

*Full Length Research Paper*

# **Perception, attitude and impacts of local communities on Senkele Swayne's Hartebeest Sanctuary, Ethiopia**

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**This study aimed to investigate perception, attitude and impacts of local communities on Senkele Swayne's Hartebeest Sanctuary. Questionnaire survey, focus group discussions, key informant interviews and observation were employed to collect data. A total of 196 households participated in the questionnaire survey. The findings revealed that the local communities of SSHA had unfavorable perceptions and attitude towards the conservation of the sanctuary. A higher proportion of the respondents (44.9%) perceived that the size of the sanctuary is too large so that it should be shrunk while only 26.5 and 28.6% of them viewed that the size of the sanctuary is small and optimum, respectively. Majority of the respondents (57.7%) perceived that people and wild animals cannot coexist since they are threats to their livelihoods and a means to their resources restriction. Over half of the respondents (54.6%) had negative attitude while only 22.4% had positive attitude towards the sanctuary. There was a significant difference in attitude across age groups, education level, family sizes, level of landholding size and size of livestock ownership ( $P < 0.05$ ).**

**Key words:** Attitude, communities, Ethiopia, perception, sanctuary.

## **INTRODUCTION**

As defined by the world conservation union (IUCN), a protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means to achieve the long-term conservation of nature with associated ecosystem services and cultural values. They are cornerstones to preserve global biodiversity and stop the extinction crisis. They are set aside to maintain functioning natural ecosystems, to act as refuges for species and to maintain ecological processes (Dudley, 2008).

Establishment of protected areas (PAs) dated back to

the fifteenth century in Ethiopia (Vreugdenhil et al., 2012), while wildlife regulation was introduced in 1908, during the reign of emperor Menelik II, in the form of nine article law strictly forbidding the hunting of young elephants (EWCA, 2012). To date, over 60 protected areas cover more than 17.1% of the country's surface area (EWCA, 2014; Young, 2012; Alemneh, 2015). This is definitely an achievement, but establishment of PAs alone cannot safeguard the perpetuation of biodiversity (Andrade and Rhodes, 2012) as almost all PAs are highly degraded due to anthropogenic impacts (Young, 2012).

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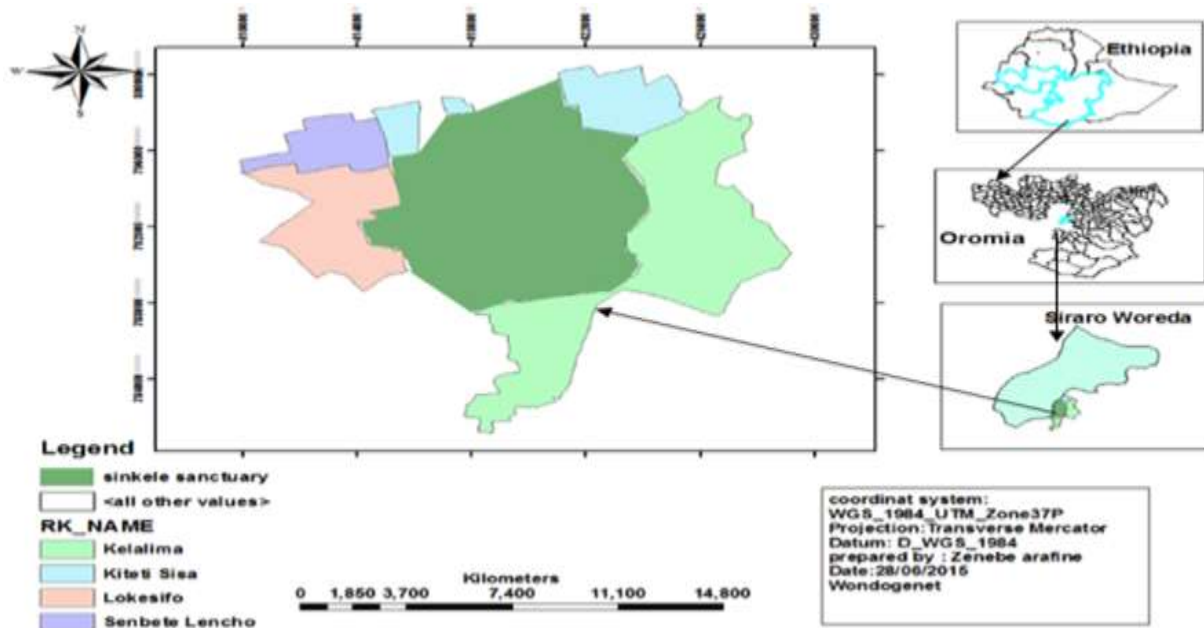


Figure 1. Map of the study area.

