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RESEARCH ARTICLE

ILLEGAL HUNTING OF WILDLIFE IN BUNO BEDELE ZONE, BORECHA WOREDA, OROMIA REGIONAL STATE, SOUTH WESTERN ETHIOPIA

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ABSTRACT

Illegal harvesting is the most significant threat to biodiversity in Ethiopia. Similar problem is facing in Borecha Woreda (Ameto, Leka Siden and Markafo kebele). The aim of this study was to assess the drivers and impacts of illegal hunting. For this study, cross-sectional and longitudinal research designs were employed. To collect necessary data through interview and focus group discussion cross-sectional design was employed and longitudinal research design was used for quantification and identification of wildlife while hunters engaged on hunting. Primary data collection tools were interviews, focus group discussion and observation checklists. Quantitative data was analyzed using SPSS version 16.0 and explained in number and percent and presented in tables and figures. The rest data explained qualitatively. The findings revealed that the main driver of illegal hunting in the study area were increased demand of bushmeat, cultural influence, protection form crop and livestock and medicinal purpose, common method hunters used for hunting were spear and wire snare. The number of wildlife is highly decreasing compared to the past ten-fifteen years due to intensive illegal hunting. Awareness creation and educating the community about illegal hunting impacts and importance of wildlife conservation, establishing ground rules at local government level in collaboration of woreda Wildlife management office, kebele leaders, religious leaders, elders and youths to reduce illegal hunting, implementing effective anti-poaching patrol during hunting season and implementing effective law enforcement are strategies that were suggested to reduce the problem.

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INTRODUCTION

The interaction between human being and nature was started before million years ago when human being was created. Their relationships have been increased and more intense during the hunt and gathering natural resources (Alemneh, 2015). There is more than enough evidence that points to the effect which humankind has in the extinction of species. Approximately 50% of all the mammals worldwide are in decline and 25% are facing extinction because of destruction of habitats for e.g. agricultural purposes (Roemer and Forest, 1996; Woodroffe and Ginsberg, 1998) and illegal hunting (Treves and Karanth, 2003; Pack *et al*., 2013). Bushmeat is an important food source for people in developing countries (Fa *et al*., 2002; Rentsch and Damon, 2013) and a valuable source of protein and fats in many rural diets (Bennett and Robinson, 2000), this is because it is normally cheaper than alternatives. The importance of bushmeat as a food source for rural people is matched by its importance as an income source (De Merode *et al*., 2004; Brown and Marks, 2007), with hunting of bushmeat often a major proportion of income generation for the poorest households (Kümpel *et al*., 2010). In urban areas, demand for bushmeat is driven by preference for its taste and is commonly more expensive than other types of protein (Lindsey and Bento, 2012). Estimates of bushmeat consumption for the Amazon and Congo basins lie at over 5 million tons of meat annually, or 282.3g/person/day (Fa *et al*., 2002). In those regions, the trade in bushmeat is a significant component of local and even national economies (Bowen-Jones *et al*., 2003). Bushmeat trade has long been recognized as a major threat to biodiversity in forest areas of Central and West Africa (Noss, 1998; Fa *et al.,* 2002). Concurrent with the recognition of the importance of bushmeat is increasing awareness of the role of bushmeat harvesting in the decline of some species (Fa *et al*., 2005; Nasi *et al*., 2011; Albrechtsen *et al.*, 2007), especially when coupled with the impact of habitat pressures, e.g. logging (Remis and Robinson, 2012). The implication is that bushmeat exploitation impacts not only wildlife and conservation but also development (Brown and Williams, 2003), with food and income security threatened by such unsustainable exploitation (Bennett and Robinson, 2000; Bennett, 2002; Rao and McGowan, 2002; Rentsch and Damon, 2013). In Ethiopia currently, there are around 320 species of mammal including 39 endemics (both small and large mammals), 918 birds with 19 endemic species, 240 reptiles (16 endemics), 71 amphibians (30 endemics) and 172 freshwater fishes with 38 endemics and more than 1225 insects recorded in Ethiopia (Wolff, 1961). Therefore, Ethiopia has one of the most diverse mammalian

