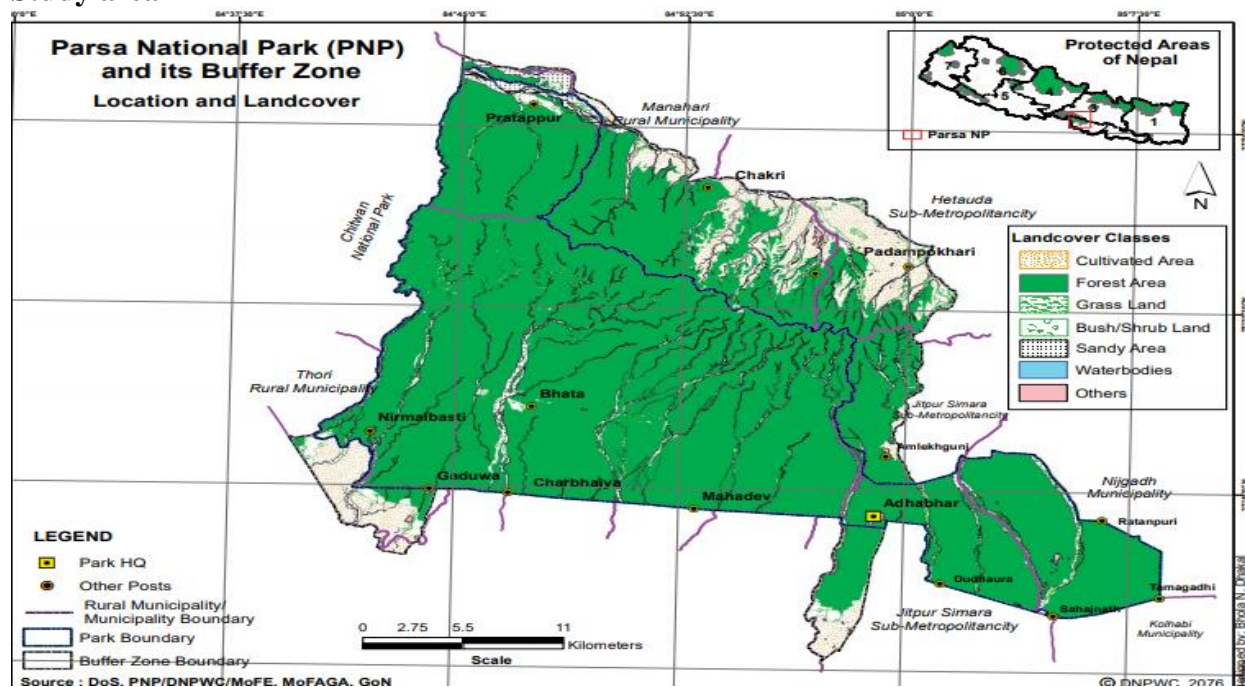
Overall studies were conducted in the periphery of Parsa National Park. Parsa National park is located in the south-central lowland Terai region of Nepal covering parts of Makwanpur, Bara and Parsa districts. It is connected directly to Chitwan National Park along a 35 km boundary in the west (Lamichhane et al. 2018). Initially, the area of the PNP was 499 km^2 and extended to 627.39 km^2 in 2015 to preserve the habitat for the resident Asian Wild Elephant and other flora and fauna (DNPWC 2018). It was the largest Wildlife Reserve of Nepal before declaring it as a National park. It is contiguous to Valmiki Tiger Reserve of Bihar State of India in the south. The

altitude of the park ranges from 100 m to 950m above mean sea level (DNPWC 2019). Broadly, the Park can be divided into three topographic regions from north to south viz. the Churia (Siwalik), Bhabar-Terai and inner-Terai (DNPWC 2019).

