WOLKITE UNIVERSITY

COLLEGE OF AGRICULTURE AND NATURAL RESOURSE

DEPARTMENT OF WILD LIFE AND ECOTOURISM MANAGEMENT

CURRENT POPULATION STATUS AND THREATS OF MENELIKBUSHBACK TRAJELAFES SCRIPTESIN BORENA SAYINT NATIONAL PARK, SOUTH WOIIO ZONE, ETHIOPIA.

SENIOR RESEARCH SUBMITTED TO DEPARTMENT OF WILDLIFE AND ECOTOURISM MANAGEMENT, COLLEGE OF AGRICULTURE AND NATURAL RESOURCE, WOLKITE UNIVERSITY FOR THE PARTIAL FULFILLMENT OF THE COMPLETION OF BSc DEGREE IN WILDLIFE AND ECOTOURISM MANAGEMENT

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ABSTRACT

Ethiopia have 31 endemic mammals from these, 17 are highland altitude moorland or grassland species whose altitudinal range is confined to above 2000masl. So from those endemic Menelik's bushbuck is confined to the Borena Sayint National park, highland forests of Bale, Menagesha Suba State Forest and other highland areas.Menelik bushbuck is one of the ungulate mammals that also occurs in the Brenna Sayint National Park. Moreover, Men lick's bushbuck is relatively difficult to observe, as it mainly inhabits dense habitat with sufficient cover and adequate forage. The population status of Menelik bushbuck were affected by habitat destruction and habitat fragmentation7(25%), prey predator in the case of leopard5(18%), climate change3(11%), drought4(14%), road construction4(15%) ,human settlement3(10%)and livestock grazing 2(7%).So those kinds of threats are affects the population size of Menelik bushbuck (tragelaphes scriptus). The data was used as Knowledge and experience of the local people; park manager and governmental organization for identify the habitat types and to located the sampling sites. Fore used to estimate the total population status of Menelik bushbuck in Borena sayint national park is showed, first to classify the total area of the park into three divisions those are wood lands, grasslands and forest habitat and established transect lines including sighting distance on three habitat and counted the number of Menlik bushbuck each sides of sighting distance by using binoculars. Finally the total population status of Menelik bushbuck in Borena sayint National park is 3171 individuals by using the formula of variable visibility profile methods.

Key words: menelik bushbuck, Borena sayint National park.

1. INTRODUCTION

1.1 BACK GROUND OF THE STUDY

Ethiopia is a country of great geographical diversity with high and rugged mountains, flat-topped plateau and deep gorges, incised river valleys and rolling plains. The country is endowed with extensive and unique environmental conditions, ranging from Dallol (100 m below sea level) at Kobar in Afar depression to Ras Dejen 4620 m above sea level (Yalden, 983). The altitudinal variation within Ethiopia produces a range of climate, which affects the distribution of fauna and flora (Yalden and Largen, 1992). This is mainly reflected by altitudinal ranges and diversity of climate, vegetation and landscape.

Ethiopia possesses a unique and characteristic fauna with a high level of endemism (Hillman, 1993), (Tedla, 1995) Out of the 284 mammalian species so far recorded from Ethiopia, 31(11%) are endemic (Hillman 1993). Many of these endemic animals are specifically associated with the high altitude moorland and grassland habitats. Others belong to the highland forests while a few occur within the lowland forests of southwest Ethiopia. Out of the documented 31 endemic mammals of the country, 17 are highland altitude moorland or grassland species whose altitudinal range is confined to above 2000masl. So from those endemic Menelik's bushbuck is confined to the Borena Sayint National park, highland forests of Bale, Menagesha Suba State Forest and other highland areas. Most authors consider Menelick's bushbuck as a Montana form distinguished by long hair, absence of pale dorsal markings and a very dark grey brown pelage in the male. Females are reddish in color, hornless and much smaller than males (Yalden, et al. , 1984). Throughout historical times, Menelick's bushbuck has occupied a limited and disjunctive range in the Chercher, Arsi and Bale Mountains, the mountains of western Shoa and areas of high ground in the province of Illubabor (Yalden et al. 1984). Both mountain Nyala (Tragelaphus buxtoni Lydekker, 1910) and Menelik's bushbuck (Tragelaphus scriptus menelik Neuman, 1902) are sexually dimorphic spiral-horned ungulates endemic to the southeastern highlands and highlands of Ethiopia, respectively (J, kingdom, 1997).

