Original Research Article

Human–Wildlife Conflict and Attitude of Local People to Wildlife Conservation around Dachigam National Park, Kashmir (India)

ABSTRACT

This study investigated the patterns of HWC and the attitudes of local people to wildlife conservation around Dachigam National Park, Kashmir. Multistage random sampling technique was employed to select a total of 394 households from the 10 sample villages for household survey. Data were collected through questionnaire survey, focus group discussions and direct observations. Data were analyzed using descriptive statistics, chi-square test and correlation analysis. Results revealed that the major types of HWC were crop raiding, livestock predation, increased risk of livestock diseases and direct threats to human life. Majority of the respondents (44.82%) faced crop damage and domestic animal loss, 26.25% reported threat to humans and 0.67% reported that they did not face any conflict with wild animals. Close proximity of the villages to the park and seasons influenced livestock predation intensity with highest predation in the summer season (58.4%). To mitigate these problems, the local people utilized various traditional methods including guarding and drum beating. Most of the people had positive attitudes towards the conservation of wildlife. Appropriate measures are to be implemented to mitigate the HWC problems and safeguard the biodiversity of the wildlife in the park.

Keywords: HWC, Livestock depredation, crop raiding, mitigation measures

1. INTRODUCTION

"Human-wildlife conflict (HWC) refers to the interaction between wildlife and humans and the resulting negativeimpact on humans or their resources or wildlife or their habitats" [1]. "Human-wildlife conflictis defined as any interaction between humans and wildlife that has negative impacts on human social, economic or cultural life, on the conservation of wildlife populations or on the environment" [2]. "HWC occurs when the demands of wildlife overlap with those of human populations, creating costs for both residents and wildlife" [3]. "Such conflict occurs when a growing human population overlaps with established wildlife territories, increasing human-wildlife interaction, leading to increased levels of conflict" [4]. "Movement and movement patterns of large mammals are controlled essentially by the availability of food, water, escape cover, and mates" [5]. "In case of unavailability of any of these components in the natural environment, wild animals are forced to move to adjacent areas, causing several forms of conflicts. HWCs are products of socioeconomic problems and political landscape fragmentations which are contentious because the resources involved are high valued and the species involved are prominent and legally protected" [6-7]. "Direct contact with wildlife occurs in both urban and rural areas, but is generally more common in and around protected areas" [8].

HWCs cause significant losses to many communities, the compensation of which makes wildlife conservation a costly enterprise worldwide [9-10]. Crop raids vary, however, it leads to the destruction of

agricultural crops for human consumption, while propertydamage could be damage to fences, water pipes and houses [8,11]. “Ameliorating and mitigating this conflict is critical to the conservation and recovery of many species, and debates about how and whether to coexist with other animals had arisen social, economic and political conflicts within and between human communities” [12-13]. “The need of the hour is cooperation betweenthe government's Department of Conservation and the public to contain the HWC. Government support for control and eradication programs continued in many areas into the twentieth century” [14].

The Dachigam National Park (DNP) of Kashmir has been facing HWCs due to increased human population, resource access for livelihood dependence and fodder security for livestock production. Furthermore, small sized land holding, dominance of petty trade, low wealth status, large family composition and low housing status, inadequate institutional support, scarcity of grazing lands and animal forage and low adoption of fodder production practices are among the critical socioeconomic problems of the local people that pose threats to the park [16]. Keeping in view, this research seeks to investigate the different aspects of human-wildlife conflict including patterns of conflict, species involved, population trend of problem animals, proximity of villages to DNP and seasonality in livestock depredation, measures to control damage caused by wildlife and attitude of local people towards wildlife conservation in and around Dachigam National Park, Kashmir. Our study hypothesis was that (1) there was a high level of human–wildlife conflict and (2) the local people would have less favourable attitudes towards problematic wild animals.

