

# MAN AND WILDLIFE CONFLICT IN DISTRICT DODA (Jammu & Kashmir)

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## Abstract

This study was conducted in some selected villages of district Doda in Jammu and Kashmir. The district Doda of J&K, lies in Middle Himalayas. The objective of the study is to examine the present status of man-animal conflict, its causes and mitigation measures to be adopted that can help in containing the problem. It was observed during the survey of the study area that the forest areas of the region are excellent habitats for the wild animals and most of the human habitations also lie very much close to the forest area. Though the villagers used to live in co-existence with wild animals since long, however the man-animal conflict has increased alarmingly in recent years, as a result of which the villagers use to lose their crops, livestock, property, and sometimes their lives and in some cases it has been observed that animals being killed to 'prevent' future conflicts. The study reveals that human wildlife conflict is a growing problem throughout the study area and a number of causes have been identified in this regard. The issues need to be solved sincerely in order to avoid Man-animal conflict. A few mitigation measures have been suggested in this study.

**Keywords:** Man-animal conflict, crop depredation, habitat fragmentation, open defecation, ex-gratia, kharif and rabi crops.

## INTRODUCTION

Human and wild animals are integral components of forest ecosystem and both have been living together in a close relationship for millions of years. This relationship plays a fundamental role in the co-existence of the partners positively or negatively. But with the increasing pressure of population growth in and around protected areas forced the carnivores to share their geographical distribution area with humans, which resulted as a Human –Carnivore conflict or Human wildlife conflict (IUCN, 2005). All continents and countries whether developed or developing, are affected by Human Wildlife conflict (Lamarque, et al, 2009). These conflicts have become more frequent and severe over recent decades as a result of human population growth, degradation of natural habitats, extension of transport routes and expansion of agricultural and industrial activities which together have led to increased human encroachment on wild and uninhabited area ( Lamarque, et al.) According to Woodroffe et al. (2005) , human wildlife conflicts is the phenomenon where conflicting situations arise between humans and wildlife in the form of crop raiding , livestock depredation , predation on managed wild animal species or killing of people . People residing near forests as well as in forest fragments are more

prone to conflicts as wild animals seek to fulfill their nutritional, ecological and behavioral needs (Kumar, S; 1990). In other words, people residing in and around forests easily fall victims to conflicts with wild animals because their requirements often overlap with those of the wildlife. In fact, conflict can be particularly serious, where rural people live in close association with protected areas (Mishra, C; 1997). It is a serious issue that requires to be addressed urgently with utmost priority (Ministry of Environment and Forests, India, 2011).

In Jammu and Kashmir like other states of India , the interface between man and wildlife narrowed down as the explosion in human population in the 20th century pushed human settlements deep into the remotest parts of wilderness(Dr. Mir M. Mansoor; 2010) . Sayed, F; (2015) reported that 20 persons have been killed and 300 injured during the incidents of human and animal conflict in Jammu and Kashmir in the past one year.

## STUDY AREA

The study was conducted in 05 villages (Assar, Bhagwa , Ganika , Mandole and Malwass ) of District Doda in J&K . Doda district lies in east of Jammu region between 32 degrees 53 min. and 34 degrees 21 min. North latitudes and 75 degrees 01 min. and 76 degrees 47 min. East Longitude. Lying in the middle Himalayan ranges , the district has mostly a hilly terrain and has an area 4500 sq Km with population 409,936 ( 2011 census ) . The district is drained by the mighty Chenab which is joined by other rivers and nallahs like Mohu Mangat , Bichlari , Neeru, Ragi , Kandheri, Dessa etc. Due to its varying physical features, the district does not have uniform climate. Average rainfall in District Doda has been recorded as 35.08 inches per year. Agriculture is the main source of livelihood in the study area. The major crops of the study area are- Maize, Wheat, Pulses and vegetables. Due to variation in climate there is variation in crop production too (District Doda Statistical Handbook, 2013-14). The Doda district is a repository of forest resources with a vast area of 5.55 Lac hectares under forests (Digest of Soil conservation department, J&K, 2013). The main vegetation of the study area includes Kahu ( *Olea cuspidata* ), Kharsu ( *Quercus semecarefolia* ), Banj ( *Quercus leucotrichophora* ), Deodar ( *Cedrus deodara* ), Blue pine ( *Pinus wallichiana* ), Chir ( *Pinus roxburghii* ), Phulai ( *Acacia modesta* ), Fir ( *Abies*) and several kinds of shrubs .

