ASSESSING THE STATUS OF HUMAN-WILD ANIMALS CONFLICT: THE CASE OF ALTASH NATIONAL PARK, NORTHWEST ETHIOPIA

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ABSTRACT

The rationale of this research was to explore the status and type of human- wild Animals conflicts in Altash National Park of Ethiopia. Five sample villages were chosen to gather data on human-wild Animals conflict namely; Marwuha, Diza-Gumuz, Gelego, Bermel, and Bambaho. Data were gatheredusing structured interviews, survey questionnaires, literature reviews.The data was analyzed using statistical package for social scientists software. Theoutcomesof the researchelucidated that wild animal types most involved in the conflicts werebush pig, warthog, vervet monkey, porcupine, Baboon, Giant mole rat,and African civet. This research further indicated that livestock murders, crop reparation, human disturbance and property obliteration were some of the mostly reported damages. Wild Animals were involvedmostly in crop damage. Over 75% of the population of Quara district was affected by livestock murders. As a result, awareness campaign is vital, consistent land use plans should beemphasized to determine where grow crops and leave livestock for grazing.

Keywords: Human-Wild animals Conflict, depredation

INTRODUCTION

Conflicts between Wild Animals and humans have been documented since people first inhabited colonial America (Garshelis, 1989). Human-Wild Animals Conflict is fast becoming a serious threat to the survival of many endangered species in the world. As Siex (1999) demonstrates, in Africa, human population growth has lead to encroachment into Wild Animals habitats, constriction ofspecies into marginal habitat patches and direct competition with local communities. Wild Animals-human conflicts are often clustered in space and time and can cause major economic losses to a few stakeholders in addition to localized Wild Animals population declines (Woodroffe et al. 2005b). In Ethiopia, in many areas withplentifulWild Animals, conflict is intensified by land use fragmentation and the development of small-scale farming. Human-Wild Animals conflict is more intense in the tropics and in developing countries where livestock holdings and agriculture are an important part of rural people's livelihoods and incomes. In addition, competition between local communities and wild animals, for the use of natural resources, is particularly intense and direct and resident human populations are very vulnerable. Ogada (2003) pointed out that human wild Animals conflict has far reaching environmental impacts. Species most exposed to conflict are also shown to be more prone to extinction. These can be either accidental, such as road traffic and railway accidents, capture insnares set for other species or from falling into farm wells, or intentional, caused by retaliatory shooting, poison or capture. Such human-induced mortality affects not only the population viability of some of the most endangered species, but also has broader environmental impacts on ecosystem equilibrium and biodiversity preservation. Hoare (1992) also identified that human-wild animal conflicts undermine human welfare, health and safety, and have economic and social costs. Humans can be economically affected through destruction and damage to property and infrastructure, livestock depredation, transmission of domestic animal diseases, such as foot and mouth. Negative social impacts include missed school and work, additional labour costs, loss of sleep, fear, restriction of travel or loss of pests.These broad environmental, human health and safety, economic and social impacts suggest that governments, wild animals managers, scientists andlocal communities need torecognize the problem and adopt measures to resolve it in the interest of human and environmental well being.

However, for wild animals species living in low altitudes, like the case in Quara district of Altash National Park, very little is known about how conflicts vary spatiotemporally. Consequently, a better sympathetic of the spatial and temporal trends of conflicts will allow more efficient allocation of resources and help in developing strategies to minimize and mitigate conflicts. Several studies from countries all over the world demonstrate the severity of the conflict and suggest that greater in depth analysis of the conflict is needed in order to avoid overlooking the problem and undermining the conservation of threatened and potentially endangered species.This researchgives insight into human-wild animal conflict, based upon the data collected in and around Altash National Park of Quara district.

The over objective of the research was to assess the current magnitude of human-wild animals conflict and to identify alternative mechanism of managing Wild Animals-human conflict in Altash National Park.

