Jimma University

College of Natural Sciences

School of Graduate Studies,Department of Biology

Impact of Human Activity and Local Community Perception on Wildlife Conservation: the case of Kabana Natural Forest, Jimma Zone, Oromia National Regional State, Southwest Ethiopia

By :FekaduMegerssa

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By :FekaduMegerssa

A thesis submitted to the Department of Biology, College of Natural Sciences, Jimma University in partial fulfillment for the requirements of Masters Degree of Science in Biology (Ecological and Systematic Zoology)

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ACRONYMS

CBNRMSCommunity Based Natural Resource Management Strategy.

EWCAEthiopian Wildlife Conservation Agency

HWC Human Wildlife Conflict

IUCN International Union for the Conservation of Nature and Natural Resources

JICA Japan International Cooperation Agency

NGO Non-Governmental Organization

PA Protected Areas

PFM Participatory Forest Management

WARDOWoreda Agriculture and Rural Development Office

WLEPOWoreda Land and Environment Protection Office

Abstract

A study on the impact of human activity and local community perception towards wildlife conservation in Kabana forest was conducted in four purposely selected Kebeles of LimmuKossaworeda of Jimma zone from September,2013 to June, 2014. The objective of the study was to examine the impact of human activity and local community perception that negatively affects the wildlife conservation in Kabana Forest that had contributed to the conservation of wildlife.Personal observation and formal discussion were used to identify the study site. Four Kebeles of the district that have common boundary with the forest were purposively selected for this study. For this study, 168, respondents were selected by simple random sampling from the householders. Eighteen key informants were also selected by purposive sampling technique for interview with local community elders, Woreda and Kebelelevel agricultural experts and Kebele administrators. Semi structured questionnaire, in-depth interview and observation were employed as data gathering. To analyze the data,$\chi 2$ (chi-Square) test was used to determine association between categorical variables while descriptive statistics was employed to present frequencies and proportions. From the result of the study, it was found thatthe trends of wildlife population in the study area declined 57.14% from time to time due to human impact such as forest clearing for coffee plantation and farm land expansion(83.9%), unauthorized use of the resource for firewood collection(48.8%) and the growing of livestock grazing in the site. The attitude of local community towards wildlife is negative (60.71%) as a result of increase in wildlife induced damage(77.4%) like crop raiding and predation, poor relationship with conservationists(64%) and lack of awareness (67.8%) about wildlife conservation. Arranging continuous awareness creation program for stakeholders to improve the local community attitude, participating the local community in the decision making process to increase conservation effort were identified as the possible solutions that should be met to alleviate the problem.Generally, if these practices are incorporated with current conservation efforts, it will greatly support the conservation of rapidly diminishing natural resource in general and wildlife in particular in the area.

Key words: *Wildlife, conservation, human impact, community attitude*

1. INTRODUCTION

1.1 Background of the Study

Wildlife is a resource of cultural, ecological and economic significance. It is a renewable resource whose survival depends, among other factors, on the quality of habitats. The importance of habitats is derived from their ecological roles in the provision of shelter, breeding places, dispersal and foraging grounds for a variety of wildlife species. They also allow free movement for animals to other geographical localities where access to critical resources for (wildlife) survival and exchange of the genetic materials occur. Wildlife habitats are, therefore, critical components for ecological integrity and the long-term survival of the ecosystem (Kideghesho, 2005)

Destruction or loss of wildlife habitats reduces their potential utility.Clearing of forests for timber and agriculture is increasingly pushing wild animals in isolated small populations that face edge effects and genetic isolation leads to the risk of extinction (Hill *et al*., 2001). There were different forms of habitat destruction (degradation, fragmentation and outright loss). Habitat degradation is "the process by which habitat quality for a given species is diminished", fragmentation "is the process by which a natural landscape is broken up into small parcels of natural ecosystems, isolated from one another in a matrix of land dominated by human activities" Expansion of human habitation, destruction of habitat for agriculture and poaching have resulted in a sharp decline in the wildlife populations (Choudhury, 2001). Outright loss of habitats occurs when habitat quality is so low such that the environment is no longer usable by a given species.

Once habitat changes were relatively a minor factor in the decline of species, being overshadowed for centuries by overexploitation and introduction of exotic species .Their relative importance has increased in recent decades. Habitat loss has emerged to be the most severe threat to biodiversity worldwide (Brooks *et al.*, 2000 and Smith *et al*., 2003) threatening some 85% of all species classified as "threatened" and "endangered" in the IUCN's *Red List*(IUCN,2004). It is most pervasive to birds, mammals and amphibians. It affects 86% of birds; 86% of mammals and 88% of amphibians' .The effect of other threats is relatively lower. For instance, overexploitation

affects only 30% of threatened birds, 33% mammals and 6% amphibians while introduction of alien species affects 30% and 11% of threatened birds and amphibians, respectively.

Human activities such as overgrazing, deforestation, bush fires, mining, urbanization and cultivation are the principal causes of habitat destruction. These activities are expanding in line with human population growth and poverty increase. Maintaining high quality habitats and ensuring the long-term ecological integrity is therefore increasingly becoming an important management challenge. Establishment of wildlife protected areas has been adopted as the most feasible strategy to this end. Currently some 104,791 protected areas covering a total area of about 20 million km^2 or 12.7% of the earth's surfacehave been assigned. This is a dramatic increase compared to only 8,500 Protected Areas covering some 7.7 km^2 (equivalent to 5.2% of the earth's surface) existed in the last decade (Kidegheshoet *al.*, 2005).

Ethiopia is one of the most physically and biologically diverse countries of the world. It has an area of over 1,023,050 km^2. It comprises highland massive surrounded by arid lowlands. It contains various wildlife and wildlife habitats ranging from alpine moorlands to lowland savannas and arid lands, and extensive wetlands. Most highlands harbor many endemic plants and animals. They have fewer species diversity than the lowlands in the country. The main reason for the presence of diverse wildlife and large number of endemic species is the rugged topography. This helped to create isolated and varied ecological situations (Yaldenet *al*., 1996).

Human activities that affect wildlife and their habitats are pervasive and increasing. Effects of these activities are manifested at all ecological scales, from short-term changes in the behavior of an individual animal through local extirpations and global extinctions (Pimmet *al.*, 1995; Russell *et al*., 2000). Consequently, understanding the effects of humans on wildlife, as well as devising strategies to improve these effects, is an increasing challenge for resource managers.

Conservation of diverse ecosystems with abundant fauna and flora has been a crucial policy goal of governments since the early 20th century. However, enforced conservation policies have often resulted in serious conflicts between government authorities and the local people who use the natural resources within the conservation areas. Despite the fact that since the 1980s, community-based conservation has become one of the popular conservation strategies, most of

the communities were not consulted with regard to the decision-making process about land and natural resources strategies (Western and Wright, 1994).

Recently, conservation agencies in Ethiopia have begun to recognize the important role of local people in wildlife conservation. However, in most conservation areas, very little effort has been made to involve local people in wildlife management. The concept of "protectionism" still pertains conservation methods (EWCA, 2010). When the activities and characteristics of this community are examined, several implications for practical methods of community-based conservation might emerge. Even though different researches concerning the role of human activities on global and climatic change were carried out, still there are gaps to be filled by conducting scientific research. Among these impacts of human activities that negatively affects the wildlife conservation and local community perception towards wildlife and the like were still gaps that need further investigation. Hence, taken as innovative principal activity, and given its considerable importance in biodiversity conservation and adjusting participatory strategy of wildlife conservation, assessing the impact of human activity and local community perception towards wildlife conservation of Kabana Forest of Jimma Zone, Oromia National Regional State becomes area of interest for researchers.

1.2 Statement of the problem

In Ethiopia like other developing countries, human activity is one of the threats to biological diversity caused by an ever –increasing use of the natural resources by the expanding human population. The Ethiopian biodiversity and tropical forest assessment reported that trees and wild animals of Ethiopia are under tremendous pressure because of the drastic decline of immature forest cover and the continual pressure of population increase, rudimentary farming techniques, land use competition, land tenure and forest degradation and conservation. The status of forest resources like wild animals at risk. Since, attitudes towards wildlife vary among rural agricultural producers, sound understanding of the local people's attitude to wildlife is a vital pre-requisite to deal with wildlife conflict management and to improve conservation effort (Messmer, 2000).

Kabana Forest is the part of BabiyaFolla Regional Forest Priority Area for conservation. Itreceived little attention up to now except for the Participatory Forest Management (PFM)

practice started few years ago by Oromia Forest and Wildlife Conservation Enterprise of Jimma branch. Assessing human impact and community attitude is required to help to explore ecological problem, for biological conservation and management purposes, as an input to environmental impact assessment and to provide basis for prediction of future change.

At present the previous intact part of this area is highly depleted because of coffee plantation activity and encroachment into forestland due to expansion of farmland and pasture was observed. Similarly cheng*et.al*, 1998 stated that coffee plantation in the natural forest has reduced the forest density and species diversity as well as wildlife population. This problem is also the image for the degradation of wildlife in Kabana Natural Forest Priority Area for conservation. However, no practical solution was given. There is a need for study since the Woreda lacks researched evidence on the issue of human impact and local community perception towards wildlife conservation. So, information on human impact and community attitude on wildlife conservation is crucial to look into the prevention and mitigation issues. Accordingly, the purpose of this study was to determine the human impact and local people's attitude towards wildlife conservation at Kabana Forest of LimmuKossaWoreda. During this study the following basic questions were considered;

- What are the human activities that negatively affect wildlife and wildlife conservation in the study area?
- What are the factors that determine the attitude of local community towards wildlife conservation?
- What basic actions should be taken to mitigate the impact of human activity that are threats to wildlife and increase the willingness of the local community to support participatory conservation activity?

1.3. Objectives

1.3.1. General objective

The general objective of this study isto examine the impact of human activities and local community perception in wildlife conservation in Kabana Forest of LimmuKossaWoreda, Jimma Zone, Oromia National Regional State .

1.3.2. Specific objectives

The specific objectives of this study are:

- ❖ Toidentify human activities whichhave adverse impact on wildlife and wildlife conservation?
- ❖ Todetermine the attitude of localcommunity in the conservation of wildlife.
- ❖ Toidentify factors determining the attitude of local community towards wildlife conservation.
- ❖ To identify indigenous intervention to mitigate the problem caused by human activity for maintaining the remnant wildlife in the area.

1.4 Significance of the study

The conservation of wildlife in and around forest as well as nature reserves has always been entangled with multitudes of problems. Among these, lack of commitment from official, scarcity of funds, expansion of large scale agriculture, illegal exploitation of natural resource, and lack of skilled staff are the main ones (AlmazaTadesse , 1996)

Conservationists largely have ignored traditional exploitation as a way to conserve biological diversity. They preferred to protect the system by excluding people from protected and reserved area. In doing so; the indigenous people were denied access to vital natural resources leading to grievance rather than sustainable use of resources. Therefore, conducting such survey study helps to identify the effect of human activity that negatively influences the conservation of wildlife which leads to search scientific ways for sustainable use of natural resources by raising community awareness. Information about the attitudes and perceptions of wild animals, orany associated species, is a prerequisite to designing optimal and effective management schemes to introduce suitable preventative measures (Else *el al.,* 1986).

The study also assesses local community perception toward wildlife conservation of the study area to increase their support conservation activities by reconciling the management of wildlife habitat with the social and economic needs of the local community. Such scientific research is basic to understand and take conservation measures for wildlife in the Woreda by involving the communities as stakeholders .The result of the study will help the local government and NGOs

to develop conservation plan and to encourage tolerance for wildlife via generating income through sustainable system by minimizing the threats to the wildlife.

1.5 Ethical consideration

Prior todata collection activities, consent was asked from the Biology Department of Jimma University. Then formal latter was written to LimmuKossa Agriculture and Rural Development Office. Then after obtaining the permit, discussing the objectives of the research to population of the study area was undertaken. Data collection was conducted after getting permission from the Woreda officials and after obtaining consent from theparticipant.

1.6 Delimitation of the Study

This study focused on impact of human activity and local community perception on wildlife conservation, the case of Kabana Natural Forest, LimmuKossaWoreda ,Jimma zone, OromiaNational regional state, Southwest Ethiopia. Thus, its scope was limited to the study area and the population.

1.7 Limitation of the study

Even though Babia Folla moist evergreen Forest Priority Area for conservation covers large area of districts of the zone, the present research covers only the part of this site that is Kabana Forest due to lack of budget and time constraint. Lack of written documents concerning the site for reference was also some limitations faced during the study.However, using available and accessible source of information obtained from closed ended question's and interview conducted with key informants, attempts were made to come up with dependable result of this work.

2. REVIEW OF RELATED LITERATURE

2.1 Human impact on wildlife

Humans obtain many services from wildlife to sustain their demand for food, fuel, water, medicine and fiber. The different activities of humans have their own impact on wildlife by modifying the behavior of animals and species distribution. The disruption of behavioral patterns can affect their social structure because social structure is a key component in the evolution and dynamics of species. Thus, its disruption by human disturbance can have a considerable effect on population performance even if the disturbance does not directly affect the survival and reproduction (Manor *et al*., 2003).

Increasing human population and the associated impacts such as habitat loss and hunting are the underlying factors for the decline of mammalian species. They are considered as species threatening factors and vary in intensity across the surface of the earth. Species that inhabit more heavily impacted regions are expected to have a higher risk of extinction (Cardillo*et al*.,2004). Illegal or traditional exploitation of wildlife within conservation areas for both subsistence and economic gain is common. For example, as reported by Leader-Williams *et al*. (1990), the decline of black rhinos (*Dicerosbicornis*) and elephants (*Loxodontaafricana*) in many countries of Africa is due to overexploitation.