The wild-animals found in the study area includes Leopard ( *Panthera pardus* ) , Black Bear ( *Ursus thibetanus* ), Porcupine ( *Hytricomorph hystricide* ) , Monkey ( *Macaca mulatta* ) , Red Fox ( *Vulpes vulpes* ) , Jackal ( *Canis auris* ), Common Langur ( *Presbytis entellus* ) etc.

## FIELD SURVEY AND DATA ANALYSIS

The list of households for each selected village was prepared and a sample of 15% households from each village was also selected randomly. Finally, a sample of 261 households (15% households from each village) was drawn and before the questionnaire survey, the distribution of houses was observed. The data was collected from the selected sampled villages on incidents of crop depredation, livestock depredation and attack on human by wild animals through questionnaire survey which was conducted in the Year 2015.

Primary as well as secondary data were used for fulfilling the requirements of the objectives of the study. The primary data was collected through personnel interview method on specifically well designed and pre-tested questionnaire. For collection of Primary data, field survey were conducted to obtain information. Questionnaire consisted of five main sections: demographic and socio-economic characteristics of respondents; Human carnivore-conflict experience; crop and livestock depredation; temporal patterns of livestock depredation and crop protection strategies used by farmers. The Secondary data was also collected from Wildlife department regarding human –carnivore conflict which served the purpose of secondary data in the instant study.

## RESULTS AND DISCUSSION

***Socio Demography of studied villages:*** The socio-economic characteristics of the people are very important since these indicators provide information regarding the status of a society. A sampled population of 261 households was approached from 05 sampled villages to know their response. Out of these, 248 (95 %) were male, as female members were shy in nature and hesitate to speak. The total population of the 261 sampled households was found to be 1392 with average family size of the sampled households as 5.3. Out of 261 respondents, 123 (47 %) respondents were literate.

***Livestock Profile of Sampled Households:*** It was reported during the survey that out of total 261 sample households, 240 (92%) hold livestock as a secondary source of income. Moreover a total of 1803 number of individual livestock was reported from 261 sampled households, of which sheep holds the highest, 829 (46%) and lowest was Horse/ Mule with 90 (5%); (Fig 1.).

