THREATS AND OPPORTUNITIES OF WILDLIFE RESOURCE IN GAMBELLA NATIONAL PARK, ETHIOPIA

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Abstract. The world's national parks are highly influenced by human activities, and they face many challenges because of community influence. The aim of this study was to assess the opportunities and threats for wildlife resources. It also aimed to distinguish between the consequences associated with wildlife resource threats and factors affecting the attitude of the local community towards wildlife resources in the area. The present findings are based on primary data from local communities, stakeholders, and field visits. Tools for primary data collection were questionnaires, KIs, interviews, and observation checklists. Secondary data was collected from related articles and prior research conducted in the area, as well as documents obtained from offices. Quantitative data was analyzed using SPSS version 20.0. The result of the present study showed that entering Murlea groups from South Sudan, expansion of agriculture, lack of infrastructure, constructing kebeles in and around the national park, wildfire disturbance, and human-wildlife conflict were the main threats to wildlife resources. Habitat loss, wildlife disturbance, human-wild animal conflict, spoils of habitat corridors and wildlife harassment were the major consequences associated with wildlife resource threats in the study area. The level of education, distance from the park, gender, age of the respondent, and size of the family were all factors influencing the local community's attitude toward wildlife resources in the studied areas. The following were the main wildlife resource opportunities in the study area: community awareness of wildlife, the prevalence of alternative job opportunities, the presence of conservation organizations in the study areas, the presence of a community-based conservation approach, and a good relationship between local communities and national parks. The presence of wildlife resource threats in the study area was a frequent problem in GNP. There is a need for further research in order to get better solutions and mitigate the threats to wildlife resources in the Jor district.
Keywords: *habitat corridors, opportunities, threats, wildlife resources, Gambella National Park*

Introduction

There are many diverse ways that individuals interpret the phrase "wildlife." However, the term "wildlife" now refers to all living things that are untamed and found in the wild, including non-game species that are not employed for sport hunting (Sinha, 2001). Additionally, it describes the diversity of all living things on earth that are found in the wild at the genetic, species, and ecological levels. Before the first humans were developed a million years ago, there was connection between humans and nature. There is an unparalleled rivalry for space and resources between humans and wildlife as a result of the transition of the earth's natural landscapes from largely wild to human-dominated. Through the hunt and collecting, their bonds have grown closer and closer. Currently, the wildlife protected areas faced many challenges, such as lack of infrastructure in protected areas, lack of technology-enabled protection system, illegal activities in the vicinity of protected areas, widespread crime of poaching and trafficking of wild animals and their products, lack of intensive research, lack of

capacity(in organization, operation, manpower, finance), the pandemic of covid-19 and others. Protected areas in emerging nations are being impacted by the increasing human population and the associated economic needs (Stephens et al., 2001). Many protected areas in poor countries are under pressure from human activities like deforestation and fuel wood harvesting (Devall, 2006).

The enormous diversity of Ethiopia's biological resources, both in terms of flora and fauna, can be attributed to a variety of ecological, edaphic, and climate circumstances. Many species are only found in particular regions of the country where their climatic requirements are met as a result of the climatic diversity. In proportion to the overall number of species in the nation, Ethiopia's mountains have a high degree of endemism because of their high elevation levels, which are remarkable for Africa (Yalden and Largen, 1992). Ethiopia is blessed with many high-value cultural and natural attractions. The nation is one of the least benefited by Africa's expanding tourist sector despite having a wealth of stunning cultural and natural heritage properties. One of the main draws of Ethiopia's wildlife legacy is its vast mammalian species, which is among the most varied in all of Africa. Numerous protected areas have been created in the nation. The term "major conservation areas" refers to national parks and sanctuaries (Leykun, 2000). Despite Ethiopia's rich wildlife resources, many wildlife species, including endemics, are threatened due to massive habitat degradation and fragmentation (Hun Girma et al., 2012). Mainly, expansion of agriculture, livestock encroachment, deforestation, illegal fire, and an increasing human population have been often cited as the major causes of bird habitat degradation, fragmentation, and loss in Ethiopia, ultimately affecting the survival of wildlife. The majority of habitat and wildlife destruction problems are intricate, site-specific, and involve numerous, frequently at odds groups of people, making biodiversity conservation a challenge that can only be overcome with a thorough understanding of the true pressures and influences that underlie behavior patterns toward resource use (Hansilo and Tiki, 2017). The goal of this article was to review Ethiopia's wildlife resources, conservation issues, and management practices.

National parks, wildlife sanctuaries, restricted hunting zones, wildlife reserves, and other protected areas are among the many protected places in Ethiopia. These places are home to a wide variety of wildlife species, including wild animals, plants, and microbes, all of which are crucial for preserving the structure and function of the ecosystem. It is home to a variety of animals and their habitats, including dry regions, lowland savannas, and large wetlands as well as alpine moorlands (Yalden, 1983). In its several protected regions, Ethiopia contains a great number of endemisms in both its flora and fauna (Yalden and Largen, 1992). Protected areas of land in the nation include national parks, wildlife reserves, priority forests, biosphere reserves, and community conservation areas. In Ethiopia nowadays, protected areas work to preserve large-scale natural ecosystems and biodiversity. However, a variety of issues are confronting these protected regions more and more frequently (Suich, 2012). Ethiopia's national parks are also heavily touched by human activity, and because of community influence, they encounter several difficulties. Ethiopia's protected regions face serious risks from expanding agricultural methods, settlement, and increased pressure on the human and livestock populations (Tadesse and Kotler, 2013). Competition between humans and wildlife is another major issue in Ethiopia's many conservation areas. Additionally, investments in the development of agriculture, the gathering of fuel wood, the renewal of new grass for use as pasture for livestock, and other projects reduce the amount of

wildlife resources in the nation. Another issue affecting Ethiopia's pastoral communities and protected areas is access to grazing fields (Ashenafi and Leader-Williams, 2005).