Principally, PAs were established to meet the needs of the local communities along with the conservation of nature (IUCN, 1994). Nevertheless, their designation has an impact on the lives of the local communities since they usually come up with new regulations and restrictions on aspects such as access to natural resources and development activities. This results in the denial of the rights of local communities to access resources, eviction from their home lands and provoked long term conflicts (IUCN, 1994; Dorji, 2009). As a result, PAs and local communities cannot co-exist if at least one of them is hostile to the other which ultimately affects the conservation effectiveness (Dorji, 2009; Vodouhe et al., 2010).

Undoubtedly, dispute over land use between local communities and conservation agencies is prevalent in areas where the local people used to utilize land until declared PAs. Likewise, the establishment of SSHS in 1976 to protect the Swayne's Hartebeests (*Alcelaphus buselaphus swaynei*) resulted in the denial of local communities of hitherto existing traditional use rights. As a result, besides its importance to shelter the Swayne's Hartebeests and other wild animals, as Burger (2011) puts it, it is a sanctuary under siege where the burgeoning local population surrounds it on three sides with interests contrary to its conservation strategies.

The boundary of the sanctuary was re-demarcated in 2010 resulting in the extension of its size from its previous area of 36 to 54 km<sup>2</sup> (a nearly 20% increase). With growing human population around the sanctuary, adding of new areas appears problematic. On the other hand, involving local communities in the management

processes and bringing their conservation support is one of the objectives of the sanctuary. Therefore, to win over the support of the local communities and convey their compliance with its conservation strategies, it is decisive to study their perception, attitude and the impacts imposed on the sanctuary.

## MATERIALS AND METHODS

### Description of the study area

Senkele Swayne's Hartebeest Sanctuary is one of the federally managed protected areas of Ethiopia which was established in 1976 to protect the endemic and endangered subspecies of the Swayne's hartebeest (*Alcelaphus buselaphus swaynei*) (Nishizaki, 2004). It is located on the western side of the Great Rift Valley of Ethiopia, in the West Arsi Zone of Oromia Regional State and the Sidama Zone of Southern Nations, Nationalities and Peoples Regional State, 305 km South of Addis Ababa between latitudes 7°07' to 7°12' N and longitudes 38°15' to 38°19' E (Burger, 2011) (Figure 1).

To the east of the sanctuary lies the Tesisa, Borena and Lalima hills and Gode-hare valley. Kite Tesisa Kebele borders the sanctuary on the northern side and Senbete Lencho, Loke Sifo and Kella Lalima Kebeles are neighbor on the western and southwestern sides.

The sanctuary is surrounded with settlements from the two ethnic groups, Sidama and Arsi Oromo. Although there is no tangible record, according to their oral history, the Arsi Oromos started to settle in the area in the middle of the 19th century (Nishizaki, 2004).

### Sampling and data collection methods

Four Kebeles (Kite Tesisa, Senbete Lencho, Loke Sifo and Kella Lalima) from a total of 6 bordering Kebeles were purposively

selected since they have higher interaction with the sanctuary.

By using the simplified formula developed by Yamane (1967) and reviewed by Israel (2012); a total of 196 respondents were randomly selected for the questionnaire interview with a precision level of  $\pm 7\%$ .

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

Where 'n' is the sample size, 'N' is the population size and 'e' is the level of precision.

Prior to the actual data collection, pilot survey was conducted with 20 randomly selected households in the selected study kebeles around the sanctuary with the help of one scout for translation of the local language, Afan Oromo. The purpose of the pilot survey was to check the clarity and sequence of the questionnaires.

Questionnaires consisting of both closed and open ended questions were administered to the randomly selected 196 respondents in the form of interview. A five-point Likert scale method of attitude measurement was carried out by using a series of statements with five response alternatives: Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4), and Strongly Agree (5) (Boone and Deborah, 2012).

Supported by the chief scout of the sanctuary, 10 people were selected as key informants and one focus group discussion was performed in each study Kebele. Observation was also conducted by on foot and vehicle patrol. Moreover, relevant literatures and office reports were referred to supplement data collected by other tools.