Menelik bushbuck is one of the ungulate mammals that also occurs in the Brenna sayint National Park. Moreover, Men lick's bushbuck is relatively difficult to observe, as it mainly inhabits dense habitat with sufficient cover and adequate forage, similar to the other subspecies, the common bushbuck (MacLeod, et al 1996).

Threats of Menelik bushbuck are habitat degradation, fragmentation, and loss are common phenomena in the park (S, pimm and p,raven, 2000). Habitat degradation, fragmentation and loss affect the survival of Menelik bushbuck populations through reducing the amount of available habitats, reducing habitat quality. Habitat fragmentation creates small meta populations that are vulnerable to a number of population extermination factors such as predation, disease, and poaching that may lead to direct population extinction (A, Atickem et al,. 2011). According to International Union for Conservation of Nature and Natural resources (IUCN, 2016), around 86% of threatened mammals are at risk due to habitat loss. The populations of Menelik's bushbuck have been declining over the past decades due to habitat degradation, loss, and fragmentation and lost most of their ranges (Z, Girma et al 1910). Menelik's bushbuck is listed under the least concern category due to its fairly high local abundance (IUCN, 2012).

1.2 STATEMENT OF THE PROBLEM

The population status of Menelik bushbucks were affected by habitat lose, climate change, habitat fragmentation and it's also affected by direct human persecution and the negative attitude associated with livestock expansion. Illegal settlement, encroachment, unauthorized resource utilization are major problems of Menelik bushbuck. Currently, human settlement approached the forest edge and all the forest habitats are regularly visited for resource utilization (grass for thatching, fire and construction wood collection) more during the dry season. The major wildlife threat of the area was habitat modification and loss. The presence of domestic dog which affects Menelik bushbuck by direct competition near and around national park for coming from village in the case of hunting for food. So those are cause of threats of species. The population status of Menelik bushbuck are declined with increased number of livestock .In addition, studies have revealed that intensive livestock grazing alters the vegetation composition and structure through selective grazing (y, Mamo,. 2011). Livestock grazing and browsing can cause uprooting, trampling, and preying on fruits/seeds that strongly hamper recruitment and understory vegetation regeneration reducing the cover and foraging opportunities of the Menelik bushbuck (D.Teketay, 1992). Studies in Bale Mountain National Parks and adjacent mountains have revealed the effect of deforestation, livestock grazing, fire, and expansion of agriculture adversely affecting the distribution and abundance of Menelik bushbuck.

1.3 SIGNIFICANCE OF THE STUDY

The significance of the study was assessing to the driving force of threats and population status of Menelik bushbuck in Borena sayint national park. And to maximize the understanding of people towards Menelik bushbuck conservation. To plan appropriate conservation strategy, and indicates future researchers for those who was like to conduct researches on threats and population status of Menelik bushbuck. The data may be used as secondary data for researchers who working in the study area. Moreover, this study was serve as ideal or standard information for the current threats and population status of Menelik bushbuck in Borena Sayint national park and able to give base line information for local community and researchers.

Population status and threats of Menelik bushbuck is identified, So that identification of the data is used to keeping and controlling for future risk in terms of gaining information and these research as the indicators of what conditions of Menelik bushbuck is live today and the stakeholder's are determine like the motivational activity or participation of conservation Menelik bushbuck type and all ecological viability of the park.

In addition the finding of this research was help full to determine the impact of Menelik bushbuck on local community. This information ımportant for localities manager and the national park to know what really exist there and therefore formulate law and regulation.