Ethiopia has national parks that are very important in terms of the economy and the environment, but there is a constant threat of deforestation and loss of wildlife as a result of growing agriculture, grazing land encroachment, illegal hunting, fishing, and natural disasters like global warming, epidemic disease, and severe drought, all of which have a high probability of raising extinction rates globally. Human-wildlife conflicts are on the rise in several of Ethiopia's national parks as a result of subsistence hunting, habitat loss from deforestation, encroachment of incompatible land uses, and uncontrolled fires (Tefera, 2011). One of the most important untapped resources in the Gambella is the area's diverse wildlife. GNP is located in the Gambella People's Regional State (GPRS). It is one of Ethiopia's most important protected areas because it supports a variety of natural fauna and flora. Particularly reliant on the GNP are sizable herds of white-eared kob that migrate between Ethiopia and the South Sudan. It was published on August 1st, 2010. After the Serengeti in Tanzania, this is the second greatest animal migration in Africa. GNP is mostly distinguished by wet regions and moist lowlands. It is also one of Ethiopia's national parks and is regarded as the country's most significant wildlife region in terms of biodiversity conservation. However, it has decreased as a result of increased large-scale agricultural investment, increased small-scale agricultural land use, and resettlement of displaced people. The animal population in the park has decreased as a result of farming operations, cotton production, hunting, poaching, and the establishment of refugee camps. The park is currently dealing with a variety of problems. Different districts define the boundaries of Gambella National Park.

One of the districts inside the borders of the Gambella Peoples Regional State is Jor. The neighborhood's inhabitants engaged in a variety of activities. These activities include increasing agricultural production, gathering firewood, and raising livestock. However, these actions might have an impact on the various animal resources and the places where they are conserved. These issues may present a chance for us to examine the difficulties with and attitudes toward local communities' conservation.

Statement of the problem

Due to anthropogenic (human-caused) activity, Ethiopia's distinct and unique landscape, ecological variety, and natural resources are deteriorating (Atickem et al., 2010). This has reduced the movement of wild animals throughout the nation to a small number of protected locations (Atickem et al., 2010). Protected areas, such as national parks, have had a number of difficulties in balancing the requirements of people and wildlife. Additionally, a variety of difficulties and unfavorable attitudes in the local populations are having an impact on the management and conservation of GNP. Furthermore, the sustainability of the ecosystem is being threatened by growing negative demands on natural resources (Africa, 2008). Rapid ecological degradation also poses a serious threat to the ecosystems and biodiversity of the park (Korner and Spehn, 2019). This lays the groundwork for conservation efforts on thorough proof of the difficulties in conserving animal resources caused by manmade causes in places like the GNP, which hold immense potential for natural resources. Therefore, it is increasingly important to consider conserving animal resources in order to enhance public opinion.

However, the study that was carried out in the Gambella Region, more specifically in the Jor region, was not thoroughly investigated, and there is no further information available concerning the dangers and opportunities for the protection of natural resources in the study area. A thorough investigation of the causes, effects, and attitudes of local communities in the GNP and adjacent areas is required to close the knowledge gap. A rigorous investigation is also required to determine how to help to the conservation of wildlife resources. The purpose of this study is to determine the human activities and pressures that have an impact on animal resources, the causes of those activities, the effects those activities have on the environment, and how people view possibilities and challenges for wildlife resource protection. Additionally, it evaluates the GNP prospects for wildlife resources.

Objective of study

In the case of Jor District, Gambella, Ethiopia, the overall goal of this study is to evaluate the dangers and opportunities to the conservation of wildlife resources as well as how the community views the protection of wildlife resources in GNP. Specifically, the objective are included: (1) to determine the factors affecting the attitude of the local community towards wildlife resources in the study area; (2) to identify threats to wildlife resources in the study area; (3) to determine the consequences of threats to wildlife resources and the local community in the study area; as well as (4) to determine the opportunities for wildlife resources in the study area.

Significance of the study

Local community support for conservation will rise when effective solutions to risks are adopted (Waweru and Oleleboo, 2013). It is crucial for the park to identify various opportunities for the conservation of its natural resources. As a result, this study offers a wealth of knowledge about managing animal resources sustainably. Additionally, it offers crucial details regarding how human activities and risks affect Ethiopia's wildlife resource conservation. The purpose of this study is to evaluate the potential for animal resource conservation as well as the impact of human influences on wildlife resource conservation and potential remedies. This research is crucial to shaping how the neighborhood's residents view the district's conservation of its wildlife resources. This study can also be used as a reference for any dangers or possibilities in the region's natural resource conservation research. The best solutions to similar situations elsewhere in the world may also be illustrated by this study. Additionally, this increases the global sustainable mitigation of human influences. Finally, by adding to the body of information on wildlife resource conservation, this work will be helpful to people who are interested in the preservation of wildlife resources.

Materials and Methods

Description of the study are

Gambella Regional State, in southwest Ethiopia, has Gambella National Park, which makes up around 14% of the state's total land area and is located 840 kilometers west of Addis Abeba (*Figure 1*). The main objectives are to safeguard the Shoebill Stork (Balaeniceps rex), extensive tracts of wetland habitat, spectacularly large populations of White-Eared Kob (Kobus kob leucotis) and Nile Lechwe (Kobus megaceros), as well as

other local natural resources. The weredas of Lare (north), Abobo (east), Gog and Jor (southeast), Itang, Jikawo, and Akobo all border it. The western region of Gambella People's Regional State (GRPS) and one of the sample research sites in Jor District will be the locations for the study. One of the five districts in the Anuak zone found in GRPS is the study area, Jor District. It is a woreda region, Ethiopia. Part of the Anuak zone, Jor is a bordered on the south by the Akobo River which separetes it from South Sudan, on the west and north by the Nuer Zone, on the northeast by Abobo, and on the east by Gog. So one of the woredas that borders the GNP is Jor. Goge District to the south, Jikawo and Jore Districts to the west, Mengeshi District and Oromiya Regional State to the east, Gambella Zuriya District to the north, Etang Special District to the northwest, Goge District to the south, and the Oromiya Regional State to the west. It includes one urban administration, 16 rural Kebele administrations, and a total area of 361324.58 km2. The large flat landscape and a modestly rising plateau to the east best describe the district's geography. The altitude varies from 460 to 1650 meters above sea level. The Alwero River and Lake Alwero are two of the principal bodies of water in this region (artificial). In the north, it is surrounded by the administrative districts of Jikawo, Lare, and Wantawo; in the west, Akobo; in the east, Itang and Abobo; and in the south, Gog and Jor. It was founded in 1973 and has a 4,575 km2 territory that has recently undergone redelineation.