2. MATERIALS AND METHODS

2.1 Study Area

“Dachigam National Park (DNP) is located in the Kashmir Valley, 21 km northeast of Srinagar, the capital of Jammu and Kashmir UT of India. The Park lies between 340 05'-340 11'N and 740 54'E and 750 09'E in the Zanskar range in the NW Himalaya biogeographic zone (2A) of India” [15]. “DNP covers an area of 141 km^2 and bounded on the north by the Dara block of Sindh FD; on the south by Brain block, Khrew and Tral ranges of Forest Plantation Divisions; on the west by Harwan village and Harwan reservoir; and on the east by Lidder FD. Overa-Aru WS is connected to the southeastern part of DNP. The altitude of the Lower Dachigam ranges from 1,650 m to 3,950 m (Mahadev Peak) and the Upper Dachigam ranges from 2,000 m to 4,400 m. DNP has a temperate climate with cool summers and freezing winters. The maximum and minimum mean temperature in the summer are 27.3^0C and 2.0^0C, respectively. The average rainfall is 660 mm, but there is no definite rainy season as in other parts of the country” [16]. “The forest type of the lower DNP is classified as Himalayan moist temperate forest” [17]. The park's mid-elevation is consisted of the western Himalayan upper broadleaf-coniferous mixed forests (Fig. 1). Above 3000 m, western Himalayan subalpine birch forests prevail giving way to alpine scrub and juniper at higher altitudes [18].

“The vegetation of the valley is very fragmented and diversified. Trees such as *Ulmus wallichiana*, *Salix alba* and *Populus ciliata* are found along the streams. *Prunus armeniaca* occurs in open bushy areas and *Quercus robur* and *Robina pseudoacacia* in distinct clear areas mainly planted in abandoned agricultural fields. Shrub species are relatively evenly distributed throughout the valley. Common shrubs in the lower parts of DNP are four species of *Prunus*, two species each of *Rubus*,*Berberis*, *Vibernum* and *Rosa*, *Indigofera* and

Parrotiopsis" [19]. "Vegetation on the southern sides is characterized by grassy slopes with *Prunus armeniaca*, *Rosa webbiana* and *Rubus niveus*. The streams have adequate tree cover, including species of *Aesculus indica* and *Juglans regia*. Northern aspects have more trees and shrubs covered with species such as *Pinus griffithi*, *Aesculus indica*, *Prunus armeniaca* and *P. jacquemontiana"* [19]. Human exploitation and disturbance of wildlife and habitats in DNP includes grazing at higher elevations in summer by nomadic herders; collection of firewood, fodder, etc. by local people and tourism.