In Africa, the regular trend is that core protected areas like National Parks are becoming ecologically isolated as people settle and increase in the countryside. If this trend continues, one can expect the complete collapse of the core area. Through time, wildlife is lost from the country and the core areas themselves are lost. The trend of an increasing human dominated landscape will continue and larger mammals continuously will only be restricted to parks and reserves (Hackel, 1999). In general, humans either directly or indirectly influence the survival of wildlife or are responsible for the extinction of many species.

The loss of habitat through the conversion of land from its natural state to a developed landscape represents the single greatest impact of increased human activity on native wildlife. All animal species require certain habitat features to survive. Development typically eliminates or significantly changes many important habitat features found in a natural area, thus reducing or eliminating the

habitat value of that area. For example, a diverse wildlife population depends upon the natural diversity of native plants found in most undeveloped areas. Development often changes the vegetative community, making it more difficult for many native species to survive. Those species able to survive in urban settings may thrive, but the rest are forced to find new territory or perish (Benedict and Edward, 2001).

2.2 Human-Wildlife Conflict

Naturally, organisms live together in an ecosystem for a long period of time.However, when humans enter these systems, the natural phenomena become disturbed.No animal is inherently a 'nuisance' or 'pest'. However, because their habitats are increasingly altered or managed by humans, certain wild species or individual animals may cause a significant problem to humans, other animals or the environment. Wildlife and people can dwell harmoniously if and only if the animals feel safe from human threat and if animals are not causing property damage or public health concern (Einarsen, 2002).

Most of the current biodiversity crises arise as a result of increasing competition with humans for space and resources. Thus, protected areas become isolated islands of natural habitat invaded by human settlement (Sitati*et al*., 2005). Conflicts between human and wildlife populations are emerging as a major conservation issue worldwide. Crop raiders including elephants, many primates, several bird species, and rodents can diminish or destroy the farmers' food and cash crops. Carnivores and larger crop raiders are often presumed to be a threat and shot on sight.

Human-wildlife conflict incidents are widespread but not evenly distributed because they are dependent on the proximity of wildlife. In addition, different species cause different types of damage at different time of the year. The damage caused has different effects on the livelihood of households depending on their level of livelihood security before the incident (Mulonga*et al*., 2003). Human-wildlife conflict affects species, particularly large mammals. Due to such conflict, most are either critically endangered are declining rapidly.

One major cause for human-wildlife conflict is increasing human population adjacent to the protected area. As human population increases and the demand for resources grow, the frequency and intensity of conflicts between protected areas and local people will increase. This can be manifested by increasing encroachment of wildlife habitat. As a result, species that are unable to

adapt to altered habitats are forced to decrease their number and invade the marginal habitats. But those species that are able to adapt to a changing ecology and survive in agricultural system become involved in a direct competition with humans (Struhsaker*et al.,* 1999).

Increase in wildlife population in some areas can be considered as another cause of human wildlife conflict. In the past, rural resident especially agricultural producers and tree growers were the cause of wildlife damage. However, more recently, urban dwellers and other wildlife stakeholders are highly experiencing wildlife damage. Traditionally, wildlife damage was agricultural problem. But, even overabundant wildlife populations are causing many other problems like residential damage and disease. Moreover, human-wildlife conflict includes human illness, wildlife attack, animal automobile collision and others (Messmer, 2000).

Human-wildlife conflict situations often have a long history. They are complex situations and are unlikely to be resolved quickly. They cannot be solved by technical means (Osborn, 2000). Past efforts to solve the conflict have failed in different areas. No solution will work without site specific knowledge that can be practical or acceptable in any situation in any particular area. The development of practical tools and techniques are required to minimize conflicts arising from human modification of ecosystems.

The consequences of the human-wildlife conflict are more serious in the tropics and in developing countries where livestock holdings and agriculture are important parts of rural people's livelihoods and incomes. In these regions, local people with a low standard of living are particularly at risk, as are agro-pastoralists who depend exclusively on production and income from their land. Human wildlife conflict involves both human activities and wildlife damages. As a result, we need to have a comprehensive understanding of the issues at stake. In order to obtain the necessary information fully, assessing a situation is appropriate to consider the cause of conflict from different perspectives (Hill *et al.,* 1997).

2.3 Causes of human-wildlife conflict

Human wildlife conflict is more intense in developing countries where livelihoods holding and agriculture is important parts of rural people's livelihoods and income (Boer and Baquete, 1998).Competition between local communities and wild animals, for the use of natural resource,

is particularly intense and direct, as a result,human and wildlife population are vulnerable (Messmer, 2000).

A set of global trends relating to human populations, habitat advancement, animal distribution and behavior have contributed to the escalation of human-wildlife conflict worldwide. The main cause of human-wildlife conflict worldwide is the competition between growing human populations and wildlife for the same declining living spaces and resources. The transformation of forests, savannah and other ecosystems into agrarian areas or urban agglomerates as a consequence of the increasing demand for land,encroachment into wildlife habitats,food production, energy and raw materials, has led to a dramatic decrease in wildlife habitats (Siex, 1999; Tjaronda, 2007).

Several factors can contribute to the modification of the quantity or quality of wildlife habitats. The two most important factors are impact of human activitiesand natural factors. Human activities such as husbandry, agriculture, fishing, the development of infrastructure or even of tourism or wildlife protection itself, can dramatically modify wildlife habitats either directly or indirectly. Natural factors,droughts, bush fires, climatic changes and other unpredictable natural hazards can contribute to a decrease in suitable wildlife habitat and therefore affect the occurrence and extent of human-wildlife conflicts. Similarly, the seasonal modification of habitats due to rainfall can also have an impact on human-wildlife conflict. Alteration of forest structure and floral composition of habitats all are part and parcel of anthropogenic engagement with environments. The patterns that these human processes involve may directly impact the pressures and structures of the basic ecological contexts(Paterson and Wallis, 2005**).**

One of the main consequences of the loss of habitats is the decrease in natural resources available for wildlife. The destruction of natural vegetation around protected areas and in some cases the total disappearance of buffer zones force herbivore species to feed in cultivated fields. This phenomenon is on the increase because the growth rate of cultivated areas is high at the periphery of protected areas (Clerici and Hugh, 2005).

The gradual loss of habitat has led to increasing conflict between humans and wildlife. As wildlife range becomes more and more fragmented and wildlife is confined into smaller pockets of suitable habitat, humans and wildlife come into contact and in conflict with each other,

thereby resulting in increased crop-raiding activities (Barnes *et al*., 2003).At present, the last suitable habitats generally survive inside protected areas. This explains why conflicts are particularly common in reserve zones where healthy wildlife populations stray from the protected area into adjacent cultivated fields or grazing areas.

Species with a more diversified regime such as primates will encroach on cultivated areas when the availability of natural food diminishes, The decline in numbers of natural prey is one of the major reasons why carnivores shift their diets to livestock, which are easier to capture and have limited possibilities of escape. When native prey is abundant, wild predators consume it in preference to livestock (Mishra *et al.*, 2003; Patterson *et al.*, 2004).

People living in developed countries like Africa and Asia are suffering from the negative impact of human activity and human wildlife conflict, such as crop damage and livestock predation. Community around such countries feel that predators and crop pests control is essential in order to reduce problems caused to livestock loss by predators and crop loss by crop raiders (Hill, 2000).

2.4 Types of human wildlife conflict

2.4.1. Human-carnivore conflict

Human-carnivore conflict is one part of human-wildlife conflict that occurs when the carnivore population increases or humans encroach on their habitats. Factors like human activities and carnivore behavior increase the risk of conflict. Thus, carnivores encounter more domestic animals and humans and can cause danger to human increasing economic loss. People often respond to this conflict by poisoning, shooting and trapping techniques that also kill non-target animals in high proportion (Treves *et al*., 2003).

Under a variety of demographic, economic and social pressure, human alteration of carnivore habitat or exploitation of carnivores has led to conflicts. Humans are the cause for most of the carnivore mortality worldwide and most of the recent reduction of carnivore population. Other reasons for the substantial decline of large carnivore are forest destruction and the expansion of cultivated land (Treves and Karanth, 2003).

According to Breitenmoser (1998), carnivores respond to human activities based on the response to environmental changes. Killing predators to protect livestock is one of the most controversial issues in natural resource management. So, there is an increased interest in the use of non-lethal methods to reduce predation. The use of guardian animals like donkey, ostriches, kangaroos, and llamas has received special attention. Properly trained and maintained dogs can reduce sheep loss to predation.

In general, many carnivores escaped extinction during the last century as a result of legal protection, habitat restoration and changes in public attitudes. However, conflicts among carnivores, livestock and humans are increasing in some areas. For instance, in Africa, the endangered wild dogs range usually beyond the boundaries of protected areas and may be exposed to lethal control by farmers (Woodroff*et al*., 2005).

2.4.2. Human-herbivore conflict

This is another major type of human-wildlife conflict. Largeherbivore mammals cause crop loss near protected areas among agriculturalists in many parts of Africa. The extent of damage is almost insignificant when it is considered at the global level compared to the damage caused by invertebrates and rodents. However, in the area where large number of animals occurs, the whole season production may be lost in a single night (Naughton-Treves, 2003)

Wildlife damage varies considerably from site to site and farmers have unequal capacity for preventing losses. Farmers themselves are sometimes, the causes for crop loss because they continuously change the vegetation structure of the land closer to the protected areas. This changed vegetation probably becomes attractive to wild herbivores. Growing densities in livestock population can create an overlap of diet and forage competition with wild herbivores. This results in overgrazing and decline or local extinction in wild herbivore populations (Mishra *et al*., 2003).

Almost all countries in Africa including Ethiopia reported problems with herbivores crop raiding (Yirmed, 1997). Subsistence agriculture is the sector more exposed to damage than other crop pests. According to Kimega (2003), food items such as maize, cassava, beans, potatoes, and fruit trees are the target for the hungry such as, baboons, zebra, buffalo and wild pigs. Among those the damage caused by common agricultural pests (primates, rodents, birds or insects), is often far

greater (Hoare, 2000). Subsistence agriculture is the sector more exposed to herbivores damage than other crop pests. Generally, it is difficult to alleviate the conflict between herbivores and humans. But it is possible to minimize it using different conservation measures.

2.5 Values of wildlife

2.5.1 Economic values of wildlife

Several classifications are used for the values of (wildlife) biological resources.The values of wildlife split into direct and indirect such asconsumptive: non-market value of firewood, game, etc. Productive use value includes commercial value of timber, fish, etc. The indirect values were classified as non-consumptive use value: scientific research, bird watching, etc,option value: value of maintaining options available for thefutureexistence value: value of ethical feelings of existence ofwildlife. Classification adopted rather relies on a pragmatic approach differentiating between the following: the economic importance of wildlife, the nutritional value, the ecological role and the socio-cultural significance (Matthew *et al.*, 2009).

Africa,compared to other continents, has the largest number of endemic families and genera of big games with high degree of endemism. This is one of the reasons for African fauna to be so interesting and spectacular.The non-consumptive use of wildlife is mostly based on the aesthetic value of wildlife. Wildlife is the support of the tourism industry, as beaches are the support of the seaside tourism industry. This category of tourism is essentially based on wildlife viewing and is almost entirely part of the service sector (Wheatley *et al.*, 1994)

2.5.2 Ecological value of wildlife in natural habitats

Wildlife has an obvious direct effect on the physiognomy of habitats. For instance, the role of the elephant in African savannahs has been studied in depth; when a mega herbivore such as the elephant disappears from regions within its original distribution area, the ecosystems tend to change: open habitats become subject to bush encroachment and eventually turn into forests (Stuart-Hill , 1992). This encroachment can cause the disappearance of some savannah species but also allows the forest wildlife to thrive.

Wildlife also plays an important role in seed dispersal. Birds, particularly migratory species, can carry seeds in their feathers or in their digestive tract over very long distances, even from one

continent to another. Monkeys and bats are responsible for the translocation of various fruit-bearing species of tree through their feces. In Africa, elephants disseminate many seeds of trees over extensive distances, both in the dry savannahs and in moist forests. For example, in the Tai forest , 30% of the woody vegetation is disseminated by elephants (Alexandre, 1978). Some species also have a vital role for the pollinization of certain plants. This role is widely recognized for numerous taxa of insects and birds, but less for bats, although the only family which feeds on nectar is responsible for the fertilization of more than 500 species of plant.

Wildlife may be seen as sometimes presenting negative or adverse values. Depredation of wildlife to people (casualties), livestock (predation), agriculture (crop damage) and natural landscape (invasive pests) are considered counter- or anti-values. As Patterson *et al*. (2004) states observers may have different views of the same value: the wildlife protectionist might consider normal for the predators to prey on livestock (positive value for wildlife), while the cattle-owner would see the large predators as detrimental (negative value of wildlife).

Other negative ecological effects on habitat include damages caused directly by large herbivores, such as elephant, hippopotamus and buffalo in Africa, wild boar, and red deer in Europe and small species quelea bird, grasscutter and baboon (*Papioanubis*)in Africa; rabbit, beaver (*Castor fiber*) or vole in Europe, not to mention the human casualties in rural communities. However, most damage occurs in agricultural landscapes, usually considered as 'modified ecosystems', where people and not wildlife play the dominant ecological role and have the most powerful impact in the long term. Some indirect but more ecological effects on human utilization of habitat may also occur (Oli*et al.*, 1994).

The income from cattle is directly related to the secondary production of beef, whereas income from wildlife is derived first from safari hunting, second from tourism, third from meat and fourth from the sale of live animals for restocking purposes. Consequently, a lower and thus more conservative stocking rate may be maintained with wildlife to the benefit of the environment. Furthermore, in semi-arid environments at least, vegetation changes are unreliable indicators of rangeland degradation, while rates of soil loss and changes in soil chemistry and physical properties may be more reliable (Clatworthy , 1989). More specifically, wildlife species may have either a positive or adverse general ecological input.

