**WOLKITE UNIVERSITY**
**COLLEGE OF AGRICULTURE AND NATURAL RESOURCE**
**DEPARTMENT OF WILDLIFE AND ECOTOURISM MANAGEMENT**

# HUMAN- WILDLIFE CONFLICT IN AND AROUND GUASSA COMMUNITY CONSERVATION AREA, NORTH SHEWA, ETHIOPIA

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SENIOR RESEARCH PROJECT

SUBMITTED TO DEPARTMENT OF WILDLIFE AND ECOTOURISM MANAGT, COLLEGE OF AGRICULTURE AND NATURAL RESOURCE, WOLKITE UNIVERSITY FOR THE PARTIAL FULFILLMENT THE COMPLETION OF BSC BACHELOR DEGREE WILDLIFE AND ECOTOURISM MANAGEMENT

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## DICLARATION

I hereby declare that this senior research project entitled “Human-wildlife conflict in and around Menz-Guassa community conservation area, North Shewa, Amhara, Ethiopia. Submitted to the department of Wildlife and Ecotourism management; Wolkite university, collage of agriculture and natural resources, in partial fulfillment of the requirements for the BSc degree in Wildlife and Ecotourism management, is a recorded of original work done by me under the supervision of Mr. Kassahun Abie (assistant professor).

Name__________________________

Place___________________________

Date of submission_______________ Signature_________________________

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## ACRONYMES AND ABRIEVATION

| | |
|---|---|
| CSA | Central statistics agency |
| HWC | Human wildlife conflict |
| MGCCA | Menz- Guassa community conservation area |
| WWF | World wide fund |
| MASL | Meter above sea level |
| FDG | Focal group discussion |

## ABSTRACT

*This study was aimed to investigate the extent of human-wildlife conflict in Guassa community conservation area, Amhara region, north Shewa zone, Ethiopia in 2018/19. The research used descriptive method and data were collected using questionnaires, interviews, focus group discussion and filed observation. . Data were analyzed using descriptive statistics, tables, charts, picture and percentage. The target population of the study was 2080 households from three rural villages closer to the conservation area. This study used a sample size of 95 respondents. Crop damage and human disruption are the major difficulty in the area. Agricultural expansion (84.21%), livestock grazing (42.1%), deforestation, fire wood collection (26.31%) and habitat disturbance (10.5%) was a cause for human- wildlife conflict. Gelada baboon, rodents, rock hyrax, rabbit and klipspringer were reported to be among the destructive wild animals' in terms of crop loss. Common Jackal, Leopard, Spotted Hyena, and sometimes Ethiopian wolf were common problematic wild animals' in terms of livestock depredation. Crop damage, livestock depredation, decrease conservation efforts and habitat fragmentation were among the negative impact of conflict. Domestic dog, Scarecrows, mounting of plastic material on wooden picks, human guarding and fencing were among the deter strategies practiced by the local communities. Among that methods (94.73%) of the respondents replied permanent guarding as the most effective guarding system. Thus, encouraging local communities to grow unpalatable crops to wild animal and to cooperatively guard their crop is important to reduce the challenges associated with crop raiding by wild animals.*



**Key words:** *human- wildlife conflict, crop raiding and Guassa community conservation area*

# 1. INTRODUCTION

## 1.1. Background and justification

Conflicts between humans and wildlife have occurred since the dawn of humanity. In Africa, these conflicts have become more frequent and severe over recent decades as a result of human population growth, extension of transport routes and expansion of agricultural and industrial activities which together have led to increased human encroachment on previously wild and uninhabited areas. Human wildlife conflict refers to the interaction between wild animals and peoples and gives negative impact on peoples, animals and on their habitats. According to (WWF) Human-wildlife defined as any interaction between human and wildlife that result in negative impacts on human social, economic or cultural life, on the conservation of wildlife population, or on the environment. It occurs when growing human populations overlap with established wildlife territory, creating reduction of resources or life to some people and wild animals. Human-wildlife conflict is becoming one of the most important threats to the survival of many wildlife species and is an increasingly significant obstacle to the conservation of wildlife (Madden, 2008). It is a serious issue in Africa and other developing areas of the world where rapidly growing human populations and expanding settlements are reducing the areas left for wildlife habitat and increasing the interactions between humans and wildlife (Mwamidi and Nunow, 20012).

As wildlife habitat becomes more and more fragmented and wildlife gets confined into smaller pockets of suitable habitat, humans and wildlife are increasingly coming into contact and in conflict with each other (Madden, 2008; Lamarque *et al*, 2009). The conflict takes money forms ranging from loss of life or injury to humans, and animals both wild and domesticated, to competition for scarce resources to loss and degradation of habitats. Frequently, human-wildlife is occurring when the community lives adjacent to protected areas (Conforti and Azevedo, 2003). When humans live adjacent to larger wildlife habitats and increasingly altered their habitat, conflict between human and wildlife may occur (Michalski, *et al*., 2006). In the recent past, 97% of the original highland vegetation has already been lost due to encroaching agriculture, grazing and settlement by agro-pastoral communities in Ethiopia and impoverished resource-dependent local populations are still increasing, both within and adjacent to Ethiopia community conservation area and other protected areas with perhaps high biodiversity value. Ethiopia is a large and ecologically diverse country (Melaku, 2011). Across Ethiopia; there are many designated protected areas of land including National Parks, Wildlife Reserves, Priority Forests, Biosphere Reserves and Community Conservation Areas. These not only act as biodiversity 'banks', but also provide important spiritual places and centers for traditional ecological knowledge. These protected areas can also have a direct economic benefit bringing in revenues from tourism and carbon trading (Young, 2012).

The natural vegetation of the country has been destroyed by human and natural catastrophic and converted into agricultural and pastoral land (Demeke and Afework, 2011). As a result, wild animal's resources of the country are now largely restricted to a few protected areas. Most protected areas in Ethiopia are increasingly degraded. Land is being converted for subsistence and commercial agriculture, timber used for fuel wood and construction protected grasslands used for livestock grazing. Loss of forests and other protected land is underpinned by a growing population, unsustainable natural resource management, poor enforcement of existing legislation uncertain land tenure and very low public awareness of the impact of climate change and the importance of biodiversity and ecosystems (Young, 2012). This also true in Guassa community conservation area, but the degree of conflict is less compared to other protected areas in Ethiopia due to the area is managed, conserve, maintain and utilize by local community. The present study were conducted to assess the extent of conflict between the local community and wild animals in and around Menz-Guassa community conservation area, north Shewa, Ethiopia.