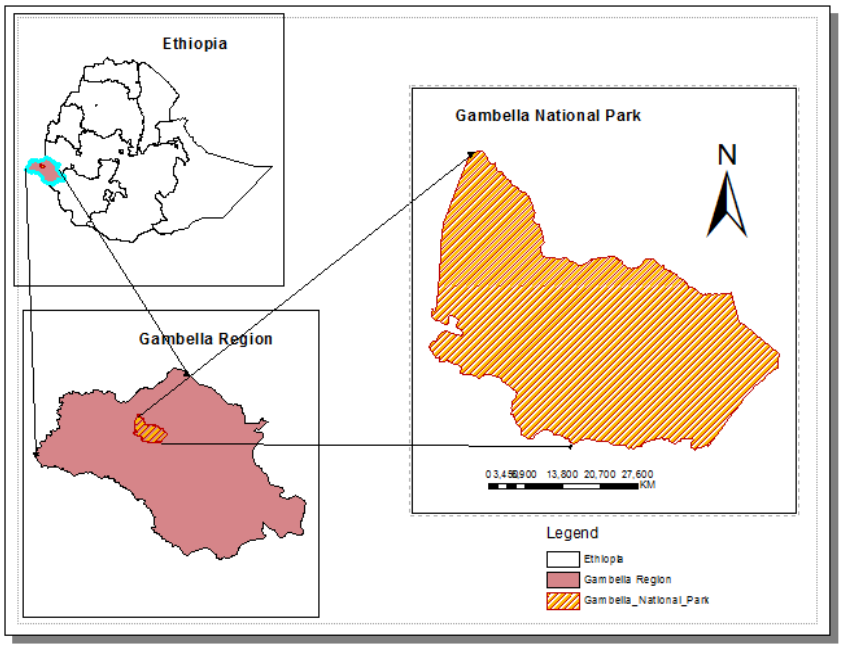

Figure 1. *Map of the study area.*

Climate condition of the study area

There are two agro-climatic zones in the district. Woinadega (10%) and Kolla are these (90%). As a result, the District's typical annual lowest and maximum temperatures are between 18 and 39 degrees Celsius, respectively. During the months of February and March, the temperature in this region reaches 45–47oC, which is extremely high. The district's primary rainy season runs from mid-April to October, and the average annual rainfall is between 900 and 920 mm.

Vegetation cover and wildlife

With the rainfall and temperature, this exhibits great variation, the natural vegetation of GNP changes significantly. Tall perennial grasses (up to 4 meters high) and blaze-resistant deciduous broad-leaved trees make up the majority of the park's vegetation. The foliage is flammable in the dry season. The park is a huge expanse of savannahs, flood plains, reedy woods, meandering rivers, and barren terrain. The White-eared kob (*Kobus kob leucotis*), Nile Lechwe (*Kobus megaceros*), Nile Buffalo (*Syncerus caffer*), African Elephants (*Loxodonta africana*), and Roan Antelope are among the larger mammals found in the region (*Hippotragus equinus*). The Sudan-Guinea savannah biome, which is poorly understood by academics, is most abundant in GNP. The park is the best place for avifauna, and it is full with these animals. Therefore, it is one of the Important Bird Areas (IBA) chosen as a stopover for northern migratory birds, as well as a refuge for two of the IUCN Red List's most endangered bird species: the shoebill stork and Basra Reed Warbler. The Shoebill Stork (*Balaeniceps rex*), long-tailed paradise-whydah, red-throated, green bee-eaters, black-winged, and Basra reed Warbler are rare bird species found in the park. Black hoopoe, Saddle-bellied stork, Yellow-bellied stork, Common bulbul, Black-headed heron, African fish eagle, Black-headed heron, Cattle egret, Hammer kob, Hadda ibis, Sacred ibis, and Antibes are some of the key bird species of GNP. The migration of White-eared Kob between GNP and Boma National Park in Southern Sudan makes the park the second largest mammal migratory route in the world (i.e., next to the migration of wilde-beest between Masai Mara and Serengeti National Parks of Kenya and Tanzania. Since the 1960s, records of the nearly threatened Shoebill and Basra Reed Warbler species have come from this area.

Sampling design and sample size determination

This study would be used a zone, wereda, and kebele-based multistage sampling strategy. Out of the six districts that border the park, the Jor district would be chosen because of its proximity to the park, the presence of numerous resettlers there, and the wealth of secondary data it contains on the park. In the research region, three kebeles would be chosen largely for their proximity to the national park. The sample does not have to be either too large or too small in order to improve the representativeness of the data. The formula would be used to determine the study's sample size. With a confidence range of 95%, the accuracy level expected to be committed in this study would be taken to be 0.05. Therefore, the formula suggested by Yamane in 1967 and examined by Israel would be used to calculate sample size (n).

$$\boldsymbol{n = \frac{N}{1+N(e)^2}} \qquad \text{Eq. (1)}$$

Where the margin of error is set at 9% and is level of precision, N is the total size of the population, and n is the sample size. The sampled HHs would be chosen using simple random sampling. Then, using the random table approach, HH would be pulled at random from the chosen kebeles. Therefore, according to the above formula the total household would be:

$$\boldsymbol{n = \frac{3217}{1+3217(0.09)^2} = 119}$$

The sample size for the study kebeles is calculated based on the following formula:

$$\text{PPS of each kebeles} = \frac{\mathbf{n}}{\boldsymbol{N}} \quad \text{Eq. (2)}$$

The respective numbers of households were allocated for each sampled based on Probability Proportional to Size (PPS) of each selected kebeles as shown in the *Table 1*.

Table 1. *Distribution of sampled household in each kebeles.*

Name of kebeles	Total number of populations		Total number of population	Number of sampled HHs	Sampled HH in Percent (%)
	Male	Female			
Ulaw	656	970	1626	N1/N*n =195	195/297*100=65.7
Utowol01	206	874	1080	N2/N*n = 83	83/297*100=27.9
Utowol02	106	405	511	N1/N*n=19	19/297*100=6.4
Total	968	2,249	3,217	297	100

Types of data and methods of collection

Both qualitative and quantitative data would be included in this investigation. According to a researcher, a quantitative study is a formal, methodical strategy that uses numerical data to learn about the world; this method would not be appropriate to gather the information needed for this study. In contrast, qualitative data are frequently rich in information and insights about participants' perceptions of the world. Different data collection methods would be employed to assess the threats and opportunities to wildlife resource conservation in the study area. For the best success of the study, both primary and secondary data sources would be used. The primary data was acquired from primary sources, including field observation, household surveys, key informant interviews, and focus group discussions.