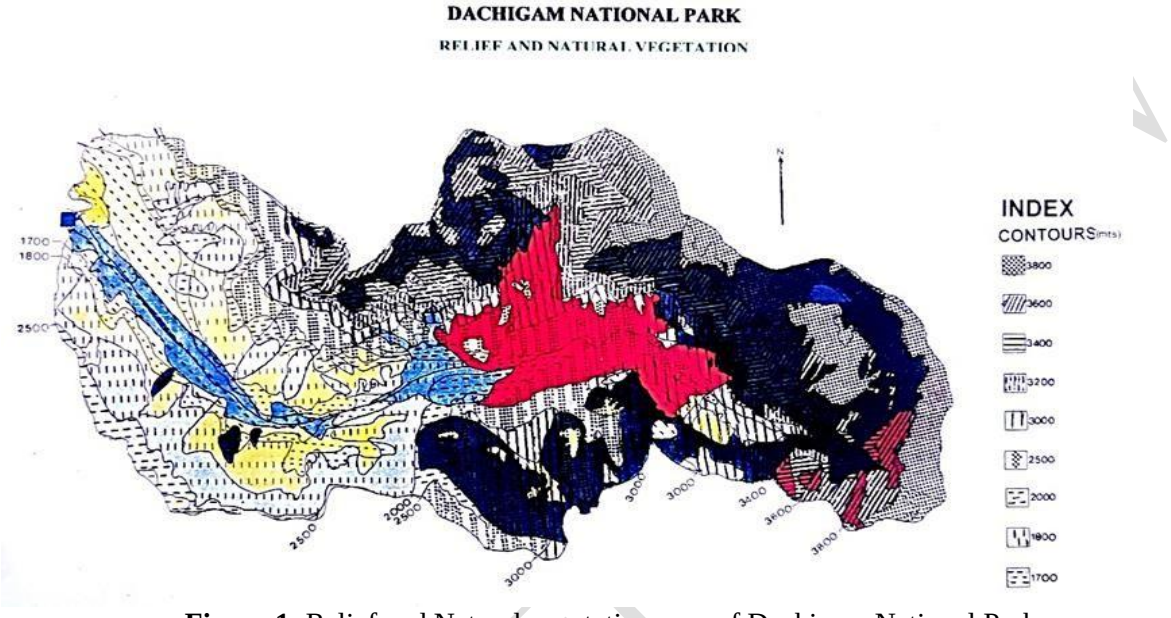

Figure 1: Relief and Natural vegetation map of Dachigam National Park

"DNP is home to approximately 17 large mammals and the last surviving population of the endangered Hangul (*Cervus elaphus hanglu*). Other large mammals include the Asiatic black bear (*Ursus thibetanus*), the common leopard (*Panthera pardus*), the Himalayan brown bear (*Ursus arctos isabellinus*), the musk deer (*Moschus chrysogaster*), the antelope (*Nemorhaedus sumatraensis*), the jackal (*Canis aureus*) and the fox (*Vulpes vulpes*), Himalayan langur (*Presbitis antilus*), Himalayan yellow marten (*Martes flavigula*), jungle cat (*Felis chaus*), leopard cat (*Felis bengalensis*), common otter (*Lutra lutra*), common mongoose (*Herpestes edwardsi*), more Long, more than 100 bird species have been reported in Marmota caudata NP" [16].

2.2 Sampling procedure

A preliminary survey was conducted in April 2016 prior to the actual data collection. This helped us to identify the boundaries, determine how many villages/localities to include and gain a general understanding of the overall situation of the DNP. Out of 46 villages, 10 villages were randomly selected and a total of 394 households were randomly selected for interviews using multistage random sampling. The villages covered were Dara (n = 45), Theed (n = 48), Sangri (n = 38), Narastan (n= 36), Pannar (n = 35), Aru (n = 32), Satoora (n = 38), Ganwan (n = 48), Nishat (n = 44) and Bathen (n = 30), at a distance of 0-5 km from the park boundary. All the 10 surveyed villages were located outside the park.

2.3 Data collection

"The primary data were collected by household survey through questionnaires, focus group discussions and direct observations" [20-21]. "The questionnaire included open and closed ended questions to obtain

information about human-wildlife conflicts and attitudes of local people towards wildlife. Before the survey, this questionnaire was pre-tested among the randomly selected people who were from different ages, genders and backgrounds in the local community of the sample villages and who were subsequently, not included in the main sample group. The pre-testing helped us to modify the questionnaire accordingly. The villages for the present study were selected based on the criteria; the distance from the park, problems related to crop damage and livestock loss, dependence of local people on the park and encroachment within the park area. This questionnaire was administered to all the sample households during the wet season (August-October) and dry season (December-February) from 2016 to 2018. Although the interview questions were written in English, but all interviews were conducted in Urdu and Kashmiri language to reduce misunderstandings due to cultural and language differences, through back-translation of the interview script" [22]. Four local people were hired and trained to implement the questionnaire. The same interview questions were asked in two different seasons with the same translator to assure accuracy. A list of wildlife species was given in the questionnaire, and respondents were required to respond with information for each of them. The average length of each interview was 40 minutes (range: 35-50 minutes). The questionnaire consisted of series of structured questions, focused on four main areas of interests: (1) demographic data, (2) HWC issues, (3) measures to control wildlife damage, and (4) local attitudes toward wildlife conservation and DNP.

2.4 Data analysis

Data were analyzed using appropriatestatistical techniques such as descriptive statistics, chi-square test and correlation analysis using SPSS 24 software (SPSS, Chicago, IL, USA). The chi-square test was used to compare respondents' perceptions of problem animals and seasonality in depredation. Livestock losses to predators and the distance of settlements from the park were analyzed using correlation analysis. The analyzed data were summarized and presented through tables and graphs.

