



The Journal of Zoology Studies
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ISSN 2348-5914
JOZS 2015; 2(1): 26-30
JOZS © 2015
Received: 11-12-2014
Accepted: 14-11-2015

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Human-wildlife conflict-causes, consequences and mitigation measures with special reference to Kashmir

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Abstract

The rising levels of man-animal conflicts at various locations of Kashmir valley in India are due to close proximity between humans and wild carnivores particularly leopard and black bear. The data regarding human injuries and mortalities caused during conflicts from 2010 to 2012 was collected from Shere Kashmir Institute of Medical Sciences (SKIMS) Soura, Srinagar and its associated medical college hospital at Bemina Srinagar. The data indicates rising levels of man-carnivore conflicts in Kashmir. The leopard and Asiatic black bear were mainly involved in causing several forms of conflict. The human population growth and expansion, habitat degradation and fragmentation, land use transformation and increasing densities of livestock grazing in protected areas are considered as major causes of man-carnivore conflicts. The objective of the study is to highlight causes and consequences of man-animal conflicts and mitigation measures to be adopted for alleviating the problem. The study reveals that people living in close vicinity of forests and protected areas are often prone to attacks by wild carnivores like black bear and leopard.

Keywords: Human, Wild predators, Conflict, Causes, Mitigation, Kashmir

1. Introduction

Human-wildlife conflict refers to interaction between wild animals and people and resultant negative impact on people or their resources, or wild animals or their habitat. 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 ^[12]). Man-animal conflict has been in existence for as long as humans have existed and wild animals and people have shared same landscapes and resources (Lamarque ^[5]).

Human-carnivore conflict is now very common global phenomenon in rural areas and has become common on urban fringe in both developing and developed countries (Dickman ^[2]). With increasing human population and pressure on forest areas, human-wildlife interaction and resultant conflict is also increasing (Zubiri & Switzer ^[13]). It occurs when growing human populations overlap with established wildlife territories, increasing interaction of man and wild animals and thus resulting in increased levels of conflict. Direct contact with wildlife occurs in both urban and rural areas, but it is generally more common inside and around protected areas (Distefano ^[3]). Movement and ranging patterns of large mammals are controlled essentially by availability of food, water, escape cover and mates (Mace *et al.* ^[6]). In case of unavailability of any of these components in natural habitats, wild animals are forced to move out causing several forms of conflict.

Human-carnivore conflict in Kashmir region of Jammu & Kashmir state in India is a conservation concern that increasingly threatens the continued existence of some carnivore species like leopard and Black bear. The increasing population with subsequent encroachment on wild land has resulted in close proximity between humans and wild carnivores which most often results in a negative outcome for humans, wildlife or both. The need for alleviating this conflict has become a challenging job for the government. The present study focuses on causes and consequences of human-carnivore conflicts in Kashmir and to suggest

recommendations for mitigating man-carnivore conflicts and improving conservation management.

2. Methodology

Data regarding human injuries and mortalities caused during human-carnivore conflicts in Kashmir was collected from Shere Kashmir Institute of Medical Sciences (SKIMS) Soura Srinagar and its Medical college Hospital at Bemina Srinagar. Causes of conflict and animals involved were known by interviewing injured persons from different localities of Kashmir region using native Kashmiri language and Urdu to put interviewee at ease. Data were analyzed using software tool ORIGIN (version 6.0). The number of injuries and death cases are shown graphically on yearly basis from 2010 to 2012.

3. Results and Discussion

The data regarding human mortalities and injuries caused during man-bear and man-leopard conflicts have been recorded for a period of three years from 2010 to 2012 (Tab.1 Fig. 1) at SKIMS and its Medical college Hospital at Bemina Srinagar. The numbers of persons injured during 2010 were 186 persons among which 3 died. The data of 2011 and 2012 show increased number of incidents as indicated by rising number of injured persons from 215 to 252. Most of the attacks as verified by interviewing injured persons in hospitals occurred during late afternoon and evening hours. The respondents were not satisfied with conflict management by the Government leading to generation of negative attitudes towards wild carnivores.