METHODS AND MATERIALS

Description of the Study area

Alatish is a newly established national park that is located in Quara district of Northern Gondar Zone. Geographically, it lies between $11^0 47'N/12^0 31'E$. It was established in 2006 and derives its name from the Alatish River that has its source in the park and flows in a westerly direction to the Sudan. The park shares its boundaries in the south with Benishangul - Gumuz Regional State, in the west with the Sudan, in the east with Bembaho Kebele, in the northeast with Gelego village and in the north with Mahdid village. Landscape at Alatish is flat with elevation ranging from 520 to 920 masl. It covers an area of 2,666 km^2 composed of lowland woodlands. The dominant soil types of Alatish are sand and gravel. Agro-ecologically, the park is classified as dry wet Kolla with annual rainfall ranging between 500-1500 mm. The boundaries of the park were defined in 1998 but were redefined with the participation of local communities in 2004. The vegetation of the park is classified as Combretum-Terminalia broad-leaved deciduous woodland.

There are 26 larger mammals (excluding rodents) and 143 recorded bird species. It forms an ecotone between the high mountains of the Simien and the Sahel zone in the Sudan. As a result, the biological attributes of the park are believed to be diverse and rich. The park is believed to conserve a major proportion of Sahelian and Sudan-Guinea biome birds and other organisms. It serves as a migratory route for Elephants, which traverse from Dinder National Park in the Sudan. As a result, its function is vital in the formation of a trans-boundary park between Ethiopia and neighboring Sudan. The various rivers that drain into Sudan from Alatish are important tributaries of the Nile.A major problem is associated with extensive resettlement programmes around the park by Government in Western Ethiopia. Large tracts of land are being given for resettlement purposes and agricultural development. Increasing number of people in the area will inevitably use up natural resources and are in conflict with the park's wild animals.

Figure 1: Map of the study area with location of the study Park and the surrounding villages

Before the actual data collection phase, extensive discussions with the key informants was undertaken to locate the sites with the highest incidences of human-wild Animals conflict in the study area. Twenty six randomly selected village representative farmers were taken to test reliability of the questionnaire's content, and to confirm whether they easily understood it. Then the questionnaire was modified based on the pre-test result.

Household heads were surveyed using Semi-structured questionnaire. They were invited to take part in the survey through park conservation agent. Both open and close ended questions were employed to gather relevant information pertaining to the study theme.

The questionnaire was designed in English but the interviews were conducted in the local language (Amharic). The questionnaire was designed mainly to check whether there is a human-Wild Animals conflict or not in and around the Alatish National Park. Focus Group Discussions and interview with Park management head had been conducted to substantiate survey results. This approach mainly collected primary data.Secondary data on the other hand was retrieved from previous studies carried out on human-wildlife conflicts at global, national and locallevels. Such information was obtained from published reports such as journals, thesis and relevant documentation and the internet.

The survey was conducted in 5 purposely selected villages. Villages were selected based on the information gathered from the pilot survey and their relative location to the park area. All the five villages share boarder and basing their means of livelihoods within the park. Accordingly, Marwuha, Diza-Gumuz, Gelego, Bermel, and Bambaho kebeles were selected.A total of 140 households were selected following (Bartlett et al., 2001). The study was carried out in five Buffer Zone areas of Alatish National Park.

No.	Sampled villages	Sample size	Total households
1.	Marwuha	23	468
2.	Diza-Gumuz	18	243
3.	Gelego	34	657
4.	Bermel	27	312
5.	Bambaho	38	708
	Total	140	1456

Finally, various techniques were used for the analyses and presentation of data. All quantitative data were analyzed using the statistical software tool SPSS (Statistical Package for Social Science) version 20.0. Before entering the data into Epi-data 3.1 software, each questionnaire was given an identity number. Every question and the responses were coded. Finally the data was exported to SPSS for analysis. Before analyzing anomalies, typing errors and missing information was corrected by comparing the original data protocol with the frequency output table of SPSS. Data was analyzed using descriptive statistics (mean, standard deviation, percentage, frequency and range). Logistic regression model was used to determine which factors might be important in determining the attitudes of respondents towards human-Wild Animals conflict. Qualitative data from questionnaires as well as interviews were analyzed thematically. Results were presented in bar diagrams, frequency tables and pie charts.

