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Community Perceptions and Challenges to Wildlife Conservation, the Case of Borana National Park, Southern Ethiopia

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ABSTRACT

Background: Despite conservationist' efforts to safeguard natural resources, wildlife continues to disappear at an alarming rate around the world. This research focused on evaluating community perceptions and factors affecting wildlife conservation in Borana National Park in Southern Ethiopia. The study was conducted by the year 2020.

Methods: Questionnaires, focus group discussions, key informant interviews and personal observation were utilized to collect data from 95 households. Quantitative data was compiled and presented in tables using a five-point rating scale with scores of 1, 2, 3, 4 and 5 correspondingly. Data was analyzed using SPSS version 20 and transformed into frequency, percentages and mean.

Result: Despite the abundance of wildlife and communities' long-standing indigenous conservation practices, the study area faced challenges such as extreme resource competitions, human-wildlife conflicts, a lack of compensation, illegal hunting, settlement, variability and unfavorable weather conditions. Furthermore, invasive species expansion and increasing commercialization of wildlife products were feasible problems that require immediate attention in order to achieve sustainable wildlife resource development in the study area.

Key words: Conservation, National park, Perceptions, Wildlife.

INTRODUCTION

Wildlife resources provide virtually all of humanity's food, nearly half of its medications, much of its clothes, all of its fuel and building materials and a portion of its mental and spiritual well-being (Keith, 2014). Human impacts on the earth have been dramatic for millennia (Steffen *et al.,* 2011; Balter, 2013), long before the industrial revolution and resulting in massive mega fauna extinctions (Lorenzen *et al.,* 2011) and habitats loss (Ellis *et al.,* 2013). Humans now affect more than 75% of the terrestrial area; wildlife has endured catastrophic biodiversity reductions and species are disappearing at a greater rate than at any other time in Earth's history (Halpern *et al.,* 2012).

Since the late 1960s, a number of factors have contributed to rapid decreases in wild animal populations, including increased poaching, habitat loss and fragmentation, poorly controlled hunting, a lack of wildlife protection in national parks and civil wars (Lindsey *et al.,* 2007; Pack *et al.,* 2013). Woody plant encroachment is considered a threat to grazers' wildlife as it reduces herbaceous plant productivity and fragments their home range (Bayisa, 2020). Conflicts between humans and wildlife occur all throughout the world, posing a threat to wildlife protection (IUCN, 2005; Berihun *et al.,* 2016). The basic causes for human-wildlife conflict are poverty, rapidly growing human populations and expanding settlements (Mwamidi *et al.,* 2012).

Furthermore, invasive species are a global problem in which foreign species struggle for resources and habitat, modifying the physical environment (IBC, 2014). Invasive plants have left visible affects in most Ethiopian national parks (*Prosopis juliflora, Lantana camara* and *Parthenium hysterophorous*).

Borana National Park is undergoing significant changes in its environment as a result of anthropogenic activity, both in terms of management and ecological changes. It is currently experiencing a protracted dry season, which is causing habitat degradation and making wildlife uneasy due to a lack of forage vegetation for consumption, resulting in death and migration from the conservancy, making them unavailable for tourists to see.

Despite the fact that many studies have been undertaken on the risks that National Parks face, there is a scarcity of literature that examines why those threats have persisted. If academics and conservationists do not work together to describe how to maintain biodiversity in general and wildlife resources in particular, they will continue to be lost fast around the globe. As a result, the objective of this study was to investigate perceptions of local community and factors influencing conservation in the study area.

MATERIALS AND METHODS

Study area

This research was conducted by the year 2020 at Borana National Park, which is located in the Borana zone of Oromia

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National Regional State. It is located in the southern region of Ethiopia, 770 km south of Addis Ababa and spans a surface area of 3,731 km^2. The park is home to a variety of mammals as well as bird species as more than 280 bird species have been identified (Tesfaye, 2016). The park is rich beautiful bird species (Fig 1) and mammals (Fig 2). The area's altitude spans from 900 to 2000 meters above sea level and the rain is bimodal. The daily maximum temperature ranges from 36°C to 39°C from December to February and 21°C to 26°C from March to May (BBNP, 2020).