Table 1: Persons injured/killed due to human animal conflicts in Kashmir (2010-2012)

Year	No. of injuries	No. of deaths
2010	186	3
2011	215	8
2012	252	12

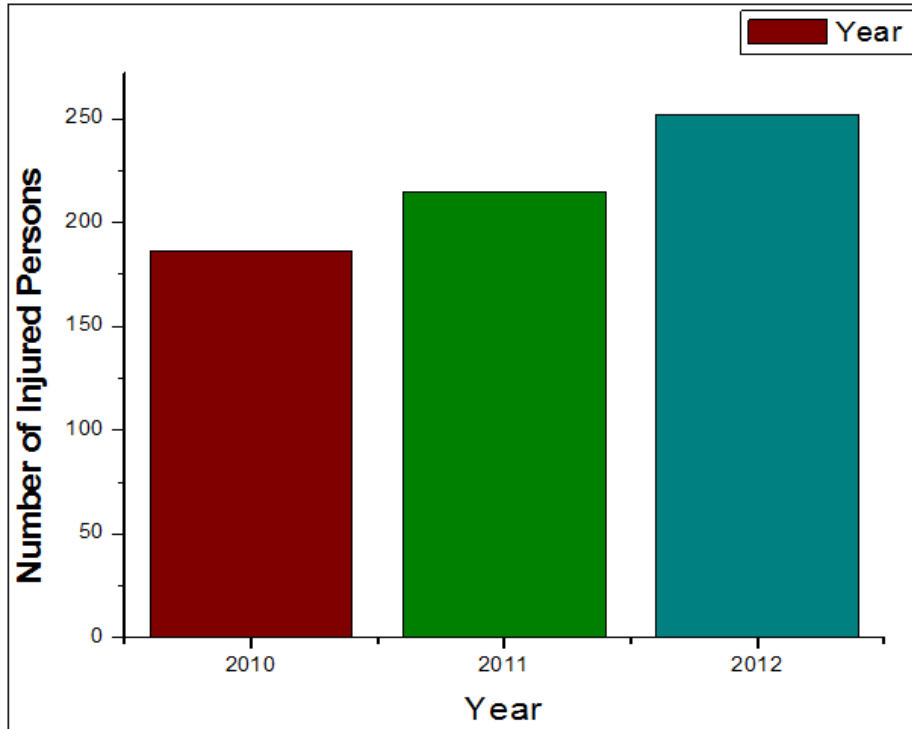


Fig 1: Number of injured persons in Kashmir by leopard and black bear attack

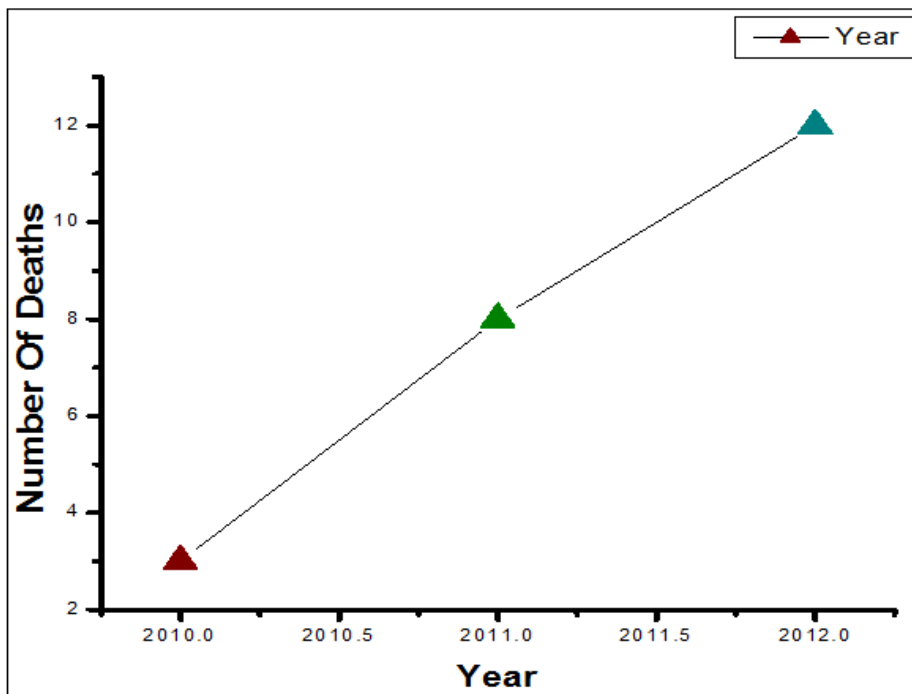


Fig 2: Number of deaths in Kashmir by leopard and black bear attacks

The injured persons were mainly from different areas of Kashmir in close vicinity of protected areas and forests. People in such conflict prone areas of Kupwara, Lolab, Handwara, Baramulla, Tangmarg, Shopian, Ganderbal, Anantnag and Srinagar lose their

crops, livestock, property and sometimes their lives. The animals like leopard and black bear are often injured or killed in retaliation. During summer and autumn, bears are on prowl owing to availability of fruit and crop in adjoining localities of forests and

protected areas. The leopard attacks have been reported round the year. Man-animal conflict has been in existence for as long as humans have existed and wild animals and people have shared same landscapes and resources (Lamarque *et al.* ^[5]). Human-carnivore conflict is now very common global phenomenon in rural areas and has become common on urban fringe in both developing and developed countries (Dickman ^[2]). Wildlife corridors that allow seasonal movement of wild animals are also being cut-off by roads, railway tracks and border fencing. The common reasons of such conflicts cited by interviewees are habitat destruction, unavailability of food and lack of shelter in natural habitats. The frequency of conflicts has increased in recent decades as a result of increased human activities in wildlife areas or natural habitats (Graham *et al.* ^[4]). A number of anthropogenic activities have been recorded in Dachigam national park (Bhat ^[1], Shah *et al.* ^[11]).