RESULT AND DISCUSSION

Socioeconomic and cultural status of people

The sample of the study comprised 1000 people surveyed in eight villages of Makawanpur, Bara and Parsa district. Four major religious categories were identified. Hindu is followed by 60.11% of total sample followed by Buddhism 37%, Islam 1.9% and Christian 0.9%. The population's occupational structure showed two dominant sources of income: agriculture and livestock farming and remittance, including other sources of income like, business-tourism, cottage and small industry, collection of non-timber forest products (NTFPs), government and private service and labour. Agriculture and livestock farming was given by respondents as the main occupation and made up 65% of the livelihood, making it the principal source of livelihood. People cultivate different types of crops like paddy, maize, wheat, mustard, millet, tobacco, soybean, potato etc. Remittances include the second major source of income that made upto 19% of the livelihood. The population educational status showed that 33% of total are illiterate following 26% of the population with primary education, 30% were under SLC, seven percent were with intermediate level education and only four percent of population were undergraduate. People of different varieties of caste and cultures were found living in the area. 48% of the total respondents were ethnic migrants like Gurung, Magar, Tamang, Newar and Chepang, 34% were hill migrants like Bramhins, Chhetri and Thakuri, 12% were indigenous terai people like Tharu, Bote, Darai and Mushahar, 3% were Dalit and 3% were Madhesi like Yadav, shah etc. 80% of the respondents used firewood as a major source of fuel for cooking. Similarly, biogas, kerosene oil, cylinder gas and electricity were used respectively.
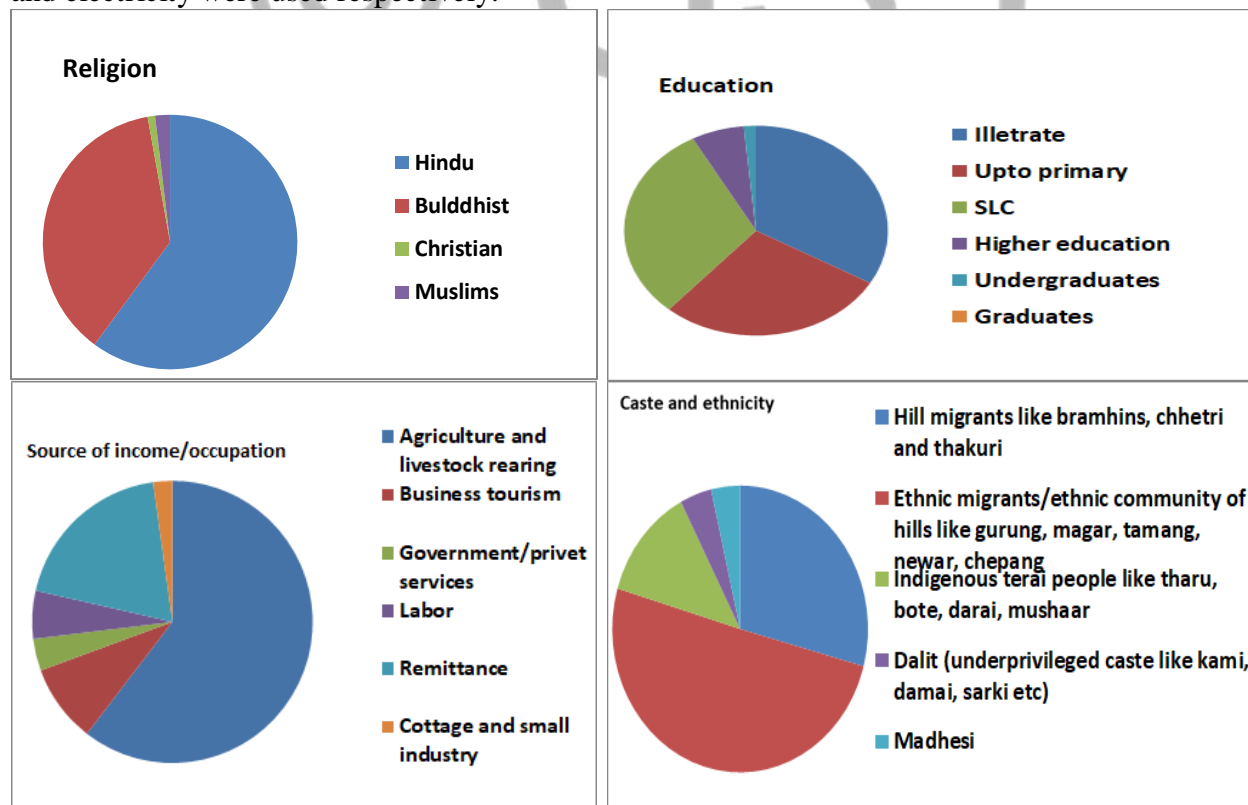
Fig: Chart showing different socioeconomic and cultural status of people living in the study area.