faunas in Africa and the great attractions of its wildlife heritage. Traditionally, many people simply represented Ethiopia as "Home of the Unique Seven" which refers to seven distinctive and large endemic mammals found only in Ethiopia. Those seven large mammals are; the Ethiopian wolf (*Canis simensis*), Mountainnyala (*Tragelaphus buxtoni*), Walia ibex (*Capra walle*), Menelik's bush buck (*Tragelaphus scriptus meneliki*), Swayne's hartebeest (*Alcelaphus buselaphus swaynei*), Gelada baboon (*Theropithecus gelada*) and Bale monkey (*Chlorocebus djamdjamensis*) and the rest (83.9%) are smaller ones including 2, 9 and 15 species of bats, insectivores and rodents, respectively (Alemneh, 2015). However, the country has more than seven large mammals (Amare 2015). For example, Boutourlini's blue monkey (*Cercopithecus mitis boutourlini*) which is an endemic sub species of blue monkey (Groves, 2005), Ethiopian Lion (*Panthera leo abyssincum*) (Bruche *et al*., 2012) Starck's Hare (*Lepus starcki*) and Giant mole rat (*Tachyoryctes macrocephalus*) were some of endemic mammals of Ethiopia that are not included under unique endemic species. The large mammals are mainly concentrated in the south and southwest border and adjacent area of the country. Furthermore, the Great Rift Valley and mountain massifs are also homes for many endemic mammals. Hunting of wildlife is believed to be a key driver of serious population declines and local species extinctions in many parts of the world including Ethiopia. Hunting certain species for meat is critical in Africa and especial to east Africa in threatening species for extinction. Illegal hunting is a serious problem in today's society (Muth and Bowe, 1998). Illegal hunters are thought to consist mostly of economically poor and uneducated farmers (Loibooki *et al*., 2002). It has served as a major coping and adaptive strategy against poverty. It is estimated that about 61% of illegal hunters hunt for their own consumption, 8% for cash and 31% for both purposes (Holmern *et al*., 2002). Other motivation that drives poachers may be culture which leads and enforces one to hunt for the sake of status or tradition (Bitanyi *et al*., 2012). In many areas, human populations are increasing rapidly on the boundaries of protected areas and in some cases, expanding into wildlife areas. Such trends are driving increased levels of illegal hunting and make the problem more difficult to control. (Lindsey *et al.,* 2012). In Borecha woreda, illegal hunting of wild animal has been ongoing. Undoubtedly, this hunting activity leads to the loss of biodiversity. Therefore, this study was designed to investigate the drivers and impacts of illegal hunting of wild life in Buno Bedele Zone, Borecha Woreda Southwestern Ethiopia.

MATERIALS AND METHODS

Description of the study area: Borecha woreda is one of the eleven woredas of Buno Bedele Zone, which is found in Oromia regional state, southwest Ethiopia. It is located between 7^0 9' to 8^0 15' North latitude and 37^0 5' to 40^0 00' East longitude and at an altitude of 1392 - 2580m. a. s. l, has a distance of 507km from Addis Ababa. Borecha is surrounded by Didessa woreda to eastern, Bedele woreda to western, Jimma Zone to Northern, and Gechi woreda to southern. Formerly (before 1994 E.C) Borecha woreda was together with Gechi woreda and named Gechi Borerecha woreda, after 1994 E.C separated from Gachi and now it is independent, and said Borecha woreda and its capital town Yanfa. The long-term weather information (2013-2018) revealed that the area has a unimodal rainfall pattern, and mean annual rain fall is 1330 mm. The rainy season covers April to September, and maximum rain received in the months of June, July and August. The woreda has moist and warm to hot climate, the mean minimum and mean maximum air temperature is 12.7°c, 27.9°c respectively. It has three agro ecological zones; among 33 kebeles of the woreda, 2 kebeles are Dega, 20 kebeles are woyinadega and 11 kebeles are kola (Borecha Woreda Agricultural Rural Development office personal communication of experts). Total population of the woreda is (M=64350 F=40362 T= 104,712), the community are native to the woreda except population of 7 out of 33 kebeles which are settlers from East and west Hararge Zone. The main socio-economic activities of the local communities of the woreda is mixed farming, these re cultivation of staple crops (maize and sorghum), oil crops (Groundnut and Sesame), cereal crops (Wheat, Barley, Teff, Bea Pea), cash crop (coffee), Bee keeping and animal rearing. The study sites (Ameto, Leka Siden and Markafo kebeles) are among 33 kebeles found in Borecha woreda which are located at 503km 520 and 547 km and their agro ecology is Dega, woyinadega and kola respectively.