## 1.2. Statement of the problem

There are many human wildlife conflicts in our country as well as in Guassa community conservation area which needs solutions, such as: deforestation, agricultural expansion, collection of fire wood, human settlement and overgrazing, but there is no empirical study done on issues pertaining to human wildlife conflict in the study area**.** Local communities do not enough benefit from wildlife resources and alienated from wildlife related economic enterprises such as the lucrative tourism industry, when local communities feel that both governments and conservation stakeholder value wildlife more than to their aspirations relation and opposition to conservation initiatives can be swift and uncompromising. The factors driving human wildlife conflict at the local level are, crop raiding and livestock depredation, however, shaped in turn by numerous other factors, including laws and policies. In many cases, legal and policy measures particularly those involving land use planning and wildlife management contributes to this growing problem. Human wildlife conflicts undermine human welfare, health, safety and have economic and social cost (Ogada *et al*., 2003). No attempt has been made to assess the magnitude of the wildlife conflict with local communities living adjacent to Guassa community conservation area. In addition, crop raiding and livestock predation are perceived challenges faced by local communities. From this perspective, it is imperative to assess the human-wildlife conflict that occurs with local communities living adjacent to Guassa community conservation area.

## 1.3. Significance of the study

The significance of the study is to maximize the understanding of people towards the wildlife conservation. To plan appropriate conservation strategy, and indicates future research areas for those who would like to conduct researches on human to wildlife conflict. Moreover, the data may be used as secondary data for researchers who working in the study area. And also the study will contribute information that may help governments; wildlife managers, scientists and local community insure positive co-existence between people and wild life in the interest of human and environmental wellbeing.

## 1.4. Objectives

### 1.4.1. General objective

The general objective of this study was to assess human wildlife conflict in and around Guassa community conservation area.

### 1.4.2. Specific objectives

- To identify cause of human wild life conflicts.
- To identify major crop raiding and livestock depredating wildlife found in the study area.
- To identify negative impacts of human wildlife conflicts found in the study area.

## 1.5. Research question

The following research questions will be raised in order to undertake.

- What are major causes of human wildlife conflict in the study area?

- What are the negative impacts of human wildlife conflict in the study area?
- What are the major crop raiding and livestock depredating wild animals found in the study area?

## 1.6 Scope of study

The study was conduct in and around Guassa community conservation area and other geographical areas are not included in the study. Moreover, the study was limited only about Human wildlife conflict in this area.

# 2. LITERATURE REVIEW

## 2.1. Concept and Meaning of Human-Wildlife Conflict

Human-wildlife conflict has been in existence for as long as humans have existed and wild animals and people have shared the same land escapes and resources. Human-wildlife conflict or negative interaction between people and wildlife has recently become one of the fundamental aspects of wildlife management as it represents the most wide spread and complex challenge currently being faced by conservationists around the world. It arises mainly because of the loss, degradation and fragmentation of habitats through human activities such as logging, animal husbandry, agricultural expansion and developmental projects (Fernando, *et al*, 2008). Human-wildlife conflict is increasing across Africa. As human populations and demands for land increase throughout the continent, human-wildlife conflict will continue to increase (Browne and Junker, 2008). Human- wildlife conflict has been the cause of serious damage to both humans and wild animals for years (Raini, 2009). It occurs as a result of occurrence of both parties in close proximity. The conflict usually starts when wildlife consumes resources meant for human consumption and their crops by herbivores and livestock by carnivores. In addition, wild animals that have Massif body size like elephants, rhinos and hippos cause structural damage to fences, Electric posts and water pipes as they raid within settlement areas. In addition, such large animals could cause significant damage to crops by trampling (Dudley *et al*, 2008).

## 2.2. Cause of Human Wildlife Conflict

As human populations expand into wild animal habitats, natural wildlife terrifies, is displaced. Reduction in the availability of natural prey/food sources leads to wild animals seeking alternate sources. Alternately, new resources created by humans draw wildlife resulting in conflict. The population density of wildlife and humans increase with overlaps in geographical areas used increasing their interaction thus resulting in increased physical conflict. Byproducts of human existence offer un-natural opportunity for wildlife in the form of food and sheltered interference and potentially destructive threat for both man and animals. Competition for food resources also occurs when humans attempt to harvest natural resources such as fish and grassland pasture. Another cause of conflict comes from conservation biased toward flagship or game species that often threatens other species of concern (Young, 2012).

## 2.3. The Impacts of Human-Wild Animal Conflict

Humans obtain many goods and services from nature to sustain their demand for food, fuel, water, medicine and fiber. Development including construction of roads, dams and utilities support human beings to accomplish the daily activities. But, these activities weaken the long term sustainable development by propagating unintended environmental impacts. Development intended for simple industrial purposes often result in uncontrolled secondary human migration, illegal logging, and hunting and resource extraction in general. Furthermore, the various dams built which intended to supply water for irrigation and non-fossil hydropower result in decreased water supply further downstream, high methane emission from some reservoirs, and draining of wetlands with enormous impact on Biodiversity and migratory species. The greatest human vulnerability to environmental degradation is related to effects on water resources, health and land productivity. Water pollution mostly occurs in the industrialized countries and uses of high energy also contribute a lot to global climate change (Anonymous, 2001).

Human activities are creating human wildlife conflict with different wildlife such as: -Human - carnivore conflict arises for several reasons. For instance, carnivores' protein - rich diet, large home ranges draw them in to periodic struggle with humans that have similar needs, most of them inhabit areas close to the human habitations and many large carnivore species are specialized for ungulate predation. Due to their large home ranges and diverse habitats, conservation of large carnivores is a challenging practice. Conflict can have multiple suggestions ranging from fear evoked by the presence of the carnivore to fatal attacks on humans. Even in the absence of attacks on humans, livestock depredation by carnivores can slow down the livelihoods of people and affect their economic condition (Ogada *et al*., 2003).

Human and wild animal have been in conflict because farming crops generally offer a rich food source for wildlife as well as for people. Large wild herbivores compete for fallow resources with livestock and can act as reservoirs of livestock diseases. As a result, humans have extirpated many native animal species from agricultural areas, either directly or indirectly through modifications in habitat availability or structure resulting from land use changes. Wildlife damage to agricultural crops is a serious concern affecting much of the world today (O'Connell R, *et al*., 2000). Primates are one of the most frequently cited crop pests (Hill and Plumptre, 2002). So primates and humans are always in potential conflict over crops. The significant problem relates to primates that are provisioned by people, when people seek contact with monkeys. The monkeys develop a taste for human foods, lose their fear of humans and then become practical and aggressive in looking for human foods. This conflict is particularly interesting in that it arises from a positive desire to contact monkeys and then people discover that the contact poses risks from bites, theft of non-provisioned food or more general health issues such as exposure to simian viruses (Else, 1991). Human-wild life' conflict is a growing problem in today's crowded world, and can have significant impacts on human population. As human population and the extent of landscape Transformation increase the probability of competition for resource between human being and Wildlife's also increase (Dickman, 2008). As the need and behavior of wildlife and human Being become close to each other, it impacts negatively the goals of human and finally create Conflict between them. Wildlife can have very significant impacts up on human directly and indirectly these impacts range from clear cut economic hard ship to less tangible effects such as increased opportunity costs and decreased quality of life. Living along side of wild life can incur variety of additional costs aside from the direct impact of depredation (Distefano, 2010).