1.4 OBJECTIVE

1.4.1 GENERAL OBJECTIVE

The general objectives of this study was to assess current population status and threats of Menelik bushbuck in Brenna sayint national park

1.4.2 SPECIFIC OBJECTIVE

- ✓ To identify threats of Menelik bushbuck in Brenna sayint national park
- ✓ To determine current population status of Menelik bushbuck in Brenna sayint national park

1.5 Research question

- ➢ How many numbers of Menelik bush buck are living in Brenna sayint national park?
- ➢ What are threats of Menelik bushbuck in Brenna sayint

2. REVIEW LITERATURE

2.1. Behavior and ecology

When alarmed, individuals react in a variety of ways. Sometimes they will sink to the ground and lie flat, or they may usually most active during early morning and part of the night, Bushbucks become almost entirely nocturnal in areas where they are apt to be disturbed frequently during the day. Bound away, making a series of hoarse barks. When surprised in the open, they sometimes stand still or slowly walk to the nearest cover. The Bushbuck is primarily nocturnal, but it is also fairly active during the day. Half of a Bushbuck's day is spent standing and grazing. Around dusk the Bushbuck move toward their night range to feed from where they off at dawn.

The Bushbuck is also the only non-territorial and solitary African antelope with neither males nor females defending any part of their home range. Though Bushbuck have small home ranges which may overlap with those of other bushbuck, they are solitary animals with even females preferring to keep social interactions with their young to not more than a few hours a day. Mature males usually go out of their way to avoid contact with each other. (Martin, P. and Bateson, P, 1985)

2.1.1. Feeding Behavior

Menelik bushbuck devoted more time to feeding than any other activities during both seasons. Feeding was observed to be lowest at midday. The possible reason may be the influence of temperature, which affects the turgidity of plants which in turn affect the plants' palatability (Dankwa and Euler, 2002). Found that at a temperature under 30 C, foraging plants of bushbuck remained turgid. However, when the temperature exceeded 31 C, the plants became flaccid due to loss of water and probably less palatable. Resting is high during the midday as the activities are affected by temperature. This behavior has significantly different between wet and dry seasons. Food varies in quality and quantity between seasons and habitats. In the present study, the variation forced bushbucks to utilize some food items in a relatively lower quantity during the dry season than the amount they take during the wet season and vice versa. The availability of data on feeding behavior is used to specify the proportion of the diet containing different food items. During the present study, plant species will be observed as a food source of Menelik

bushbuck. This study showed that the number of plant species found in the diet of bushbuck in each season varied slightly. (Chane, M. 2010)

The diet of Menelik bushbuck observe during the study period comprised mainly herbs. This is in accordance with previous studies of (Jacobsen, 1974; Odendaal, 1983; and Dankwa-Wiredu and Euler, 2002). for the common bushbucks. The present observation shows that Menelik' bushbucks are mixed feeders, which rely on browsing herbs, shrubs and ground level bushes and grazing on a variety of grass species. This is related to the findings of (Wronski, et al., 2006b). for bushbuck and (Hofmann, 1989) and (Owen-Smith, 1992). for other ungulate species. Bushbucks spent more time feeding on herbaceous species and grasses and less time on shrubs and trees during the wet season. However, during the dry season, the amount of time spent feeding on shrubs and trees increased as the availability of grasses and annual herbs decreased.

In the study carried out by (Okiria, 1980).Common bushbucks exhibited a similar strategy by concentrating to feed on the available shrub species during the dry season. As the rainy season resumed, they widened their acceptance range to include a considerable amount of herb species. This adaptive feeding style most probably contributed to the pronounced seasonality in foraging behavior. This corresponds with the bushbuck's ability to utilize a wide range of plant species as already reported by several researchers (Okiria 1980, Odendaal 1983, (MacLeod, et al , 1996), (Haschick, and Kerley, 1997)..

2.1.2 Habitat

Bushbuck's preferred habitat is dense bush at the base of mountains or along river courses. This antelope is always found close to permanent water courses. Where they are found the shy and elusive bushbuck is widely distributed over sub-Saharan Africa. In East Africa it is found in a variety of habitats, though rarely on open land. Bushbucks have a lot of individual and regional differences in their coat colors and patterns. In general, Bushbuck inhabiting deep forest has darker coats. They will live anywhere from sea level to mountaintops, from rainforests to sub desert terrain.(Grubb, K.L, 1985)

2.1.3 Predators

Bushbucks are most vulnerable to predators such as Leopard, Lions, Hyenas and Cheetah when on the run, but if cornered the male will fight bravely and if attacked may even become a dangerous foe. Even though Baboons sometimes eat the young, Bushbucks continue to associate

closely with them at times, picking up fallen fruit and other foods that foraging Baboons drop(Kerley, G., 1997).