Overall conflict pattern

Socioeconomic status of study areas showed that the area is dominated by poor, underprivileged ethnic groups who depend directly on forest resources for survival. Underprivileged ethnic communities were attacked by wildlife more frequently than expected. Most of the attacks on humans were caused by Elephant and Tiger. Tiger and leopard caused most of the livestock depredation. Elephants were largely involved in crop depredation and property damage. Thori VDC of Parsa district and Ramauli Pratappur village of Manahari VDC were highly prone areas for human-wildlife conflict. A total of 126 incidents of livestock depredation were recorded in which 252 livestock were killed. Carnivores (Tiger and Leopard) were the cause of more than 90% of recorded livestock depredation. Tigers killed both large (cattle and buffalo) and medium sized (goat, sheep, pig) livestock but leopards mostly killed medium sized livestock. A total of 73.01 % incidence of livestock killing occurred in the jungle when people take their livestock for grazing. The overall trend shows that livestock depredation is increasing in recent years. According to the victim's family report, there were losses of total N.rs.17, 67,000 from livestock depredation and NRs 49,82,100 from crop damage since the last two years.
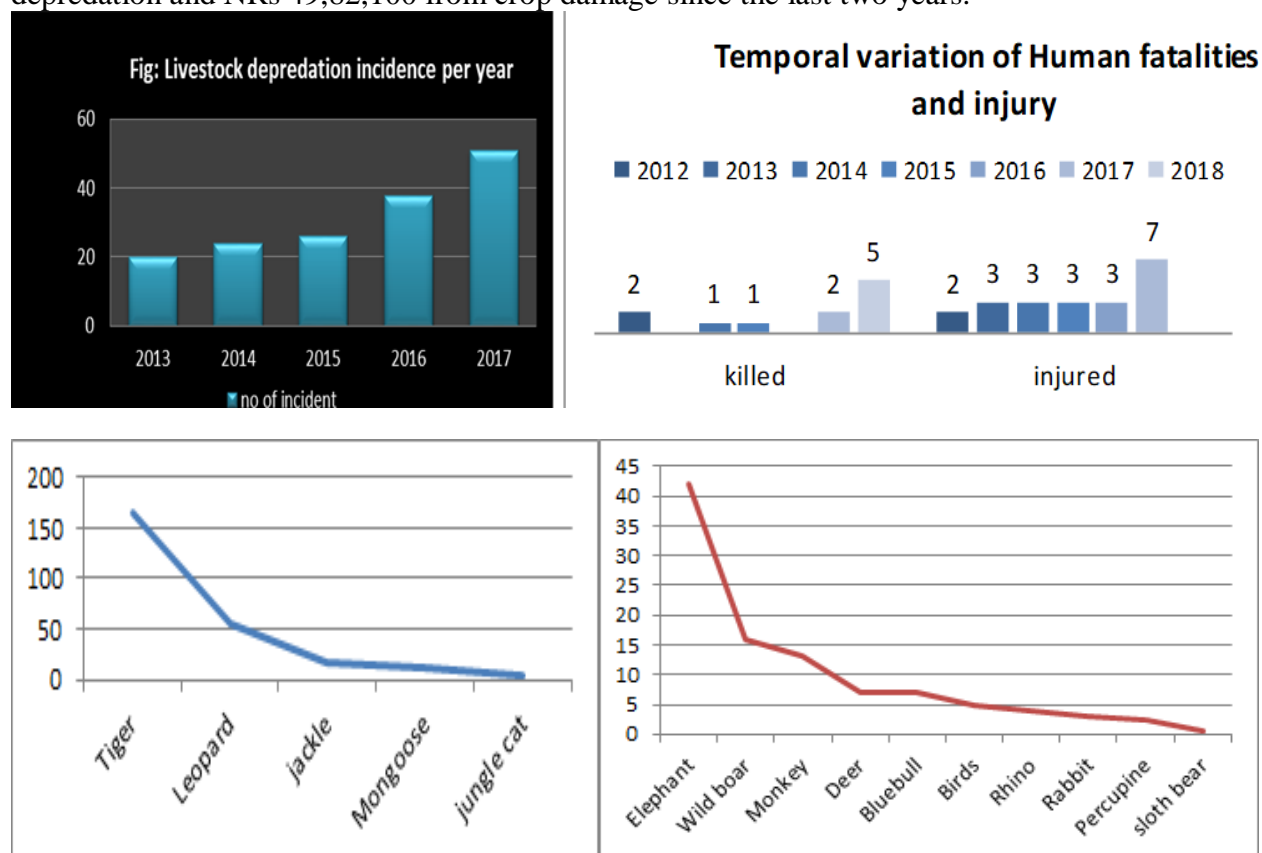