## 2.4. Human Wildlife Conflict Resolution

No single management strategy can prevent all crop raiding and the goal of management should not only be to reduce the levels of crop raiding but also to raise the tolerance level of crop raiding by lessening its impact to farmers (Sillero-Zubiri and Switzer, 2001). No solution will work without site-specific knowledge of what is possible, practical, or acceptable in any particular area. Unfortunately, human-wildlife conflict situations are often complex so are unlikely to be resolved quickly and cannot be solved solely by technical means. Human wildlife conflict can be managed through a variety of approaches. Prevention strategies endeavor to avoid the conflict occurring in the first place and take action towards addressing its root causes (Hill, 2000). Protection strategies are implemented when the conflict is certain to happen or has already occurred. Mitigation strategies attempt to reduce the level of impact and lessen the problem. The main difference between the options is the moment at which the measure is implemented. By definition, management techniques are only cost-effective if the cost of implementing the technique is less than the value of the damage, taking into account the fact that a short period of active management may have a continued effect, by instating longer-term protection of crops or herds (FAOUN, 2010). The various management possibilities are presented according to the characteristics of conflict whether they relate to humans, production, animals and the environment, rather than according to their ability to prevent or mitigate damage (Lamarque *et al.*, 2009).

Conflict resolution/management methods have the following possible goals: reducing the amount of crop losses to wildlife; improving local people's attitudes and perceptions towards protected area and its wildlife; helping affected farmers to improve agricultural production; increasing the amount of crops being harvested locally. Through improved local yields and reducing levels of poaching. Once the individual goals have been established and the availability of the necessary resources determined, then discussion with the communities can important.

Communities living around forest areas are different from those in other areas as they often receive a disproportionate amount of interest from the conservation and development contributor. This can influence people's expectations with respect to who should take responsibility for developing, implementing and/or maintaining any control scheme. Those wise it is very important that farmers be involved in the process of developing new solutions from the beginning (Treves, 2007). Not only does this foster a sense of commitment and involvement amongst them, but it is also vital that they be involved from the beginning. Because they understand how the situation affects them and what kinds of intervention are likely to be acceptable and feasible within the local culture, providing there is adequate representation from the different types of stakeholder involved (Parkhurst, 2006).

The most viable options to reduce crop loss were increasing vigilance by farmers. This has been shown to make a considerable difference in the amount of crops lost, increasing farmer tolerance for a pest species and lost crops and increasing the ability of farmers to repel crop raiders using existing local methods. This has a number of obvious benefits, if these methods do not make a considerable impact on crop loss, and larger impact interventions such as electric fencing, lethal control of pest animals or moving farmers from the conflict zone can be considered (Treves, 2007).Many traditional repelling techniques are fairly effective if formalized, but are labor intensive. But where an animal can be repelled adequately using conventional methods it seems in appropriate, and certainly not particularly cost effective, to try to introduce more expensive techniques requiring greater technological input or backup (Conover, 2002). Another approach that has been used successfully to manage Human wildlife conflict involves changing the perceptions of people experiencing the damage, thus, increasing their willingness to tolerate damage. This can be accomplished by enhancing an individual's appreciation for wildlife and its non-tangible benefit. Agricultural producers already are receptive to this argument and appreciate the wildlife on their farms to enhance wildlife habitat and their tolerance for some wildlife damage. This tolerance can be enhanced by providing economic incentives (Messmer, 2009).

## 2.5. Qero system in MGCCA

The Guassa Area originated as a community-based natural resource management system known as “Qero” over 400 years ago. It is one of the oldest known conservation areas in Sub-Saharan Africa. The Qero system is organized by two formally elected chiefs who oversee the beneficiary communities to ensure equitable resource distribution, and enforce the bylaws protecting the common property resources. Based on traditional tenure patterns, rules of protection and utilization as well as enforcement are essential aspects of the Qero system. Further organization of the user community into parishes gave the Guassa area the status of consecrated land, under the protective patronage of the parish, which reinforced the Qero system with the prestige, power, and authority of another important local level institution. In the process, the Guassa common property resources became a kind of sacred entity. Following the 1974 popular revolution, the government nationalized all rural land in the country, disbanded all local level land tenure and common property natural resource management institutions. This agrarian reform destroyed the functionality of the Qero system and the Guassa area was turned into an open access resource, which resulted in extreme decline of natural resources in the area (Getachew, 2010).

# 3. MATERIALS AND METHODS

## 3.1. Description of the Study Area

The present investigation was conducted at Menz Guassa community conservation area (MGCCA) Menz Gera midir woreda, located in the central highlands of Ethiopia. Menz Guassa is found Amara national regional state with in north Shewa zonal administration. It is located 245 km away from the capital city, Addis Ababa, and 135km away from the zone capital (Debre Birhan) and 20km away from the Woreda town Mehal Meda. This area lies at latitude $10^0$ 15’-$10^0$ N and longitude at $39^0$ 45’-$39^0$ 49’E. It is found in the altitude range between 3200 and 3700 masl.