Sample size and sampling techniques

Informants involved in this study were from bordering around districts of Borana National Park (Elwaya, Yabelo, Gomole, Dubuluk, Dire, Dillo and Miyo) and Borana National Park staffs. From all kebeles bordering the national park, 1970 households of the communities are settled in the park or partially on the border area of the park (BNPO, 2020). Since these people are near to or in the park and can express approximately accurate information about the park, researcher directly selected them as respondents of the study. Number of respondents interviewed was determined based on the formula designed by Yemane (1967) at 90% confidence interval:

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

Where
n = Sample size for the research.
N= Total households of kebeles surrounding or in the park.
e= Maximum variability or margin of error 10% (0.1).
1= Probability of the event occurring/adjustment.

Data gathering tools

Key informant interview with structured and semi-structured interviews was undertaken with selected informants whereas focus group discussion incorporated with selected representatives. The instrument used in questionnaires was a five point rating scale of strongly disagree (SD), disagree (D), undecided (U), agree (A) and strongly agree (SA) with a corresponding scores value of 1, 2, 3, 4 and 5 respectively (Likert, 1932) and some open-ended questions were also used for respondents.

Data collection

Data was collected from June 2020 at the study area.

Sources of data

Primary data (interview, focus group discussion and key informant interview) and secondary (books, journals, reports).

Method of data analysis

The collected data was verified, described, analyzed and interpreted using both quantitative and qualitative approaches by using statistical software for social science (SPSS version, 20). The arithmetic mean for the values was computed as 1 + 2 + 3 + 4 + 5 = 15/5 = 3. Therefore, a total mean score of 3 and above was used as cut-off point for "agree" while any mean score below 3 indicate "disagree". It was interpreted described by narrative, figures and tables.

RESULTS AND DISCUSSION

Demographic and socio-economic of the respondents

The educational background of the sampled households indicates that, the educational status of the respondents is particularly at literacy level which has its own affect in properly managing and transferring existing traditional knowledge to next generation (Table 1).

Local communities' perception towards wildlife resources and conservation site

Respondents outlined that existence of wildlife conservation site at Borana National Park viewed positively as a source of benefit than paying them extra costs (40.2%). The mean score of the two items (1.1 and 1.2) also reflect this fact; that of positively worded item diverges towards agree (3.94) whereas that of negatively worded item diverges towards disagree (2.51).

Regarding perception of the community towards human-wildlife conflict existence in the study area was also positively viewed as it is manageable in many ways (47.6%). But the surrounded community didn't hesitate as they need additional service from the conservation site (Borana National Park) in terms of direct and indirect benefits



Fig 1: Attractive and high populated bird species in the park (like ostrich and gwen fowl).