RESULTS

Demographic Characteristics

The age of respondents ranged from 34 to 76 years. About 24.7% of the respondents were in the age bracket of 20–35 years whereas 57.9% of the respondents were between 36 - 45 years. The rest 17.4% of the respondents were above 45 years. It was indicated that 79.4% were male and 20.6% of the respondents were female.

Association between distance from the park and intensity of conflicts:

More than half (57.3%, n=140) of respondents reported that events of wild animals attacking people occur mostly inside the national parks/reserves, while 13% said it happens more in buffer zones, and the rest of respondents (25.3%) saidthat confrontation happens in transit to and from the park and buffer zone border. Only 4.4% had the view that Wild Animals attack people more outside the buffer zones. The human casualty data from the national park of Altash elucidated that out of the twelve cases reported, tenhappened inside the National Park.

Most of the respondents (52.6%) live more than 4km away from the park boundary, whereas 31.2% of the respondents live between 1 and 4km away from the park boundary. 16.2% of the respondents live very close to the park boundary (<1km) as elucidated from the figure below.
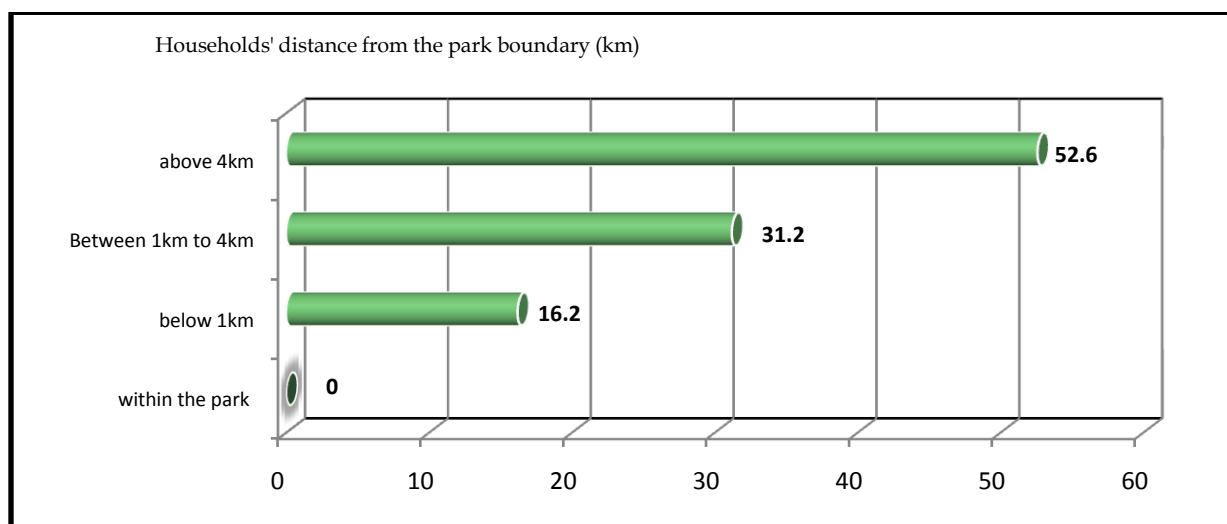
Figure 3.1 Distance of residential areas from the park, (n = 140)

Table 3.1 Number of livestock lost in the last three years and anticipated distance of the villages from the Park (N= No. of sampled households)

Villages' distance from the Park (km)	N	Kind of domestic animals attacked					Total loss
		Cattle	Sheep	Goats	Chickens	Donkeys	
Bambaho (0-3)	38	14	23	29	56	23	145
Marwuha (1-3)	23	18	14	24	41	19	116
Gelego (2-4)	34	15	9	17	38	17	96
Diza-Gumuz (1-6)	18	6	7	10	32	14	69
Bermel (2-6)	27	3	2	5	29	10	49
Total		56	55	85	196	83	475