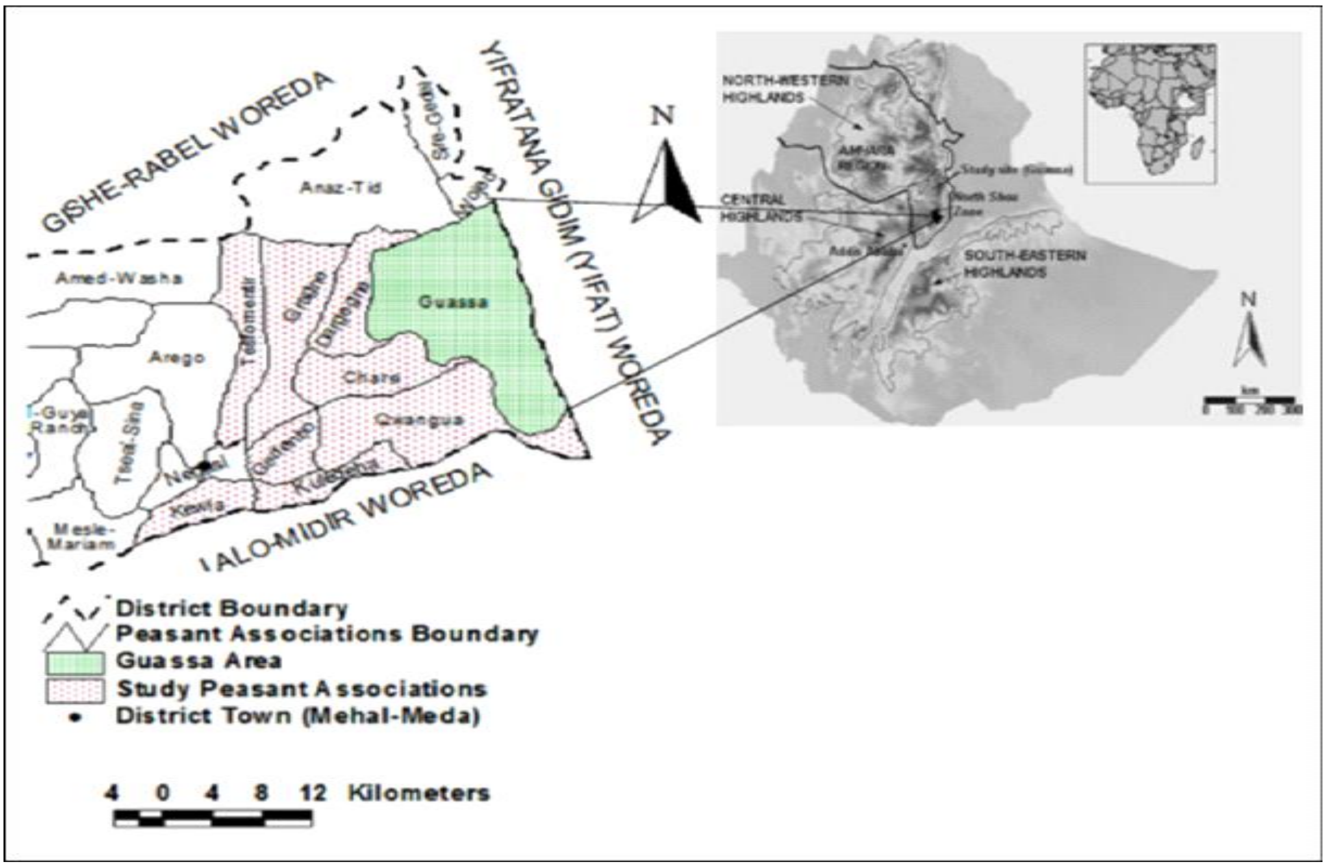


Figure 1: map of the study area

Its rainfall pattern ranging from 1200mmto 1600mm. the area is characterized by mild day and cold night. In the driest months (December through February) the day time temperature can rise to $23^0$c while at night it can fall to -$10^0$ c and the temperature variation is less in the wet season with a day time temperature of $12^0$c and night time temperature of $3^0$ c. The Afro mountain vegetation varies with altitude and key attraction of the area. The high altitude afro alpine fistula grassland or Guassa grass gives its name but other habitats include euryops- alchemical shrub land Erica moorland .common plants include Cortex, Menistachia, cortex fishery, Hydrocotyle Minnie and kniphofiafoliosa moving up words, europs- alchemical shrub land occurs over 3200m on flat gentles scope and well drained area.

Menz-Guassa Community Conservation Area (MGCCA) has herbaria 23% of the endemic animals of Ethiopia. Including the Ethiopia wolf (*Canes Siemens's*), gelada (*Theropithecus gelada*) and the Abyssinian har lupus stack). The Ethiopia wolf is legally protected and with a total world population of 500 individuals. It is the most endangered cranial in the world. Other potential mammal's species to observe on the MGCCA plateau are the get duiker, klipspringer, spotted hyena, leopard, common jackal and serval cat. The area also includes 114 bird species: 12% of the 862 species of bird in Ethiopia. From this some are endemic such as Ankober serin(*serinus ankoberenis*), Abyssinian cat bird(*parophasma galinier*) etc. According the central statistics agency (CSA), of Menz Gera Woreda 2016, the population of Menz Gera administrative districts is 98,000. The population is predominantly Amhara, one of the largest cultural ethnic groups in the country.

## 3.2. Data Collection Methods

The present study was carried out by means of questionnaire, interview. Focus group discussion and field observation/direct assessment modified from Newmarket al. (1994)

### 3.2.1. Questionnaire survey

Questionnaire survey were used to acquire information on the various aspects of the study about The different variables with the questions being both open and close ended. The questionnaire survey was carried out between December and January among local community and strictly in all three villages. Interviews held to farmers were conducted to establish in depth information about the impact of human-wildlife conflict in MGCCA. The study was able to get a response from 95 respondents out of 87 questionnaires distributed to four rural villages around the park; this represents a response rate of 91%of the total questionnaires distributed. The rest of respondents did not return the questionnaires citing forget fullness and lack of time. However, the achieved response rate was considered credible enough to provide the basis for arriving to the conclusions of the student.

### 3.2.2. Filed Observation/ Direct assessment

Field visits and observation were mainly used to confirm the respondent's responses, so that accurate and reliable information would be collected during filed observation. Observation also important to obtain data on, distance between the Menz- Guassa community conservation area and farm lands, negative impact of human wildlife conflict on the human and wildlife, the main cause of human wildlife conflict and the major crop raiding wildlife species and livestock depredation in the study area..

### 3.2.3. Focal group discussion

Focal group discussion tool is preferred as, firstly, it helps the discussant to be free to move the conversation in any direction of interest to explore a topic broadly and, secondly, it helps explore a situation in a short period of time and reinforce questionnaire (Newmark et al, .1994).Two FGD were held for the whole study. The group size in each discussion ranged within 8-10 people. The first group was made up of 4 expert of natural resource management from agricultural and rural development office, 3 experts from wildlife and forest enterprise of the district's, 3 expert from cultural and tourism office of the district's and to people from kebele governmental administrated, whereas the second was made up of 4 elders of village, 3 females from female association, 2 local leaders and 1 person from the nearby school. Discussants were invited to discuss issues according to their convenience. They have discussed the negative impact of human wildlife conflict on the human and wildlife, the main cause of human wildlife conflict and the major crop raiding wildlife species and livestock depredation in the study area.

## 3.3. Sampling size determination

The present study was conducted from January 2019 to May 2019. For this specific study, the target group was respondent, knowledgeable person, educated stakeholder, local communities. The respondents were selected purposively based on their ability, awareness, adjacent to an area and knowledge contributes to the overall research objectives. The study areaiscontaining9kebeles of these selected three kebeles namely: Yedi, Chare, and Alfa Midir which are HWC are high intensity, extensive knowledge, and experience compared to other kebeles around the study area.

Those kebeles have total households of 2080.95 was taken as representatives which encompasses elder of village, female association, local youth, and local leaders from each three kebeles.

The sample size was determined by using the formula adapted from Yamane (1967) as follows.

$n=N/1+N\,(e)^{2}$

Where, N = the total population

n = the required sample size

e = the precision level which is = ($\pm$ 10%)

$n=2080/1+2080(0.1)^{2}=95$

Table 1: total house hold and sample population of the study area

| Name of kebeles | Total house hold (N) | Sample population(n) |
|---|---|---|
| Alifa Midir | 747 | 34 |
| Chare | 713 | 33 |
| Yedi | 620 | 28 |

Accordingly, from the total house hold of three kebeles namely: Yedi, Chare, and Alfa Midir a total of 95 respondents were selected, 34 from Alfa midir,33 from Chare and 28 from Yedi based on formula adapted from Yamane (1967) and the questionnaire was transferred. The respondent was selected purposively based on their ability, awareness, adjacent to an area and knowledge contributes to the overall research objectives. The questionnaire was pre-tested by a small number of interviews before conducting the actual one among some group of population which is not included in the main sample group to make it more practical.

### 3.4 Data analysis

.The study was interpreted based on the survey questionnaire, interview and filed observation. The data was analyzed by using simple descriptive statistics such as mean and percentage and the finding presented in table, figure and pie chart to enhance compression and interpretation.