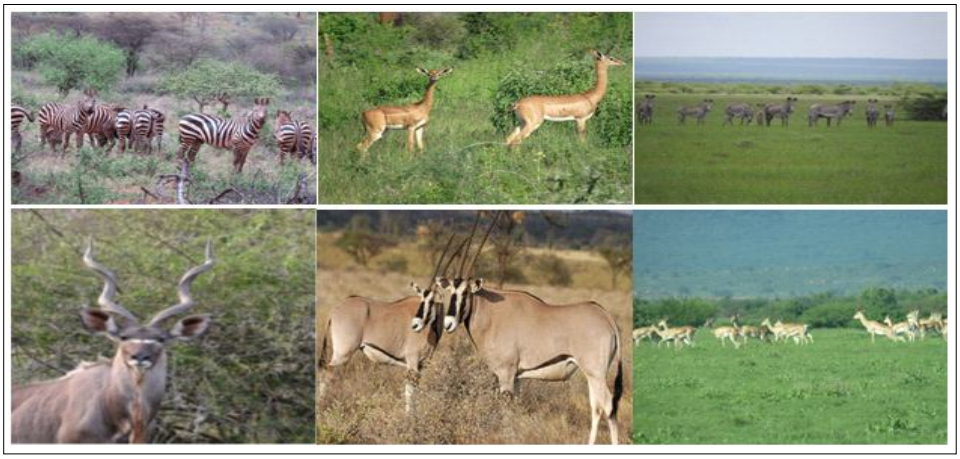

Fig 2: Selected icons of mammals' wildlife in Borana National Park (Burchelle's zebra, Gerenuk, Gravy's zebra, Greater kudu, Beisa Oryx and Grant's gazelle).

Table 1: Socio-economic and demographic characteristics of the respondents.

Characteristics	Description	Frequency	Per cent
Sex	Male	61	74.4.0
	Female	21	25.6
Age	Below 20 years	2	2.4
	20-30 years	8	9.8
	31-40 years	33	40.2
	Above 41 years	39	47.6
Marital status	Married	75	91.5
	Not married	4	4.9
	Divorced	2	2.4
	Widowed	1	1.2
Year of stay	Less than 20 years	0	0.0
	20-40 years	21	25.6
	Above 40 years	61	74.4
Occupation	Cattle raring only	0	0.0
	Farming only	0	0.0
	Mixed farming	79	96.3
	Employed	3	3.7
Education	Cannot read and write	61	74.4
	Basic education	13	15.9
	Elementary	6	7.3
	Certificate and above	2	2.4

Own survey, 2020.

(42.7%). The mean score of the two items (1.3 and 1.4) indicated the fact that agreement of the respondents (3.39) and disagreement (2.06) based on the prepared questionnaire (Table 2).

Because they use animal by-products for various ceremonial issues, the residents of the research region have a good perception of wildlife's contribution to their cultural lifestyles. Getachew and Weldemariam (2016) proposed a scenario in which wildlife is necessary for human progress due to the commodities and services it delivers.

Local community of the study area have positive perspective towards the existence of wildlife conservation site in their locality which was somewhat different from other areas where it was negatively viewed for many reasons. They appreciated rangers and others park staffs employed from local community which has positive role in jobless reduction for the youths. The existence of abundant grass for their cattle and leaves for their browsers showed the importance of the conservation site as per respondents picked out. The earth's biodiversity, according to (Kolahi *et al.,* 2012; Stolton *et al.,* 2015, Mamatha *et al.,* 2019), is a delivering enormous monetary and non-monetary advantages to humanity.

Currently existing wildlife conservation challenges in the study area

In the study area, more than half of the informants (54.9%) revealed that there was human-wildlife conflict existence which can be considered as threat for conservation site (Table 3). Respondents complained the issue of no compensation for resource damage by wildlife at the conservation site which was repetitive events (76.8%). Almost all of the informants (87.8%) outlined as there was variability and unfavorable weather condition for some wildlife species as it is sometimes difficult to survive even in the study area. But the idea of lack of transparency from park management for local people at Borana National Park under item 4.9 got disagreement from respondents (36.6%) with mean score value of (2.24). Similarly, item 4.10 which stated there is limited awareness by local people about role of wildlife resources was disagreed by majority of the respondents (42.7%) with mean value of (2.20). On the other hand, argument of inadequate benefit from Borana National Park was agreed by respondents (43.9%).

Despite the fact that the people in the study region are committed to indigenous conservation, there are certain barriers to animal conservation and indigenous practices in the area. Marginalization and loss of usage rights, according to Asefa *et al.* (2019), have developed negative attitudes

toward protected areas in local communities, putting communities at conflict with wildlife protection.

Similarly, biodiversity loss is caused by overpopulation and overconsumption (Kolahi *et al*., 2012), habitat loss, fragmentation and invasive species (Meduna *et al.,* 2009), low morale and insufficient money (Eldredge, 2010). The other problems threatening use of local knowledge in conservation site they said is “the modernization in our

Table 2: Local communities’ perception towards wildlife resources.