#### Data analysis

The data analysis was carried out using Statistical package for Social Science (SPSS) version 20. Descriptive statistics were used to compute mean values, percentages, frequencies and other important information. Chi-square test was conducted to test the relationship between selected qualitative variables and one way analysis of variance (ANOVA) was run to test if there was a significant difference between the mean attitudinal scores and the selected variables.

A total of 14 statements were prepared for the five point Likert Scale. Sample weightings (1 to 5) were assigned to the response categories. The maximum weight of 5 was given for 'Strongly Agree' and the minimum 1 was assigned for Strongly Disagree. A weight of 2, 3 and 4 were given for the response categories of Disagree, Neither Agree nor Disagree and Agree, respectively. Thus, if a respondent ticks 5 for all 14 statements, the maximum weight will be 70, whereas 14 will be the minimum weight when a respondent ticks 1 for all 14 statements. Hence, the average of the sum scores of all 14 statements for each respondent would again range from 1 to 5. Higher average scores for statements indicate positive attitude towards the sanctuary, while lower scores show negative attitude.

Respondents were classified according to their attitude as positive, neutral, negative and strong negative. Following the procedure applied by Tsehaye and Mohammed (2013), the mean and standard deviation of the average marks (the average score of the 14 statements for each respondent) were used to classify respondents based on their attitude towards the sanctuary.

A = Positive: Mean + Std. deviation  $\leq$  A  $\leq$  Max

B = Neutral: Mean  $\leq$  B < Mean + Std. deviation

C = Negative: Mean - Std. deviation  $\leq$  C < Mean

D = Strong Negative: Min  $\leq$  D < Mean - Std. deviation

The internal consistency of the Likert scale statements was checked by calculating Cronbach's alpha reliability coefficient. The value of the Cronbach's alpha reliability coefficient was 0.87 which indicates good internal consistency of the Likert scale statements. Cronbach's alpha reliability coefficient normally ranges between 0 and 1 (Gliem and Gliem, 2003). The closer the Cronbach's alpha reliability coefficient is to 1, the greater the reliability of the items in the scale. For more illustration, the following rule of thumb was provided (Gliem and Gliem, 2003).

#### Rule of thumb

Cronbach's alpha > 0.9  $\rightarrow$  Excellent; > 0.8  $\rightarrow$  Good; > 0.7  $\rightarrow$  Acceptable; > 0.6  $\rightarrow$  Questionable; > 0.5  $\rightarrow$  Poor; < 0.5  $\rightarrow$  Unacceptable.

## RESULTS

### Socio-economic and demographic characteristics

Of the 196 respondents, 150 (76.5%) were males while the rest 46 (23.5%) were female households. The average age of respondents was 43.77 years, with a range from 24 to 78 years. The middle age group (40 to 59) comprises 45.9% of the respondents (Table 1). The classification of age groups was based on the Central Statistical Agency of Ethiopia (CSA, 2007).

The local communities living around the sanctuary had a culture of polygyny marriage. The mean wife number of male respondents was 2 ranging from 1 to 5 wives. A higher proportion of male respondents (44.7%) had two wives followed by those engaged with three wives (24%). Only two respondents (1.3%) were engaged with 5 wives for each. Generally, a total of 150 male respondents had married with 327 wives.

Most of the respondents (42.3%) were illiterate, 33.2% can read and write with informal education and the rest 24.5% attained primary education. Respondents had an average family size of 11 with a range from 3 to 35 family sizes.