# 4. Result and discussion

## 4.1. socio-economic character of the respondents

Demographic characteristics of respondents of the study have been mentioned based on different category such as: sex, age and education status.58.95% of the respondents were males while the rest 41.05% were female. According to sex category 58.95% of male and 41.05% Female were participated. According to education statuses illiterate were higher than literate (66.32%) and (33.68‰) respectively. According to age category 20-30 were (21.05%), 31-42were (31.57%), 43-51(27.36%) and above 52 were (20.00%) identified. most of the respondents were farmers (75.8%), followed by traders (10.5%), government employers (8.4%), and students (5.3%).

Table 2: Distribution of respondent demographic characteristic (n=95)

| Demographic character | Category | No of respondents | Percent % |
|---|---|---|---|
| Sex | Male | 56 | 58.95% |
| | Female | 39 | 41.05% |
| Age | 20-30 | 20 | 21.05% |
| | 31-42 | 30 | 31.57% |
| | 43- 51 | 26 | 27.36% |
| | Above 52 | 19 | 20.00% |
| Education status | Illiterate | 63 | 66.32% |
| | literate | 32 | 33.68% |
| | High school | 7 | 21.87% |
| | preparatory school | 13 | 40.62% |
| | Diploma | 9 | 28.12% |
| | Degree and above | 3 | 9.37% |
| | | | |
| occupancies | farmers | 72 | 75.8% |
| | Government employers | 8 | 8.4% |
| | traders | 10 | 10.5% |

| | | | |
|---|---|---|---|
| | students | 5 | 5.3% |

Regarding the distance from their farmland to the conservation area 36.84% of the respondents live very close to the conservation area up to (0-2 km) due to the closeness of the area, the crop of local was easily seen by wildlife, the sound of locale disturb wildlife, domestic animal can easily move to conservation area and finally the conflict between human and wildlife very serious. This result was similar with the finding of Kumssa and Bekele (2013) reported, most crop damage occurred within 0-2 km radius from the Senkel Swayne's hartebeest Sanctuary. Most respondents (48.42%) 2km-3 km far apart, (15.78%) 3km-4km far apart, and (10.52%) above 4km far apart from the conservation area.

Table 3: distance of farm land from the study area

| Distance of farm land | No of respondents | Percentage |
|---|---|---|
| 0-2km far apart | 35 | 36.84 |
| 2-3km far apart | 46 | 48.42 |
| 3-4km far apart | 15 | 15.78 |
| >4km far apart | 10 | 10.52 |

Agriculture was the main activity of people around the study area. The main crop growing months were May to January. A survey conducted in the village showed that barley, beans and was the major crop. Farmers in the study area cultivate different type of crops, such as potato, beans, wheat and barley. 63.15% of the respondents cultivate barley, 26.32% cultivate, 21.05% cultivate Wheat, and 31.57% produced other cereal crops table 4.According to the respondents' severity of crop damage varies in different reasons. These reasons include the presence of plenty food in the farmland, due to attractiveness of farm crops, shortage of food for wildlife in conservation area, and due to unfavorable condition. Similarly, Pankhurst (2006) was identified the presence of plenty food in the farmland is increase the damage of crops in Wildlife Sciences, Virginia.

Table 4: Type of crops cultivated in study area

| Types of crop cultivated | No of respondents | Percentage |
|---|---|---|
| Barley | 60 | 63.15 |
| Beans | 25 | 26.32 |
| Wheat | 20 | 21.05 |
| Other cereal crops | 30 | 31.57 |

## 4.2. Major crop raiding wild animals in the study area

Local community members indicated that wildlife species have various impacts within Guassa community conservation area. The respondents identified the species in terms of their involvement in human–wildlife conflict. The following wild animals were identified in the interview process such as Gelada baboon, Rock hyrax, porcupine, rodents, rabbit and duikers are the major wild contributors to crop damage. Growing densities in livestock populations can create an overlap of diets and encourage competition with wild herbivores, resulting in overgrazing and decline or even extinction in wild herbivore populations. Farmer ranked crop raiding wild animal such as: - 84.42% of the respondent's ranked Gelada baboon was commonly reported crop raiders which cause much damage and ranked first.

52.63% of the respondents put Rock hyrax as second crop raiders in the study area. 44.21% of the respondents put Porcupine as the third crop rider, 21.05% of the respondents put rodent as fourth position, 15.78% of the respondents put rabbit on fifth rank and 6.31% of the respondents ranked klipspringer on sixth position . Klipspringers actively destroy crops for a few weeks only after germination. Guassa community conservation area which supports a different array of wildlife is prone to conflict with people. In the present study, informants reported the conflicts with wildlife due to crop raiding were significant as many of them practice crop production for their subsistence. During focus group discussion the reason for such incidences nearby Menz-Guassa community conservation area could be wild animals moving outside the conservation area or people approach to the natural resources for their domestic needs. Similar reasons for human-wildlife conflict were identified around protected areas (Woodro *et al.,* 2005).According to Datiko & Bekele (2013) particular food like Maize, Teff and Sorghum attract crop raiders around Chebera Churchura National Park in Ethiopia. The informants of the present study also confirmed similar situation adjacent to MGCCA in which beans, Barley and Wheat were highly preferred by primates as these crops were growing more often in the study area. As per the respondents, the reason for crop damage was increased subsistence agriculture followed by both increased subsistence agriculture. In Guassa community conservation area gelada baboons, klipspringers, duikers and rabbits raid crops such as barley, lentil, bean, wheat and peas mainly at the time of seedling. Due to this reason misbalancing of food security and decreasing of income level happened. This result was agreed with Crop raiding by wild animals cause food insecurity and loss of income to forest adjacent communities (Quirin, 2005).

Table 5: respondent result on major crop raiding wild animals

| Wildlife | Scientific name | Rank | frequency | Percentage |
|---|---|---|---|---|
| Gelada baboon | *Theropithecus Gelad* | 1 | 84 | 88.42 |
| Rock hyrax | Procabia Capensis | 2 | 50 | 52.63 |
| Porcupine | *Hyscrix Cristata* | 3 | 42 | 44.21 |
| Rodents | *Rodentia* | 4 | 20 | 21.05 |
| Rabbit | *Oryctolagus cuniculus* | 5 | 15 | 15.78 |
| Klipspringer | Oreotragus Oreotragus | 6 | 6 | 6.31 |

### 4.3. Major livestock depredating wild animals found in the study area

Majority of the respondents (63.15%) reported that there was damaged livestock by common jackal especially on sheep and goat in the study area. During the present investigation, four species of wild animals were identified as problematic animals in livestock depredation. These animals caused loss of domestic animals. Loepard, Spotted Hayena, Common jackal and Ethiopian wolf were the identified predators in the present study area. This is in line with Yihune et al. (2009) that reported Loepard, Spotted Hayena and Common jackal were the major predators for domestic animals in and around Simien Mountains National park of Ethiopia. Respondents ranked wildlife which cause livestock predation from the one which causing most damage to the one that cause the least damage Common jackal was the most commonly reported predator and killed more livestock and ranked first. In focus group discussion also, most respondent reported that there was a strong conflict between local peoples and common jackal. This result was in agreement with Getachew (2010) who reported that human conflict with jackals was very serious compared to other carnivore predators due to sheep predation. 40% of the respondent was reported leopard on second rank by livestock predator: 24.21% of the respondent put spotted hyena on third rank which is another problematic animal for the local community but the loss livestock to spotted hyena as result of carelessness of the owner. Unless the livestock are left on field during night time spotted hyenas do not dare to come close to human settlements and attack livestock. And also (10.52%) of the respondent was reported Ethiopian wolf ranked fourth.