Items	Response										Mean
	SD		D		U		A		SA		
	N	%	N	%	N	%	N	%	N	%	
I think wildlife has great contribution for livelihood of the community.	2	2.4	3	3.7	12	14.6	46	56.1	19	23.2	3.94
I believe that existence of wildlife conservation site in my area pay me high cost and I prefer if not.	17	20.7	33	40.2	13	15.9	11	13.4	8	9.8	2.51
I believe that existence of human-wildlife conflict is normal as it is manageable.	11	13.4	13	15.9	5	6.1	39	47.6	14	17.1	3.39
I think the surrounded community is satisfied from Borana National Park in terms of direct and indirect benefits.	28	34.1	35	42.7	13	15.9	5	6.1	0	0.0	2.06

Own survey, 2020.

Note: SD= Strongly disagree=1, D= Disagree=2, U= Undecided=3, A= Agree=4 and SA= Strongly agree=5 are used throughout this section. The decimal points are rounded to the tenth for percentage and to the hundredth for mean.

Table 3: Some existing challenges that affect wildlife conservation in the study area.

Items	Response										Mean
	SD		D		U		A		SA		
	N	%	N	%	N	%	N	%	N	%	
I believe there is existence of human-wildlife conflict at Borana National Park	0	0.0	0	0.0	2	2.4	35	42.7	45	54.9	4.57
I think there is high wildlife death from car accident in Borana National Park	0	0.0	3	3.7	13	15.9	44	53.7	22	26.8	4.04
I believe that there is continuous illegal hunting in Borana National Park	15	18.3	43	52.4	12	14.6	8	9.8	4	4.9	2.32
I think there is expansion of settlement in Borana National Park	3	3.7	6	7.3	16	19.5	33	40.2	24	29.3	3.84
There is high competition between livestock and wildlife on grazing in Borana National park	0	0.0	0	0.0	14	17.1	37	45.1	31	37.8	4.21
Currently there is invasive species expansion in Borana National Park	1	1.2	5	6.1	9	11	41	50	26	31.7	4.26
There is unfair/no compensation for local people for resource damage by wildlife at the conservation site	0	0.0	0	0.0	0	0.0	19	23.2	63	76.8	4.77
There is variability and unfavorable weather condition for some wildlife species	0	0.0	0	0.0	2	2.4	8	9.8	72	87.8	4.85
There is lack of transparency from park management for local people	23	28.0	30	36.6	19	23.2	8	9.8	2	2.4	2.24
There is limited awareness by local people about role of wildlife resources	21	25.6	35	42.7	18	22.0	5	6.1	3	3.7	2.20
I think there is an inadequate direct/indirect benefit for community from the park	6	7.3	10	12.2	12	14.6	36	43.9	18	22.0	3.61

Own survey, 2020.

Note: SD= Strongly disagree=1, D= Disagree=2, U= Undecided=3, A= Agree =4 and SA= Strongly agree=5 are used throughout this section. The decimal points are rounded to the tenth for percentage and to the hundredth for mean.