A total of 475 predator attacks were reported in the last 3 years (Table 3.6). The number of predation cases was different between the villages and the type of livestock around the Park. There was a significant difference among villages in the total number of domestic animals killed ($\chi^2 = 74.8$, df = 6, P < 0.05). Livestock predation intensity increased around the National Park relative to the distance. A total of 56 cattle, 55 sheep, 85 goats, 196 chickens and 83donkeys were killed by predators. Distance to the park and the frequency of domestic animals loss by predators were positively correlated (r = 0.62) in respect to the number of sampled households.
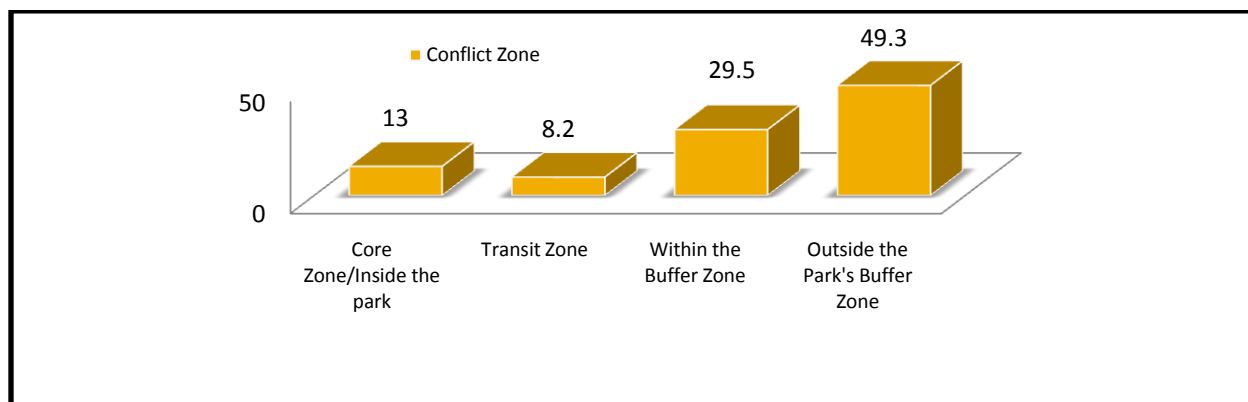
Figure 3.2 Human-Wild Animals conflict zone, n=140

The farming households in the study area were characterized by subsistence life; each household produced crops such as, Maize, Seasam, and Sorghum and raise livestock including Cattle, Sheep, Goats, Chicken and Donkeys. To sustain this subsistence farming in general, each household hold more than six cows and threeoxenfor plowing, more than ten goats and sheep, ten to twenty chickens and more than three donkeys. The average cattle, sheep, goats, chicken, and donkey holding of sampled households were6.7, 8.9, 15, 12.4 and 3.2 respectively.

Extent of Damage and Trends in population

Table 3.2 Households perceptions about the degree of damages inflicted, and changes in population of the predators in Altash National Park, Quara district, Ethiopia during the last three years (n = 140).

Type of wild animals	Scientific Names	Extent of damage	Threats to				Trends in population over last 3 years
			Livestock	**Humans**	**Chickens**	**Crops**	
			78.4	12.4	0.0	0.0	
Lion	Panethera Leo	High					Increasing
Leopard	Panther Pardus	Medium	62.8	1.8	0.0	0.0	Decreasing
Greater Kudu	Tragelaphus Strepsiceros	Small	14.2	0.8	0.0	8.5	Highly decreasing
Spotted Hyena	Crocota	Small	34.6	24.8	0.0	0.0	Increasing a little
Wartog	Phacochoerus Aethiopicus	Small	2.8	0.0	0.0	11.8	Highly decreasing
Zorilla	Lctonyx Striatus	Small	1.6	0.0	0.0	0.0	Highly decreasing
Baboon Anubis	Papio Anubis	High	51.7	1.4	0.0	45.9	Increasing a little
Porcupine	Hystrix Cristata	High	3.1	0.0	0.0	23.1	Decreasing
Buffalo	Synncerus caffer	High	27.4	0.0	0.0	2.6	Highly decreasing
African Elephant	Loxodonya africane	Small	38.6	0.0	0.0	6.7	Decreasing
Egyption Mangoose	Herpestes sanguincus	High	0.0	0.0	79.8	8.4	Increasing
Average			**26.3**	**3.4**	**13.5**	**9.8**	