Primary data

Household survey

Surveys would be made available to determine the risks, risk factors, and environmental effects of the research region. They would be administered to communities as well as the necessary parties. Additionally, they would be ready to hear from the target responder's vital information regarding dangers to the preservation of animal resources. Communities would get semi-structured questionnaires to help identify dangers and the causes of those concerns. Selected households would be surveyed using a questionnaire that included both open-ended and closed-ended questions. Sample homes from the three chosen kebeles around GNP would be interviewed using a structured and semi-structured questionnaire. To identify the risks, contributing elements, and detrimental environmental repercussions associated with the threats in the park, they were also made available to park employees, government employees, and NGO workers. After the respondents have provided the necessary information for the study, a pilot study will be carried out to determine the validity and reliability of the household questionnaires before they are used in the actual study. The household questionnaires will first be written in English and then translated in to the local languages (Anuak and Nuer). 15 household heads from both kebeles would be chosen as a convenience sample based on their availability and willingness to take part in the pilot project. The chosen homes and institutions were not included in the study's

sample overall. Some doubts have improved as a consequence of input from the pre-tests, such as questions that will not be clarified for replies.

Key information interview & focus group discussions

To evaluate the possibilities for animal resource conservation in the research area, key informants (KIs) from communities and different stakeholders would be interviewed. This would be carried out at each sample kebele with the help of six stakeholders from park staff, government agencies, and non-governmental organizations as well as eight community leaders and village elders who had been carefully chosen. The fourteen chosen KIs are regarded as knowledgable about conservation efforts. In this study, key informants (KIs) are people who are native to Kebeles, have knowledge of the region and prospects for wildlife resource conservation, and are familiar with its socioeconomic applications. Based on their involvement in professional competence and experience in certain positions, KIs would be chosen using the snowball approach. The top five wildlife managers who appeared the most frequently were given the role of key informant in each kebele after the aforementioned KIs were graded. KIs would be chosen based on the data provided by local administrators and the park management following extensive engagement with local government officials and the locals within chosen kebeles (*Figure 2*). The majority of the participants would be senior citizens with extensive knowledge of local park and community interactions. The KIs questionnaire would involve 6-9 individuals in total. The KI questions would all be unstructured. What they knew about the prospects for conserving animal resources in the park was one of the key topics covered in the KI interview.

Figure 2. *Interview with key informants.*

Focused group discussion (FGD), which involves a small group of respondents to discuss topics presented by the facilitator, a qualified moderator focused on key themes of the study topic, helps to gather data at the community level. Using FGD as a data collecting approach enables for in-depth conversation and probing on a topic of interest, offering a tremendous amount of information at a minimal cost and obtaining more people in a shorter amount of time when compared to in-depth interviews. Age, sex, and location close to the national park will be taken into consideration while choosing FGD. FGD would be undertaken in this study with community members, including the elderly, women, and youth groups. The FGD's members would be chosen based on their level of familiarity with the area's historical environmental, social, and economic

conditions. Each kebele would conduct a separate FGD with the old, female, and youth groups. There would be six individuals in each group. The chief scout of the national park and the kebele chairperson would assist the discussion participants' selection, and households representing a range of age groups would participate. With an average of 7 participants per kebele, group discussants ranged in size from 5 to 12 people. Open-ended questions on the park's conservation history, pastoral community opinions on the impacts, causes, and consequences of threats to the area's wildlife resources, the history of resource use conflicts with the park, and relations between the community and the park would all be covered in local tongues. During the KI interviews, the information obtained up to this point will be organized and utilized. The major goal of the FGDs is to comprehend how people perceive opportunities and risks to the preservation of natural resources in the research region.

Field observation

In this study, observation would be utilized as an additional or supportive strategy to gather data that can support or contextualize information collected through other sources. To verify some of the issues brought up during the talks held with KIs and FGDs, direct field observations are also carried out in addition to the KIs and FGDs. Various environmental and socioeconomic activities, interactions between park management and locals, socioeconomic traits of locals, and management techniques for the study area's natural resources, particularly wildlife and their habitats, are all observed on the ground. It would be used to compare data collected from other data collection methods and to verify information. In order to compare the results of the questionnaire and interview with the reality on the ground, other tasks were completed, such as environmental observation, a market overview, police station observation, and visits to the woreda and kebele administrative offices.

Secondary data

Secondary information pertinent to this study will be gathered from a variety of sources, including published and unpublished documents (the Gambella National Park office will provide the scientific name of the tree), books, journals, articles, and reports. Secondary data sources, such as seminar papers, conference proceedings, and previously completed theses, as well as park-related studies, statistical publications, and all pertinent documents from the Gambella agriculture office and project reports, will all be incorporated during the data collection process.

Data analysis

Descriptive analysis

Descriptive statistical techniques, such as percentages, would be used to examine the quantitative data received from the questionnaire. In SPSS 20.0 edition, the Chi-square test (also known as the Ki-square or Chi-squared test) can be used to examine significant differences across groups. We will use cross-sectional descriptive statistics to calculate frequencies and enable cross-tabulations. Both quantitative and qualitative data analysis will be used in this investigation. Narratives will be used to assess the qualitative data that would be gathered through interviews and fieldwork (the data that would be generated from key-informant interviews, FGD, and field observation will be

analyzed by using qualitative techniques). For quantitative data, the results of a household sample survey would be coded and placed into a computer to be analyzed using the program SPSS 20.0. To organize, evaluate, and interpret the study's findings, descriptive statistics like mean, percentages, frequency, pie charts, and tables were computed. Software for descriptive statistics analysis would be used to conduct descriptive statistics on demographic data, including percentages, frequencies, and chi-square comparisons between variables. Tables and graphs would be used to present the results. Descriptive statistics would be used to assess data mostly pertaining to the key threats. The results of the Chi-square test comparison between the variables would be shown in tables and graphs. The data on the effects of threats on the preservation of wildlife resources would also be subject to descriptive statistics analysis. To demonstrate the substantial difference between the variables, a chi-square test would be utilized.