2.1.4 Conservation status

According to international union for the conservation of nature and natural resource, Men lick bushbuck is highly endangered species. It's only found in Ethiopia. These species is highly concerned for conservation by protecting and keeping forgive as available habitat.

2.2. Population Estimation of Menelick bushbuck

The population estimation of Menelick bushbuck was to identify Population structure in this study area the number of adult male, Adult female , male and female young of Menelick buck in the whole study area by using sampling counting methods.

2.3. The key terms of threats of Menelick bushbuck

2.3.1. Habitat destruction and fragmentation

This means recorded as the major threats for existence of Menelik bushbuck in the study area. The increase in human population was result in more demand for food, farmland and other natural product. This has also result in constriction of range and led to change on composition and structure of habitat (Meduna, et al 2017) and habitat fragmented means splitting of natural habitats and ecosystems into smaller, more isolated patches driven by many different factors like disturbance, pollution settlement, infrastructure and deforestation

2.3.2. Livestock grazing

Livestock grazing is the minor threats for Menelik bushbuck in this study area. The most commonly observed domestic animal in this study area cow, goats, donkey's high number of cattle and scarcity of grazing land made the local people used even difficult area for grazing and agriculture. This during observation in the study area and confirmed by the local people during focus discussion. The same result was supported by (aramde, et al, 20011), (chanie and Tesfaye, 2015). Where livestock grazing deteriorates wildlife habitat diminishes the population size.

3. MATEREAL AND METHODES

3.1. Description of the study area

The present study was carried out in Borena Sayint National Park, which is located in south Wollo Zonal Administration of Amhara Region, Ethiopia, situated between 10 47'-10 50'N latitude and 38 35'-38 42'E longitude, about 600 km north of Addis Ababa . The altitude ranges from 2,300 to 3,665 m above sea level. The area is generally characterized by rough topography, deeply incised valleys, escarpments and plateau (Ayalew *et al*, 2006). Previously, the forest covered an area of 4325km^2 ha. However, this park has been reduced due to deforestation and encroachment by the local people.

The annual pattern of rainfall in the area is bimodal with a long rain season during June to September and a short rainy season during March to April. The mean annual rainfall is 845 mm, ranging from 655 to 1,165 mm. The lowest temperature recorded during the wet season was 7.4C in August and the highest during the dry season was 26.4 C in February. The dense forest covers 19.6 km while the rest of the reserve lies in the 2 cold part of the Afro-alpine zone, which covers 35.4 km 2 of the Borena sayint National Park. Between 2,400-3,000 m, the area comprises a thick forest. Above 3,000 m, the Erica woodland gradually changes to Festuca dominated Afro-alpine grassland with some scattered giant Lobelia (Ethiopian Wildlife and Natural History Society, 1996)geologically, the area lies on extremely thick Tertiary volcanic deposits with soils comprising mainly of Lithosols. Denkoro River, which flows to the west to join the Nile River, is one of the permanent sources of water in the area.

The residents in the study area are engaged in agriculture. To a large extent, most human settlements are concentrated along the periphery of the forest surrounded by agricultural land. Thus it is not uncommon to encounter bushbucks in the village during (Abune, L. , 2000) (Jacobsen, N.H.G. , 1974) g night. Cattle are reared mainly for plugging, traction and milk production. Line-transect method was used to obtain data on population status, group size, and structure of Menelick's bushbuck in the study area (Norton-Griffiths 1978, (Buckland, et al., 1993)(Sutherland, W.J., 1996),(Wilson, et al., 1996)