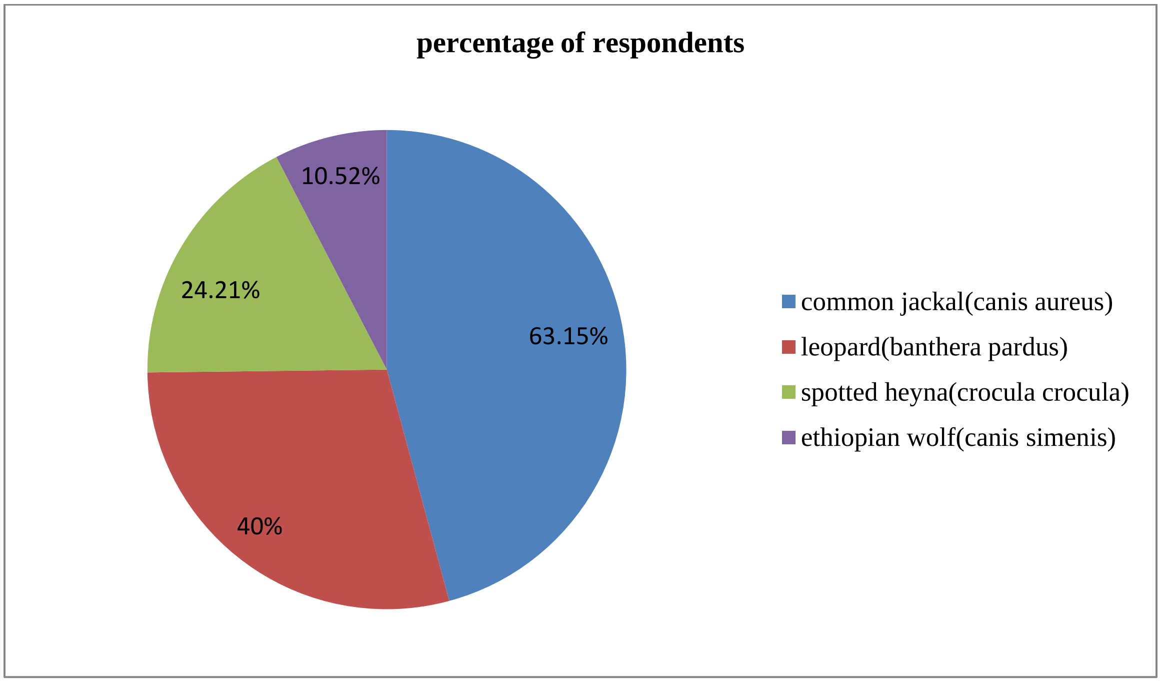


Figure 2: Major livestock depredating wild animal in the study area

**4.4. Impact of human wildlife conflict in the study area**

As the practice of both crop farming and livestock rearing was common for resident's livelihood around study area, respondents reported the conflict happened due to both crop damage and livestock depredation. Agricultural expansion, grazing livestock, deforestation and habitat disturbance was some key reasons for increment of the conflict in Guassa community conservation area. This result was agreed with the finding of (Ladan, 2014) cause for human wildlife conflict in different countries such as Kenya, Namibia, Mozambique, Zambia and Nigeria. The crop damage adjacent to the MGCCA boundaries was significant in gelada the important crops in the study area like bean, Barley and Wheat were damaged more frequently by wild animals. The number of informants reported for crop damage was significant.

84.21% informants thought that the main reason for crop damage was due to increased subsistence agriculture followed by both increasing population of crop raiders as well as increased subsistence agriculture. . Majority of the local peoples lived around Guassa community conservation area practice agricultural activities at that time the wildlife was attracted by the crop of locals. This problem is enhanced when the wildlife unable to get their diet from the natural habitat and compute for daily life. Degradation of wildlife habitats and expansions of agricultural lands due to rapid human population growth probably forces wildlife into crop raiding. This result was agreed with finding of (dickman, 2010) who reported that crop-riding by wildlife is one of the major impacts of human wildlife conflict.

42.10 % of the Respondents revealed that livestock grazing was the second cause of human wildlife conflict in the study area. Livestock of the local people graze the conservation area and compete with the wildlife then conflict between them is occurred. The most commonly observed domestic animals in the study area were cows, oxen, sheep, goats, donkeys, and mules. The presence of excess number of livestock causes direct competition for food with wildlife in the area. This has been confirmed by the local people during focus group discussion.

Figure 3: Image of Domestic animals competing with wild animals

26.31 %, of the Respondents revealed that deforestation and fire wood collection was one of the causes of human wildlife conflict in the study area. When the local peoples cut the forest of wilderness area and disturbed the wildlife then conflict between them is occurred. Habitat disturbances (10.05%) were cause for human wildlife conflict due to expansion of subsistence agriculture and over grazing around the study area.

Due to the impact of wildlife on livestock and crop of locals in the study area hindering the implementation of conservation initiatives. Human wildlife conflict have a high impact on the conservation of wildlife species since the people has disliked the species because of property loss that contributes for food insecurity and poverty. But not have more frequent and not serious obstacle for the conservation of wildlife in the study area, because of that area was community based.

Habitat fragmentation also one of the impacts of Human-wildlife conflict in the study area, which emergence of discontinuities (fragmentation) in an organism's preferred, environment (habitat) causing population fragmentation and ecosystem decay. Causes of habitat fragmentation include geological processes that slowly alter the layout of the physical environment and human activity such as land conversation, which can alter the environment much faster and causes the extinction of many species fragmentation not only causes loss of the amount of habitat, but by creating small, isolated patches it also changes the properties of the remaining habitat" (van den Berg et al. 2001). Habitat fragmentation is the landscape level of the phenomenon, and patch level process. Thus meaning, it covers; the patch areas, edge effects, and patch shape complexity.