A total of 12 kinds of wild animals were identified as predators of domestic animals (Goats, sheep, cattle, and donkeys, chicken) surrounding the Park. These wild animals caused threats on livestock, crops and humans. The threats they inflicted to crops, livestock and human safety are given in Table 3.2. Of these wild animals, Spotted Hyena, Anubis Baboon, Buffalo, Lion and Leopard were considered as risky wild animals for livestock predation and human safety, while Greater Kudu and African Elephant inflicted limited problem. Farmers in and around

Altash National Park have identified wild animals that threaten their crop production. They reported that, in order of importance, Baboon Anubis (Papio Anubis), Porcupines (Hystrix cristata), warthogs (Phacochoerus) and Egyption Mangoose (Herpestes Sanguincus) were the major wild animals that frequently damage their crops. The results from the focus group discussions also suggested that nearly everyone in the study area experienced wildlife damages to their livestock and crops at least once in the last 3 years. This study clearly showed that local people perceive human-wild animal conflict as a problematic issue. Additionally, households noted that birds also were significant threats to their crops. With regard to rating the extent of damage to their crops, about 51% of the households suffered a high severity of crop damage; 26% a moderately severity of damage, 11% of which reported small damage, and 12% reported no damage.

There was a significant difference in the mean percentage of threat scores (χ^2=35.24, df =5, P<0.05). As per of wild animals population trends in the national park of Altash, the respondents believed that some of them had increased and some others had decreased over the recent 3 years (Table 3.2). About 48.3% of the respondents remarked that Lion, and Leopard populations have decreased in their respective areas. The mean score of respondents' opinions towards the population status of wild animals was different (χ^2 =23.69, df=4, P<0.05).

One respondent explained his view on the current situation:
"Previously, attacks on people and livestock were infrequent. Livestock and people could move more freely, but now, the animals are enjoying the benefits of us. This change coincided with the change in regulations and when Ethiopia started to rely more on wildlife and tourism and less on the copper industry."
A participant from FGD also stated:
"My first priority is my crops and then my safety, crops are more important than the risks I must take to protect them."

About (35.3%) of all respondents expressed "no benefits from these animals, only problems" with the remaining proportion (64.7%) of respondents acknowledging both positive and negative impacts. No respondents reported only positive impacts of wildlife. The distribution of respondents perceiving no positive impacts and at least one positive impact from wildlife varied significantly among villages (χ^2=9.08, df= 2.6, p= 0.012). More residents of Bermel and Marwuha indicated positive and negative impacts of wild animals, while more residents of Gelego, Diza-Gumuz and Bambaho indicated only negative impacts of wild animals.

Institutional conflicts were also raised during Focus Group Discussions: "People are also giving problems to other people such as those that are meant to represent us in the village expose us while taking protection measures instead of advising." Bermel village FGD participant

(a)   (b)