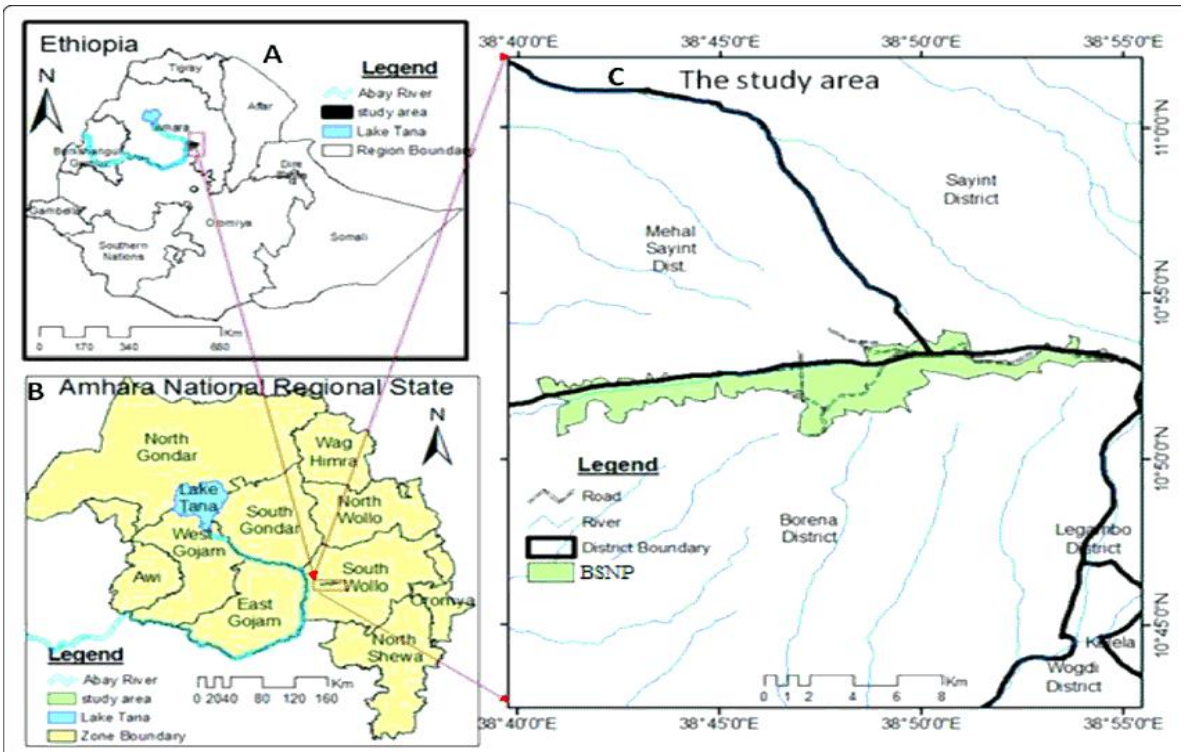

Figure 1:- Map of the study area (Source Borena sayint National Park Office, 2019)

3.2. Preliminary study

Preliminary study was conducted in the area before the actual data collection. During this survey all relevant information about distribution of Menelik bushbuck. In addition, presence of 22 large and medium sized mammal, climate condition, topography and vegetation type and coverage of the park was observed.

3.3 Methodology

The data was used as Knowledge and experience of the local people, park manager and governmental organization for identify the habitat types and to located the sampling sites. Depending on the dominant vegetation types, the study area was categorized into the natural forest, woodland and grassland habitats. Three habitats used for identification of menelik bushbuck: forest habitat, woodland and grassland. Data collection was carried out from all cover area about destination area. Moreover, sighting distance and sighting angle of the animal/herd from the observer was recorded. Sample sites was take from different habitats, which have sloping areas, dense forests, grasslands, woodlands, bush lands and thickets under the three habitat type. sample sites where established transect line and sample sites randomly selected for

the forest habitat and one sample site for each of the woodland, grassland and forest with each of habitat types. The number of transects among sample sites varied depending upon visibility (Norton,1978). The Transect length of all habitat type was 20km depending on visibility of the animal associated with vegetation cover and topography of the sample site. Starting points of each of the transects will be mark with permanent colored markers. Those are made at such meter of interval along transects during the first survey, following the method use by (Ndhlovu, D. and Balakrishnan, M, 1991) to avoid confusion during transect walking. In addition, transect lines are demarcated by poles and natural markings such as streams, rivers, big trees and rocks.