3. RESULTS

3.1 Socio-demographic characteristics of the people

The study revealed that respondents were of various sex, age groups, occupations and educational backgrounds. Out of the 394 respondents, 67% were males and 33% females. Most (72.4%) of the respondents were aged between 27 and 50 years, whereas 10.1% were younger than 20 years and 6.5% were older than 50 years, respectively. The respondents covered a rangeof age groups, with the youngest 18 years and the oldest 78 years. There was a significant difference in the educational status among the respondents ($\chi 2 = 98.16$, df = 3, $P < 0.05$); 42.1% were illiterate, 6.3% had informal education, 27.4% had primary education, 15.5% had secondary education and only 8.7 had higher secondary level education. Most (55.4%) respondents had medium sized families with 4–6 family members. On the other hand, 34.6%, 6.3% and 3.7% of the respondents had 1–3, 7–10 and >10 family members, respectively. The main sources of livelihood among majority of the respondents (52.3%) were mixed farming including crop cultivation and livestock rearing while only 16.5% were depended on crop farming alone and remainder (31.3%) were engaged as workforces to different service sectors.

3.2 Human–wildlife conflict

A total of 09 wild animal species was recorded as problematic in the study villages (Table 1). Among

these, Hangul (*Cervus elaphus hanglu*), Himalayan Musk deer (*Moschus chrysogaster*), Serow (*Nemorhaedus sumatraensis*), Himalayan Langur, (*Semnopithecus entellus*) and Common Monkey (Macaca mulatta) were the most frequently mentioned crop-raiding species. Whereas, Asiatic Black Bear (*Ursus thibetanus*), leopard (*Panthera pardus*), Jackal (*Canis aureus*) and Red fox (*Vulpes vulpes*) are prime predators of domestic animals. Respondents differed significantly in their perceptions towards the degree of problems caused by the problematic animals. On an average, 25.52% of the respondents perceived these animals as cause of major problems, whereas 13.48% noted these animals caused only minor problems and 60.98% indicated that they caused no problem.

Table 1: Perceptions about extent of problems caused by the problematic animals in Dachigam National Park (N= 394)

S. No.	Common Name	Zoological Name	Ranking by the respondents (%)		
			Major Problem	Minor Problem	No Problem
1	Asiatic Black Bear	*Ursus thibetanus*	82.3	12.5	5.2
2	Common Leopard	*Panthera pardus*	72.5	18.6	8.9
3	Hangul	*Cervus elaphushanglu*	24.7	21.7	53.6
4	Himalayan Langur	*Semnopithecusentellus*	18.3	26.2	55.5
5	Himalayan MuskDeer	*Moschus chrysogaster*	13.4	14.2	72.4
6	Jackal	*Canis aureus*	7.0	12.7	80.3
7	Monkey	Macaca mulata	6.8	8.4	84.8
8	Red Fox	*Vulpes vulpes*	3.6	4.1	92.3
9	Serow	*Nemorhaedussumatraensis*	1.1	3.0	95.9
		Mean	**25.52**	**13.48**	**60.98**

Note: Major problem animals based on >50% of respondents assigning a species as a major problem

Table 2 listed the reasons stated by the respondents for conflicts with wild animals. There was a significant difference in the reasons mentioned as causing the most of the conflicts with wild animals (χ^2 = 97.36, df = 3, P < 0.05). Among the respondents, 44.82% reported crop damage and livestock predation, 26.25% reported threats to the humans (death and injuries), 15.65% reported only crop damage and 15.18% reported only livestock depredation. Among the respondents, 0.67% reported they did not face any conflict with wild animals. Additionally, perception of the types of problems caused by wildlife differed among villages (χ^2 = 59.98, df = 8, P < 0.05).

Table 2: Problems caused by wild animals in villages around Dachigam national park (N= 394)

S. No.	Villages	Respondents (%)					
		n	CD	LP	CD + LP	TH	NC
1	Dara	45	19.2	17.3	61.3	25.6	0.0
2	Theed	48	15.5	13.7	55.5	27.9	0.0
3	Sangri	38	17.3	15.9	32.7	22.5	0.1
4	Narastan	36	18.2	13.4	63.4	25.2	0.0
5	Pannar	35	14.7	19.1	57.9	21.7	0.0
6	Aru	32	17.2	19.7	42.2	27.7	0.2
7	Satoora	38	15.9	14.5	32.1	32.1	0.0
8	Ganwan	48	16.1	12.7	27.9	23.8	0.8
9	Nishat	44	9.6	7.3	21.5	21.3	4.3
10	Bathen	30	12.8	18.2	53.7	34.7	1.3

Mean	**15.65**	**15.18**	**44.82**	**26.25**	**0.67**

Note: CD = crop damage, LP = livestock predation, CD + LP = crop damage and livestock depredation, TH= threat to humans, NC = no conflict