2.6 Community attitude towards wildlife

Rural Africans have little sympathy for wildlife and see animals purely in terms of their meat value. Rural communities consider wildlife, particularly large mammals, as threats to their safety and food security. This adverse perception is particularly strong near protected areas where the presence of wildlife populations inflicts daily costs on local communities, which can erode local support and tolerance. In turn, local people can develop a negative attitude towards reserves and wildlife, exacerbating conflict and undermining conservation efforts. Landowners, traditional land-users and even wildlife managers still sometimes deliberately kill species they consider a threat –from elephants to birds (Siex, 1999).Predators and crop raiders commonly generate negative attitude among the rural residents in many regions of the world since they prey upon domestic animals and damage crops(Oli*et al.*, 1994).

Human attitude and value about wildlife vary both among and with different sector of society Differences in wildlife attitude may also vary among rural agricultural producers (Messmer, 2000).Community perception towards the wildlife and protected area stem from variety of contributing factors including loss of access to resources and income generated from the area, crop depredation by wild animals, exclusion from participation in decision making, planning and management and low levels of awareness about the importance of wildlife conservation(Kiss, 1999).

People feel threatened by wildlife, both in terms of crop loss and personal safety (Eley and Else, 1984; Hill, 1999; Hoare, 2000).The continued negative attitude of communities towards wildlife emanates from losses (including human life, property, crops and even agricultural land set aside for conservation purposes) incurred by wildlife. The association of wildlife to damage is at present so integrated in the minds of local populations that they will even blame beneficial species (Struhsaker , 1999).

Attitude can be defined as a predisposition to act in a favorable or unfavorable fashion towards some object. It is considered as a precursor and an important predictor of willingness. For instance, a study on the wolf restoration in Yellowstone National Park showed that increasing distance from wolf range is seen as a more positive attitude towards the species. These days, the conflict between local people and wildlife is taken as the major conservation issue (Newmark*et*

al., 1993). The conservation attitude of local communities living adjacent to the protected areas is highly influenced by the problems associated with wildlife. People living surrounding the protected areas that are unable to control the losses caused by wildlife are likely to develop negative attitude towards wildlife.

In communities with a subsistence economy, even small losses can generate strong negative attitude towards wildlife (Oli*et al*., 1994). At present, crop damage and livestock depredation by wildlife are major source of economic loss. As a result, local communities have in turns' threatened protected areas by poaching and causing habitat loss through encroachment of farms into protected area. As reported by Newmark*et al*. (1994), in Tanzania, conservation attitude of thelocal people living adjacent to the protected area is strongly influenced by problems with wildlife. On the other hand, people who get benefit from natural resources are likely to support the wildlife conservation efforts and protected areas.

2.7 The role of Community in Biodiversity Conservation

Conservation of diverse ecosystems with abundant fauna and flora has been a crucial policy goal of colonial and post-colonial African governments since the early 20th century. However, enforced conservation policies have often resulted in serious conflicts between government authorities and the local people who use the natural resources within the conservation areas. Despite the fact that since the 1980s, community-based conservation has become one of the popular conservation strategies, most of the communities were not consulted with regard to the decision-making process about land and natural resources (Western and Wright, 1994).

For a long time many local communities contributed to the conservation and protection of biological resources. Recently their importance in natural resource protection and the need for deriving benefits from protected areas has been recognized. This move is necessary if local communities are expected to support conservation efforts (Matthew *et al.*, 2009).

Many rural communities regard forests and protected areas as belonging to the government. Analysis of the people's perceptions of the socioeconomic pressure on coastal forest resource use and management demonstrate that many people have no direct responsibility for the maintenance of the coastal forests because they do not belong to them and they are denied access to some of their traditional forest utilities. This denial perpetuates negative perceptions that many protected

areas are actually a liability rather than an asset. Although it is generally perceived that local communities destroy the environment, many protected areas are being over-exploited by people from urban areas and even from abroad for commercial purposes (Madulu*et al.*, 1999).

Discussing the importance of the local communities in biodiversity and environmental conservation, McNeely and Ness (1996) argued for the need to respect, preserve, and maintain knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles. For instance, in Tanzania, efforts to put this approach into practice are getting momentum although still at a very limited level. The land conservation project in Central Tanzania, has introduced the concept of partnership management in order to ensure that natural resources are productively utilized and sustainably managed (Nkwilima, 1999). Moreover, the National Forest Policy emphasizes that local community and other stakeholder participation in forest and wildlife conservation should be promoted through joint management agreements among all relevant parties (Yanda, 1998）.

Wildlife policy can flourish if local communities are made protection partners as well as beneficiaries of the revenue accrued from the protected areas (Kauzeni and Madulu, 2000). This is largely a community-based approach to conservation. These changes in perception and thinking with regards to local community participation, makes the understanding of the interactions between population dynamics, natural resources and the environment even apparent. Although notable efforts have been made to tackle environmental problems in Tanzania, minimal efforts have been made to identify the implications of demographic factors on the sustainability of conservation activities, especially in protected areas.

Broadly speaking, the variety of life in itself has an enormous ecological value. As is the case for every form of life, wildlife is closely connected to the environment. Being dynamic, it interacts continuously with all the components of the entire ecosystem and has to be taken into account by managers who make the natural resources management sustainable. Even if wild animals raid crops along and predate domestic animals along forest edges, they have become important components of ecotourism-linked conservation efforts (Butynski and Kalina, 1998).

2.8 Sustainable wildlife conservation

Many nations accept protecting their natural heritage to contribute for the protection of natural resource and conservation of the biological diversity of the world. A number of initiatives aimed at reducing human wildlife conflict and its related negative perceptions by humans towards wildlife have been proposed by governments and wildlife authorities and conservation groups (Katerere, 2005). Realizing the need and protecting its biodiversity, Ethiopia has become one of the worlds that ratified the Convention on Biodiversity. The country commenced its wildlife conservation and development program in 1965 (Andebrahan,1992). However, Ethiopia's conservation and protected area has different setbacks.

Many of Ethiopia's protected areas exist on paper only while others have declined in size or quality (Tewodros, 2006). Kabana Natural Forest part of BabiyaFollaregional forest priority area for conservation is one of the areas that decline in size and quality due to local community influences. No scientific research concerning the issue was conducted. The area has become under increasing human pressure impacting the habitat available to the native wildlife.

Managing the threats to wildlife populations requires a reconciliation of conflicts, as well as the recognition of habitat requirements of different species.Obtaining the cooperation of local people in efforts to both conserve and control wildlife damage is a significant mechanism for sustaining wildlife populations. In this regard, understanding attitudes and working through conservation education to affect attitudes maybe key to preserving wild animals in areas adjacent to humans. Studies of attitudes are relatively rare, and studies of the interaction between perceptions and wild animals are even fewer (Strum, 1986).

Thus, a clear understanding of the distribution of organisms in time and space is central to the evaluation of the conservation status of species and critical for the formulation of appropriate conservation strategies (Coetzer, 2012).The National Wildlife Policy (NWP) has emphasized on the importance of involving local communities surrounding the protected areas in the implementation of laws and regulations of the wildlife division. This policy has been developed from the realization of the local community's capacity to conserve and protect their environment and tackle problems of poaching.

3. STUDY AREA AND METHODS

3.1 Description of the study area

The present study was carried out in LimmuKossa District, Jimma Zone, Oromia National Regional State; southwest Ethiopia (Fig.1) .The Woreda is located in Jimma zone on the northern part of the town sharing common boundaries with TiroAfata, Manna, Cora Botor and LimmuSeka district. Kabana Natural Forest, the part of BabiyaFolla is one of the moist evergreen forests among remnant natural forest priority areas for conservation in the region where different kinds of mammals and birds are inhabited. It is 60 km away from the zone capital town and 375 km away from Addis Ababa, located at longitudes between 36° 15' E, latitude $7^{0}30'$ and 7° 45' N .The forest has an area of 22,780 hectare (Woreda Agriculture and Rural Development Office)

LimmuKossaWoreda has a total population of 204,748 of which 103,350 were males and 101,398 females. Topographically, the Woreda is characterized by dissected plateaus, plains and valleys. Attitudinally, the Woreda lies between 1250 and 2720 m.a.s.l. Several perennial rivers, intermittent streams, springs and one lake (chaleleki) are found in the woreda (LimmuKossaWoredaAgricultural and Rural Development Office). The study was conducted from September 2013 to July 2014.

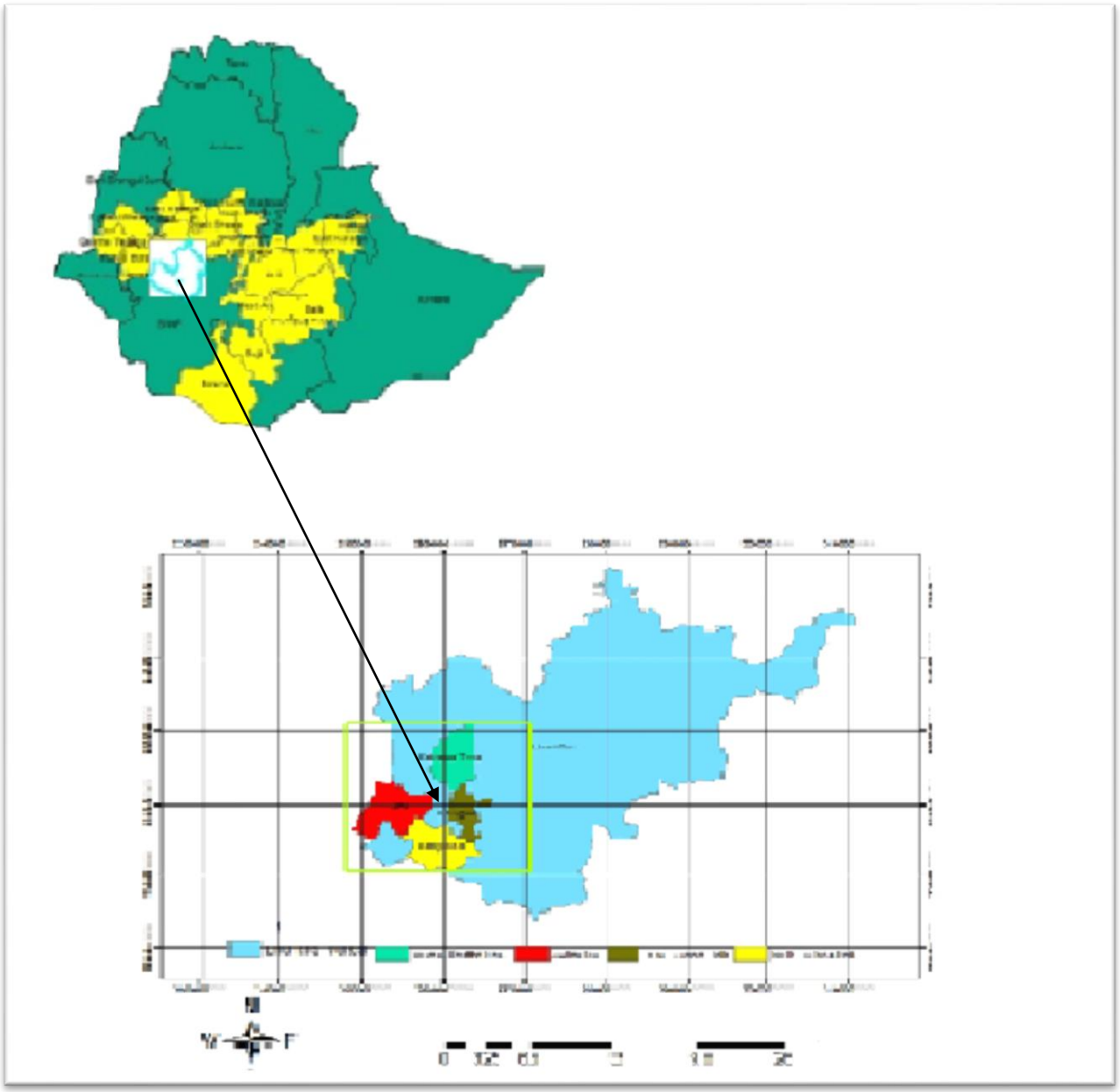

Figure 1: Map of the Study Area (Source: Jimma Zone Forest and Wildlife Conservation Enterprise,Babiya Folla Disrict Office).

3.1.1 Climate

The climate of the study area is classified into Dega (10%), Woinadega (65%) and Kola (25%) zones. The mean annual rainfall of the area is between 1600 and 2200 mm. The annual minimum and maximum temperature of the woreda ranges from 11-27ºC. Chromic and pellicvertisols, orthicAcrisols and DystricNitosols are the major soil types found in the Woreda(LimmuKossaWoreda Agriculture and Rural Development Office).

3.1.2 Wildlife

Due to different types of vegetation present Kabana Natural Forest contains variety of wildlife. Some of the common wildlife includes*Papioanubs*, *Scrofadomesticus,ChorocebuPygrethrus,Colobusgureza,Hystrixcristata,Phacochoerusafricanus, Canisaureus,Crocutacrocuta ,Oryctolaguscuniculus,Pantheratigris*, and varieties of species of birds, mammals and reptiles. Even though high national forests woodlan and manmade plantations are available wildlife conservation is not practiced in the district (Personal communication with local community).