3.4. Sample size and sampling technique

Simple random sampling technique was used in the study area. Among that technique was mainly concentrate on the sampling method, because it is the best way to get our respondent or to get people who have efficient information and knowledge about may study. Sampling technique is a method of selecting sample from entire population. The population estimation of Menelik bushbuck is calculated by variable visibility profile methods those are the area of the park is divided Ander three habitat type each habitat type is formed in transect line by siting distance.

To have better insight into the impact of livestock and human encroachments on the abundance and distribution of Menelik, a stratified random sampling design across the three dominant habitat types found in the study area (natural forest, mixed plantation forest, Erica shrub lands, and the Afro-alpine) was used. . Plots were situated lengthwise following the slope of the ground in an attempt representing subtle Eco tones and capturing the greatest number of scats. Plots were purposively established on the southern and northern ends of the study area to capture all the three dominant habitat *types* and areas where the Menelik bushbuck occurred with the livestock and where tree removal is evident (A. Kidane, 1982). The approximate area of each habitat type was estimated during the field reconnaissance survey and from the literature (G. Miehe and S. Miehe , 1994). The knowledge was used to determine the proportion of sample transect needed to represent each of the three habitat types. For this specific study, the large study was scout local , community and manager office.

The respondent was selected purposely based on their extensive knowledge. Experience, expertise, and environment with the tourism sector in the study area.The sampling size of the study was determined based on formula adapted from Israel (1992) as follows.

n = N/1+N (e)2

Where, n= the sample size required

N= the total population size

e = the level of precision

Where confidence interval is 95% at p=±5 (maximum variability)

Which is = (±10%)

3.5. Methods of data collection

3.5.1. Source of data

Data for the study was collected from primary and secondary source. Individual work with in Brenna sayint national park and manager office, the source of secondary data was using by additional information source from other sources.

3.6. Data collecting Instrument

3.6.1 Interview

Interview was held with scout, manager offices, and local community. Researcher was gather in depth information through face to face.

3.6.2. Questionnaire

This Questionnaire was used for the data collection from local community, scout and manager offices. Both closed and opened end self that Questionnaire items distributed to research sample.

3.6.3. Field observation

In order to gather this data by employing the instrument, I was observed directly the study areas. To estimate the population size, line transects (distance sampling) method was used. Transects was systematically located on the study site after preliminary survey. Transects was conducted on foot stopping and carefully observing at approximately 50 m interval. Each time, the Menelik bushbuck group size will be recorded. Such data will be by taking notes and photo camera.

3.6.4. Data Analysis

After the collection of necessary data, the data was analyzed using descriptive analysis. The data collected from group discussion and key informants was summarized using a text analysis method and is present in a description fashion.

The sample formula used to population estimation is by using variable visibility profile methods. The visibility profile is measured each time along transact and the animal distance from transect and also the distance '**S**' of each sighting from the vehicle or observer path is measured and 'XS' is calculated and used as one half the effective strip width.

I show That the area of Borena saint national park is classified in to three habitat types those are forest, grassland and wood land habitat types. Each habitat types are construct about transect line within sighting distance.By using these directly counting of Menelik bushbuck (tragelaphes scriptes).

Total area of Forest habitat is 1500km = 20% of the area is 300km sample area of forest.

Total area of Grassland is 2000km = 20% 0f the area is 400km sample area of grassland.

Total area of Woodland is 825km = 20% of the area is 165 km sample area of woodland.

The sample formula used to population estimate: by using the variable visibility profile

Population estimates of menelik bushbuck in three selectivehabitat of sample area.

$$XS = \frac{\text{the sum of sighting distances (ES)}}{\text{Number of stops}}$$

$O = (XS \times K \times 2)\ km2$

$D = N/O$

$P = N/OxH$

Wear, D=density of Menelik Bushbuk counted

N=total number of Menelik bushbuck counted on sample area

O=observed are H=area of habitat

4. RESULT AND DISCUTION

4.1. Population status of Menelik bush buck

3171 Menelik bush buck were recorded from the total area of Borena Sayint national park in terms of classification of habitat type those are forest habitat, grass land habitat and wood land habitat types.During this survey. number of Menelik buck individual from observed in forest habitat (47) , in wood land (34) and (30) Menelik bush buck from grass land habitat. From these the study conclude that forest are the most population status Menelik bushbuck because of which preferred food for Menelik bushbuck suitable for breeding and living sustainability.