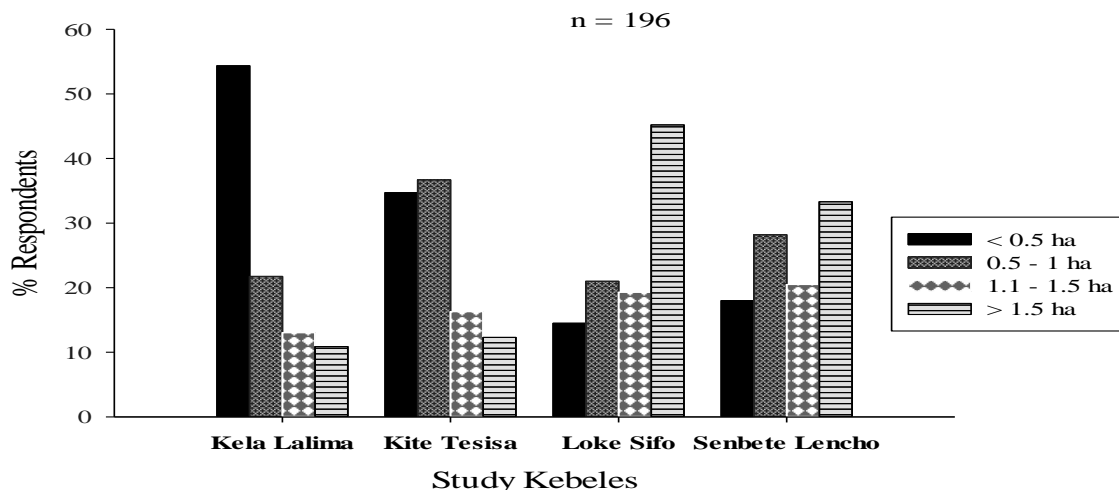
Crop farming and livestock rearing were the main sources of income for local communities of Senkele Swayne's Hartebeest Sanctuary. An average landholding size of respondents was 1.06 ha with a range from 0.1 to 3 ha. There was a significant difference in the size of landholding among study Kebeles ( $\chi^2 = 37.295$ ,  $df = 3$ ,  $P < 0.05$ ). Many of the respondents from Loke Sifo (45.2%) and Senbete Lencho (33.3%) held a landholding >1.5 ha, while many of the respondents from Kela Lalima (54.35%) and from Kite Tesisa (34.7%) own a land size less than 0.5 ha (Figure 2). Respondents own a total of 5627.77 TLU livestock with an average livestock ownership of 28.7 TLU.

### Local communities' perception of conservation and the sanctuary

An overwhelming percentage (98%) of the respondents

**Table 1.** Socioeconomic and Demographic characteristics of respondents.

Age class	Sex		Total	%	Average family size	Land holding (ha)	Average landholding (ha)	Livestock Size (TLU)	Average livestock size (TLU)
	M	F							
20-39	58	21	79	40.3	8	39.875	0.5	1229.02	15.56
40-59	65	25	90	45.9	13	112.375	1.25	3083.84	34.26
≥ 60	27	0	27	13.8	17	55.75	2.06	1314.91	48.70
Total	150	46	196	100	-	208	-	5627.77	-

**Figure 2.** Landholding size of respondents across study Kebeles.

perceived that they were dependent for their livelihood on some of the resources in the sanctuary. Grazing and thatching grass were the two sources of livelihood dependences indicated by all respondents. Perception on resource dependency was not different across Kebeles and other socioeconomic characteristics ( $P > 0.05$ ).

With no significant difference between study Kebeles, sex, education level and landholding size ( $P > 0.05$ ), many of the respondents (44.9%) perceived that the size of the sanctuary is too large so that some part of it should be returned back to the community. Perception on the size of the sanctuary was different across age groups, family size and size of livestock ownership (Table 2).

Regardless of the Kebele they are living and other socioeconomic characteristics, a higher proportion of the respondents (62.8%) left the responsibility of conservation of the sanctuary to the government and only 17.9% make themselves responsible.

Over half of the respondents (57.7%) viewed that people and wild animals cannot coexist. Perception on people-wild animal coexistence was different across age groups, education level, family size, landholding size and size of livestock ownership (Table 3).

Most of the respondents, 37.8 and 33.2%, indicated that there was much and very much extent of crop damage

respectively. The remaining 29% reported crop damage by wild animals was little and no respondent agreed with the choice of no damage. A higher percentage of the respondents (59.2%) reported loss of livestock by wild animals, while the remaining 40.8% did not lose any livestock due to wild animals. However, the perception of respondents about compensation was tough. All respondents (100%) marked that there was no any form of compensation or a law which supports compensation for wild animals' damage. They indicated that the only legal incentive they get from the sanctuary was thatching grass.

#### Attitude of local communities towards the sanctuary

The mean attitude index score of respondents towards Senkele Swayne's Hartebeest Sanctuary on the five point Likert scale was 2.57 (SD = 0.73, n = 196). The least score on the attitude index was 1.36 showing strong negative attitude towards the sanctuary, while the highest was 4.07 which indicates positive attitude (Figure 3).