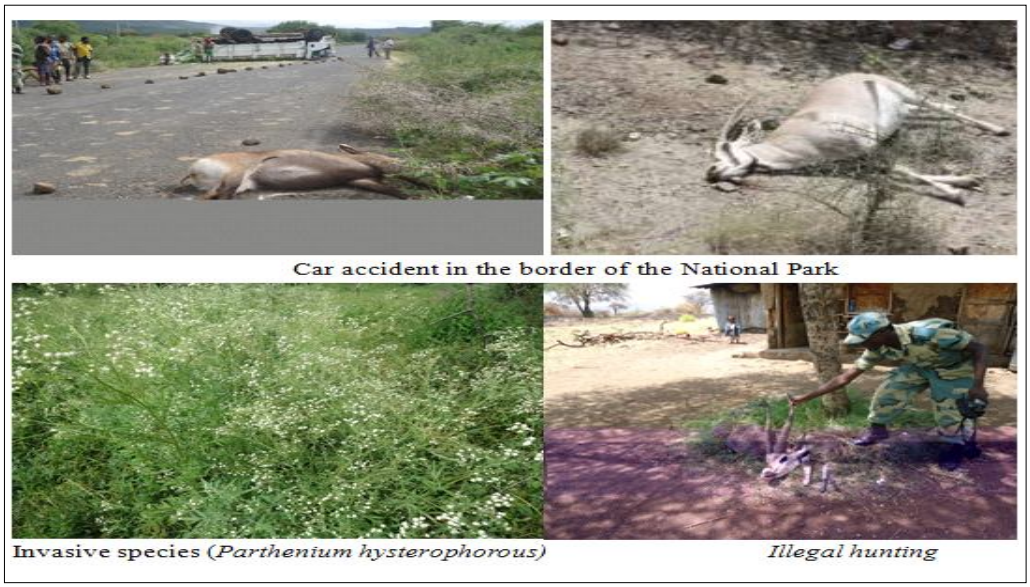

Fig 3: Some pictures showing threats to Borana National Park in different times.

society that has affected our youths as they do not regard the local traditional institution sometimes". Wildlife product commercialization and religious development were also the others challenge affecting indigenous wildlife conservation practices. Another study found that much indigenous knowledge is rapidly vanishing in terms of conservation of natural resources variety (Deselagn, 2001; Gordon *et al.,* 2016; Birhanu, 2020).

According to the respondents, there was an increase in human-wildlife conflict as a result of competition for few resources as the human population in the area grew. Human-wildlife conflicts are an ever-present issue and the situation is only getting worse as more land is cultivated (Berihun *et al.,* 2016; Yenesew *et al.,* 2020). National Park's resources have been damaged by an increase in livestock population and illegal resource extraction (Demeke and Afework, 2011).

Crop damage by some wild animals, livestock predation and human interference with wild animals' home ranges were the main variables that exacerbated human-wildlife conflict in the study area. Human-wildlife conflict happens all around the world (IUCN, 2005); nonetheless, emerging countries are more vulnerable (Berihun *et al.,* 2016). Due to the lack of compensation many people have developed uneasy behaviors and some people with a casual attitude may murder wild animals in response to their predated cattle. Crop damage caused by various wildlife creatures was also a major source of concern for local settlers in and around the National Park.

On the other side, wildlife deaths caused by car accidents in the park were a severe problem. Wildlife that is sensitive to disturbance, such as ostriches and other ungulates such as Beisa oryx, Greater and lesser kudus, are more vulnerable to traffic accidents in the study region due to drivers' lack of attention. Other study revealed that, national parks are experiencing challenges as a result of low awareness (Gashaw, 2015; Tesfaye, 2017).

According to informants and personal observation, the expansion of invasive species on some portions of the protected area, which was unusual in the previous two decades, was another threat to the site. *Parthenium hysterophorous* and other locally identifiable species were found to be viable in the area (Fig 3). Invasive species have left visible consequences in the majority of Ethiopia's national parks (Young, 2012; IBC, 2014; Mulualem and Tesfahunegny, 2016). Variability and bad weather conditions for some wildlife species, which could result in a shortage of fundamental needs such as water, were also considered by responders. Various researchers have discovered that a combination of causes has produced rapid losses in wildlife populations since the late 1960s (Lindsey *et al.,* 2007; Pack *et al.,* 2013). Poaching, habitat fragmentation, devolution of traditional conservation methods and civil wars in countries were among the most pressing issues.

CONCLUSION

Threats to wildlife species appear to be modest in the research region, based on wildlife biodiversity potentials and favorable opinions and conservation behaviors of local people. However, given current human population growth and concomitant special needs in the study area, wildlife and their habitats may become increasingly in demand in the future, necessitating ongoing conservation efforts from concerned stakeholders to ensure their survival for future generations.

Competing interests

I declared no competing interests.

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