Study population: For this study 1729 males with the age group ≥ 15 of the three kebeles (Ameto, Leka Siden and Markafo) were study population (Table 1).

Sample size and Sampling techniques

For this study, primarily three kebeles (Ameto, Leka Siden and Markafo) were taken by purposive from three agro ecological zone. The reason was due to the presence of remnant forest in these kebeles compared to the other kebeles. After selection of kebeles, 313 sample male were taken from 1729 age group ≥ 15 of selected kebeles. By stratified sampling , the population of size N is divided in to non-overlapping and mutually exclusive L sub-population (strata) of size $N_1,N_2,...,N_L$ and a random sample of size n is drawn from each stratum h ; h=1,2,3,...,L.

For the study the total age group ≥ 15 were grouped into three sub kebeles (strata), these are:

- Dalo kebele (N1)
- Leka Siden kebele (N2)
- Markafo kebele (N3)

To determine the sample size variability, confidence level and margin of error is considered. The sample size is determined by using the following formula (Cochran, 1977).

$$n = \frac{\sum \frac{N_h^2 p(1-p)}{wi}}{\frac{N^2 d^2}{Z^2} + NP(1-P)}$$

Where n = sample size needed for the study, N = Total number of households in the selected kebeles. N_h =the number of households in each selected kebele, Z= the critical values of standard normal cumulative distribution that corresponding to α/2, p= population proportion, d = margin error. W_i= estimated proportion of Ni to N. L= Number of strata (kebeles).Thus, total sample size =313 and samples allocated for each kebele based on their total population were 72, 149 and 92 for Ameto, Leka Siden and Markafo. Finally, samples from each kebeles were selected by simple random sampling method.

Data collection Instruments

Primary data sources were used for the study, and collected by using interview, focus group discussion and observation.

A. Interview: Interview questions were prepared by local language (Afan Oromo) and 313 samples were interviewed about the causes of illegal hunting, common hunting method, types of wildlife targeted by illegal hunters, impacts of illegal hunting and possible solution of the problem.

B. Focus Group Discussion: Discussion points were prepared by local language (Afan Oromo) and presented for three kebele leaders (3M), managers (3M) and elders greater than 61 year (17M) of the study areas, totally 23 male were participated on discussion for conveying information about the drivers of illegal hunting and possible solution of the problem. Participants of FGD (23 males) were selected purposively, because they had detail information about the issue.

C. Observation: Observation checklists were prepared for quantification and identification of wild animals while hunters engaged on illegal hunting.

Study design

Both cross sectional and longitudinal study design were employed, longitudinal study design was employed for observation while hunters engaged on hunting of wild animals for quantification and identification whereas cross sectional study design was employed to gather data through interview and focus group discussion.

Data analysis

Collected data were entered into a computer and checked for completeness and consistency. Analysis was undertaken in both approaches namely quantitative and qualitative methods and both MS- Excel and SPSS version 16.0 were employed. For the quantitative data analysis, the data gathered using structured interview questions were first arranged and changed into frequency, percentage and mean, and presented by tables and figures. Finally narration and descriptions was employed in the case of qualitative data analysis.

Ethical Consideration

Ethical clearance was obtained from Research Review and Ethical Committee Board of Bedele College of Agriculture and forestry, Mettu University. Concerned officials were informed about the purpose of the study and verbal consent was obtained from households after brief explanation of the objectives of the study.