3.3 Population trends of problem animals

The study revealed significant difference in the perceptions of respondents concerning changes in population size of problem animals (χ^2 = 76.11, df = 3, P < 0.05). The majority (66.9%) of respondents were of the opinion that populations of problematic animals had recently increased in the area (Figure 2). Contrarily, 14.6% of the respondents opined that the wildlife populations had remained relatively constant and 10.0% stated that numbers had decreased. Only 6.7% of the respondents were unsure of the status of wildlife populations. There was a significant difference in how the respondents thought the populations of problem animals should change (χ^2 = 34.99, df = 3, P < 0.05). Most of the respondents (55.4%) wanted populations to decrease, especially Asiatic black bear (82.3%) and Common leopard (72.5%) due to high conflict with local people. However, 16.2% of the respondents were of the opinion that populations of the animals should increase, 24.3% wanted populations to remain the same and only 4.1% of the respondents did not respond to this question. The respondents recorded that in all villages crop damage and livestock depredation had increased during the last seven years. This view did not differ significantly among the study villages (χ^2 = 20.71, df = 8, P > 0.05). Only 8.8% of respondents perceived decreasing trends of crop damage and livestock predation.

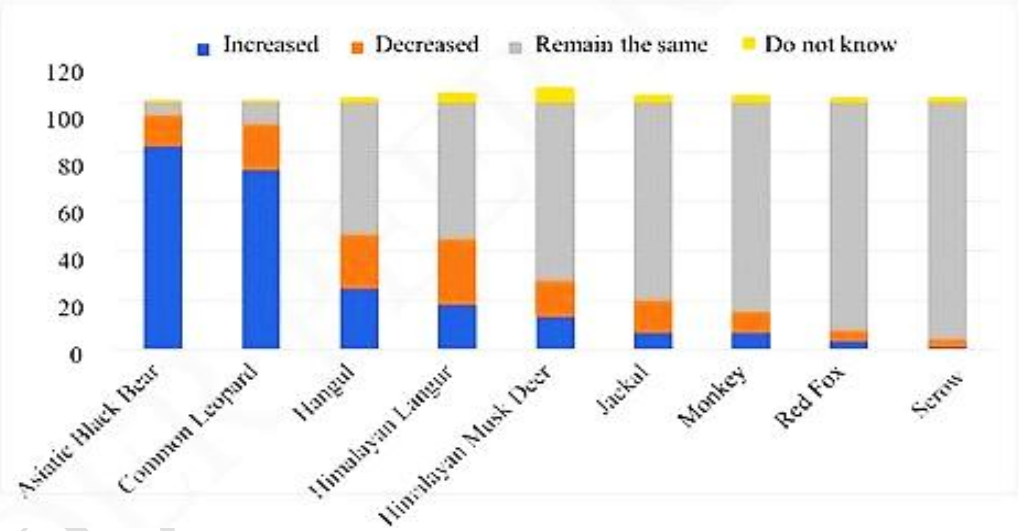

Figure 2: Peoples' opinion on the population status of problem animals (N= 394)

3.4 Proximity to villages and livestock depredation

A total of 378 domestic animals were attacked by predators, comprising 67 sheep (*Ovis aries*),39 goats (*Capra hircus*), 26 cattle, 74 chickens (*Gallus gallus domesticus*), 5 horses (*Equus caballus*) and 167 dogs (*Canis familiaris*) during the study period. There was a significant difference among villages in the total number of domestic animals killed (χ^2 = 77.25, df = 8, P < 0.05). There was a negative correlation (r = -0.45, P < 0.05) between livestock loss by the predators and the distance of settlement from the park.

3.5 Seasonality in livestock depredation

Livestock loss generally increased during the summer season as compared to winter season (Figure 2).