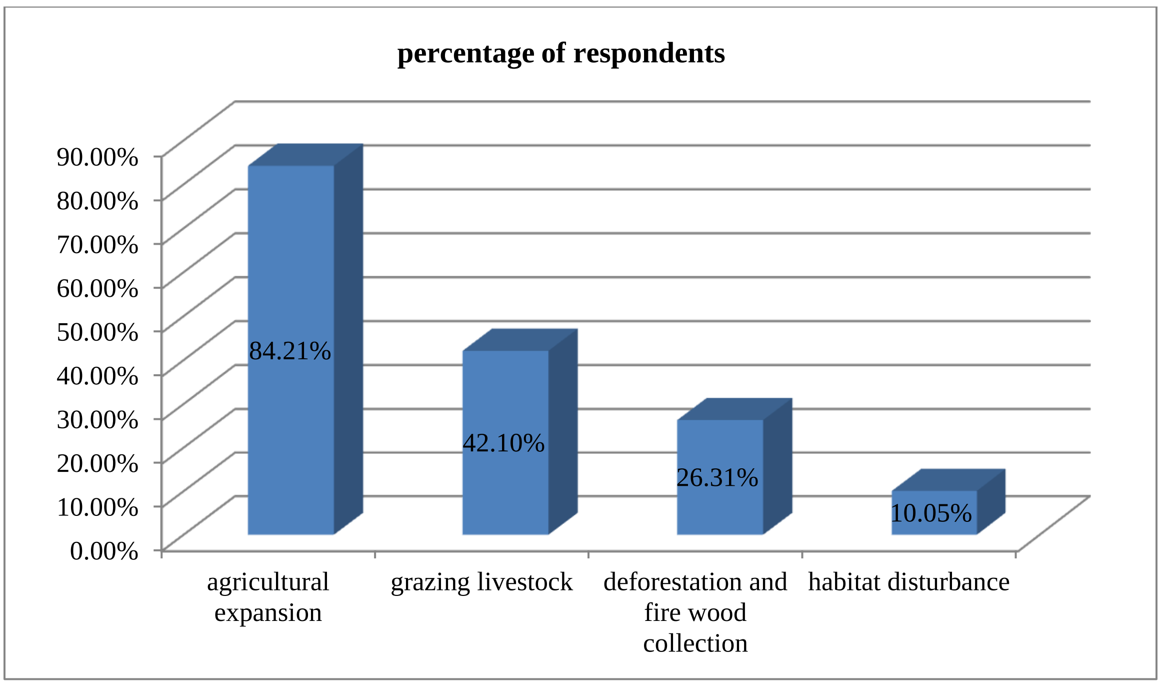


Figure 4: cause of human wildlife conflict in the study area

## 4.5. Methods that used respondents to protect crops from crop raiders and their livestock from livestock depredating animal

Numerous controlling methods for crop damage were identified in Guassa community conservation area such as guarding, scare crows, fencing and chasing from that most effective strategy the local communities used in preventing crop damage was guarding which is time consuming this result was similar with the findings of (Eniang et al., 2011) in Gashaka Gumti National Park, Nigeria reported that permanent Guarding by adults is the most effective strategy to control both crop and livestock from wildlife when asked the most effective deter strategy among practiced by the local.

94.73% of the respondents replied permanent guarding as the most effective guarding system, Most respondents guard their crop from the beginning (sowing) to the end by separate one person mainly child to protect the crop permanently. They reported that this method was very effective to deter crop raiding animals. However, it is difficult for those household who have less number of children. This idea was agreed with the finding of Active guarding by famers and members of their families were found to be the sole mode of protection from crop raiding (Guinness and Taylor, 2014).

84.21% of the respondents reported that chasing by domestic dogs was very important to avoid both crop raiding and livestock depredation wild animals. Domestic dogs tied around the farm to guard crop raiding wild animals including Rabbits and Squirrels. When the wild animal approaches to the crop, the dog barked and the wild animal go back to their habitat. Dogs are indicators when wild animals are approached to home and farm. At night time they barked repeatedly and lead to the farmer to check his vicinity and can prevent both his livestock and crops. Although dogs are depredated by Leopards and Hyena in the study area, they give warning to the household by their barking.56.84% of the respondents reported that fencing was other protection methods employed by farmers in the study area. For example farmers in use live fence using tree species of along the boundary of anal crops to protect crops, mainly from domestic animals (Goudar *et al*., 2017). However, farmers consistently reported that live fences were ineffective as protection against many wild mammal crop pests such as gelada baboons and rodent species, but agreed that strong (matured), tight, and maintained live fences could keep porcupines away from crops

37.90% of the respondents revealed that making Scarecrows or Mounting plastics on wooden branches is to scare crop raiding animals such as birds, Rabbits, Squirrels and porcupines. Wild animals are frightened both from the image and sound of the plastics. Improving crop and livestock protection measures is one most viable method of human wildlife conflict resolution. Use of audio-visual deterrents for crops, promote construction of proper sheds for livestock, intensifying human vigilance, fencing, dog guarding, scarecrows, mounting of plastic materials on wooden sticks and efficient livestock management practices are among the recommended crop and livestock protection measures without affect the existence of wildlife. This mitigation strategy was supported by Demeke and Afework (2013).

According to the respondents revealed that there are different livestock husbandry methods in this area such as construction of night enclosure for livestock and using well trained domestic dog. Most of the reported attack during night was associated with poor management and poor quality of huts. The strong construction of night enclosures for livestock to the night was associated with reduced losses to carnivore. A similar result was reported in and around Semien National Park, Ethiopia (Yehune et al., 2009). Therefore, constructing huts or tin enclosures from strong wood and increased protection at nighttime will be valuable to reduce conflict.In addition, using a well-trained domestic dog is a good method to reduce depredation by informing herders to alert the approach of carnivores (Dickman, 2008).

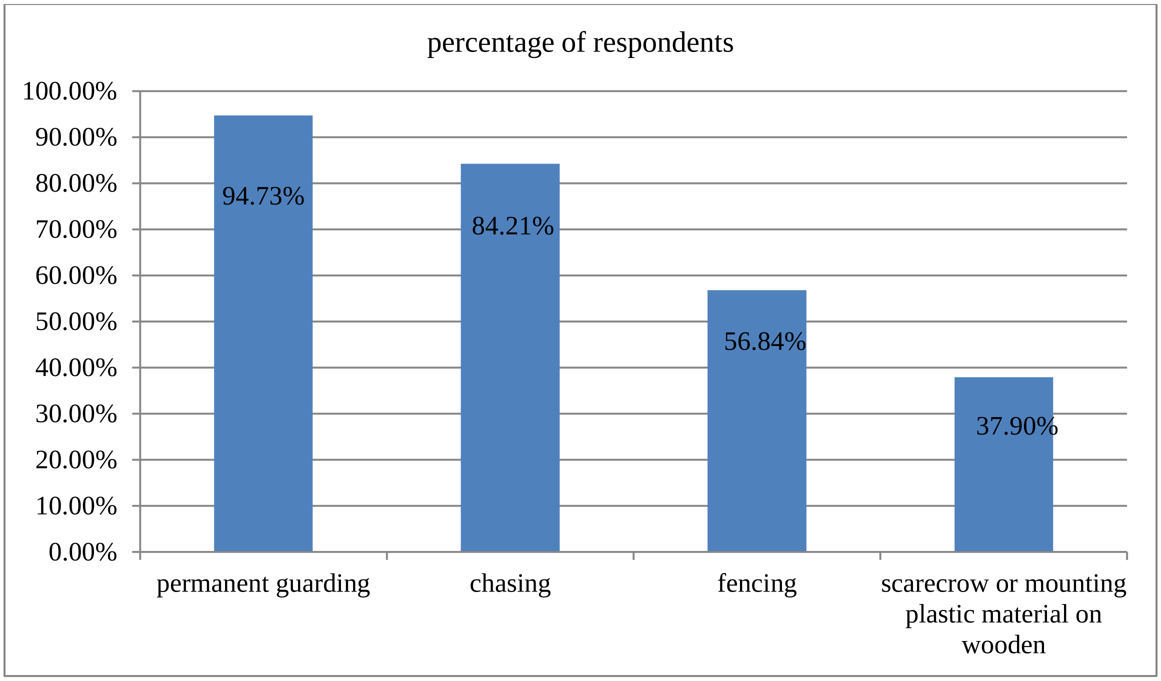


Figure 5: traditional methods that used respondents to protect crop from crop raiding