Altash National Park view close to Bermel and Gelego villages respectively

Perception of local communities on Wild Animals conservation

The respondents demonstrated positive thinking in wild animals' conservation. About 65% (n=140) liked wild animalswhile 35% did not like them and wanted to wipe out them. It means they were positive towards wild animals'conservation. A question had been asked to identify why you liked wild animals. The results showed that becausewild animalsbring revenue and jobs through ecotourism (38.4%), they have ecological value and their presence indicate a healthy ecosystem (26.2%), they are endangered and their number is decreasing (21.5%), they are beautiful and charismatic (11.6%) and they have religious value inGumuz culture (2.3%). Out of 49 respondents who didn't like wild animals, the majority ofthem (83%) attributed to wild animalsattacks against livestock, hence they don't like them. The rest saidwild animalsare threats to human safety and they, too, don't like them. Perception on wild animalsconservation and education were significantly associated (χ^2=36.36, df =3, p <0.001). More people with high education supported the conservation of wild animals. Similarly, perception and gender showed a significant association (χ^2 = 12.27, df = 1, p <0.001). Male respondents were more positive than female to conserve the wild animals. Distance from the park was negatively correlated (r = -0.2, P < 0.001) with knowledge about wild animal of the area. There was a difference in conservation attitude towards wildlife among the villages (χ^2 = 14.3, df = 7, P < 0.05).
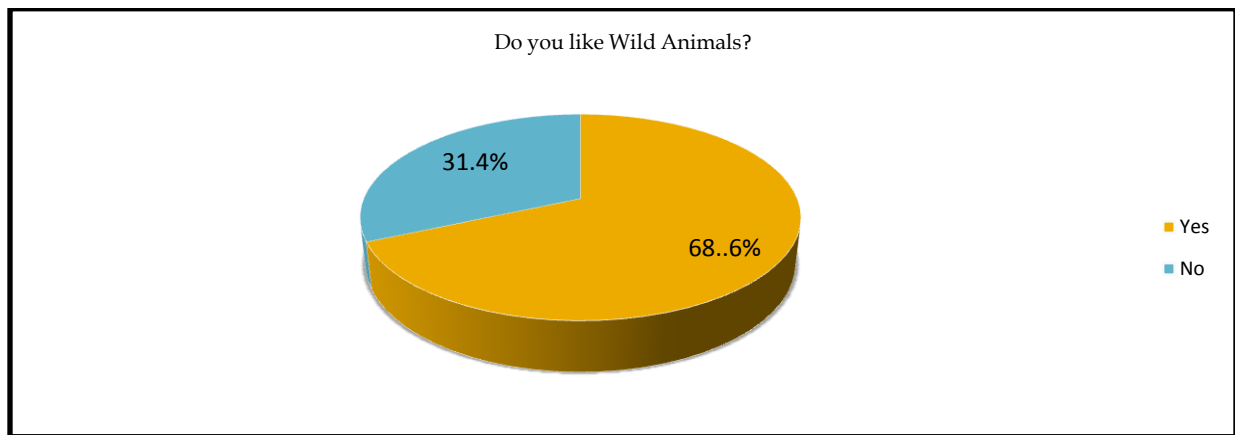

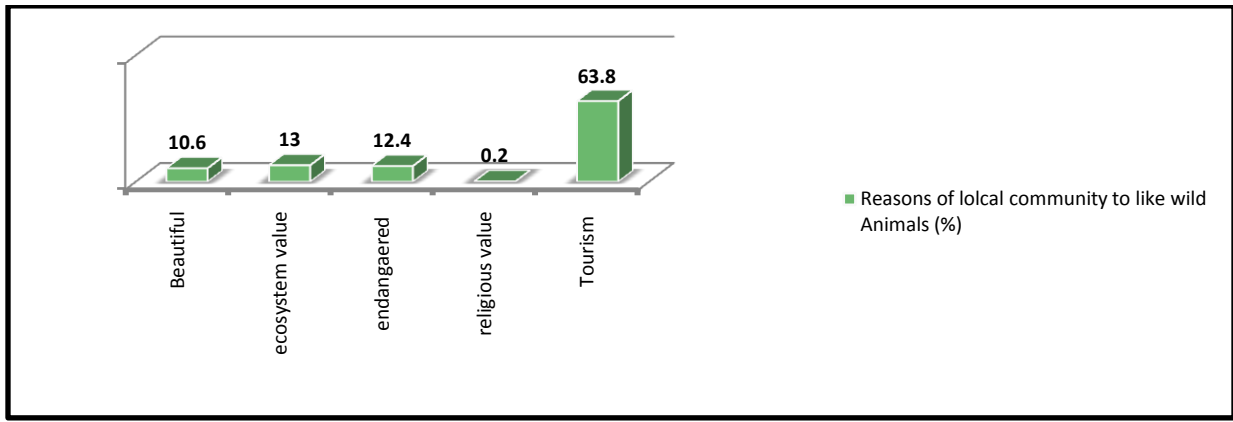Figure 3.3 Perception of local people on Wild Animals/ to like or dislike, n=140

Figure 3.4 Reasons of local community to like Wild Animals, n=96

Figure 4.3 Perception of local community on why they don't like Wild Animals, n=44

Patience to loss by Wild Animals

To examine the tolerance level of local residents in the effort to conserve wild animals, respondents were asked three hypothetical questions as to whether they agreed, disagreed or were indifferent in supporting wild animals conservation if one of their family members had been killed or injured by a wild animal attack or if they had lost livestock or crops through wild animals predation. More than half of the respondents (76%,) were not in agreement with supporting wild animals conservation only if they had lost a family member in a wild animals attack. Similarly, 24%of respondents were found to disagree in supporting wild animals' conservation when their family member had been injured by a wild animal attack

Overall, they were found to be positive in supporting wild animals' conservation (72.1 %,) if they had lost only livestock or crops.