Of the total 378 domestic animals killed by predators, 58.4% were killed during the summer season and 41.6% during the winter season (Figure 3). There was a significant difference between seasons in the number of domestic animals killed (χ^2 = 82.79, df = 2, P < 0.05). Leopard, black bear, red fox and jackal were responsible for most domestic animal mortalities recorded. Respondents differed significantly (χ^2 = 74.29, df = 5, P < 0.05) in their views of what the appropriate response to wildlife conflict should be; 64.4% of the respondents suggested compensation from the government for the damaged crops and livestock depredation, and 14.2% wanted to minimize the number of problem animals. The adoption of various conventional methods was proposed by others (12.3%) in order to reduce the harm that wildlife causes. Only 4.2% of respondents recommended killing troublesome animals in their neighborhood. 2.8% of respondents chose not to comment on the strategies, while only 2.1% suggested moving troublesome animals to different locations.

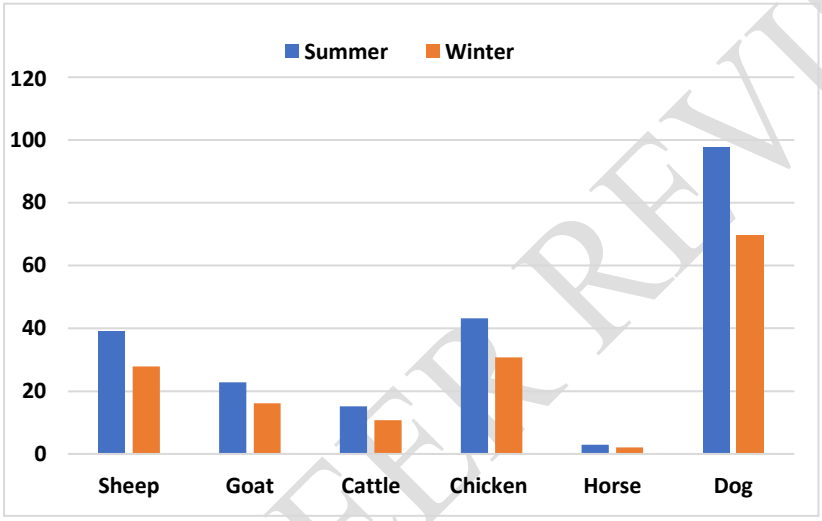

Figure 3: Seasonality of livestock depredation around DNP (N=394)

3.6 Measures to control damage caused by wildlife

Different measures were adopted by villagers to minimize wildlife induced damages. Major techniques deployed were guarding by humans, keeping watch dogs, erecting scare crows, lighting fires and drum beating/crackers. Most of the respondents reported guarding (85.62%) as an effective method in all villages followed by keeping watch dogs (62.81%), scare crows (27.27%) and drum beating/crackers (16.3%) (Table 3).

Table 3: Traditional techniques used by villagers to protect crops and livestock around DNP (N=394)

	Villages	Respondents (%)					
S. No		n	Guarding by humans	Keeping watch dogs	Scare crows	Lighting fires	Drum beating/crackers
01	Dara	45	85.2	87.4	39.7	30.1	9.7
02	Theed	48	94.5	44.8	34.8	18.8	13.8
03	Sangri	38	81.4	42.6	33.0	15.7	12.3
04	Narastan	36	85.8	64.4	43.4	31.9	10.0
05	Pannar	35	82.6	59.7	39.6	27.6	15.0
06	Aru	32	92.5	62.4	41.9	29.1	17.9
07	Satoora	38	88.7	68.5	48.7	26.5	16.5
08	Ganwan	48	81.0	71.8	48.3	32.8	22.8
09	Nishat	44	79.7	58.3	40.5	28.5	21.7
10	Bathen	30	84.8	68.2	43.7	31.7	23.3

	Mean	**85.62**	**62.81**	**41.36**	**27.27**	**16.3**

3.7 Attitude of local people towards wildlife conservation

There was significant difference in the attitudes of respondents towards the conservation of wildlife and area ($\chi 2 = 31.82$, df = 2, $P < 0.05$); 63.7%, 32.2% and 4.1% had positive or negative attitudes or no opinion, respectively, towards the conservation of wildlife. The majority of respondents (44.7%) who were in favor of conservation were younger and much educated, claimed to have benefited from the park's presence, and also thought it was critical to preserve the environment and forests for future generations. Among those with a negative attitude, there was significant difference in their opinion towards the conservation area ($\chi 2 = 52.19$, df = 4, $P < 0.05$); 35.6% reasoned that they were not allowed to benefit from wild resources for their own purposes, 26.2% were due to predator attacks on their livestock, 22.3% due to lossof their farmland with crops and 15.9% gave no answer to the question.