# 5. CONCLUSION AND RECOMMENDATION

## 5.1. Conclusion

The present study investigated the impact of human wildlife in and around Guassa community conservation area in north Shewa zone, Amhara, Ethiopia. Peoples perceived crop damage by wild animals as a great hindrance to their livelihoods. The cause of human-wildlife conflict was Agricultural expansion, grazing livestock, Deforestation, house construction and the contribution of all mentioned causes. The Crop raiders and local peoples take a lion share for the occurrence of human- wildlife conflict on the study area through crop raiding and domestic animals depredation. The gelada baboon, common jackal, leopard and spotted hyena in and around the Guassa area caused strong conflict with local communities, but a conflict between local people and Ethiopian wolf not as such a major problem. Duikers and klipspringers cause crop damage to lesser extent. Rodents, rock hyrax, rabbit and porcupines also cause crop damage in the study area. The attitude of local people towards wildlife conservation is influenced by the problems associated with it. Crop raiders cause significant loss on farmers' production. The negative impact of human wildlife conflict in the study area was crop damage, habitat fragmentation, livestock depredation and decrease conservation effort. The traditional methods crop raider protection in the study area were permanent guarding, chasing by dog, scarecrow and fencing from those permanent guarding was the most appropriate method. According to the Respondents revealed that the severity of this problem was not much more because of the conservation area is managed, conserved, utilized by local community.

## 5.2. Recommendation

The impacts of human wildlife conflict were negative and impacts negatively on both human and wildlife as highlighted in the paper. It was also a serious obstacle to the conservation of the wildlife species in Menz-Guassa community conservation area. From the result of this study the following recommendations were made to reduce the human-wildlife conflict in the area.

- ❖ Local people should participate in the process of resolving the existing challenges in order to foster positive outlook towards wildlife.
- ❖ Further investigation must be conducted to identify alternative crops that can be rejected by crop raiders in the area

- Farmers should cooperatively keep their farm against crop raiders to minimize crop loss by using most effective method in an area
- Giving awareness among the local people to develop the knowledge about the issue of environmental degradation and its overall impact as well as sense of ownership of natural resource.
- Demarcate boundaries and develop zoning to reduce the human–wildlife conflict.
- Local community should be get an employment opportunities in and around the closure area
- Clear laws and policies regarding in preventing any type of hunting, destruction of wildlife habitat, entering of livestock to the conservation area, collection of fire wood should be conducted to alleviate a conflict between human and wildlife conflict.

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# 7. APPENDIX

**COLLEGE OF AGRICULTURE AND NATURAL RESOURCE**

**DEPARTMENT OF WILDLIFE AND ECOTOURISM MANAGEMENT**

Part I: Personal Information

I am Esayas Aschenaki graduate student at Wolkite University. Currently I am conducting a research study on Human wildlife conflict in and around Guassa community conservation area, north Shewa; Amhara, Ethiopia. The case of in partial fulfillment of the requirements for the Degree of Bachelor of science of Wildlife and Ecotourism management. I require your help to spend some minutes of your time with us for interview. The purpose of this Interview is to gather information about the Human wildlife conflict in this area. I can assure you that any information that provide in this interview will be kept confidential. Your kind cooperation would be greatly appreciated and is great importance for the successful completion of this study. Thank you!!!

Appendix I: The survey questionnaire for formal interview Households survey on Human-wildlife conflicts in and around Guassa community conservation area, north Shewa, Amhara, and Ethiopia.

1. General information

Household code number__________________ Name of interviewer___________________ sign ______Date of interview day ________ month _____ year ___________

2. Name of household head__________________________

3. Sex A. Male B. Female

4. District___________

5. Keble's ________ village ______ GPS _______/agro-ecology ______

6. Level of education

A. Illiterate B. Elementary C. High school D. Diploma E. Degree and above

7. What is the nature of your land security from wild animal damage?

A. Secured B. Not secured

8. What are your livelihood activities? (Multiple choices is possible)

A. Crop production B. Livestock raring C. Mixed Farming (Farming and livestock keeping D. Crop production and other income E. other (mention)

9. How much is the distance of your cultivation land from forest edge?

A. Less than 1 Km B. between 1Km and 2 Km C. above 3Km

10. What type of crops you grow in your farm land? Put in order to know which one is the most?

A. Potato B. Barley C. Legume D. Wheat E. Teff F. Maize G. Others

11. Do wild animal cause damage on your environment?

A. Yes B. No

12. What type of damage?

A. Crop damage B. Domestic animal damage C. On your life/ human injury

13. Which wild animal are more responsible for damage?

A. Gelada Baboon B. Ethiopian Wolf C. Spotted hyena D. Golden jackal E. Serval cat F; Ethiopian highland hare

14. Which type of crop is more damage by wild animal?

A. Teff B. Legume C. Barley D. Potato E. Other crops

15. Which wild animal are more responsible for crop damage?

A. Gelada Baboon B. Ethiopian Wolf C. Spotted hyena D. Golden jackal E. Serval cat F. Ethiopian highland hare

16. Which type of demotic animal is more damage by wild animal?

A. Goat B. Sheep C. Hen D. Donkey E. Caw F. Other live stock

17. Which wild animal are more responsible for domestic animal damage?

A. Gelada Baboon B. Ethiopian Wolf C. Spotted hyena D. Golden jackal E. Serval cat F. Ethiopian highland hare

18. What is the cause for the happening of HWC in your area?

A. Human settlement B. Grazing livestock C. Fire wood collection D. House construction

E. Other specify

19. What control measures have you taken to safeguard your crops from wild animal?

A. Guarding B. Chasing C. Fencing D. Smoking E. Scarecrow F. Other Specify

20. Which of the techniques are most effective?

A. Chasing B. Fencing C. Smoking D. Guarding E. Scarecrow

21. Which of the techniques are least effective?

A. Chasing B. Fencing C. Smoking D. Guarding E. All

Appendix II. Lists informant interview (rural agricultural development office, District and better-Informed farmers)

1. Name ________________________ Date _________________

2. Education status _________ your profession_______________

3. How long have you stayed in the area? ______________________

4. Is there HWC around this area?

5. What are the impact of wild animal on their crop and livestock?

6. What are the major factors that cause Human wildlife conflict in the study area /district?

7. Do you have traditional method to reduce this conflict?

8. Why farmers are in your area face Human wildlife conflict?

9. What are the gaps between farmers and development actors in addressing Human wildlife conflict?