RESULTS

Out of 313 total respondents 133 (42.5%) were within the age group of 15-30, 150 (47.9%) of them were within age group of 31-45, and 30 (9.6%) of them were within age group of 46-60 (Table 2). Majority of respondents were literate 238(72.3%). Regarding the Drivers of illegal wildlife hunting, out of 313 respondents, 127 (40.6%) said that, the main driver is increasing demand of bushmeat, which is followed by cultural influence 89 (28.4%), protection from their crop and livestock 75 (24%) and for medicinal purpose 22 (7 %) were the other drivers (Table 3). Wild animal such as Warthog, common Bushbuck, Gazelle, Pig, Rabbit, Duiker, Monkey, Baboon, Spotted Hyena and Porcupine were animals that are targeted by illegal hunters (Table 4). All respondents 313 (100%) engaged on hunting of wild animals those which are edible (Common Bushbuck, Duiker, Gazelle). The reason is due to the lack of affordability of alternatives or preference over domestic animal meat 313 (100%). Warthog, Monkey, Baboon, Pig and Spotted Hyena were hunted due to for protection from their crops and livestock 313 (100%), and Porcupine 37 (11.8%) and Rabbits 21 (6.7%) were killed for medicinal purposes. Total numbers of animals killed during hunting season explained in (Table 5). The activities of illegal hunting in the study areas were engaged in mass and singly, which are 313 (100%) and 32 (10.2 %) respectively. During mass hunting, Spear is the main hunting instrument used for illegal hunting 313 (100%), wire snaring and pitfall trap were also the other hunting methods used respectively while hunting singly 19 (6%) and 13 (4.2%) (Fig. 1).

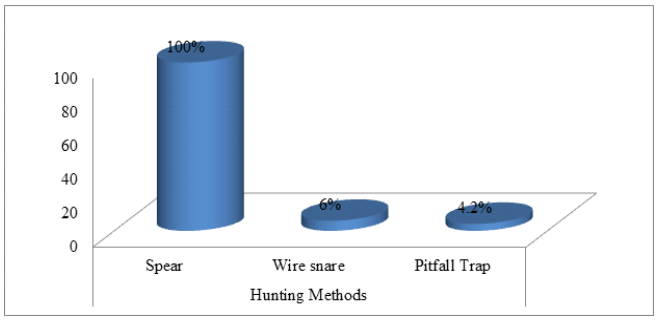

Fig 1. Common methods used for illegal Hunting

The result indicated that more than half hunters 183 (58.5%) didn't have awareness about illegal hunting negative consequence and the rest 130 (41.5%) were perceived that as illegal hunting is the main cause of wildlife decline. Hunters 283 (90.3%) engaged intensively on illegal hunting of wildlife more than past ten-fifteen years whereas 30 (9.7%) respondents agreed as hunting decreasing currently and the number of wildlife decline due to illegal hunting activities 309 (98.7%) however, 4 (1.3%) were not quite sure whether numbers of wildlife incline or decline (Fig. 2). The results indicated that awareness creation and educating the community 313 (100%), establishing ground rules in collaboration 81 (25.9%), anti-poaching patrol during hunting season (February, March and April) 75 (23.9%), effective law enforcement 39 (12.5%) and Poultry farming and animal raring as an alternative protein source 33(10.5%) are possible mitigation strategy of illegal hunting in study areas (Table 6).

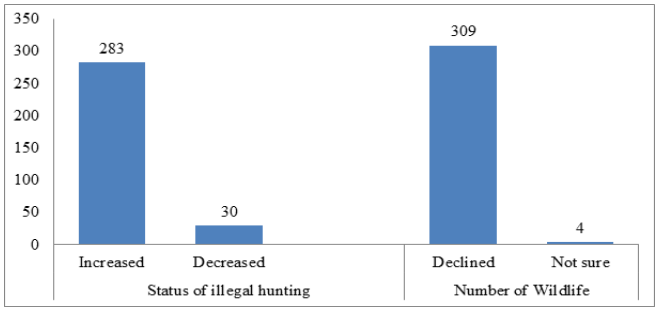

Fig. 2. The status illegal hunting and number of Wildlife in Borecha Woreda, 2019

The focus group discussion participants agreed as hunting activity of wildlife is highly increasing when compared to the past ten-fifteen years with increasing of human population.