The greater proportion of the respondents (54.6%) had negative and strong negative attitude towards the sanctuary while 23% held neutral attitude and only 22.4%

**Table 2.** Perception of respondents about the size of the sanctuary.

Variable	Perception of respondents on the size of Sanctuary (%)						
	n	Small	Optimum	Large	$\chi^2$	df	P-value
<b>Age</b>							
Youngest (20-39)	79	44.3	32.9	22.8	32.69	4	0.000
Middle (40-59)	90	15.6	27.8	56.7			
Oldest ( $\geq 60$ )	27	11.1	18.5	70.4			
<b>Family size</b>							
1-10 People	104	28.8	39.4	31.7	18.135	2	0.000
>10 People	92	23.9	16.3	59.8			
<b>Livestock Size</b>							
0-20 TLU	74	39.2	35.1	25.7	18.757	2	0.000
$\geq 20$ TLU	122	18.8	24.6	56.6			

**Table 3.** Perception of respondents on coexistence of people and wild animals.

Variable	Perception of respondents on people-wild animals coexistence (%)					
	n	NO	Yes	$\chi^2$	df	P-Value
<b>Age</b>						
Youngest (20-39)	79	24.1	75.9	66.762	2	0.000
Middle (40-59)	90	74.4	25.6			
Oldest ( $\geq 60$ )	27	100	0			
<b>Education level</b>						
Illiterate	83	77.1	22.9	34.816	2	0.000
Informal Education	57	59.6	40.4			
Primary School	56	26.8	73.2			
<b>Family size</b>						
1-10 People	104	44.2	55.8	16.35	1	0.000
>10 People	92	72.8	27.2			
<b>Landholding size</b>						
0-1 ha	110	65.5	34.5	6.25	1	0.012
>1ha	86	47.7	52.3			
<b>Livestock size</b>						
0-20 TLU	74	33.8	66.2	27.744	1	0.000
$\geq 20$ TLU	122	72.1	27.9			

of the households had positive attitude (Table 4).

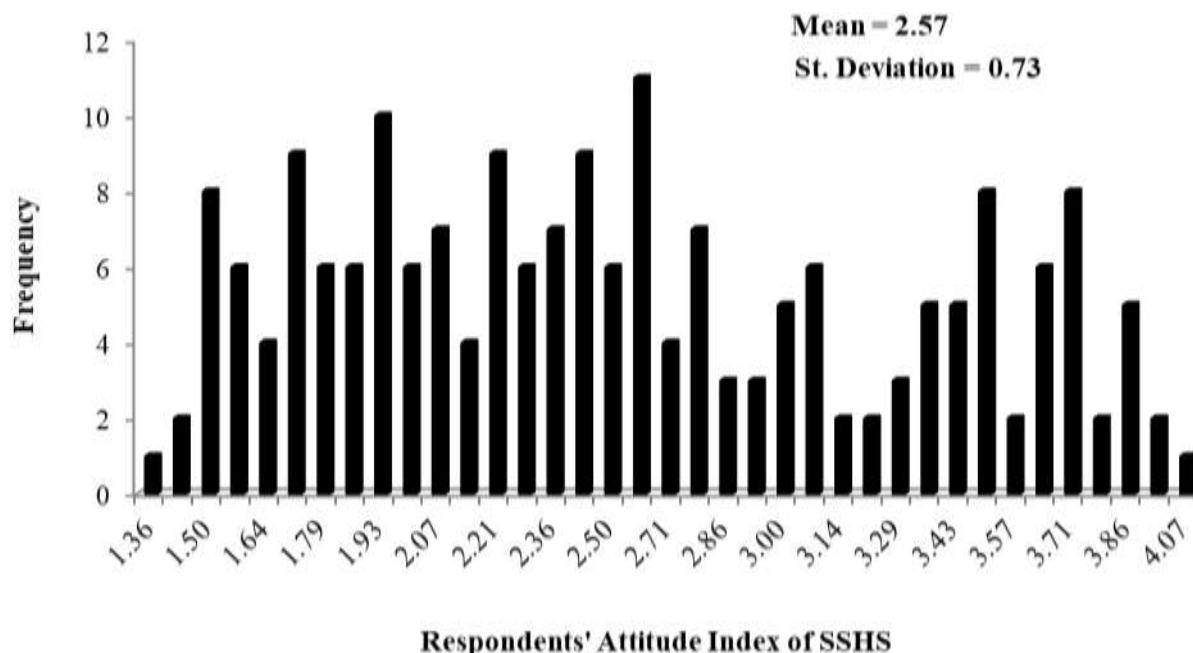
The results of one way ANOVA showed no significant difference in attitude between study Kebeles ( $F = 0.734$ ,  $df=3$ ,  $P > 0.05$ ) and between sex of respondents ( $F = 0.322$ ,  $df=1$ ,  $P > 0.05$ ). However, attitude towards the sanctuary was significantly different across age groups ( $F = 79.367$ ,  $df=2$ ,  $P < 0.05$ ), education level ( $F = 137.498$ ,  $df=2$ ,  $P < 0.05$ ), family sizes ( $F = 36.13$ ,  $df=1$ ,  $P < 0.05$ ), level of landholding size ( $F = 53.259$ ,  $df=1$ ,  $P < 0.05$ ) and size of livestock ownership ( $F = 71.886$ ,  $df=1$ ,  $P < 0.05$ )