Major reasons for getting wild animals killed?

Respondents were asked questions of why wild animalsare being killed to understand the causes of such. The result showed that, they were killed for the trade of body parts (52.5%), followed by revenge killing (38.3%) because wild animalskill livestock, and last but not the least, is that they are killed to reduce the potential risk of attack on humans and their livestock (9.2%). In short, the result revealed that illegal poaching are the main cause of wild animalspopulation depopulation in the park.

Knowledge of local people on wild animals'conduct

This study found that local people had quite a good understanding on certain aspects of wildanimals' ecology. Above 61% (n=140) of respondents answered that due to the depleted prey base in their habitat, they come out of the forest in search of food. Above one quarter (26.20%) said that wild animals prefer domestic livestock over wild prey as they are an easier kill. Above six percent of the respondents expressed that wild animals habitat is too dense for predators so they come out of forest. Five percent are ignorant about why wild animals come out of forest. Regarding the time when wild animals come out, almost all people (94.32%, n=140) indicated that they come out at night time.

DISCUSSION

More than half (57.3%, n=140) of respondents reported that events of wild animals attacking people, livestock, and crops occur mostly inside the national parks/reserves. Village distance from the Park and damage caused by wild animals were important factors to determine livestock loss by predators. It means that as one go far away from the park boundary, intensity of livestock predation decreased except chicken. This finding was observed in studies conducted by (Holmern et al., 2007). In the present study, distance to the Park was strongly correlated with predation intensity. For instance, in villages such as Bambaho, Gelego and Diza-Gumuz, there was high predation intensity. These villages are very close to Altash national Park than the other villages and thus influenced more by wild animals. A total of 475 predator attacks were reported in the last 3 years.

Spotted Hyena, Anubis Baboon, Buffalo, Lion and Leopard were considered as risky wild animals for livestock predation and human safety, while Greater Kudu and African Elephant inflicted limited problem. Farmers in and around Altash National Park have identified wild animals that threaten their crop production. They reported that, in order of importance, Baboon Anubis (Papio Anubis), Porcupines (Hystrix cristata), warthogs (Phacochoerus) and Egyption Mangoose (Herpestes Sanguincus) were the major wild animals that frequently damage their crops.

From this study it was found that 47.3% of the respondents reported the loss of crops grown close to the park boundary. This finding is consistent with a study conducted by (Mesele Yihune, et al., 1994) in Semien mountains national park of Ethiopia. The study confirms that Gelada baboons frequently caused damage oncrops. The respondents distinguished that the effect of wild animals has been increasing recently. As the number of wild animal increases around the Park,conflict may arise. Most respondents living in around the park boundary liked most kinds of wild animals.Similar results had been fabricated by Harcourt et al (1986) found that public attitude towards wild animal conservation in developing countries is positive.

We found that almost all of the farmers interviewed in the study area perceived that the degree to which wild animals are affecting their land has been increasing. The identified problematic animals included: crop raiders (monkeys, porcupines, baboons, antelopes, warthogs, wild pigs, mice, and birds) and predators (honey badgers, hyenas, monkeys, foxes, pythons, and eagles).

CONCLUSION AND RECOMMENDATIONS

This study found that the perceived socio-economic impacts of this conflict were complex and multidimensional. We infer that human wild animals conflict are a potential barrier to effective, natural resource management and livelihood improvement efforts being undertaken in the area. The perceived extent of damage to livestock, crops

and human safety were found to be decisive. So long as farmers perceive the effect to be significant, we propose the local government and development actors give more attention to further investigate the problems and mitigate the effects of these conflicts. Some of the possible conflict resolution strategies can include leaving sufficient conservation areas for wild animals, enhanced buffer zone for wild animals to let them move freely to assure their living within safe ecosystem.

ACKNOWLEDGEMENTS

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