Total population size of Menelik bushbuck in Borena Sayint national park is 3171 individuals. From the above table 3171 individuals of Menelik bush buck were recorded from three habitat type such as forest, grass land, and wood land. From these the study concludes that forest are the most important habitat for Menelik bushbuck because of which preferred food for Menelik bushbuck suitable for breeding and living sustainability.

Table 1: menelik bush buck group recorded with number of individual from different habitat of the park area.

No	Habitat	20(%)Area of habitat	Density	Population size	No of stop	K	ES
1	Forest	300km^2	4.7	1410	10	20km	2.7km
2	grassland	400km^2	3	1200	11	20km	3km
3	woodland	165km^2	3.4	561	11	20km	3km
4	TOTAL	865km^2	11.1	3171	32	60km	8.7km

This survey was conducted for 28 respondent by classifying those respondent according to their age, sex and education level.Among 28 respondent, from 18-35 years old 5(62%)male and 3(38%) female, 36-45 years old 4(57%) male and 3(43%) female and 46-55 years old 8(62%) male and 5(38%) were female and depending on education level 5(20%) were illiterate, 8(40%) were primary level, 4(20%) were secondary level and 3(15%) were higher education level.

Table 2: Description of demographic and socioeconomic characteristics of the respondents.

Education level	Age class	Respondent response frequency	Percent (%)
illiterate	18-35	5	18
Primary level	36-45	13	46
Secondary level	46-55	6	21
Hiher education	>56	4	15

4.2. Threat of Menelik bushbucks

The survey established the threats of Menelik bushbuck in Borena sayint national park.The major identified threats that affect the status of Menelik bushbuck in the study area were habitat fragmentation and habitat destruction 7(25%). The other threats are climate change 3(11%), drought4(14%), road construction 4(15%),prey predator in case of leopard 5(18%), human settlement 3(10%) and livestock grazing 2(7%). There is insignificant difference among the threats affect Menelik bushbuck population in the study area.

People cultivated crop by using even the in fertile and mountain area which are also habitat for Menelik bushbuck. Menelick bushbuck moved to the farmland and consumes those crops. So, the local people chased Menelik bushbuck away from their farm land by domestic dog.

Table 3: Threats of meneliki bushbuck

Threat	Respondent response frequency	Percent (%)
Predator in case of Leopard	5	18
habitat fragmentation &	7	25

habitat destruction		
climate change	3	11
drought	4	14
Road construction	4	15
Livestock grazing	2	7
human settlement	3	10

Habitat destruction& habitat fragmentation (25%) was the threats of Menelik bushbuck in the study area. Increase in human population has result in more demand for food, farm land and other natural product. In the tropical developing countries, protected area are continually under threat from growing human population (Wynne,1998). Local peoples of the study area occupied the new lands for different purpose. Cutting of trees for fuel wood, construction of house and fence, were common the practice in the entire study area .Many local peoples were observed when they were cutting and collecting fire wood from the bush land habitat of the study area. In developing countries like Ethiopia, 75% of deforestation and habitat loss was caused by local people for fuel wood collection purpose (FAO,2000) Tree cutting resulted in the deterioration of the vegetation cover . This minimize the feeding ground and mating site of Menelik bushbuck(Tragelafes scriptes) (Bekele et al ., 2013).Domestic animal competing with menelick bushbucks. The most commonly observed domestic animal in the study area were cows, sheep, goats and donkeys.

Figure 2;- Human settlement in the study area (photo by Mezikr 2019)

5. CONCLUSION AND RECOMMENDETION

5.1 Conclusion

Ethiopia possesses a unique and characteristic fauna with a high level of endemism (Hillman, J.C, 1993) , (Tedla, 1995) Out of the 284 mammalian species so far recorded from Ethiopia, 31(11%) are endemic (Hillman 1993). Many of these endemic animals are specifically associated with the high altitude moorland and grassland habitats. So from those endemic Menelik bushbuck is confined to the Borena sayint National park.