(Table 5).

## DISCUSSION

### Local communities' perception of conservation and the sanctuary

Regardless of the socioeconomic characteristics or the Kebeles where the residents lived ( $P > 0.05$ ), an



**Figure 3.** Frequencies and range of respondents' attitude index towards SSHS.

**Table 4.** Classification of respondents based on their attitude towards the Sanctuary.

Attitude	Frequency	%
Positive	44	22.4
Neutral	45	23.0
Negative	70	35.7
Strong Negative	37	18.9
Total	196	100.0

overwhelming percentage (98%) of the respondents perceived that they were dependent on some of the resources from the sanctuary. Grazing and thatching grass were the two sources of livelihood dependences indicated by all respondents. Similar result was reported on different protected areas, in Ethiopia and abroad (Silori, 2006; Karanth and Nepal, 2011; Anteneh et al., 2014; Tewodros and Afework, 2014).

Communities whose livelihoods chiefly involve the direct exploitation of natural resources often complain on the sizes of protected areas (Anthony, 2007). The resistance of local communities on the size of SSHS was started before decades (Nishizaki, 2004) and this was intensified with the highly growing population and demarcation of the boundary of the sanctuary while land is scarce (Burger, 2011). The local communities perceived that smaller area is enough for the finger counted wild animals in the sanctuary. The results conform to former studies on the sanctuary (Tewodros, 2006; Mekbebe et al., 2010). Linearly, local communities of Marsabit National Reserve (Kenya) also considered

establishments of protected areas as wastage of land (Shibia, 2010).

Most of the local communities had low feeling of ownership over the sanctuary and they consider it as the property of the state. A higher proportion of the respondents (62.8%) left the responsibility of conservation to the government and only 17.9% make themselves responsible. This resulted when the local communities are not involved in the management and decision making process of the conservation area (Shibia, 2010).

Threatened with their existence, most of the respondents had unfavorable perceptions about coexistence of people and wild animals. Similarly, local communities in different PAs of Ethiopia and abroad had unfavorable perception of people-wild animal coexistence because of prevalence of crop damage and livestock depredation (Tewodros, 2006; Dorji, 2009; Mekbebe et al., 2010). Respondents' perception of wild animals in the sanctuary was found better in respondents who attained primary education, young aged, with larger landholding

**Table 5.** Attitude of respondents across different variables.

Variable	n	Attitude				
		Mean Score	Std. deviation	df	F	P-value
<b>Age</b>						
Youngest (20-39)	79	3.13	0.589			
Middle (40-59)	90	2.30	0.551	2	79.367	0.000**
Oldest (60 and above)	27	1.81	0.324			
<b>Academic background</b>						
Illiterate	83	2.06	0.423			
Informal education	57	2.49	0.547	2	137.498	0.000**
Primary School	56	3.40	0.453			
<b>Family size</b>						
1-10 People	104	2.84	0.691			
>10 People	92	2.26	0.647	1	36.130	0.000**
<b>Land holding size</b>						
0-1 ha	110	2.27	0.622			
> 1 ha	86	2.95	0.678	1	53.259	0.000**
<b>Livestock size in TLU</b>						
<20 TLU	74	3.05	0.59			
≥20 TLU	122	2.27	0.65	1	71.886	0.000**

size and in respondents with small size of livestock. This was different from Mekbebe et al. (2010) in which view of local communities towards wild animals was different only with income source and benefits received from the sanctuary.

Though most of the respondents (59.2%) had ever lost livestock and faced crop damage due to wild animals, there was no form of compensation for their losses. This was contrary to experiences of other countries such as Bhutan where the government adopted a compensation scheme for the crop damage and livestock depredation in Jigme Dorji National Park (Dorji, 2009).