The mean differences in the communities' attitudes of the conservation of animal resources among age groups and the respondents' gender will be examined using a non-parametric test on all of the test variables. The correlation between the respondents' perceptions of the conservation area will be assessed using the Spearman rho. Additionally, using ordinal logistic regression models with an ordered categorical dependent variable, factors influencing perceptions toward wildlife resource protection in the vicinity of the GNP will be investigated (i.e., ordinal logistic regression consists of multiple regression and multiple linear regression). The following equation represents the link between several linear regressions:

$$Yi = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots\ldots\ldots + \beta_k X_k + \varepsilon_{i,} \qquad \text{Eq. (3)}$$

Where, Yi=the dependent variable; X1….Xk=independent (explanatory) variables considered to have influence on the Y variable; β1….βk=Partial regression slopes corresponding to the respective Xi; βi is defined as the rate of change in Y for a unit change in Xi, while the effects of the other independent variables remain constant; and εi is the residual variance in Y after taking into consideration the effects of the Xi variables included in the model.

Multicollinearity test

The Mul-ticollinearity test would be tested for this study as well. One of the most important considerations in multiple regression analysis is that the regressor variables should not significantly correlate with each other because if any two Xi variables are correlated, the real magnitude of the relationship they have with the Y variable is either deemed best or it can be depressed. i.e., if any two X variables, say X1 and X2, are correlated, the corresponding slopes b1 and b2 do not reflect the true dependence of Y on either Xi. For instance, if X1 and X2 are positively correlated, the presence of one of the variables unduly magnifies the true dependence of Y on the other Xi and vice versa. On the other hand, if X1 and X2 are negatively correlated, the presence of one depresses the effect of the other on the Y variable. The existence of significant correlation between regressor variables is termed a multi-collinearity problem, and when it is detected, one of the variables, usually the one with the lower effect on the Y variable, should be dropped from the model. A Multi-collinearity test would be conducted as well for this study. One of the most important considerations in multiple regression analysis is that the regressor variables should not significantly correlate with each other because

if any two Xi variables are correlated, the real magnitude of the relationship they have with the Y variable is either deemed best or can be depressing. I.e., if any two X variables, say X1 and X2, are correlated, the corresponding slopes b1 and b2 do not reflect the true dependence of Y on either Xi. For instance, if X1 and X2 are positively correlated, the presence of one of the variables unduly magnifies the true dependence of Y on the other Xi and vice versa. On the other hand, if X1 and X2 are negatively correlated, the presence of one depresses the effect of the other on the Y variable. The existence of significant correlation between regressor variables is termed a multicollinearity problem, and when it is detected, one of the variables, usually the one with the lower effect on the Y variable, should be dropped from the model.

The entire hypothesis category, including continuous and dummy explanatory variables, was examined for the presence of a multicollinearity issue before adding the chosen variables to the logit model. Because there is no single estimate of the parameters and there is a linear relationship between the explanatory factors, the problem of mul-ticollinearity may occur. The calculated regression coefficients may have an erroneous sign, low t-ratios for several of the variables in the regression, and a high R2 value due to a Mul-ticollinearity problem. Additionally, it results in high variation, a broad confidence interval, and high standard error. Therefore, it can be challenging to determine each variable's exact impact. Various techniques are frequently employed to identify the presence of numerous ticollinearity issues. To identify the presence of Mul-ticollinearity in continuous explanatory variables and the Contingency Coefficient (CC) for dummy variables, the Variance Inflation Factor (VIF) technique was used in this work. According to a research, VIF (xi) can be defined as:

$$VIF\ (Xi) = (1/1\text{-}R^2) \qquad \text{Eq. (4)}$$

Where: Ri2 is multiple coefficient between (Xi) and other explanatory variable. For each selected continuous explanatory variable (Xi) is regressed on all other continuous explanatory variables, the coefficient of determination Ri2 constructed for each case. The larger the value of Ri2, the higher the value of VIF (Xi). This causes higher collinearity in the variables. For continuous variables, as a rule of thumb, a value of VIF greater than 10, is often taken as an indicator for the existence of a Mul-ticollinearity problem in the model (if the value of Ri2 is 1, it would result in a higher VIF and cause perfect Mul-ticollinearity between the variables). Besides, the contingency coefficient (CC) is computed for dummy variables from chi-square ($\chi 2$) values to distinguish the problem of Mul-ticollinearity (the degree of association between dummy variables). The dummy variables are said to be collinear if the value of the contingency is greater than 0.75.

$$\mathbf{C.C} = \sqrt{\frac{\boldsymbol{X2}}{\boldsymbol{n+x2}}} \qquad \text{Eq. (5)}$$

Where; C.C is contingency coefficient, n is sample size, $\chi 2$ is chi-square values. The result of Mul-ticollinearity test showed that there is no Mul-ticollinearity problem in continuous and dummy variables used in this study.

Results and Discussion

Demographic characteristics of the sampled households

There were 297 respondents selected from local communities. About 201(67.7%) of them were males, whereas 96 (32.3%) were females. The study also required establishing the respondent's age composition in years. From the findings, 145 (48.8%) of the respondents in the age category were aged 18-25. In addition, 198 (66.7%) of the respondents were married. Regarding the family size of the respondents, 155(52.1%) of the respondents have a family size of 1-3 (*Table 2*). The result as in *Figure 2* showed that about 147 (49.5%) of the respondents were uneducated (can't write and read) while 28 (9.4%) of the respondents attended college/university. The educational level of the respondents has shown significant variation (X2=47.277, df=9, p=0.000). Next, the result in *Figure 3* showed that about 190 (64%) of the respondents in the study area live near the national park. The distance of the respondents from the park has shown significant variation (X2=8.561, df=9, p=0.003).