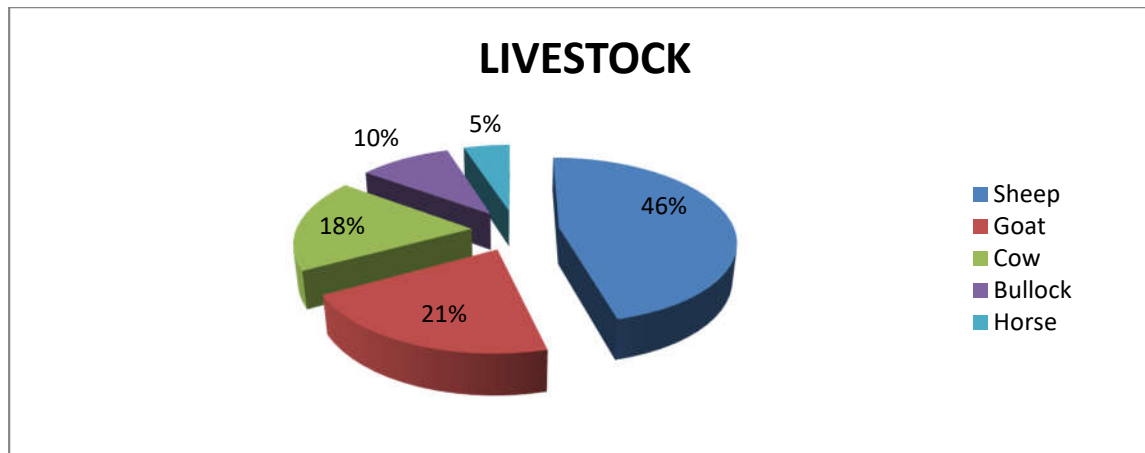


Fig1. Percentage of Livestock holding of sampled households in study area

**Livestock Predation:** A total of 141 respondents in the study area have experienced attacks of mammalian predators on their livestock. It was observed that Leopard, Black Bear were major predators responsible for the majority of Livestock killings in the study area while Red Fox, Jackal were mainly involved in poultry killings. During the household survey, total 82 livestock depredation cases during last five years were reported. Out of these, Leopard was found to be involved in 78 cases and Black Bear in four cases. The predators mostly attack on sheep (N= 103; 73%) and least number of attacks were recorded on Cow (N= 4; 3%) as was reported by respondents in the study area . The study highlights that sheep was the common prey of Leopard in the study area . Sheep are ideal leopard prey because these are smaller animals ( 20-50 Kg ) and can be quickly dragged to a secluded and safer place after killing . In a similar type of case study conducted in Sariska Tiger reserve , Sheep and goats comprised 81% of total Livestock killings by Leopard ( Sekhar, 1998 ). The instant study further revealed that 62 ( 44% ) of livestock was killed during night hours followed by , 35 ( 25% ) in early morning hours by predators . In a similar study conducted in Mandi district of Himachal Pradesh it was observed that 74% livestock casualties occurred during night hours followed by 15% in the afternoon / evening ( Kumar and Chauhan, 2011 ).

**Crop Depredation :**There are two growing seasons during the agricultural year in the study area . Rabi season extends from March to July and involves the crops such as Wheat , Barley , Peas and some fruits & vegetables while the Kharif season extends from July to October and the crops harvested are Maize , Beans, Fruits and vegetables etc. The study revealed that 206 ( 79% ) out of 261 respondents experience frequent crop depredation raids by wild-animals in their fields . Some crops were reported to incur damages right from germination , through fruiting up to maturity . Upto 81 % of respondents reported that serious crop depredation occurs starting with fruiting stage up to when mature, ready for harvesting . Only 31 % reported that crop depredation occurs throughout the life span of crop (Table 1) . The Household Survey further highlighted that Monkey was the most destructive crop- raiding species in all

the 05 sampled villages ( Table 2 ) . Monkey was reported to damage fruits at all the stages of maturation and also flowers and leaves and is therefore believed to damage crops throughout the year .

**Table 1 (Agricultural crops depredating species & time of damage in study area)**

Common Name	Botanical Name	Problem Species	Damage Time	Part Eaten
<b>Maize</b>	<i>Zea mays</i>	Monkey	June to September	Young shoots,corn
		Bear	August-October	Corn
		Porcupine	May- September	Roots,flowers,corn
<b>Wheat</b>	<i>Triticum aestivum</i>	Monkey	April-July	Young shoots,grains
		Bear	June-July	Grains
		Porcupine	April-July	Roots , grains
<b>Barley</b>	<i>Hordeum vulgare</i>	Monkey	April-July	Young shoots,grains

Table 2. Crop depredation events caused by various wild-animals as reported by respondents.

Wild-animals responsible for crop depredation	Crop depredation events as reported by respondents( Number )
<b>Monkey</b>	91
<b>Bear</b>	63
<b>Parcupine</b>	41
<b>others</b>	11

**Most vulnerable crop :** The survey further revealed that Kharif Crops were more vulnerable to crop raids as compared to Rabi crops . The majority of respondents reported , Maize as the most depredated crop which is followed by vegetables ,fruits and wheat ( Fig. 3 ) . In a similar study conducted in Arunachal Pradesh ,it was observed that Black Bear caused damage to maize which is major crop for many hill tribe people ( Wildlife Institute of India , July, 2009 ).