Table 1. Total Population and age groups ≥ 15 of the study kebelesin Borecha Woreda, 2019

Kebele	Total Population of study kebeles			Population (≥15 years-old)		
	Male	Female	Total	Male	Female	Total
Ameto	795	684	1479	388	281	669
Leka Sidan	1530	1538	3068	826	809	1635
Markafo	998	976	1974	515	498	1013
Total	3323	3198	6521	1729	1588	3317

Table 2. The age group of illegal hunter in Borecha Woreda, 2019

Age group	Frequency	Percentage
15-30	133	42.5
31-45	150	47.9
46-60	30	9.6
Total	313	100

Table 3. Drivers of illegal hunting in Borecha Woreda, 2019

Causes of illegal hunting	Frequency	Percentage
Demand for Bushmeat	127	40.6
Cultural influence	89	28.4
Protection from crop and livestock	75	24
Medicinal purpose	22	7
Total	313	100

Table 4. The targeted wildlife by illegal hunters in Borech Woreda, 2019

Targeted Wildlife	Scientific name	Frequency	Percentage
Common Bushbuck	*Tragelaphus scriptus*	313	100
Pig	*Potamochoerus larvat*	313	100
Gazelle	*Nanger soemmerringii*	313	100
Warthog	*Phacochoerus africanus*	313	100
Monkey	*Papio anubis*	313	100
Baboon	*Papio anubis*	313	100
Spotted hyena	*Crocuta crocuta*	313	100
Duiker	*Sylvicapra grimmia*	313	100
Porcupine	*Hystrix cristata*	37	11.8
Rabbit	*Oryctolagus cuniculus*	21	6.7

Table 5. Wildlife killed by hunters from February-April in Borech Woreda, 2019

Targeted Wildlife	**Scientific name**	**Animals killed in each kebele**			**Total**	**Percentage**
		Ameto	**Leka Siden**	**Markafo**		
Common Bushbuck	*Tragelaphus scriptus*	5	4	7	16	8
Duiker	*Sylvicapra grimmia*	3	3	5	11	5.5
Gazelle	*Nanger soemmerringii*	0	0	4	4	2
Warthog	*Phacochoerus africanus*	3	14	16	33	16.6
Monkey	*Papio anubis*	10	9	8	27	13.6
Baboon	*Papio anubis*	15	13	19	47	23.6
Spotted hyena	*Crocuta crocuta*	0	1	0	1	0.5
Pig	*Potamochoerus larvat*	14	16	23	53	26.6
Porcupine	*Hystrix cristata*	2	1	3	6	3
Rabbit	*Oryctolagus cuniculus*	0	1	0	1	0.5
Total		52	62	85	199	100

Table 6. Possible mitigation options of illegal hunting in Borecha Woreda, 2019

Mitigation options	Frequency	Percentage
Awareness creation and education	313	100
Establishing ground rules in collaboration	81	25.9
Anti-poaching patrol	75	23.9
Effective law enforcement	39	12.5
Poultry farming and animal raring as alternative protein source	33	10.5
Using alternative plant protein sources	11	3.5

The main reason why the hunters engaged on illegal hunting is due to wild animals are the main source of meat in the study area, in addition, cultural influence is the other aggravating factor. They were explained that, among different cultures of the society, hunting is the known and transferred from their ancestors to them. According to the participant FGD, male greater than fifteen years old who do not participate/ engage on mass hunting is not considered as male.

As they responded, before twenty-thirty years, male that used Gun and killed Buffalo and Lion particularly by wearing the mane of Line and by smearing butter they were boasting and battle crying by shibboleth, and then they were considered as winner and brave, as the result respected in community. Focus group discussion participant results showed that the numbers of wildlife, particularly the edibles wild animals like Bushbuk, Gazelle, and Duiker were highly decline and exceptionally

Greater kudu and Buffalo are not found in their area due to intensive illegal hunting of wildlife. Finally, they were recommended possible solution that minimize illegal hunting of wildlife. These are (i) creating awareness and education at meeting and religious place in the community about the negative consequences of illegal hunting and the values of wildlife (ii) establishing ground rules in collaboration of woreda Wildlife management office, kebele leaders, religious leaders, elders and youths and (iii) effective anti-poaching patrol during hunting season by concerned body.