***Table 2**. Demographic characteristics of sampled households.*

Demographic characteristics	Categories	Frequency (N)	Perentage (%)	X^2	df	p-value
Sex	Male	201	67.7	36.222	3	0.000
	Female	96	32.3			
Age	18-25	145	48.8	4.685	1	0.030
	26-33	108	36.4			
	34-44	36	12.1			
	>44	8	2.7			
Family size	1-3	155	52.1	2.143	3	0.543
	4-6	95	32.0			
	>6	29	9.8			
	No	18	6.1			
Marital Status	Single	69	23.2	1.750	4	0.782
	Married	198	66.7			
	Widowed	28	9.4			
	Divorced	2	0.7			

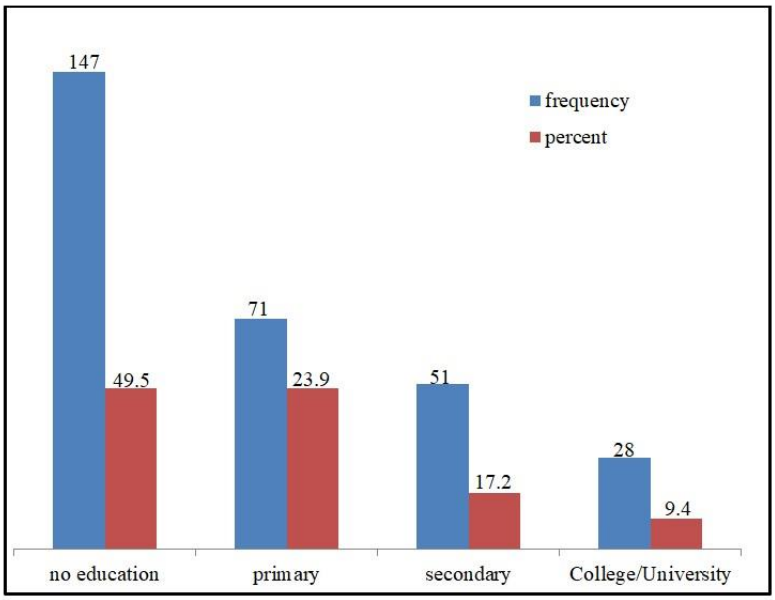

***Figure 2.** House hold's Level of education.*

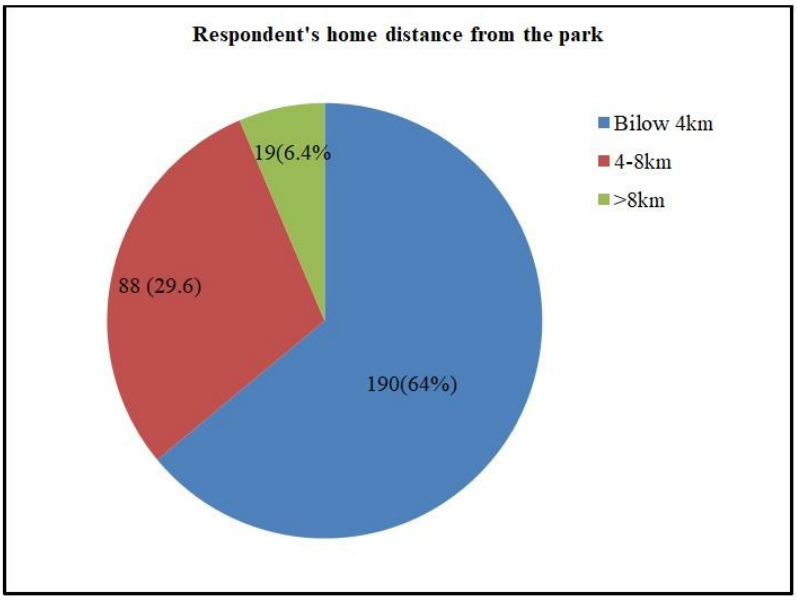

Figure 3. *Distance of respondent's home from the National Park.*

Socio-economic characteristics & crop production by local community

From the socioeconomic data gathered in the present study, about 241 (81.1%) of the respondents depend on both crop cultivation and the production of livestock (agriculture) for their source of income (*Table 3*). Meanwhile, the result in *Table 4* showed that the majority (219, 73.7%) of the respondents thought that maize was the most produced crop in their area/kebeles. From the finding, *Figure 4* showed that about 239 (80.5%) of the respondents have farmland of 1 hectare while 51 (17.1%) of the respondents have 1-3 hectare.

Table 3*. Jobs create income.*

Activity	Frequency (N)	Percentage (%)
Agriculture	241	81.1
Mining	33	11.1
Employment	18	6.1
Others	18	1.7
Total	297	100

Table 4*. Crops that are produced in the study area.*

Types of crop	Frequency (N)	Percentage (%)
Maize(*Zea mays*)	219	73.7
Sorghum(*Sorghum bicolor*	67	22.6
Barely(*Hordeum vulgare)*	11	3.7
Total	297	100

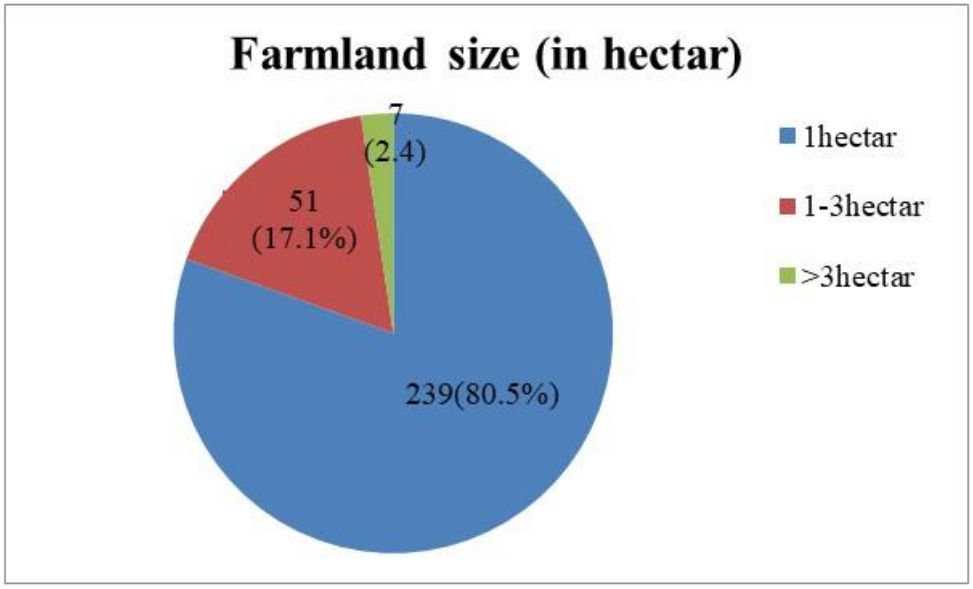

Figure 4. *Respondent's farmland size in hectare.*

Threats of wildlife resource

Factors affecting the attitude of local communities towards wildlife resource

The results (*Table 5*) showed that the level of education (Wald=9.102, df=1, p=0.003) is an important factor affecting the attitude of local communities towards wildlife resources. In addition, the age of respondents (Wald=6.406, df=1, p=0.011) is also another factor affecting the attitude of local communities towards wildlife resources in the studied areas. Distance from the national park and the local community's houses are also another factor affecting the attitude of local communities. Next, the result in Table 6 showed that most of the respondents in Ulaw kebele175 (89.7) have a positive response to the effect of threats on wildlife resources, whereas 20 (10.3%) of the respondents have a negative response to the threats to wildlife resources in the study area.