3.1.3 Land use pattern

Agriculture (crop production) is the dominant livelihood activity followed by livestock raising in the study area. Out of the total land in the Woreda,34.9%, is suitable for farming. The most widely cultivated predominant crops are maize, sorghum, teff, barley and bean. Coffee, fruits and sugarcane are the major local cash crops in the Wored (WoredaAgricultural and Rural Development Office and local community personal communication).

3.2 Methods

3.2.1 Selection of the study site

A survey of the study site was carried out in May 2013 and resulted in the identification of four out of six Kebles which are more adjacent to the Kebena forest. During this period basic information about the study site were collected from the concerned bodies such as the local people living around the study area and governmental bodies specially Agriculture and Rural

Development office experts. In order to make the study manageable and representative, purposive sampling procedure was employed to select four kebeles which are more adjacent to the forest where severity of human impact were strong. Those Kebeles which are selected for the present study were, QacoTirtira, KellaGabbisa,KossaGeshe and Acha.

3.2.2 Study design and population

Community based cross sectional survey study design was used to assess the impact of human activity and community perception around Kabana Natural Forest. Purposively selected community elders, kebele leaders, Development Agents of the selected Kebeles as well as the Woreda Agriculture and Rural Development Office experts wereidentified in consultation with the local agricultural experts and community elders as source of population to provide both qualitative and quantitative data for this research.

3.2.3 Sample size determination and sampling technique

A total of 300 individuals from four Kebeles who lived there for a minimum of ten years and have been familiar with events happening in the site information were selected purposively. From this total sample size of the study was determined using a formula for single population proportion formula following Cochran (1977) and proportional allocation was employed to determine the sample size for each Kebeles. Hence;

$$n = \frac{n_o}{1 + \frac{n}{N}} where, n_o = \frac{z^2\,\alpha/2\,pq}{d^2}$$

n= total sample size, d = degree of accuracy (5-10%)

N = total number of individuals P =proportion of population

Z= level of significance (95%,≈1.96), q = 1-p, where d = 0.05

n_o= marginal line ∝= 0.05

$$n_{o} = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384$$

Considering the population correction factor, the sample size was;

$$n = \frac{no}{1+\frac{n}{N}} = \qquad n = \frac{384}{\quad}$$

1+384 ≈ 168

300

Based on the above calculation, 168 respondents were sampled and the sample size for each Kebele was determined. Lottery method Simple random sampling technique was used to identify sample respondents from total population of each Kebele. The distribution of respondents per each kebele is shown below (Table 1).

Table 1: Distribution of respondents by Kebeles from LimmukossaWoreda

Study site (Kebele)	Total population	Sample size	%
QacoTirtira	105	59	35.1
KossaGeshe	82	46	27.4
KellaGabisa	63	35	20.8
Acha	50	28	16.6
Total	300	168	100

3.2.4Data Collection Method

Information on impact of human activity and local community perception on wildlife conservation in Kabana Natural Forest was collected from November 2013 to April 2014. Quantitative and qualitative data collection methods were used to collect relevant data. Structured followed by semi-structured questionnaire, observation and face-to-face interview were used as data collection tool to gather primary data study participants in the study site. Observation and household survey was made in all selected kebeles in order to get relevant data related to the objective about human activities and its negative impact on wildlife and wildlife conservation. The household questionnaires were prepared in English and translated to the local language (Afan Oromo) were administered to 168 randomly selected respondents.

In order to get primary data with respect to research questions and related issues key informants were interviewed on human impact and community attitude. Check-list was prepared in advance consisting of 7 essential questions prepared in English and translated to local language help to conduct key informant interview. Key informants included were two Peasant Association Leaders from each kebels, two Development Agents from each Kebeles and two Woreda Agriculture and Rural Development expert, totally 18 respondents who were purposively

selected and included in the interview. For this study, key informants were defined as people who are knowledgeable about human activity and community perception and were living in the locality at least to 10 years.

Field observation or guided field walk with key informants was made in the site in order to get qualitative data related to the objective of the study. Field data sheets were used to record what is observed during the field walk.

3.2.5 Methods of Data Analysis

The qualitative and quantitative data collected from the primary source were organized and analyzed using descriptive statics and Ms SPSS version 16.0 software package.χ^2 (chi-square**)** test was used to compare categorical data with respect to impacts of human activities and community attitude. Descriptive statistics was employed in order to present the data using tables and figures. Percentages frequency distribution was used to describe the characteristics of respondents, impact of human activity, problems the community faced due to wildlife, benefits the communities need to obtain from the site and contribution of local community to the wildlife conservation. Finally the analyzed data were interpreted by using charts, tables and percentages.

4. RESULTS

4.1. Profile of household respondents

Out of 168 participants 165 (98.2%) were male and 3(1.8%) female aged between 30 to 60(Table 2). Most respondents from each of the study site 105(62.5%) have family size of seven and above increasing the demand for more resource utilization.

Most of the participants 132(78.5%) were living near the forest for 11 to 30, while 19.58% of the respondents have lived there from 31 and above years (Table 2). 58(34.5%) and 86(51.19%)of the respondents lived 1-2 and 3-4 km away from the site, respectively, while 12(7.4%) lived very closer to the site (Table 2).

The household varied also on their level of education. Among participants 115(68.45%) of the respondents were illiterate, while 46(27.7%) have attended primary education and 7(4.16) have attended secondary education.

Table 2: Profile of householdrespondent

Characteristics of the respondents		n	% from the total
Sex category	Male	165	98.2
	Female	3	1.8
	Total	168	100
Age	< 30 years	2	1.19
	30-40	98	58.3
	41-50	43	25.59
	51-60	19	11.3
	>60 years	6	3.57
Family size	1-3	3	1.7
	4-6	50	29.7
	7-9	105	62.5
	10 and above	10	5.9
How long did you live near Kabana forest?	10 years	3	1.78
	11 – 20 years	98	58.3
	21-30years	34	20.2
	30-40years	29	17.2
	Above 40years	4	2.38
. Residents distance from the conservation site	< 1km	12	7.14
	1-2km	58	34.5
	2-3km	86	51.19
	3-4km	10	5.9
	Above 4 km	2	1.9
Educational level of respondents	No formal education	115	68.45
	Primary education	46	27.38
	Secondary education	7	4.16
	Beyond secondary education	-	-

4.1.1 Economic Dependence and Resource utilization

4.1.1.1 Livelihood activities of Respondents

The livelihood activity of the people living in and around the Kebena Natural Forest conservation site is exclusively on subsistence agriculture and the rearing of livestock. Accordingly,14(8.3%) of the respondents were engaged in cultivation of crops in which sorghum and maize were the most widely cultivated crops in the area, while coffee production is the major local cash crop in the area. However, 9(4.8%) of the respondents were engaged in livestock rearing such as goats, cattle, sheep and pack animals. Furthermore, the majority 141(83.9%) of the respondents were identified as engaged in crop cultivation and rearing livestock (Fig. 2).

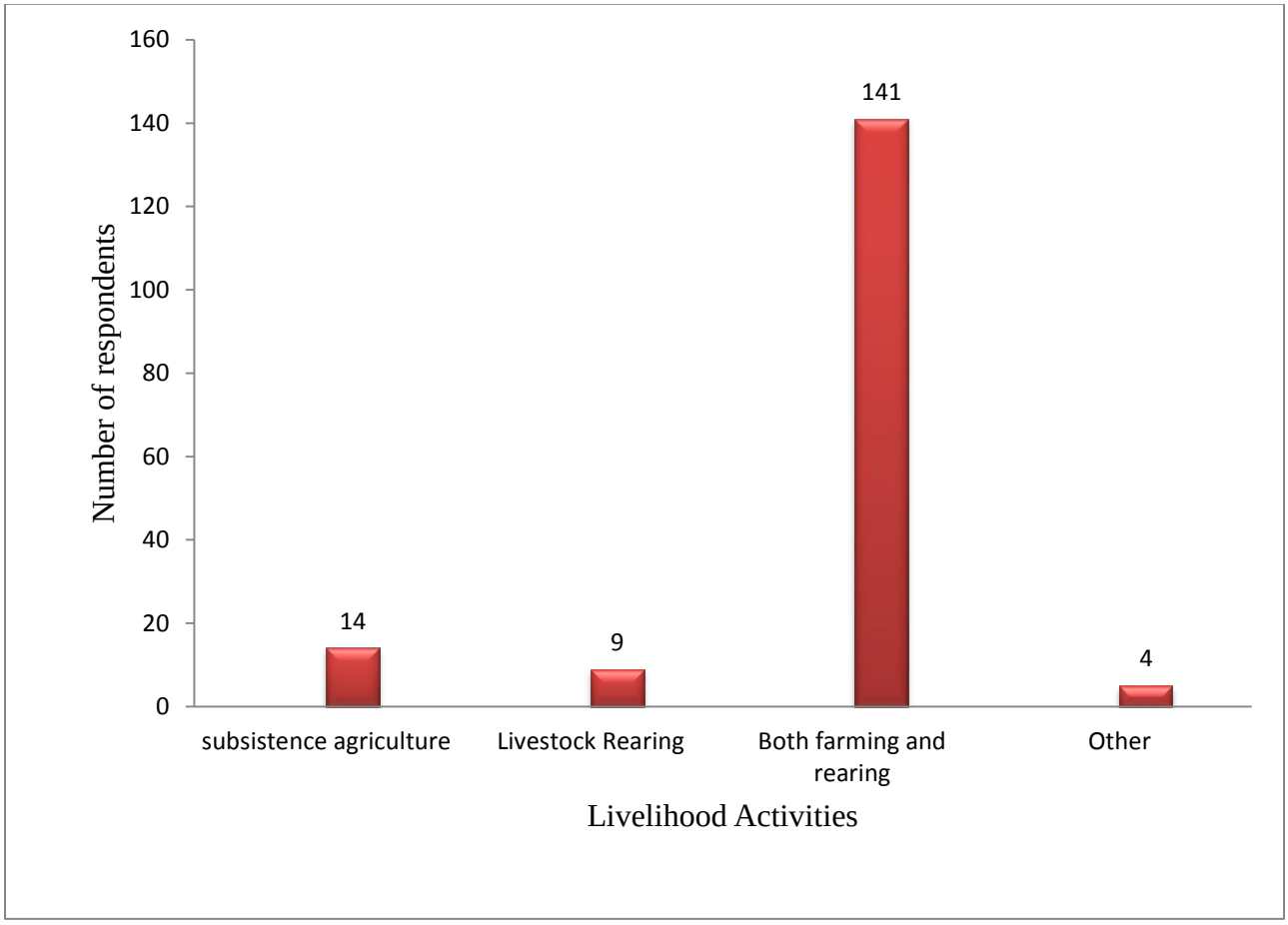

Figure 2: Livelihood activities of the local community

4.1.1.2 Land holding scheme of the local community

Household census in and around border of Kabana Natural Forest conservation site showed that, 165 (98.2%) household have farmland with different size ranging from half ha to four ha.95(57.5%)of respondents haveland of 1-2 ha, while, 120(71.4%) of questionnaire respondents has land holdings of less than two ha, though 58(34.5% held above two ha (Fig. 3). There was a significant difference$\chi 2$ = 9.65, df (5), P<0.05 in the size of land holding among the respondents. Hence, large number of respondents has land holding less than two hectare.

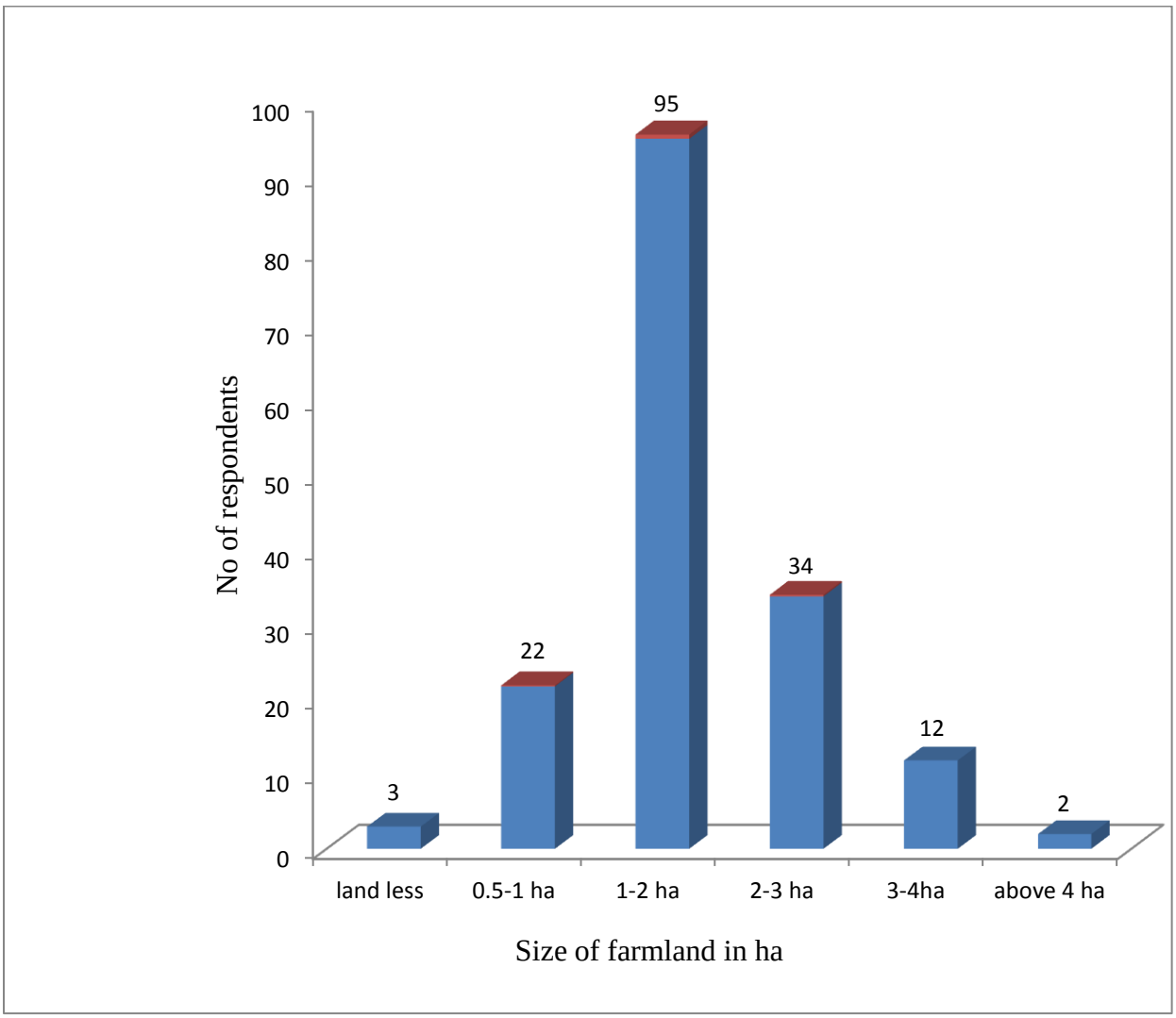

Figure 3: Size of farmland owned by the local community

4.1.1.3 Crop growing and livestock rearing in the study area

Most respondents depended on agriculture for subsistence. Accordingly, respondents were identified that maize, sorghum, barley and teff were the most predominant widely cultivated crops in the area.