4. DISCUSSION

4.1 Human–wildlife conflict

"In the villages around DNP, a wide range of wild animals caused problems for local people. Hangul (*Cervus elaphus hanglu*), Himalayan Musk deer (*Moschus chrysogaster*), Serow (*Nemorhaedus sumatraensis*), Himalayan Langur, (*Semnopithecus entellus*), Common Monkey (*Macaca mulatta*), Jackal (*Canis aureus*), Red fox (*Vulpes vulpes*) and especially Asiatic Black Bear (*Ursus thibetanus*) and leopard (*Panthera pardus*), were the animals representing the greatest threats to humans and responsible for the majority of human–wildlife conflicts. According to the respondents, the wildlife population had increased after establishment of the National Park. This might be related to better management activities currently being implemented and the suitable habitat quality maintained due to reduced anthropogenic disturbances in the park. DNP was formerly a controlled game hunting reserve established by Maharaja of Kashmir and later elevated to the status of National Park especially for the conservation of Kashmir Stag or Hangul. Park managers and staff were employed for effective and regular patrolling of the park after the establishment of the area as a National Park. Anthropogenic factors that had previously impacted on the park ecosystem probably decreased in recent years due to better conservation efforts. Increase in wildlife populations, particularly of large herbivores and carnivores, as a result of conservation activities have also been reported to result in increased human–wildlife conflicts" [23]. The study [24] noted that "season, variety and characteristics of crops, food availability, distance from the park, and farm protection methods will have impacts on crop raiding and depredation of domestic animals by wildlife. No doubt, livestock has a vital role to play in the food security, agricultural support and economy of local people. It is an important source of food and nutrition, income, savings and socioeconomic status among the rural setup". "Therefore, wild animal attacks on livestock are a major problem for rural communities. Human populace adjacent to the park boundary and farms around the park might be one of the major reasons that wild animals shift their diet to livestock, which are easier to capture and have limited possibilities of escape" [25-26]. "Local people occasionally react with retaliation killings of those predators. Studies in Kenya have also shown that predator tolerance by local communities depends on the extent of predation on their livestock" [27].

The global climate change has also affected in temperate environment of Kashmir as well in a way that

seasonal change in climatic conditions lead to change in structure and quality of habitat parameters rendering the wild animals to seek other alternative food sources around the DNP. Thus, overall climatic change in environment has also contributed to HWC to large extent.

4.2 Proximity to villages from the park and human–wildlife conflict

"In many parts of Africa, the conflict between local people and wildlife is one of the most serious problems where villagers are located adjacent to nature reserves" [28]. "The present study also showed that living in close proximity to protected areas pose damage such as loss of crops and livestock to wildlife, injury and death, and time and resources spent to guard livestock, in contrast to those households living farther away from protected areas" [29-30]. Human settlements and agricultural fields within close proximity to the park boundaries were in the high-risk zone of the damages from wildlife. High predation rates (49.2%) were found in villages including Dara, Bathen, Narastan, and Aru. These communities are more impacted by predators and crop loss than the other villages because they are closer to the park. Each of the ten villages in the current study indicated problems with livestock theft, human safety, and conflicts with wildlife over crops.

4.3 Predation and season

"Predation of livestock peaked during the summer season in the present study. Similar findings were recorded around Waza National Park in Cameroon" [31] and Tsavo National Park in Kenya [32]. "This might be related to the variation in the dispersal of wild prey with the season. In addition to a good habitat cover for protection, the prey animals get their food nearby and limit their movement, which minimizes exposure to predators during the summer season. As the summer progresses and water is more readily available, prey populations might disperse widely in their habitat. As a result, livestock in villages around the park and herders become an alternate source of food for predators. However, during the winter season, as vegetation cover gets sparse, wild herbivores tend to concentrate near water sources in the protected area, and therefore it becomes easier for predators to prey on them. While during snowfall the herders from villages come down from the alpine meadows and feed their domestic animals at home which minimizes their exposure to the predators. Livestock predation follows seasonal patterns" [33].