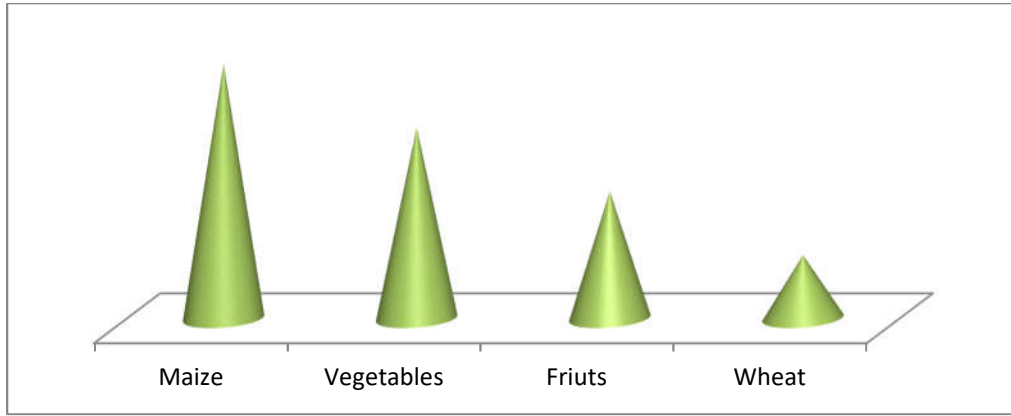


Fig: 3 Ranking of depredated crops by majority of Respondents

**Crop Protection Strategies :**The crop protection strategies used by the farmers to protect their fields and orchards from wildlife raids were also studied . The crop protection strategies adopted by farmers in the area included – shouting at the animals , beating of tin canes , using dogs , fencing of fields with thorny twigs and patrolling and guarding etc. The most commonly used crop protection strategy is shouting ( 60% ) as reported by the respondents while beating of tin canes ( 25% ), using dogs ( 10% ) and field fencing with stones & thorny twigs ( 5% ) are the other methods used by the farmers , as reported by respondents in the study area( Fig 3 ). Shouting was also found most commonly used crop protection measure in a study conducted in some villages of Sumatra , Indonesia ( Valerie Marchal and Catherine Hill , 2007 ) .

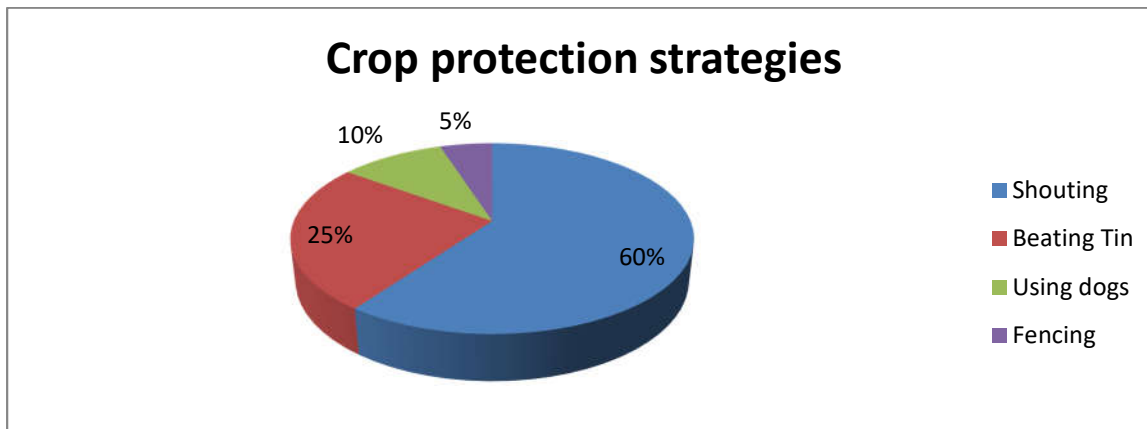


Fig. 3 Methods being used by the farmers to prevent wild animal crop raids.

**Manifestations of human wildlife conflict:**The different manifestations of human wildlife conflict were also studied in terms of ranking . In the study 104 ( 40% ) out of 261 respondents reported that wild animals were responsible for creating an environment of fear while 91 (35% ) reported depredateion of crops and Orchards and the remaining i.e 65 ( 25 % ) reported injury & loss of human life .