Livestock rearing is also another livelihood activity in which the communities located in and around the conservation site depend on. Residents living around Kabana natural forest conservation site rear cattle, sheep, and goats and pack animals. Number of livestock and their type is indicated in (Table 3).

Table 3: Kind and number of livestockowned by respondents

Kebeles	Types and number of livestock					
	Cattle	sheep	Goat	Donkey	Mule	Horse
Qacotirtira	406	178	237	26	11	-
KossaGeshe	362	139	186	18	8	-
KellaGabisa	365	105	141	11	9	1
Acha	280	86	112	9	5	1
Total	1404	508	676	64	33	4

4.1.2 Human interruptions to wildlife conservation

The common known wild animals found in Kabana Natural Forest were Wild pigs, Anubis baboon vervet monkey, colobus monkey, common jackal, blue monkey, porcupine, warthog and different kinds of birds (Table 4).

Table 4: Common wild animals found in the study area

Local name of animals	Common name of animals	Scientific Name
Jaldesa	Anubis baboon	*Papioanubs*
Boyye	wild pig	*Scrofadomesticus*
Qamale	Vervet monkey	*ChorocebuPygrethrus*
Weni	Colobus Monkey	*Colobusgureza*
Xadde	Porupine	*Hystrixcristata*
Karkarro	Warthog	*Phacochoerusafricanus*
Wango	Jackal	*Canisaureus*
Maja	Spotted hyena	*Crocutacrocuta*
Wakkalle	Rabbit	*Oryctolaguscuniculus*
Qerransa	Leopard	*Pantheratigris*

4.1.2.1 Trends of wildlife population in the Kabana forest

Concerning trends of wildlife population in the conservation site, 96(57.14%) of respondents have remarked that wildlife populations have declined in their respective areas, while 53(31.5 %) of the respondents remarked that the wildlife population has increased. Only 19(11.3%) of the respondents were unsure whether wildlife population has increased or declined (Table 5). However, there was statistically significant difference between respondents ($\chi 2=6$,df (2), $P<0.05$) on the view of trends of wildlife population in the conservation site. Hence, large number of respondents from Acha and KossaGeshe has remarked that the trend of wildlife population was decreasing in the Kabana Forest.

Table 5: Local people perceptions on trends of wildlife population

Item	Kebels										p-value
	QacoTitriria (n=59)		KossaGeshe (n=460)		KellaGabisa (n=35)		Acha (n=28)		Total (n=168)		
	n	%	n	%	n	%	n	%	n	%	0.021
Increasing	20	33.8	14	30.4	11	31.4	8	28.5	53	31.5	
Decrease	33	55.9	27	58.6	19	54.2	17	60.8	96	57.14	
Unsure	6	10.5	5	10.8	5	14.2	3	10.7	19	11.9	
Total	59	100	46	100	35	100	28	100	168	100	

Human interference that contributed to the declining of wildlife in the study area was the utilizing of wildlife habitat for different purposes. These interferences were identified as 141(83.9%) destruction of wildlife habitat primarily for farmland expansion and coffee plantation, 82(40.8%) for firewood collection and tree cutting for fuel, 60(35.7%) for grazing of livestock, and 55(32.7%) encroaching to wildlife habitat (Table 6).

Table 6: Human interference on wildlife conservation

Items	Human interruptions	n	% from the total	Rank
What are the main human interruptions that contributed to the destruction of wildlife in the study area?	Grazing of livestock	60	35.7	3
	Farmland expansion and deforestation	141	83.9	1
	Tree cutting firewood and household consumption.	82	48.8	2
	Population pressure	55	32.7	4

In the present study, 66.3% of the community living around Kabana Forest utilizes the site for the household consumption and farmland expansion for coffee plantation besides using as

grazing land for their livestock, and tree cutting for construction and household activities. This unauthorized harvesting of resources then, results in altering forest cover of an area and diminishing wildlife resources

Plate 1: Views of Kabana Natural Forest clearing for coffee plantation and household activities (by:FekaduMegerssa, May 13/201)

4.1.2.2 Grazing area and duration of grazing

The community living in and around the Kabana Nature Forest utilizes the site as a grazing land for their livestock. Among the participants, 51(30.3%) of the respondents graze their livestock inthe conservation site and 30(17.85 %) outside the conservation site, while 87(51.8%) of the

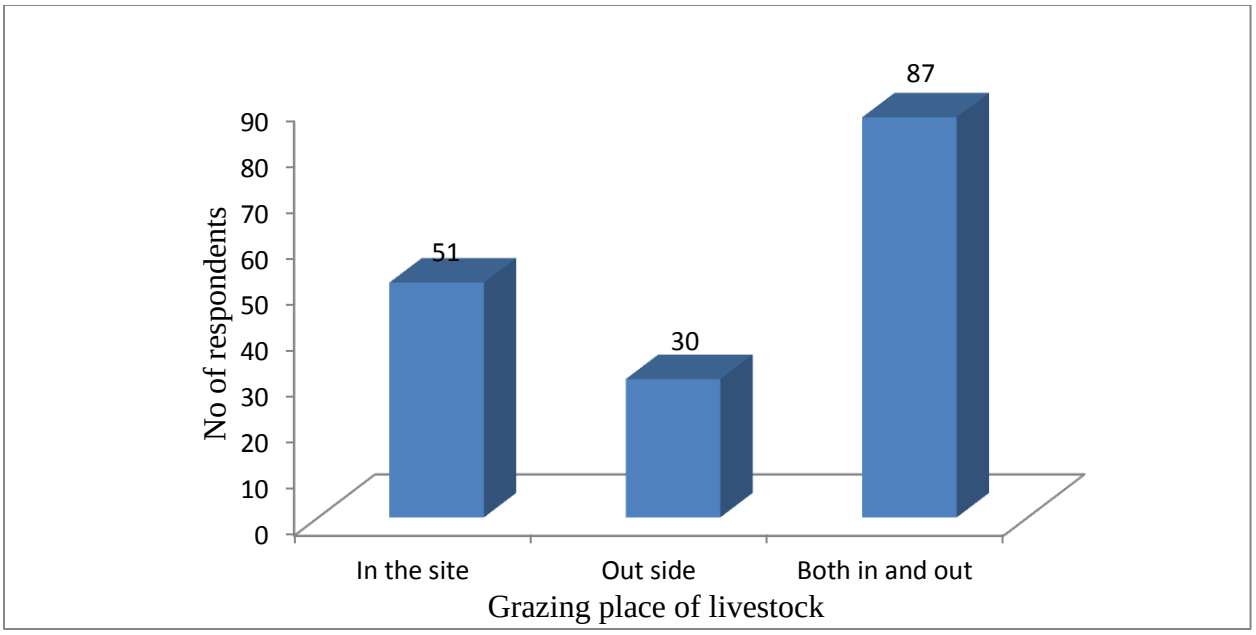

Figure 4: Grazing areas of livestock

Average period of utilization of the conservation land for grazing was five months and the range of grazing period in the site was 3 to 12 months. For most respondents 126(74.9%), the duration of grazing in the conservation site was from four to nine months (Table 7).

Table 7: Duration of livestock grazing in the conservation site

Item	Duration	n	%
For how long do yourlivestock grazed in and around the Kabana Forest?	1-3 months	16	9.52
	4-6 months	86	51.2
	7-9 months	40	23.8
	10-12months	26	15.5

4.1.2.3 Construction of new huts in the conservation site

78(46.6%) of the respondents indicated that there is still construction of new huts near and in the conservation site, while 90(53.5%) of the respondents showed that there is no construction of new huts in the site (Table 8).However, there was no significant difference ($\chi 2$=2.00, DF (1), P>0.05) among respondents on the construction of huts.Non-governmental organizations found in the Woreda were did not participate in the wildlife habitat conservation rather most private

owners practiced coffee plantation and harvestation in and around the forest by constructing huts for coffee bean mill and store.

Table 8: Construction of new huts in and near the conservation site

Item	Kebeles										P-value
Practice of new hut construction in the site	Q/Tirtira (n=59)		K/Geshe (n=46)		K/Gabisa (n=35)		Aca (n=28)		Total (n=168)		0.157
	n	%	n	%	n	%	n	%	n	%	
Still practiced	27	45.7	22	47.8	16	45.7	13	46.5	78	46.6	
Not practiced	32	54.3	24	52.2	19	54.3	15	53.5	90	53.5	
Total	59	100	46	100	35	100	28	100	168	100	

4.1.2.4 Practice of traditional hunting

The result indicated that about 136(87.17%)the respondents indicated that there was no traditional hunting practiced in the conservation site. On the contrary, 12(7.4 %) of the respondents indicated that, there were still traditional hunting practiced in the conservation site, while 20(11.9%) of respondents indicates that sometimes there is still practice of traditional hunting in the area (Table 9).However, there was statistically significant difference between respondents ($\chi 2$=6.0, df(2), $P < 0.05$) on the views of practice of traditional hunting among the deferent Kebeles. Hence, large number of respondents from Acha and Qacotirtira reported as there was no practice of traditional hunting in the study site than from KellaGabis and KossaGeshe.

Table 9: Practice of traditional hunting in the conservation site

Item	Kebeles										P-value
Is there practice of traditional hunting?	Q/Tirtira (n=59)		K/Geshe (n=46)		K/gabisa (n=35)		Aca (n=28)		Total		
	n	%	n	%	n	%	n	%	n	%	
Yes	4	6.7	3	6.5	3	8.5	2	7.1	12	7.4	
No	48	81.3	37	80.4	28	80	23	82.1	136	87.17	
Sometimes	7	11.8	6	13	4	11.4	3	10.7	20	11.9	
Total	59	100	46	100	35	100	28	100	168	100	0.010

4.1.2.5 Human wildlife conflict around conservation area

134 (80.4%) and 20(11.9%) of the households experienced crop damage and induced damage on livestock respectively in the last four years. Two of the respondents from the study site faced disease transmission by wildlife, whereas 76(46.1%) of the respondents reported the problem of both livestock predation and crop damage. Few 3(1.78%) of the respondents did not face any problem caused by wildlife (Table 10).The kinds of domestic animals involved were goats, sheep and cow. The local people identified spotted hyena and Jackal, as the most problematic in terms of livestock predation whereas, Anubs baboon, vervet monkey, porcupine and warthog in terms of crop damage.

Table 10: Problems that the local community faced due to wild animals

Item		n	% from the total	Rank
What problems did the community face due to wild animals?	Crop damage	134	80.4	1
	Predation	19	11.9	3
	Disease transition	2	1.7	5
	Both crop damageand predation.	76	46.1	2
	None	3	1.78	4

4.1.2.6 Tendency of wildlife induced damage.

The majority of respondents 130(77.38%) indicated that wildlife induced damage to livestock predation and crop damage was increasing from time to time, 32(19.04%) of the respondents replied that the tendency of crop damage and livestock predation was decreasing, while 6(3.6%) indicated that the tendency was stable (table 11). However, there was significant difference ($\chi 2$ =6,df (2), P<0.05) among the views of respondents with regard to tendency of wildlife induced damage.Hence, large number of respondents from Acha and QacoTirtira replied as thetendency of crop damage and livestock predation was increasing than KellaGabisa and KossaGeshe.

Table 11: Tendency of wildlife induced damages

Tendency of wildlife induced damage	Kebeles								Total		p-value
	Q/Tirtira (n=59)		K/Geshe (n=46)		K/Gabisa (n=35)		Acha (n=28)				
	n	%	n	%	n	%	n	%	n	%	
Increase	46	77.9	35	76	27	77.1	22	78.5	130	77.4	0.019
Decrease	11	18.6	9	19.5	7	20	5	17.8	32	19	
Stable	2	3.3	2	4.3	1	2.8	1	3.5	6	3.6	
Total	59	100	46	100	35	100	28	100	168	100	

Respondents have remarked that the tendency of crop damage by wildlife has increased from time to time (Table 12). Large number 97(58%) of respondents expected the government to kill the problematic animals living there, while 44 (25.7%) of the respondents wanted to minimize those problematic animals from time to time (Table 12).