### Attitude of local communities towards the sanctuary

Restrictions for access of resources influence the perception and attitude of the local communities towards the sanctuary. Loss of land as a result of the establishment of the sanctuary has an impact on them who are dependent on resources such as fuel wood, grazing area and thatching grass (Shibia, 2010). Since its establishment, the size of the sanctuary has been fluctuating due to the local communities' resistance to conservation. It is now found almost four times (54 km<sup>2</sup>) lower than its original size (200 km<sup>2</sup>) (Nishizaki, 2004; Burger, 2011).

In addition, punishments imposed by the sanctuary and

wildlife damages without appropriate compensations also negatively modify the attitude of the local communities towards the sanctuary. They had unfavorable interpretations to conservation of the sanctuary and the wild animals living inside it. Due to this, majority of the respondents (54.6%) held a negative attitude towards the sanctuary while only 22.4% of them had positive attitude. The findings agree with Tewodros and Afework (2014) while contradict with Anteneh et al. (2014).

Attitude of respondents towards SSSH was independent of sex and the Kebeles where they were living. However, majority of young respondents had more positive attitude to the sanctuary. Relatively, respondents who attained primary education had better compliance than others. Likewise, respondents with less family size, large size of landholding and with small size of livestock ownership had more positive attitude than others who do not possess either of these. Shibia (2010) reported similar result on Marsabit National Reserve (Kenya).

### Impacts of local communities on the sanctuary

#### *Human population increase*

The Senkele Swayne's Hartebeest Sanctuary is an island which is tightly surrounded by growing human population. The culture of the community which supports a polygyny



**Plate 1.** Livestock Population in different parts of the Sanctuary (Azmeraw Alemkere).

marriage contributes for the population increase and thereby contributing for the human impact on the sanctuary.

The 2008 data of human population in the four study Kebeles bordering the sanctuary was 26,725. The human population in the same Kebeles around the sanctuary was raised to 31,723 in 2014. Within only six years, the population was increased by 18.7% which was a 3.12% growth per year. This value was greater than the national average population growth rate (2.44) which was estimated for the year 2010 to 2014 (Aynalem, 2014).

The highly increasing human population around the sanctuary has increased the demand for resources such as land for cultivation and grazing, fuel wood, thatching grass and other forest products, which could consequently lead to habitat destruction and encroachment to the sanctuary. Accelerated human population growth around protected areas was identified as a severe threat for sustainability of protected areas (Mwamfupe, 1998; Kideghesh, 2006; Burger, 2011; Binlinla et al., 2014).

### **Livestock grazing**

All respondents were engaged with livestock rearing. They owned a total of 5627.77 TLU livestock with an average ownership of 28.7 TLU. More than three fourth of the respondents (77%) graze their cattle in the sanctuary. The very weak form of punishment (10 Ethiopian Birr per household per day of restraining) contributed for the frequent grazing of livestock in the sanctuary (Plate 1).

In 2008, the total livestock identified in the four study Kebeles bordering the sanctuary was 35,397.116 TLU. Though it was not a remarkable reduction, the livestock population in the same Kebeles was reduced to

32,893.495 TLU in 2014. The reason for the reduction, as Nishizaki (2004) said it, was due to the gradual change in the importance of livestock and the increased preference of crop farming. However, the load on the sanctuary was not reduced yet. Because, according to the sanctuary staffs, the local communities always brought their relatives' livestock purposely to graze in the sanctuary. In addition, huge size of livestock also comes from neighboring Woreda administrations such as Shalla (Source: Sanctuary Staffs).

Grazing does not kill the Swayne's Hartebeests and other co-inhabiting wild animals directly. However, it is much difficult for Swayne's Hartebeests and other grazing wild animals to compete with several thousands of cattle roaming in the sanctuary. This can be considered as indirect poaching for the Swayne's Hartebeests and other grazing animals in the sanctuary (Burger, 2011). The noise made by the people and the livestock inside the sanctuary was anxious for the wild animals.

### **Settlement and agricultural encroachment**

The increase in human population around the sanctuary increases the need of extra land for agriculture and settlement. According to the sanctuary office, 793 huts were built along the periphery of the sanctuary in a round fashion (Plate 2).

Illegal settlements in the sanctuary are not eradicated yet. According to the sanctuary staffs, over 50 huts are still left in the sanctuary. In addition, huts were built along the immediate border of the sanctuary in a round fashion. Such settlements inevitably degrade the sanctuary which, in the long run, could lead the Swayne's Hartebeests not to be seen once again on earth.