Depending on the dominant vegetation types, the study area was categorized into the natural forest, woodland and grassland habitats. Data collection was carried out from all cover area about destination area. Moreover, sighting distance and sighting angle of the animal/herd from the observer was recorded. Sample sites was take from different habitats, which have sloping areas, dense forests, grasslands and woodlands. under the three habitat type sample sites where established transect line and sample sites randomly selected for the forest habitat and sample site for each of the woodland, grassland and forest with each of habitat types. The number of transects among sample sites varied depending upon visibility (Norton,1978). The Transect length of all habitat type was 20km depending on visibility of the animal associated with vegetation cover and topography of the sample site.

So total population status of menlik bushbuck is 3171 individuals by using the formula of variabl visibility profil method. So those population status is affected by habitat degradation, fragmentation, and loss are common phenomena in the park S, pimm and p,raven,.2000). Habitat degradation, fragmentation, and loss affect the survival of Menelik bushbuck populations through reducing the amount of available habitats, reducing habitat quality. Habitat fragmentation creates small meta populations that are vulnerable to a number of population extermination factors such as predation, disease, and poaching that may lead to direct population extinction (A, Atickem et al,. 2011). According to International Union for Conservation of Nature and Natural resources (IUCN,. 2016), around 86% of threatened mammals are at risk due to habitat loss.

5.2 RECOMMENDETION

- Based on the result of the study, I would like to forward the following recommendation.
- Local people should participate in the proses of resolving the existing threats in order to foster positive outlook toward menelik bushbuck.
- Government provide incentive program for the people who live in and adjacent to the national park to minimize the negative impact.
- Stakeholders should work together to reduce human encroachment in the national park and relocate agricultural land out of the park.
- Implementation of rural development should be designed to move the local people to the buffer zone to reduce human activity in the national park from their farming lands.
- Effective conservation measure should be taken through an extension work to create public awareness among the local community

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7. Appendix

Please indicated your response by marking

- ✓ for the equation with alternative choices and for the open ended question briefly write your response in the space provided. The success of this study depends up on your earnest and sincere response. Thank you for your laid cooperation

1, sex……Male…….Female……

2, Age……18-35…… 36-40…… 41-55

3, Education Diploma……

Degree……

MSc……

If any……

4 Marital status **A. single** **B. married**

2. Answer the following question by circle the letter of your response or by write the letter of your answer on the blank space.

1. when did you start this work?

A. theirtime **C. one year ago**

B. two year ago **D. before three year and above**

2. When you join in to borena sayint national park?

A. in this year **B. before 2 year**

C. before one year **D.before three year and above**

- To determine current population status of menelik bushbuck in borenasayint national park

3.what is the status of menelik bush buck in B0rena sayint national park?

A. increase **B. similar with the past**

C. decrease **D. no change**

4. what your answer in Q 3 is decrease by what amount?

A. very small **C. mean**

B. medium **D. half**

- To identify threats of men lick bushbuck in Borena sayint national park

5. Do you know that the threats of Menelik Bushbuck in case of Borena sayint national park?

A. yeas **B. no**

6. If your answer Q5 is yeas what are the major threats of menelik bush buck in Brenna sayint national park?

7.which do think is the most serious problem with regarding to the park protection

No	item	tick	rank	Byhome
1	Human Settlement			
2	Livestock Grazing			
3	fire			
4	Habitat Fragmentation			
5	Habitat Destruction			
6	Construction road			

8.who is the responsible body for the utilization and management of resources ?

A. government **B.NGOS**

B. local community **C. private**

9.Do you know the behoove of men lick bush buck?

A. yeas **B. no**

10.if your answer Q9 is yeas list?eachof them behavior?

11.Do you think the fauna and flora species in borne saying National Park my still be used in the future?
If yeas, How?

……

12. what species type do have been totally disappeared from the National park? List each of them

…….