Table 5*. Factors affecting for the attitude of local community towards wildlife resource in the studied areas.*

Factors affecting for the attitude of local community towards wildlife resource	B	S.E.	Wald	df	P-value
Level of education	0.759	0.252	9.102	1	0.003*
Distance from the park	0.619	0.293	4.470	1	0.034*
Sex	0.686	0.261	6.890	1	0.009*
Age of Respondent	0.637	0.252	6.406	1	0.011*
Number of family size	0.623	0.249	6.302	1	0.012*
Constant	-1.794	0.433	17.190	1	0.000

Table 6*. Response of respondents on threats of wildlife resource in each studied kebeles.*

Do you believe the threats affect for wildlife resource?	Ulaw kebele		Utowol01 kebele		Utowol02 kebele	
	N	%	N	%	N	%
Yes	175	89.7	77	92.8	17	89.5
No	20	10.3	6	7.2	2	10.5

Intennsity of wildlife resource threats practiced by local communities in the studied area

The finding in Figure 5 showed that about 270 (90.9%) revealed that the intensity of wildlife resource threats practiced by the local community was high in the studied areas, whereas 27 (9.1%) of the respondents said that the intensity of wildlife resource threats practiced by the local community was low in their areas.

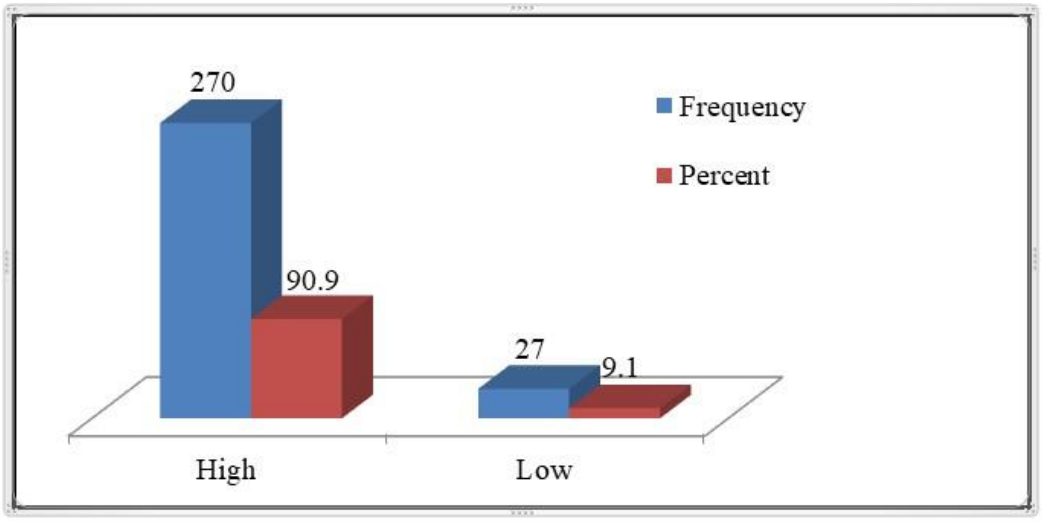

Figure 5. *Intensity of wildlife resource threats practiced by local community.*

Association of between local communiTies and National Park

The result (*Figure 6*) showed that about 291 (98%) of respondents revealed that the local community has a good association with the national park, while 6 (2%) of respondents revealed that there is no association between local communities and the national park. The *Table 7* showed that 63 (54.9%) of respondents indicated that the main threat to wildlife resources in the studied areas was the entry of Murlea groups from South Sudan, while 62 (20.9%) of respondents said that agricultural expansion was also one of the threats to wildlife resources in the studied areas. The finding (*Table 8*) showed that about 36 (85.71%) of stakeholders' perception of the intensity of wildlife resources was high in Ulaw kebeles, whereas 23 (54.76%) of stakeholders' perception of the intensity of wildlife resources in Utowo02 was low.

Table 7*. Threats of wildlife resource in the study area.*

Category	Frequency	Percentage
Entering Murlea groups from South Sudan	163	54.9
Agricultural Expansion	62	20.9
Lack of Infrastructure	47	15.8
Constructing kebeles in and around the National park	11	3.7
Wildfire disturbance	8	2.7
Human-wildlife conflict	6	2
Total	297	100

Table 8*. Stakeholders' perception on the intensity of wildlife resource threats practiced by communities of the three kebeles.*

Name of keveles	High		Low		X^2	df	p-value
	N	%	N	%			
Ulaw	36	85.71	6	14.29	5.133	1	0.012
Utowol01	25	59.52	17	40.48			