**Plate 2.** Settlements and construction of new huts along the periphery of the Sanctuary (Left = Huts from Kela Lalima Kebele; Right = A new hut From Loke Sifo Kebele)(Azmeraw Alemkere).



**Plate 3.** Part of the Sanctuary which was burnt by fire (Azmeraw Alemkere).

### **Fire**

Fire frequently happens in the sanctuary during the dry season. When used in a controlled manner, fire has an advantage for regeneration of grass for the Swayne's Hartebeests and other grazer wild animals in the sanctuary. Abiot (2013) revealed that a higher number of Swayne's Hartebeests was observed in a fire disturbed habitat though it was opposite for warthogs. The same result was also reported by Burger (2011). However, uncontrolled fire devastates the vegetation which is highly important for other forest dwelling wild animals (Plate 3). It was appreciable that all the sanctuary staffs, heroically, tried to control the usual fire outbreak in the sanctuary. However, it was impossible for them to save all part of

the sanctuary from burning.

Respondents were asked about why they set fire in the sanctuary. Three reasons were given by them. The first was to help the regeneration of the grass for the next grazing season. The local communities understood that burning facilitates regeneration of the grass. The second reason given by the respondents was to avoid pests of their cattle, especially tick. The third was to get the good quality thatching grass in the next season.

The sanctuary staffs added two more reasons of setting fire in the sanctuary. The first was when members of the local communities have conflict with the other. After the grass is distributed to the local communities, individuals set fire on patch of the grass which belonged to somebody which they wanted to attack. The second

reason, when the distribution of thatching grass is unfair the one who thought that he did not get equal share of the grass sets fire to the sanctuary which devastates the vegetation.

## CONCLUSION

The local communities living around Senkele Swayne's Hartebeest Sanctuary had unfavorable perceptions and attitude about the conservation of the sanctuary. They perceived that the size of the sanctuary is too large and viewed that the extent of wild animals' damage is much and increasing from time to time. Threatened with the intensified crop damage, livestock depredation, restrictions and punishments imposed by the sanctuary, the local communities perceived that people and wild animals cannot coexist. Concurrently, the sanctuary did not develop compensation schemes for the crop damage and livestock depredation incurred by wild animals. Consequently, most of the local communities had negative attitude towards the conservation of the sanctuary. Attitude of local communities was different across age groups, education level, family size, landholding size and livestock size. Respondents, who tend to be younger, more educated, with lower family size, high size of landholding and with low size of livestock ownership had better compliance than others who didn't possess either of these.

Senkele Swayne's Hartebeest Sanctuary is under jeopardy from the fast rising human population and the ongoing access of resources. The local communities used the sanctuary as a communal grazing land though they knew it is illegal. Border settlements are also challenges facing the sanctuary. Furthermore, fire frequently happens in the sanctuary which drastically damages the vegetation in the sanctuary.

To convey conservation support from the local communities and reduce the challenges in the Sanctuary, the local community should be actively participated in the sanctuary's affairs. Awareness and environmental educations should be given to the communities so that they will regulate their activities in the sanctuary. In addition, the sanctuary should work to improve the livelihoods of the local communities through job opportunity creation, infrastructure development and preparation of appropriate compensation schemes for crop damage and livestock depredation.

## RECOMMENDATIONS

The following recommendations are given to assist the sustainable management of the sanctuary:

(1) The local communities should get awareness creation trainings, be involved in the conservation affairs of the sanctuary and should get incentives from the sanctuary.

(2) In collaboration with the government and donor agencies, the sanctuary should devise strategies to reduce the resource dependency of the local communities on the sanctuary.

(3) The local communities should get trainings on how to change their culture of polygyny marriage. Attention should also be given for family planning systems to limit the alarming human population around the sanctuary.

(4) Entrepreneurial activities in relation with the presence of the sanctuary should be initiated to bring their attention to conservation.

(5) The local communities should enjoy benefits from the sanctuary through job opportunity and infrastructure developments that might help them to diversify their livelihood.

(6) Appropriate compensation schemes should be prepared in coordination with concerned bodies such as Ethiopian Wildlife Conservation Authority to increase their tolerance to wild animals.

(7) Above all, the sanctuary should have a general management plan on which its management process is guided. This can help the sanctuary to adopt proactive conservation strategies.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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