Fig: Number of livestock killed by different animals. Fig: Percentage of crop damage by different animals

People living nearby forests, especially underprivileged ethnic groups were found dependent on forest products like NTFPs (fodder, firewood, wild fruits, mushrooms, fiddlehead, asparagus, and medicine) for livelihood which undoubtedly escalated the risk of human wildlife conflict. A total of 31 serious wildlife attacks to humans with 11 deaths and 20 serious injuries were recorded between 2012 and 2018. Elephants and Tiger were involved in human death. More

human deaths (73%) occurred by Elephant attack compared to Tiger. Other wildlife involved in human injury were Rhinoceros, Sloth Bear, Crocodile and Wild Boar. In response, retaliatory killing of wildlife was also recorded. Although most respondent felt hesitation to respond on retaliatory killing record, 10% of the respondents claimed that, wildlife were used to be killed retaliatory. Deer and Wild Boar were mostly killed for retaliation as they do crop depredation. Study found that dogs (usually hunting dogs) were mostly used for killing wildlife.

Crop raiding was the most common problem in all the area followed by property damage and the threats to people. Significant quantities of the crop raiding problems were seen in Ramauli-Pratappur, Thori, Subarnapur, Nirmalbasti, Tagiabasti and Sikaribas villages as this area is very close to dense forest. The frequency of crop damage differed significantly among the surveyed villages along the distance gradient from the protected area. The percentage of farms that experienced crop damage was highest in villages that were closest to the protected area. Maize and paddy were significantly damaged crops by wildlife following wheat, millet, potatoes and mustards respectively.

It was reported that local people adopted locally available techniques to mitigate the crop depredation and livestock depredation problems. Major techniques implied were making fire, noises (drumming and explosives) especially for Elephants, thorny wire and thorny cactus fencing, watch tower (Machan), guarding the farm, cultivating alternative crops like Tobacco, Sesame and making scarecrows in farmlands. Watch tower and scare crow was very commonly practiced as it was clearly visible in every field bordering the reserve. Some people from Bara-Parsa and Ramauli-Pratappur village of Makawanpur district were found cultivating alternative crops like Tobacco, sesame, ginger, turmeric. Study showed that interest in cultivating alternative crops that are less attractive to Elephants and other wildlife is in increasing trend.

A total of 70% of the respondents said that coexistence with wildlife is going strenuous day by day as the conflict scenario doesn't seem to be over. Almost all the respondents agreed that the wild animal's population is increasing recently due to effective conservation measures but at the same time they were unhappy because of increasing conflict with wildlife. Out of total victims of human wildlife conflict, 45% of people found ignoring the conflict and didn't used to claim for relief support, as they were somehow benefited from the forest resources that balance their loss and next is the process of getting compensation is lengthy and time consuming. 40% of the people reported to authorities about the loss for relief support and 15% of the respondents did not know about the provision of compensation scheme and the process to claim for it. People complained that government authorities give more focus on conservation but not on compensation. The procedure for compensation is also lengthy and time consuming and also the amount of compensation in comparison to damage was very low. Data revealed that, average time period to receive relief support was 144 days. Due to these reasons people were developing hostile attitudes towards government authorities and conservation.

Conclusion

Socioeconomic status of study areas showed that the area is dominated by poor, underprivileged ethnic groups who depend on agriculture and forest resources for survival. Study showed that Elephant and Tiger were significantly involved in most economic loss and human fatalities. Elephants were involved in crop raiding, house demolished and human fatalities. Tiger were involved in livestock depredation and human fatalities. 73.01 % incidence of livestock depredation occurred in the jungle when people took their livestock to graze. People living nearby forests, especially underprivileged ethnic groups, were found dependent on forest products like NTFPs for livelihood which undoubtedly escalate the risk of human wildlife

conflict. It can be concluded that, if the dependency of villagers to forest resources could reduce, accordingly human wildlife conflict will drop. Coexistence with wildlife is going hard day by day as people think that wildlife population is in increasing trend. People believed that government authorities were mostly targets for conservation but not for compensation. Compensation mechanism was not working effectively in the area due to which people's attitudes towards government and conservation was becoming antagonistic.

Local community has a very important role in project sustainability. Community involvement is a key ingredient in the delivery of good planning outcomes. Entire field work was successfully accomplished with direct involvement and support from local communities and community forest user groups. Coordinated and collaborative conservation action plans are therefore required to deliver successful results and allow communities to shift from conflict to coexistence with wildlife.

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