DISCUSSION

The results of this study suggested that illegal hunting is perceived as a common phenomenon in the study areas, also this activity is most notable in different parts of Asia, South America and Africa (Tanzania, Zambia, Mozambique, Zimbawbe and Ethiopia) (Kassegn and Endalkachew, 2018; Mengistu *et al*., 2017; Darimont *et al*., 2015; Gandiwa *et al*., 2013; Lindsey and Bento, 2012; Mfunda and Roskaft 2010; Milner-Gulland and Bennett, 2003; Fa *et al*., 2002). Illegal hunting in the study areas is an activity conducted solely by men, which is in keeping with findings from Zambia and Zimbabwe (Lindsey *et al.,* 2009; Barnett, 1998). The age group predominantly engaged on illegal hunting were between 31-45 (47.9%) which is followed by age between 15-30 (42.5%), the result is contrast with the work done in Zimbabwe and Central Mozambique, in which most hunters are in their age of 20s and 30s (Lindsey *et al*., 2011). Hunting activities were mainly targeted by hunters on the forest regions; this is similar with research conducted in West and Central Africa (Bennett *et al.,* 2007; Robinson and Bennett, 2002; Barnes, 2002; Fa *et al.,* 2002; Bowen-Jones and Pendry, 1999; Noss, 1998; Wilkie *et al.,* 1998). Also illegal hunters engaged on hunting of wildlife during dry season, this is similar with the study conducted in Zimbabwe by (Lindsey *et al*., 2009). The hunting system cannot be considered in isolation, because it is influenced by a variety of driver that impact on hunter and prey behavior and population dynamics. These driver vary according to locations and contexts, include governance driver (e.g., conflicts, institutional change), economic driver (e.g., availability of other sources of income and food, infrastructure investments increasing access to markets), social driver (e.g., migration, urbanization, displacement), and ecological driver (e.g., climate change, climatic hazards, habitat degradation, land cover change) (Van Vliet *et al.,* 2015). In the present study areas, the drivers of illegal hunting were increasing demand of bushmeat 37.4%), which is followed by cultural influence (27.5%) and protection from their crops. The results of this study are consistent with the finding of Mfunda and Røskaft (2010); Bennett *et al.,* (2007) in which bushmeat need was the main driver of illegal hunting in different African countries. In contrast Lindsey *et al.* (2012) listed different driver of bushmeat hunting in savanna areas as follows except increasing demand for bushmeat as a main driver; These are (1) lack of clear rights regarding land and wildlife; (2) inadequate legal protection for wildlife, and inadequate enforcement and penal systems; (3) poverty and food insecurity; and (4) political instability. Cultural influence was the second driver of illegal hunting, which is in line with findings of Nyaki *et al.* (2014); Bennett *et al*. (2007) and hunting is part of their heritage and sense of cultural identity for indigenous and traditional people (van Vliet and Mbazza, 2011). Before Fifteen- twenty years male that killed Buffalo and lion using Gun particularly by wearing the mane of Lion and by smearing butter they were boasting and battle crying by shibboleth, and then they were considered as winner and brave, as the result respected in community (Kassegn *et al.,* 2018). Protection from crop and livestock were the other drivers of illegal hunting in my study. Similarly, the finding of Nyaki *et al.* (2014); Conover (1994), are evidence that the drivers of hunting include destruction of crop by wild animals, and according to Bennett *et al*. (2007); Nasi *et al*. (2008); Wilkie *et al*. (2011) drive of illegal hunting was to reduce threats to livestock and human safety. Contrast to my study, drivers of hunting include disease control, wildfires and lack of environment education (Nyaki *et al.,* (2014), in Luangwa Valley income generation and enjoyment and community respect are driver of hunting (Lindsey *et al*., 2013; Brown and Marks, 2007; Brown, 2003). My result showed that wild animal such as Warthog, common Bushbuck, Gazelle, Pig, Rabbit, Duiker, Monkey, Baboon, Spotted Hyena and Porcupine were animals that are targeted by illegal hunters. All respondents 313 (100%) engaged on hunting of edible wild animals (Common Bushbuck, Duiker and Gazelle) for bushmeat demand. This finding is in line with study of (Mfunda and Røskaft, 2010) in which wildlife were hunted for bushmeat need. Warthog, Monkey, Baboon, Pig and spotted Hyena were hunted for protection from their crops and livestock (Wilkie *et al*., 2011; Nyaki *et al.,* 2014).