In the instant study it has been observed from the household survey and official data that the incidents of man animal conflict are increasing at an alarming rate in district Doda and has resulted into death of two females and injury to several others besides causing extensive crop and livestock depredation during the year, August 2015 . People in several villages are living under constant threat due to frequent Leopard and Bear attacks on human, livestock and orchards from past few years. The secondary data of five years (2010-11 to May 2015) collected from wildlife department reveals that during this period Man animal conflict has claimed five lives and has caused injury to 37 persons in the district and in respect of Livestock depredation the conflict has claimed 461 livestock heads during the said period in the district .A similar study conducted in Kenya also shows, leopards responsible for highest number of livestock killings (Karani 1994).

The analysis of official data, revealed that Bear was responsible for majority of the human injuries in the district. The official data further highlights 15 cases of unnatural deaths of Leopards and 03 of Bear in the district during the last five years .The population decline and extinction of many carnivore species can be traced to direct conflict with humans arising from livestock depredation (Mishra 2001,Mishra et al.2002).

The field study revealed a number of reasons for increasing human wildlife conflict in the area, the common of which are 1.Habitat fragmentation as a result of construction of roads in the district. The reservoir of Baglihar has further aggravated the situation due to loss of habitat near the bank of Chenab River. 2. Encroachment of forest land by the locals has resulted in shrinkage of wildlife habitat in the study area. 3. It has been also reported during the study that the villagers are dependent on forests for collection of fuel-wood, fodder, water and livestock grazing, which has increased the incidences of man-animal conflict 4. Decrease in population of wild prey by poaching has resulted in carnivores moving out of forest in search of prey and indulge in cattle lifting. 5. Open defecation due to non- availability of Latrines in the villages has also been observed as a significant reason for human wildlife conflict in the study area.6. Over the years the number of wild-animals has increased due to complete ban on hunting of wild-animals and increased human settlement has led to greater human wild-animal conflict.

## CONCLUSION

Human wildlife conflict is a growing problem throughout the district Doda. The people residing in the villages near the forests easily fall victims to conflicts with wild animals because their requirements often overlap with those of the wildlife. The result of this conflict is very serious. Many people lose their crops, livestock, property and some their lives. The prolonged fear of wild-animals particularly leopard and bear has paralyzed the lives of local villagers who depend on forest

and forest resources for their livelihood. The livelihood of these people is fully dependent on Agriculture and the livestock's. So, agricultural damage and livestock predation affect the livelihood patterns of those peoples. Conflicts create negative impact on local community and due to this conflict many people have developed a dislike for these wild-animals. In this regard therefore, Human-wildlife conflict issues must be treated with concern, and placed in the context of local community and individual needs, as well as conservation objectives. In order to minimize the human-wildlife conflict in the study area, I have come up with a couple of recommendations: 1. Stop fragmentation of Wildlife habitat - while going for construction of roads in the area, we should avoid fragmentation of wildlife habitats and proper care should be taken so that the connectivity through wildlife corridors is not disturbed 2. Providing of LPG to villagers – LPG should be provided to those villagers who frequently go to the forest area especially wildlife habitat to fetch fuel-wood for their Chullas so that they may stop penetrating into forest and stop inviting Man-wildlife conflict .3. Controlling crop pattern- Crops like Maize should not be allowed to grown near forest areas. The crops attract wildlife for food as well as hiding place. 4. Paying Ex-gratia / Compensation to the victims- Though no compensation can overcome the loss of human life but it should be paid promptly to the victims of wildlife attack so that people will not become enemy of wild-animals. Otherwise people tend to take revenge from the wild-animals by killing them. 5. For the management of wildlife –animal conflict, detailed predator survey in the area is required as there is no viable baseline data for the population of wild-animals.6. Awareness program to sensitize the people about Do's and Dont's to minimize the conflicts.7. Construction of Toilets be taken at war footing at village levels so that open defecation may be avoided, which has also been observed as one of the causes in our study.

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