Table 12: Community expectation to reduce wildlife induced damage

Item	Expectation	n	%
What do you expect from government to reduce wildlife induced damage?	Killing problematic animals	97	58
	Minimize those problematic animals	44	25.7
	Take problematic animals to other place	27	16.3

4.1.3 Community awareness and attitude towards wildlife conservation

114(67.85%) of the respondents in the study area responded that they did not have awareness about wildlife conservation. On the contrary 46 (27.4%) of the respondents expressed as they have awareness about wildlife conservation and 8(4.76%) of the respondents have no idea on the issue (Table 13).

Table 13: Local community awareness on wildlife conservation

Items	Respondents response	N	% from the total
Does the Community have awareness about wildlife conservation?	Yes	46	27.4
	No	114	67.85
	No idea	8	4.76

In the present study, 86(51.19%)of the local community believed that conserving wildlife did not benefit the local community. However, 43(25.59%) considered conserving wildlife is important in attracting tourists and hunting during drought, while 39(23.2%) had no idea on benefits of conserving wildlife (Fig. 5). Concerning the view of respondents on the benefit of wildlife conservation, there was astatistically significant difference(χ^2=4.25, DF (2), P<0.05) between respondents view. Hence, large number of number of respondents remarked that conserving wildlife did not benefit the local community.

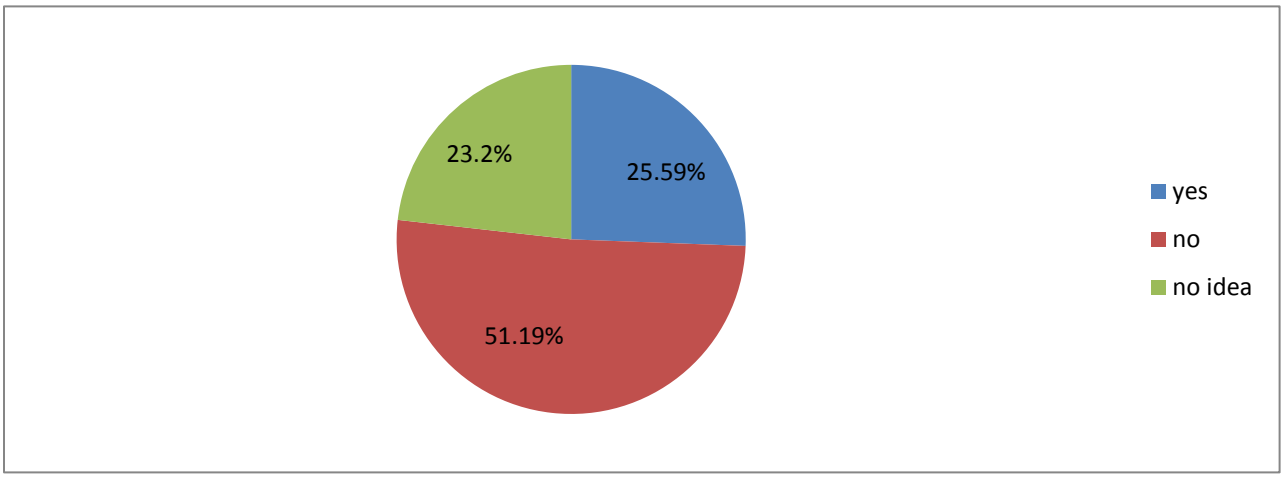

Figure 5 : Views on benefits of wildlife conservation

4.1.3.1 Attitude of local communities towards wildlife conservation

102(60.71%) of the respondents have negative attitude on wildlife and wildlife resource to be conserved and 49(29.16 %) had positive attitude towards wildlife while, 17(10.11%) had no any idea on wildlife and their conservation. However there was statistically significant difference between respondents ($\chi 2$=8, df (2), P<0.05) in the attitude of local communities on wildlife conservation. Thus, large number of respondentshave negative attitude on wildlife resource to be conserved .Concerning the benefits that the community needs to obtain from the conservation site, questionnaire survey revealed that 132(78.6%) of local residents need the conservation site for grazing of livestock, 152(90.4%) fire wood collection 106(63.09%) for farmland expansion and coffee plantation, 67(39.9) house construction materials and 32(19.04) for beekeeping practice (Table 14).

Table 14: Community attitude towards wildlife and benefitsobtained from the conservation site

Items	Responses	n	% from the total
What is your attitude towards the conservation of wildlife?	Positive	49	29.16
	Negative	102	60.71
	No idea	17	10.11
What benefits do you need to obtain from the conservation area?	Grazing area	132	78.6
	Firewood collection	152	90.4
	Farmland expansion	106	63.1
	Construction materials	67	39.9
	Beekeeping	32	19.04

As the result of the study indicated 132(78.6 %) of the respondents collect fire wood from the conservation site. It had a significant impact on the habitat quality by removing vegetation which is an important habitat for some species, which are the prime diet of carnivores. This activity has resulted in continuous land clearing leading to habitat fragmentation and decrease in abundance and diversity of wildlife in the site and surrounding areas.

Plate 2: Views of Kabana Natural Forest utilized for fire wood collection (by FekaduMegerssa February 4/2014)

4.1.3.2 Attitude of local community on the foundation of the conservation site

Local community in and around Kabana Natural Forest did not recognize the foundation of the conservation site near by them. This is supported by 97(58%) of the respondents, while 61(36.8%) of the respondents received the foundation of the site nearby, and 8(5.2%) were neutral on their attitude (Fig. 6). Respondents expressed supportive views of their nearby site has both for economic and ecological values. Other respondents expressed negative view where they did not receive any benefit from the site.

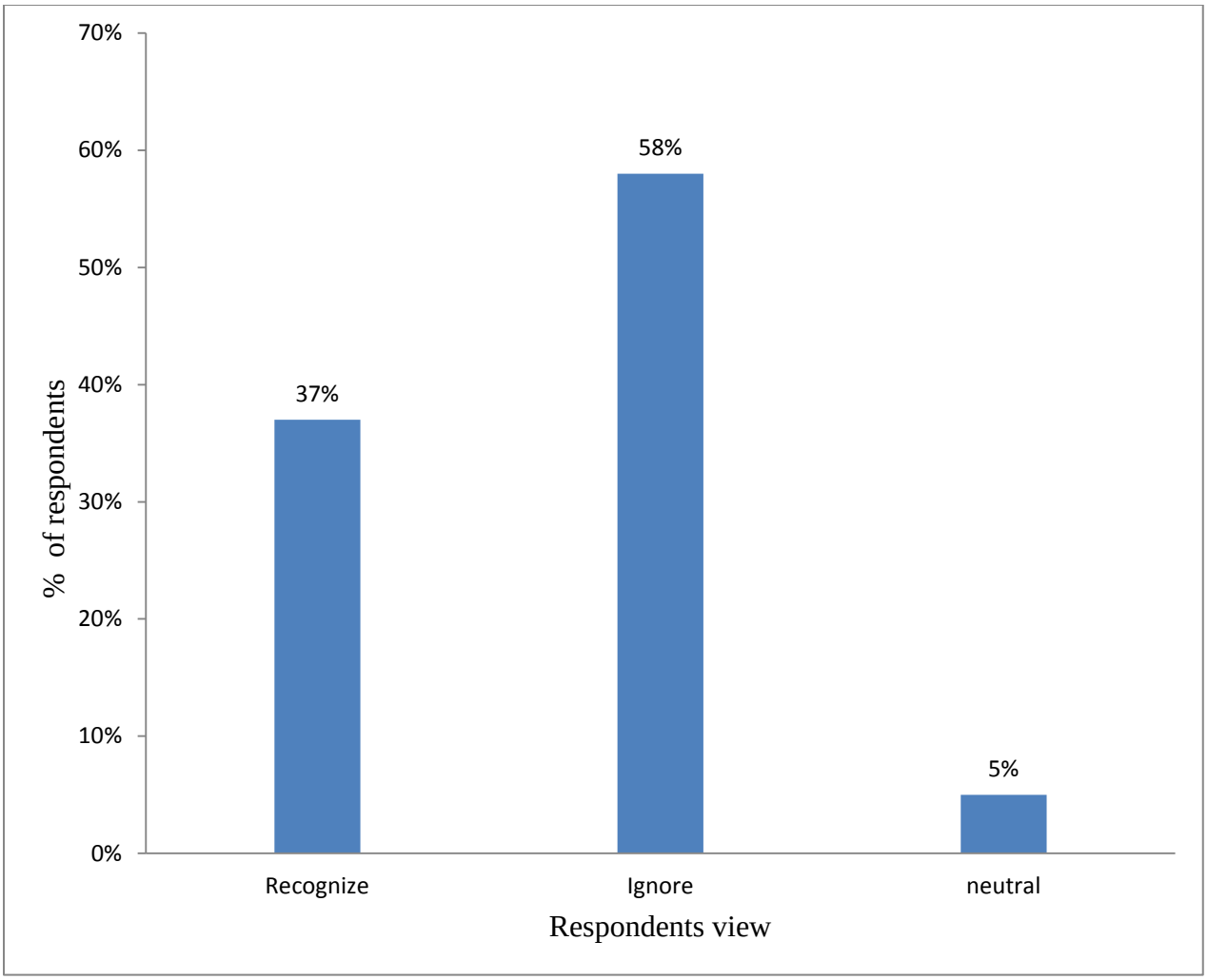

Figure 6: Views on the foundation of nearby conservation site.

4.1.3.3 Community attitude on the size of conservation site

Many respondents 127(75.5%)expressed their belief that the size of the conservation site was too large and felt that some land could be returned to the community. 12(7.2%) stated that the size is too small, while 29(17.2%) considered the site of conservation site as right size (Table 15). There was a significant difference ($\chi 2$=13.22, DF=2, P<0.05) in the view of the size of conservation site between respondents.Hence,large number of respondents from respondents from QachoTirtira and KossaGeshe reported that the size of conservation site was to large than KellaGabisa and Acha.

Table 15: Community attitude on the size of the conservation site

Item	Kebele									p-value
Views on Size of conservation site	Q/Tirtira (n=59)		K/Geshe (n%=46)		K/Gabisa (n=35)		Aca (n=28)		Total	
	n	%	n	%	n	%	n	%	n	%	
Too small	4	6.7	3	6.5	3	8.5	2	7.14	12	7.2	
Too large	45	76.2	35	76	26	74.2	21	75	127	75.5	
Right size	10	16.9	8	17.3	6	17.1	5	17.8	29	17.2	
Total	59	100	46	100	35	100	28	100	168	100	0.001

4.1.4 Sustainable and participatory wildlife conservation

Farmers in the study area utilized various method to keep their farms against crop pests and livestock against predation. Local methods mentioned by respondents to scare wild animals included guarding crops and livestock 107(77.5%), use smoke and fire 37(22.0%), trapping problematic animals 21(12.5 %), using guard dogs 30(17.9 %) and thorn bush fences around the crop. Most respondent 131(78%) reported using watching eye (guarding) as the very effective method of minimizing the damage (Fig. 7).Respondents also identified that August- December months were the season in which the crop damage problem is sever.

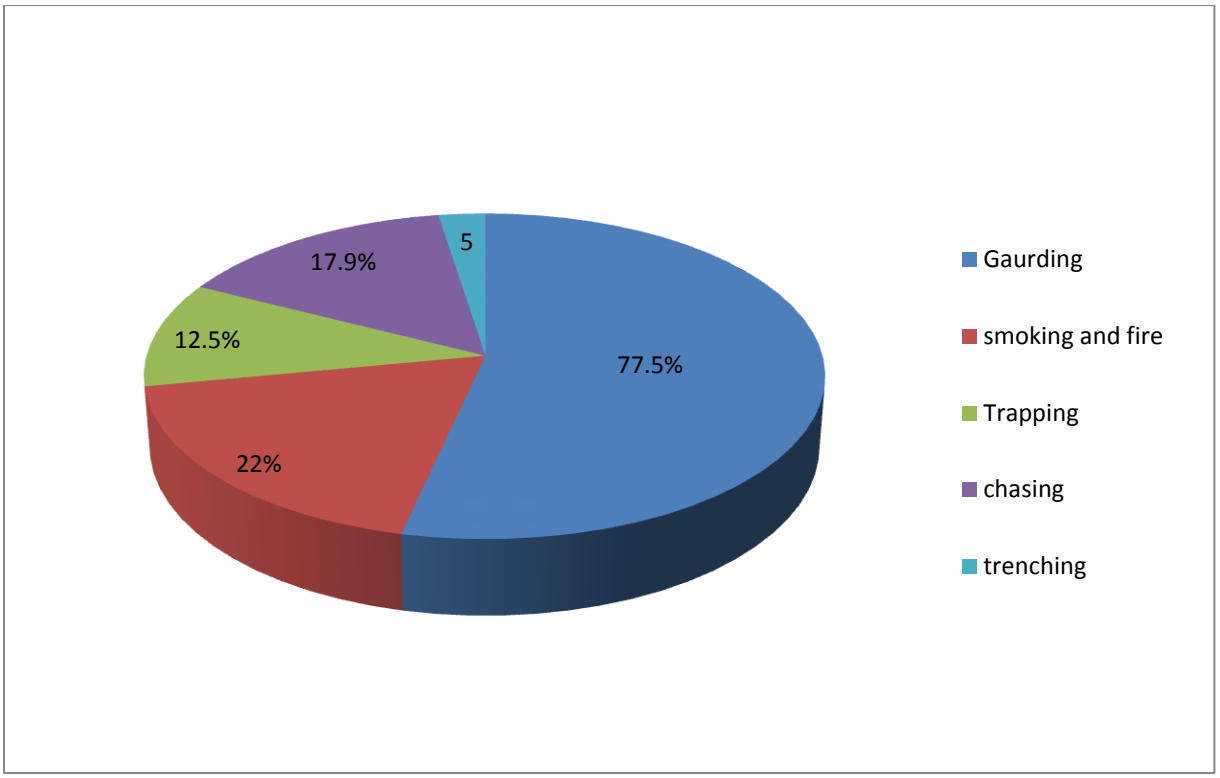

Figure 7: Local methods used to protect wildlife induced damage

4.1.4.1 Relationship between conservationists and local community

Regarding local views of respondents towards conservationists and protected area staff members ,107(64%) expressed that the relationship between conservations and local community was poor and felt that staffs were antagonistic or disliked local residents, while 50(30%) of respondents that receive some benefits from the area expressed positive attitude on the protected area conservation managers and reported as they have good relationship with that of conservationists; whereas,11(6%) of the respondents responded they have smooth relationship with that of conservationists (Table 16). However, there was statisticaldifference($\chi 2$=8,df (2),P<0.05)in their views of relationship between conservationists and the local community. Hence, large number of respondents have expressed as they had poor relationship with conservationist.