Similarly in different African countries for instance, in Mozambique and Zimbabwe wild animals like Common Warthog (*Phacochoerus africanus*), Greater Kudu (*Tragelaphus strepsiceros*), African Elephant (*Loxodonta Africana)*, Impala (*Aepyceros melampus)*, Reedbuck, Bushpig (*Potamochoerus larvatus*), Bushbuck, Lion *Panthera leo*, Eland, Chacma Baboon, Oribi, African Buffalo *Syncerus caffer*, Sable Antelope, Vervet Monkey *Chlorocebus* (*Cercopithecus) aethiops,* Common Duiker, Burchell's zebra *Equus quagga*, Giraffe *Giraffa camelopardalis,* Waterbuck *Kobus ellipsiprymnus,* Blur wildebeest *Connochaetes taurinus,* Eland *Taurotragus oryx, and* Spotted Hyena were killed by hunters in Zimbabwe by Gandiwa *et al*. (2014); Lindsey and Bento (2012) and in Ethiopia, *Gumuz* society highly depends on hunting of rodent species and large mammals such as Greater kudu (Kassegn *et al.,* 2018). In my study common hunting method used by hunters was spear (100%). This is in contrast with the findings of Gandiwa *et al*. (2014) in which wire snaring used (100%), Dogs (67%), poisoning (17%) and spear only (2%) as the common hunting methods, in addition, wire snaring and pitfall trap were the other methods used. These is supported by previous studies Kümpel *et al.* (2009); ; Kaltenborn *et al*. (2005); Campbell and Hofer (1995), in which snaring is the common hunting method, and also findings from Zimbwabe Noss (1998); Tumusiime *et al*. (2010) showed as illegal hunting involves the use of common traditional hunting methods such as snares and pitfalls. In general, in contrast with the three methods used in my finding, hunting with bow and arrows Sinclair and Arcese (1995), with dog, firearms and poisoning Barnett (1998); Gandiwa *et al*. (2014) and gin trap (Lindsey and Bento 2012) are known common hunting methods used in different parts of Africa. The current finding indicated as the number of wild animal species highly decreased (98.7%), due to intensive engagement of the local community on illegal wild animal hunting, for instance, animal like Buffalo and Greater kudu are not found in the study area.

These finding is in line with different studies like Lindsey and Bento (2012); (Dublin *et al*. (1990) in which some species, including Rhinoceroses, Common Wildebeest, Roan Antelope and African Wild Dog have been extirpated and others (e.g. African Buffalo, Zebra, Waterbuck, Spotted Hyena) persist at population sizes that are thought not to be viable. According to Barnett (1998), the reliance of rural communities on bushmeat for protein requirements elsewhere in Mozambique represents a more serious threat to wildlife populations in the country than habitat destruction. Furthermore, illegal hunting is often unsustainable and has led to reductions and/or local extinctions of many wildlife populations across the tropical ecosystems (Paudel and Kindlmann 2012; Bennett 2011; Wilkie *et al*., 2011; Emery 2007; Corlett 2007; Bennett *et al*., 2002; Ceballos and Ehrlich 2002; Peres 2000). Based on my findings I suggest different strategies that may contribute to the further reduction of illegal hunting in the study areas. These are: (i) awareness creation and educating the community about illegal hunting impacts and importance of wildlife conservation, (ii) establishing ground rules at local government level in collaboration of woreda wildlife management office, kebele leaders, religious leaders, elders and youths to reduce illegal hunting, (iii) implementing effective anti-poaching patrol during hunting season by concerned body and (iv) implementing effective law enforcement.

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