4.4 Measures to control damages caused by wildlife

The local people of the villages around DNP adopted various traditional methods to protect their crops and livestock from problematic animals. They used the measures like guarding by humans, keeping watch dogs, scare crows, lighting fires and drum beating/crackers for deterring crop-raiding wild animals. The respondents came up with varying views regarding the degree of effectiveness of wildlife damage control measures. They perceived that guarding when used with other methods is very effective and low cost but often proves tedious and time-consuming process. Therefore, none of these methods provide complete protection until supplementedby other measures. However, for larger animals, guarding along with drum beating was adopted to control crop losses and livestock depredation. Manual guarding [34] was reported as a most widely used crop protection measure.

4.5 Attitude of local people towards wildlife conservation

"The attitudes of local communities about wildlife conservation are vital to improve protected area–

people relationships if protected areas are to achieve their goals" [31]. "There are multitude of factors that influences the conservation attitudes of local people positively or negatively. The magnitude of the effects of each factor is determined by the historical, political, ecological, socio-cultural and economic conditions and this may call for different management interventions" [35-37]. In the present study, increasing demand for the use of park resources, wildlife-imposed constraints and socio-demographic are factors considered probably responsible for shaping attitudes of local people.

Despite the difficulties and issues they faced, the majority of respondents in the current study had a good attitude toward animal conservation, according to the study's findings. Because of the possibility for tourism revenue and resource utilization when necessary, they valued the protected regions. Younger and better educated respondents expressed appreciation for protected places. The study [38] also noted that "educated and young people with access to information and awareness mostly supported presence of the park and its wildlife. Education is a major factor to get better employment opportunities and, therefore, a means for alternative livelihood". The findings agree with the findings [39], who reported that "as the level of education increases, the level of negative attitude towards wildlife conservation activities decreases. As a factor, age had a significant influence on the attitude of the local people towards conservation. Youngsters showed more positive attitudes for conservation than middle-aged and elders. Similar results were reported for older residents in five protected areas in Tanzania, who supported abolition of protected areas" [29]. "Most of the respondents depended mainly on livestock and crop cultivation as sources of household income. People with more cattle are more likely to interact with the protected area through restrictive, prohibitive and punitive laws". A study [40] also noted that "negative attitudes of local people towards large carnivores were correlated with the number of livestock one holds. The least percentage of respondents had negative attitudes in spite of the frequent conflict incidents with wild animals and lack of compensation for damage by wild animals. People are more likely to appreciate protected areas if benefits gained from them offset the associated costs" [41].

"Most of the respondents around DNP clearly believed that the park's future is depended upon good relationships between park staff and local communities. Toward this end, many locals felt that community relations could be improved allowing access to traditional resources such as pasture, firewood, medicinal herbs and key grazing areas during summer. Respondents believe that conflicts with park staff due to strict rules on park resources use and access might generate negative attitudes among local people towards wildlife conservation. Lack of awareness towards conservation issues and lack of involvement of the local community in the decision-making processes might also be important determinants of negative attitudes toward protected areas" [42-43]. Therefore, understanding local people's attitudes can generate useful information that can be incorporated into decision-making processes, improve local people's attitudes and change behaviors, thereby improving relationships between local people and park staff.

5. CONCLUSION

The Human-wildlife conflicts have adverse impacts on wildlife and humans equally. There was strong conflict of both the carnivores and herbivores with local communities in and around Dachigam National Park (DNP). These wild animals potentially caused economic loss among the local people especially in the fringe

villages of the DNP. The crop damage, livestock depredation, and threat to humans were the main reasons for the cause of HWC. The people were of the opinion that populations of problematic animals had recently increased which may reduce the long-term species conservation support from the community. A negative correlation existed between livestock loss by the predators and the distance of settlement from the park. The chief measures to control damage caused by wildlife techniques were guarding by humans, keeping watch dogs, erecting scare crows, lighting fires and drum beating/crackers. In all, the people have strong positive attitudes towards conservation of wildlife in DNP. Therefore, there is urgent needs to take important measures that can prevent or minimize the risk of conflicts existing between people and animals for the peaceful coexistence of humans and wildlife in the study area. To ensure both wildlife conservation and human wellbeing the policy makers should launch awareness campaign on the importance of wildlife, keep watch on the population trends of animals to pace with future and create job opportunities to secure livelihoods to mitigate the local pressure on wildlife and the national park.

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