Table 16: Relationship among conservationists and the local community

Item	Response	n	%
How do you explain the relationship between community and conservationist?	Good	50	30
	Smooth	11	6
	Poor	107	64
	Total	168	100

4.1.4.2. Participatory wildlife conservation

Conservationists of the site do not participate the local communities in developing conservation program. This was supported by 118(76%) of the respondents. The result of the present study, 107(64%) of the respondents revealed that local residents do not know why the conservation site was established there (Table 17).

Among the respondents, 114(68%) are willingness to be involved in conserving wildlife resource and develop supportive relationships between communities and nearby protected areas that are critical to the long term success of conservation efforts (Table 17). About 125(74.4%) of the respondents expressed that the local government and conservationists do not arrange awareness creation and community based conservation program to gain local support for conservation. Indeed, respondents expressed their desire to look after wildlife like their own belongings and to continue to protect the wildlife if the government supported local communities and included them in conservation activities in improving their household economy, construction of infrastructures and creation of various job opportunities to conserve wildlife and their habitats.

Table 17: Sustainable conservation practice

Item	Response	n	%
Do conservationists participate the local community in developing conservation program?	yes	50	24
	no	118	76
	total	168	100
Do you know why the conservation site was established?	yes	61	36
	no	107	64
	total	168	100
Do you want to involve yourself in wildlife conservation practice?	yes	114	68
	no	54	32
	total	168	100
Do conservationists arrange awareness creation programs to local community?	yes	43	25.6
	no	125	74.4
	total	168	100

4.2 FieldObservation

From the direct observation around Kabana forest the previous undamaged forest cover up of this area the home of wild animals is highly depleted at present because of human encroachment in to forest land to expand farmland and pasture. The major cause of deforestation and degradation of natural resource in kabana natural forest are coffee production activity and encroachment in forest land to expand farm land and pasture. From this it possible to estimate that large amount of the accessible natural forest is under the influence of coffee plantation and production activity which has the most impact on the natural forest and wildlife population.

Plate 3:Views of Kabana forest clearing for farmland expansion (by: FekaduMegerssa) May 13/2014).

From the direct observation around the study site, more numbers of livestock animals are commonly observed in the site while grazing. Frequently, herbivores and cattle feed upon the vegetation on the same field. In addition to this, the cattle continuously have devastated the habitat of the wildlife .This makes the wild animal becomes shy and retreats to the area where the human activity is less.

Plate 4: Views of Kabana forest Utilized for livestock grazing (by:FekaduMegerssa February 23/2014)

From the direct observation conducted around Kabana Forest, farmers utilized various methods to protect their farm and livestock from the damage caused by crop riders and predators. Most of the farmers in the study area uses watching eyes (day time guarding),guarding livestock, using guard dogs, trapping problematic animals and burning of smoky fire to minimize crop damage and livestock predation. Initiating the local community to use these traditional methods effectively helps to increase tolerance and improve participation effort for wildlife conservation.

From the direct observation conducted at the study area, frequentsetting of fire to the Kabana Forest wildlife habitat is not problematic like that of forest clearing for farmland expansion. But continuously tree cutting for fire wood collection and fuel is observed which is another type of exploitation of human activity which has a determinant effect in the area.

Construction of new huts by farmers in and around the forest as well as construction of coffee-bean mill by privet owners where observed by researcher during observation. Even though, there were NGO's such as JICA who works on the conservation and management purposes in other districts of the zone such as Belete Gera state forest, they never include this site for participatory forest management (PFM) practice. So it is possible to say that there is no any movement of

NGO's participate and practice in wildlife and natural resource conservation in the study site. These existing condition calls for critically mitigating the problem in practical way.

4.3 Key informant interviews

Respondents interviewed marked that the population size and distribution of wildlife in and around Kabana Forest were declined due to HWC in areas adjacent to the boundary of conservation site. Community living around Kabana forest utilizes the site as grazing land for their livestock, firewood collection and tree cutting for construction besides farmland expansion for coffee plantation. Due to this activity the habitat of wildlife is disturbed which leads to human wildlife conflict. Respondents mentioned that the damage and problems associated with HWC had increased moderately over the last year.This is in line with (Messana and Netsereab, 1994) that states, the main source of conflict between wildlife conservation and other land-use practices in the Senkele plains is utilization of resources of the Sanctuary by both livestock and local people living around the site.

Many of interviewed persons noted that willing to wild animals and wildlife conservation is negative due to wild predators and crop damages caused by wild animals. Respondents also noted thatthe local governments and conservationists did not establish community based conservation and awareness creation program in an effort to increase the local community support for conservation.

Respondents explain conservation activities needed to be implemented by different stakeholders to encourage participatory conservation practices. Most of respondents mentioned that local government need to adopt strategies that benefits the nearby community through job opportunity ,social services and income generation that improve the livelihood of the peoples' which progress local support and tolerance.

Majority of respondents reported that conservationists should understand local communities' views with respect to protected area and the depth of HWC problem around the conservation site that had increased moderately over time. Many respondents acknowledged that conservationist's relation with community should be improved to sustaining conservation effort. Respondents also felt that community relation could be improved by allowing access to traditional resource like

fire wood collection and water point.Interviewers marked that frequent and continuous awareness creation program should be arranged to develop residents' knowledge and wildlife conservation attitude.

Interviewers also asked to explain local communities' direct responsibility for the maintenance of habitat and conservation practice. Local community are expected to support conservation effort by practicing effective traditional protection methods ,namely the use of housing stock with in protective night time enclosures or corrals ,using human like effigies ,dry wood fence, using thorn bushes followed by eye guiding rather than perceiving conservation as only the responsibility of government.

5. DISCUSSION

5.1 Economic and resource utilization of local community

Studying impact of human activity and community perception covers different aspects, but the main concern of this study was to examine the impact of human activity and local community perception on wildlife conservation that negatively affects wildlife and wildlife conservation, the case of Kabana evergreen natural forest.

Plate 5: Views of Kabana evergreen natural forest (Photo by: FekaduMegerssa, June 25/2014)

A total of 168 informants in the age range from 30 to 60 accounting majority of the total participant were involved to provide detailed information on the objective of the study. This is done assuming as such age class was important in recognize the comprehensive information on impact of human activity and community perception on wildlife conservation in the study area since they are familiar with the issue that is really practiced in the area.

Analysis of data in this study showed that 63% of the respondents have family size of seven and above, and had land holding less than two ha to produce food grain maize and sorghum. As a result, communities have been imposing maximum pressure on the natural resource including

wildlife and forest of the area. Similarly, TewdrosKumsa (2001) also reported that large family size with small land holding increasing the demand for more resources utilization. Although, for a subsistence farmer or individual with large family size is a huge burden primarily to the family and then to the surrounding resource. Such conditions may force direct and indirect negative impacts on natural resources of an area in particular. This then, results diminishing wildlife resources and altering forest cover of an area for the sake of land for cultivation, fuel wood collection, charcoal production and household construction materials.

In the present study, 68.45% of the respondentshad no formal Education or are illiterate. Education is an important factor in understanding the role of protected area and conservation in general. The findings showed that most of the local people are hostile to wildlife conservation. This may indicate that thelevel of education has significant effect on the people's attitude towards conservation. Heinen (1993) observed a similar situation in a study of people's attitudes towards the wildlife in KosiTappo wildlife Reserve in Negal. The study revealed that those respondents with higher house holdilliteraterates had negative attitude about wildlife in the conservation area. Hence education is considered an initial step in improving the people's attitude towards conservation.

In the present study, 132(78.57%) and 106(63.09%)of the community living around Kabana Forest utilizes the site for firewood collection and farmland expansion for coffee plantation beside using as grazing land for their livestock, and tree cutting for construction and household activities. This unauthorized harvesting of resources then, results in altering forest cover of an area and diminishing wildlife resources. There were similar report from studies by Newmark,(1993),which showed that in Tanzania, the major problem facing wildlife in and around protected areas today is the increase in unauthorized harvesting of resources within the protected areas.

Analyzed data showed that the local people's household economy depends exclusively on agricultural and livestock production.About,165(98.2%) of the respondents depended on land to generate income making the competition with animals more direct and have influence on the view of local community towards wildlife conservation. This was in agreement with the case study that demonstrated competition between local communities and wild animals, for the use of

natural resources, is particularly intense where livestock rearing and agriculture (crop production) are an important part of rural people's livelihoods and incomes (Messmer,2002).

From the present study 57.5% of the respondents had land holding size less than two hectares and produce major food grain maize and sorghum which are vulnerable for crop loss by wild animals. Local community preferred the site as their communal pasture area since separate plot was not allocated for livestock grazing. Though, this causes growing over stocking rate of livestock and farmland expansion leading to habitat loss through forest clearing for household consumption. Thus, the conservation site under the study area was continually under threat from growing unauthorizeduse of the site for livelihood activities.

5.2. Human interference and its impact on wildlife conservation

Some of respondents have remarked that wildlife populations have declined in their respective areas due to human interruptions that contributed to the destruction of wildlife and wildlife habitat. Similarly,Clerici*etal*(2005) stated that,human interruptions were the most important factors that contributed to the modification of the quantity or quality of wildlife and wildlife habitats.

As respondents replied and from direct observation conducted in the site, more number of livestock are observed in and near the site while grazing. This frequent and unauthorized harvesting of resources within the protected areas and adjacent lands increases the extent of resource exploitation that leads grazers to feed upon the vegetation on the same field. The major problem that wild animals face in this area today is the unauthorized harvesting of resources within the protected areas and adjacent lands. The present study is in line with that of Mishra *et al,(*2003) that stated the growing densities in livestock populations can create an overlap of diets and forage competition with wild herbivores, resulting in overgrazing and decline in wild herbivore populations. Also Newmark*et al*.,(1993) stated that frequent utilization of the conservation site increases the extent of resource exploitation and encroachment on wildlife that has itsown impact on the wildlife population.

As the finding of the present study indicated 65(35.7 %) of the respondents collect fire wood from the conservation site. Even though it is not pronounced like livestock grazing, it had a

significant impact on the habitat quality by removing vegetation which is an important habitat for some species, which are the prime diet of carnivores. This activity has resulted in continuous land clearing leading to habitat fragmentation and decrease in abundance and diversity of wildlife in the site and surrounding areas. Similar studies conducted in Simien Mountain National Park reveals that destroying forest for the purpose of fire wood, cattle grazing and other benefits results in the destruction of wildlife habitat (Mesele, 2006).

As indicated by respondents during the study period and direct observation by investigator, hunting and setting of fire to the habitat were not serious problem to the site, but construction of new huts in and around the conservation site that have an influence on wildlife habitat was still practiced and observed . Hunting of wild animals may be more detrimental for the to survival of herbivorous animals that are hunted more for a variety of reasons than habitat destruction and can locally remove populations even where suitable habitat remains (Oates, 1996).

5.3. Resource conflict

The conflict between wildlife and local people adjacent to Kabana Natural Forest involved crop raiding and livestock predation. The conflict between local people and wildlife is the most serious problem if they are adjacent to nature reserves (Newmark*et al.*, 1994). Similar study revealed that, predators and crop raiders commonly generate negative attitude among the rural residents in many regions of the world since they prey upon domestic animals and damage crops.(Oli*et al.*, 1994).

The respondents identified predators like common jackal and spotted hyena as problematic predator and anubus baboons, vervet monkeys and crested porcupine as the most problematic crop raiders to the people living in and around the study site increasing negative attitude of local people towards carnivores wild animals. The present study is in line with (Melaku ,2013) which stated that the tendency of wildlife induced damage by pest primates is increasing from time to time in Kefa zone, southwest Ethiopia. This could intensify the wide area problematic nature of the wildlife and thus costs the local people a lot and also influences the perception and attitude of the community to wildlife and conservation activities.

From the present study farmers utilized various methods to protect their farm from the damage caused by crop raiders and predators. The effective use of these local methods increases the

tolerance of local people to live with wild animals rather than developing negative attitude towards their conservation. Similarly, Naughton (1997) also reported that in Uganda, majority of the respondents reported using guarding tominimize crop damage and increase tolerance around the Kibale National Park.

5.4 Community attitude towards wildlife conservation

From the present study,the local community had negative attitude towards wildlife conservation due to frequently facing of problems caused by wildlife. The local communities need to use the conservation site for farmland expansion for coffee plantations. This is in line with Oli*et al.,* (1994) that states, in communities with subsistence economy, even small loss can generate negative attitude towards wildlife. Similarly, as reported in Tanzania, conservation attitude of local people living adjacent to the protected area is stronglyinfluenced by problems with wildlife. Research conducted in and around Simien Mountains National Park, disagrees with the result of the present study that most of the respondent of the study area had positive attitude towards wildlife conservation (Mesele, 2006).