The J&K is witnessing human population growth which has led to encroachment of wildlife habitats. As per details from Census 2011, Jammu and Kashmir has population of 1.25 Crores, an increase from figure of 1.01 Crore in 2001 census i.e., a decadal population growth of 23.64 percent. Demographic and social changes place people in direct contact with wildlife: as human population grows, settlements expand into and around protected areas as well as in urban and sub-urban areas (IUCN World Park Congress ^[12]). The transformation of forests and other ecosystems into agrarian areas or urban settlements is a consequence of increasing demand for land, food production, energy and raw materials. The trees have been recklessly cut down which has rendered environment devastated. The cultivation of commercial horticultural crops near forests creates favorable habitats for black bears.

The fencing of line of control (LOC) has fragmented natural habitat resulting in hindrance of wild animal movements across the line, consequently they are heading towards human settlements adjoining forests. The wild animals are forced to roam in populated areas killing and injuring people and often get killed in retaliation thereby, threatening their survival. It is commonly reported that occurrence of carnivores in human landscapes cause livestock depredation (Patterson *et al.* ^[9]). Growing densities of livestock populations in some protected areas like Dachigam national park acts as an alternate prey for leopard (Shah *et al.* ^[10]). Livestock depredation is a cause of human-leopard conflict worldwide (Madhusudan & Mishra ^[7], Namgail *et al.* ^[8]).

4. Recommendations

The man-animal conflict in Kashmir region is an outcome of diminishing area of forests, increasing human population combined with human interference in natural habitats and shortage of food for wild animals. Due consideration should be given to following points while tackling man-carnivore conflicts:

4.1 Habitat Restoration

As a result of growing human population, changing land use practices and resultant anthropogenic pressures, forest cover has either decreased or declined in quality due to habitat degradation. Avoiding deforestation and planting new trees in forest areas can help a lot in reducing conflict rate in the long run.

4.2 Organizing awareness programs

Though locals were living with wildlife for ages, their knowledge about behavior and ecology of wild animals is remarkably poor. So government and non-government organizations must come forward for organizing awareness programs. Education and training activities will help in creating tolerance towards wild animals. Training and education programs for wildlife personnel, giving proper skills for dealing with wild carnivores would promote commitment towards conservation and raise the welfare level of animals.

4.3 Do not disturb or irritate wild animals

Wild carnivores usually unleash terror as retaliatory and defensive action when provoked by local inhabitants outside their natural habitats. People should, therefore, avoid irritating animals outside their habitats.

4.4 Role of Government

In view of growing man-animal conflict cases, the state government has enhanced compensation for victims. As per new order, compensation for death and permanent disability by wild animals has been increased from one to three lakh. Any victim with grievous injury will be compensated with rupees one lakh and fifteen thousand will be given to victims who receive minor injuries. The Department of Wildlife Protection J & K should be equipped with necessary infrastructure for tackling conflicts. Besides, training programs for wildlife officials be organized for handling wild carnivores outside their habitats.

4.5 Law enforcement

Appropriate legal measures should be enforced in order to protect natural habitats against illegal exploitation and to avoid human interferences in such areas.

4.6 Avoid rearing of pet animals

The people living near forest areas must avoid rearing pets as they act as an attractant for leopard.

4.7 Care must be taken when away from home

People near forest areas should avoid wandering during dawn and dusk when attacks by leopard are often expected.

4.8 Avoid making fruit plantations near forests

This activity will alleviate man-bear conflicts in adjoining human areas of forests. The alternative is to plant some fruit trees in natural habitat of black bears as it will reduce their movement towards human habitations.

5. Conclusion

Along with conservation education program, the conflict has to be studied properly to develop a management plan for mitigation of human-bear and human-leopard conflicts in Kashmir. The creation of mobile rescue teams, training of wildlife staff in handling, tranquilizing and transporting wild bears and leopard is to be ensured. The man- animal conflict in the valley of Kashmir has reached a point where conflict is leaving more casualties than before and has become a matter of concern for people as well as government. Although this type of confrontation is not new to places girded by forests but never before had number of beastly attacks and consequent deaths crossed a limited count. People generally get rid of conflict problem by killing wild animals, but it is not the ultimate solution. The conflict can be resolved by attitude, cooperation and concerns of the local community.

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