Among the study participants, small number (29%) of the respondents had positive attitude towards wild animals and are likely to support the wildlife conservation efforts. Similar result has been reported by Harcourt *et al.*(1986) that public attitude towards wildlife conservation in developing countries is positive. On the other hand, people who get benefit from natural resources are likely to support the wildlife conservation efforts and protected areas.Respondents among interviewed also indicate that, local people who faced frequent problems by wildlife had negative attitude towards wildlife, whereas those who faced little or no problem with the wildlife had positive attitude.

In the present study, 71%of the respondents do not recognize the selection of the site as one of the forest priority area for conservation under Babia Folla moist evergreen forest that is the habitat of various wildlife. Thus, the continued negative attitude of communities not to recognize the selection of the site emanates from loss (including crops and even agricultural land set aside for conservation purposes) incurred by wildlife. This is in line with Struhsaker,(1999)that states association of wildlife protected area with damage is so integrated in the minds of local populations that they will even blame beneficial species and their conservation.

5.5 Sustainable and participatory wildlife conservation

In the present study 64% of local residents revealed that they do not know why the conservation site was established. In addition to that, conservationists of the study site do not participate the local communities in developing conservation program to encourage participatory effort of the local people that leads to develop negative attitude towards the conservation site in general and wildlife in particular. This is in agreement with Kiss (1999) which states that community perception towards the wildlife and protected area stem from variety of contributing factors including loss of access to resources and income generated from the area, crop depredation by wild animals, exclusion from participation in decision making, planning and management and low levels of awareness about the importance of wildlife conservation.

The majority of the local community in the present study expressed that, the relationship between the conservationists and local community was poor. This influences the success of wildlife conservation by reducing human impact on wildlife conservation. They expressed that the gap between the conservationist and local communities arose from misunderstanding, opposing views on protected area and the need to use the resource freely without any limitation. These have an impact on the success of participatory natural resource conservation effort of local community. Similarly as Messmer (2000) states, the success of wildlife conservation and human impact reduction largely depends on the ability of conservationists to recognize, embrace and incorporate differing stakeholder values, attitudes and beliefs.

As indicated by respondents, to bring sustainable wildlife conservation and local community development at Kabana Forest, it requires active participation from local communities and meeting the interest of stakeholders. Similarly, research conducted by TewodrosKumsa(2006) on human-wildlife conflict in Senkele Swayne's Hartebeest Sanctuarystates that to bring sustainable wildlife management and rural community development requires reconciling the interest of stakeholders. These will be achieved when the conflict between the interest of the community and the conservationists were narrowed, awareness creation program and introducing other community services were practiced.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The present study has shown that most respondents have family size of seven and above, and had land holding less than two hectore to produce main food grain maize and sorghum. Majority of the household were also illiterate in their level of education. Such subsistence farmer with large family size and small range of land holding in addition to low level of education is a huge burden primarily to the surrounding habitat of wildlife.These leads to diminishing wildlife resources and altering forest cover of an area for the sake of land for cultivation, fuel wood collection, charcoal production, and others. Such conditions may force direct and indirect negative impacts on natural resources and wildlife of an area in particular.

The study had shown that the local people's household economy to generate income was depends exclusively on agricultural and livestock rearing. Thus, the locals modify the natural habitat of the wildlife for agriculture and to generate income making the competition with animals more direct and severe. As a result, the requirements of wildlife overlap with the people in the area. This leads to competition for resources between wild animals and people. From this it is possible to conclude that in the study area competition between local communities and wild animals for the use of natural resources is particularly strong which finally leads to conflict and develop negative attitude towards wildlife conservation.

Human activity is one of the most important factors that have impact on wildlife and wildlife habitat by modifying the population and species distribution. From the present study ,human activities such as encroachment to wildlife ranges and increase in subsistence agriculture through forest clearing, overgrazing and overexploitation of natural resources and hostile attitude of community towards wildlife were the major human activity that can dramatically alter wildlife and wildlife habitats either directly or indirectly in and near Kabana Forest.

With regard to the present study community attitude towards wildlife and wildlife conservation around kabana forest protected area is negative. The contributing factors for the continued negative attitude of communities towards wildlife and wildlife conservation emanates from crop depredation by wild animals, livestock predation by predators, exclusion of community from

participation in planning and decision making, and low levels of awareness about wildlife and wildlife conservation.

Wildlife induced damage,poor relationship between conservationists and local community, low levels of awareness about wildlife and wildlife conservation as well as excluding the local community from decision making about the issue were identified problems local community faced because of wildlife in this study. These all have their own negative impact on the attitude of local community and effort on participatory conservation to achieve the goal successfully.

In the current study mitigativestrateges identified to reduce the level of impact and lessen the problem as well as to practice sustainable participatory conservation mobilize greater local participation and support for conservation, bring about positive changes in the local community attitudes towards wildlife, improved the relations with local authorities and conservation managers or raised awareness on the values of wildlife.

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6.2. Recommendations

In the light of the finding obtained from the present study, the following recommendations are forwarded to minimize the problem and to improve existing conservation practices.

- BabiyaFolla Wildlife and Forest Conservation Agency, Jimma District should clearly demarcate the boundary of the Kebena Forest in agreement with the local people and conservationists to co-ordinate and workout the integrated and feasible wildlife conservation.

- Awareness creation is totally lacking in the area and there is a need for carrying out intensive awareness program focusing on changing the attitude of local people towards conservation area, increasing and restating the value of wildlife and wildlife habitats, and developing a successful wildlife and natural resource conservationprogram**.**

- Jimma District Wildlife and Forest Conservation Enterprise should enhance the moral of conservationists and local people introduce training and other incentives.

- The destroyed resources because of misuse by individual of the community should be replaced by initiating the society to take part in natural resource and wildlife conservation.
- Local authorities should reduce human settlement encroaching in to wildlife habitatsand need to relocate agricultural activities out of wildlife ranges.
- The local authorities and conservationists should take strong measure to curtail deforestation process inside and near the conservation site.
- Wildlife and Forest enterprise authorities and NGOs shouldcooperatively work hard and jointly to increase awareness of the local people about the importance of wildlife and wildlife conservation.
- The local community should learn in order to have a behavioral and attitudinal change toward wildlife to ensure the continued natural resource conservation.

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APPENDICES

Appendix I

Jimma University

College of Natural Sciences,Department of biology

Household questionnaires to be filled out by respondents

The main purpose of this questionnaire is to collect relevant data on the impact of human activity and community perception in wildlife conservation of Kabana Forest of LimmuKossaWoreda. The objective of the study will be realized only when you sincerely participate in giving valid and reliable information through this questionnaire. Thus, please be honest, confident and objective while filling the questionnaires. The researcher kindly requests your sincere response and acknowledges your cooperation to greater excellent.

A.Household Questionnaire for local community around Kabana forest.

1. Respondent Woreda…… Kebele …….....

2. Age..... 3) Sex.....

4. Family size (1-3)_____(4-6)_____(7_9)_____10 and above_____

5. Educational level

a. no formal education..... b. primary education(1-8) .....

c. secondary education(9-12)..... d. beyond secondary education.....

6. What is your livelihood activity?

a) Crop production b) keeping livestock

c) Farming and livestock rearing d) Trade e) other (mention)……..

7. How long have you lived in the near kebele of the conservation site?.....years

8) Distance from the Kabana forest .....km

B. **Household Economy and Resource Use**

9.Does community have awareness about wildlife conservation? Yes/no

10. Do you think that conserving wildlife is important (benefited) the community?

a) Yes **b)** no **c)** I don't know

If yes, in what way? ……

11. Do you have your own farmland? a) yes b)no

If yes, how large it is? a) half ha b) one ha c) two ha d) three ha and above

12. What type of crop do you grow?

a ..... c.....

b..... d.....

13. Do you keep livestock? If yes,

a. number of cattle..... b. number of goats.....

c. number of sheep…..... d. number of pack animals……..

14. Where do you graze your livestock?

A) in the Kebena Forest…..... b) other separated area….....c)both in and outside the site

15. If you graze in the forest, for how long do they graze in the forest?

a. 1-3 months…..... c. 6-9 months…..

b. 4-6 months…..... d. throughout the year…..

C) Human activity and its Impact on wildlife

16. What type of wildlife do you know in the Kabana Forest area?

a)…..... b)…… e)…….

c)……. d)……..... f)……

17. Do you believe that these wildlife are useful resource to be preserved? A) Yes B) No

18.Is the numbers of wildlife in the conservation site increasing or decreasing from time to time? a) Yes(increasing)_____ b) no(decreasing)_____C)stable

19. If, decreasing, of (Q18) what are the main human interruptions that contribute to the destruction of wildlife in the study area?

a) Population pressure b) over grazing by livestock c) tree cutting for fuel

d) Deforestation f) farm land expantion for coffee plantation.

20. Is there traditional hunting practiced in the area? A) Yes B) no C) Sometimes

21. Are new huts are constructed in and around the forest area? A) Yes B) No

22. Do NGOs participate in wildlife habitat conservation? Yes/no

If yes, how----------

If no, why……

D. Human wildlife Conflict and community attitude

23.What is your attitude towards wildlife and their conservation? A) Positive B) negative c) no idea

24. What benefits do communities need to obtain from the protected area?

a) Grazing land b) Firewood collection c) farmland expansion and Coffee plantation d) House construction Materials e) Harvesting honey f) other

25. Do the local community recognize the foundation of the kebena forest conservation site nearby them? Yes/ no/no idea, why?.....

26. What is the community opinion on the size of the kebena forest conservation site?

A) too small B) too large C) right size

27.Do you face any problems because of wildlife? if yes, what problem do you faced?

a. crop damage…..... b. predation…....

c. disease transmission…..... d. both predation and crop loss

28. Have you lost any livestock to wildlife since the last four years? a) Yes b) No

a. If yes, How many? ----------

b. What is the animal involved? a) Goats b) sheep c) cows d) donkey e) others

29. Which animals are the most problematic in terms of livestock predation?

a) Monkey b) pigs c) Hyena

d) Lion e) others

30. Is the wildlife induced damage increasing or decreasing from time to time?.....

31.If(yes) in (Q30) How do you minimize this wildlife induced damage caused by wildlife?

A) ----------

B) ----------

32) Do wild animals cause damage to your crops? A)Yes B)No

33) Which animals are most problematic in terms of crop damage?

a) Monkeys b) Pigs

c) Apes d) Other

34) Which season is the damage problem more sever?.....

35). Do you get help from other sources to solve your problem?

a) Yes b) No

If yes, from where do you get the help? .....

36. What is the tendency of the crop damage from time to time?

a. increasing b. decreasing c. stable

37. Which methods do you use to control (minimize) the crop damage caused by Wildlife.

A, using domestic animals C. Using fence

B, guarding D, trapping problematic animalsE, other.

38. Which of these techniques are effective?

i. most effective….....

…..**.....**

ii. Least effective….....

….....**.....**

39. What measures do you think should be taken by the following bodies in order to prevent the wildlife induced damage caused by wildlife?

a) By the government….....

….....**.....**

b. by the private sector….....**.....**

….....**.....**

c. by local community ….....

….....**.....**

40. How do you express the relationship between conservationist and local community?

a) Good b) Smooth C) Poor

If you say poor, what are the causes?**.....**

E) Sustainable and participatory wildlife conservation.

41**.** Do you know why the conservation area was established? A) Yes B) No

If yes why it was formed?**.....**

42. Do the conservationists participate the local community in developing conservation program?

A) Yes B) No

43. Do you want to involve yourself in conserving wildlife (forest) recources? A) Yes B) no

If no why? ----------

44. Do conservationists arrange awareness creation programs to local community about wildlife conservation? a) Yes b) No

45. What should be done to increase the local community participation, benefits and securing the wildlife habitat?

A) By government…….

B) By local community…….

Appendix II

Interview guide question for key informants

The aim of this interview is to assess the Impact of human activity and local community perception on wildlife conservation to suggest possible solution and assist the local government and NGOs with the development of sustainable wildlife conservation plan.

1. Do you think that number and distribution of wildlife in and around the forest /study are increasing? Why?
2. Is there any conflict between local community and wildlife around the Kabana Forest?
3. How local communities affect the survival of wildlife and their habitat?
4. How could you describe community attitude towards wildlife conservation?
5. Dose the Woreda Agricultural Development Office has participatory Natural resource (wildlife) conservation plan?
6. What are local government and NGOS doing to increase the local community benefit and securing from the conserved forest (wildlife) habitat?
7. What management activity should be implemented to encourage the participatory wildlife conservation practice?

   A) By government……

   B) By conservationists……

   C) By local community…….

Appendix III

Data collection sheet for direct observation on human activity that stress on wildlife.

Woreda---------- Kebele----------
Distance from the forest---------- Date of observation/event----------

No	Indicators	Level at which it is applied	Main method for obtaining information
1	Forest cover change	Site/habitat	Communication with local people
2	Livestock grazing in the site/forest	Site/habitat	Direct observation
3	Human settlement and construction of new huts adjacent to the forest	Site/habitat	Direct observation
4	Methods of defending crop damage caused by wildlife	Site/habitat	Direct observation
5	Methods of protecting livestock from predators attack	Site/habitat	Direct observation
6	Tree cutting for fuel	Site/habitat	Direct observation
7	Farmland expansion	Site/habitat	Observation
9	Fire frequency	Site/habitat	Observation and information.
10	Private (NGOs) Participation on Wildlife resource conservation activities	Site/habitat	Direct observation and communication with local peoples.

Declaration

I, the undersigned, declare that this thesis is my work and that all sources of material used for the study have been acknowledged.

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Signature: _____

Name of Institute: Jimma University

Date of Submission: _____