Utowol02	19	45.24	23	54.76

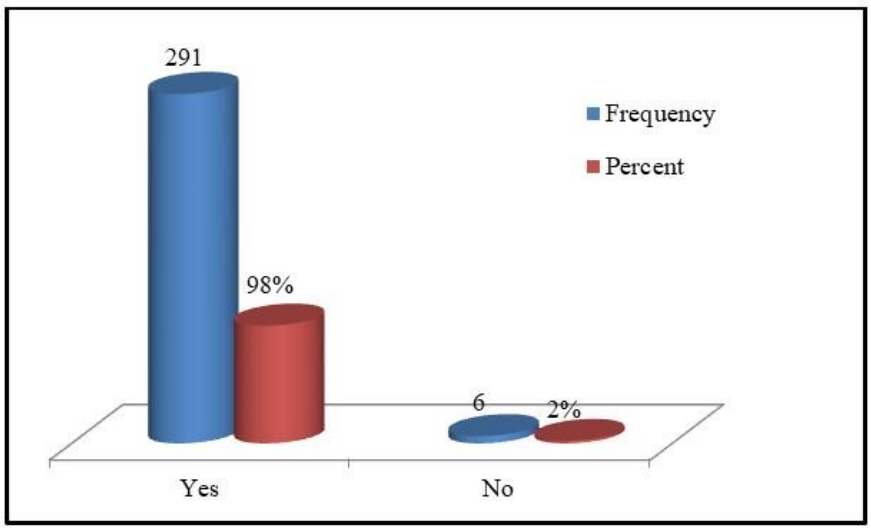

Figure 6. *Good association between the local communities and national park.*

Opinions of respondents towards factors contributing for wildlife resource

The finding below (*Table 9*) showed that the majority (278, 93.6%) of respondents from the local community had a positive response on managerial factors contributing to wildlife resources in the studied areas, while 19 (6.4%) of respondents from the local communities said that there were no managerial factors contributing to wildlife resources in the studied areas. In the finding of *Figure 7*, the majority of 135 (45.5%) of respondents agreed that habitat loss is the most common negative impact of the threats in the studied areas, whereas 72 (24.2%) of respondents revealed that wildlife disturbance is also another consequence of the threats in the studied areas.

Table 9*. The opinion of respondents towards factors contributing for wildlife resource threats in Jore areas.*

Respondents	A:Yes		A:NO		B:YES		B:NO		X^2	df	p-value
	N	%	N	%	N	%	N	%			
Communities	278	93.6	19	6.4	273	91.9	24	8.1	4.598	1	0.032
Stakeholders	23	54.8	19	45.2	29	69.1	13	30.9	0.437	1	0.723

Notes: A=Managerial factors; B=Community related factors.

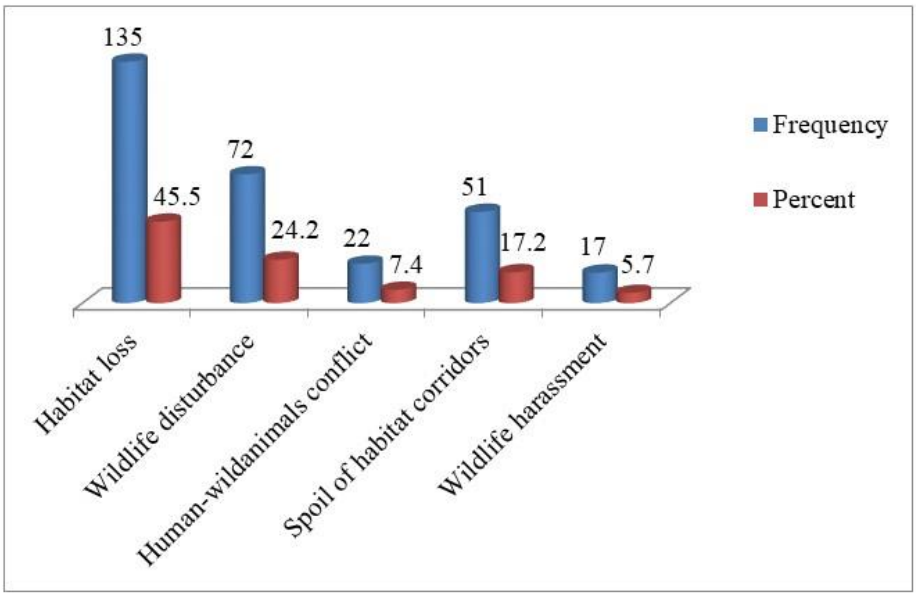

Figure 7. *Consequences of threats on wildlife resource conservation.*

Perception of local communities towards wildlife resource conservation opportunities

The result (*Table 10*) showed that about 297 (98%) of respondents revealed that the local community has got an opportunity for good association between the local communities and national parks, while 288 (97%) of respondents revealed that the awareness of local communities towards wildlife resources is another opportunity in the studied areas.

Table 10*. Perception of local communities towards wildlife resource opportunities.*

Opportunities	Yes		No	
	N	%	N	%
The awareness of communities towards wildlife	288	97	9	3
Prevalence of alternative job opportunity	285	96	12	4
The presence of conservation organization in the study areas	263	88.6	34	11.4
Existence of community based conservation approach	277	93.3	20	6.7
Good association between the local communities and National Park	291	98	6	2

From the socio-demographic characteristics of the sampled households, there were 297 respondents selected from local communities. Of them, about 201 (67.7%) were males, whereas 96 (32.3%) were females. The number of males was significantly higher than females (X2=36.222, df=3, p=0.000) (*Table 2*). The study also required establishing the respondent's age composition in years. According to the above findings (*Table 2*), 145 (48.8%) of the respondents in the age category were 18-25 years old, while the age structure of the respondents was characterized by 108 (36.4%) between 26-33, 36 (12.1%) between 34-44, and the remaining 8 (2.7%) were above 44 years old (*Table 2*). There has been a significant difference in the age category of respondents (X2=4.685, df=1, p=0.030). The current study also requested information on respondents' marital status. As a result, the aforementioned result (*Table 2*) revealed that approximately 69 (23.32 percent) of the respondents were single, 198 (66.7%) were married, 28 (9.4%) were widowed, and 2 (0.7%) were divorced. The respondents' marital status hasn't changed much (x2=1.750, df=4, p=0.782). In terms of the

respondents' family sizes, 155 (52.1%) have a family size of 1-3, 95 (32%) have a family size of 4-6, 29 (9.8%) have a family size >6, and 18 (6.1%) do not have a family size (*Table 1*). The respondents' marital status has not significantly changed (x2=2.143, df=3, p=0.543).

In the current investigation, the respondents' educational background was also necessary. According to the above result (*Figure 2*), around 147 respondents (49.5%) were illiterate (couldn't write or read), 71 respondents (23.9%) had attended primary school, 51 respondents (17.2%) were in secondary school, and 28 respondents (9.5%) had a diploma or higher. The respondents' educational attainment varied significantly (X2=47.277, df=9, p=0.000). Additionally, the study also needed to know how far the respondents' homes were from the national park. 190 respondents (or 64%), or those who reside less than 4 km from the national park, do so. A total of 88 respondents (29.6%) reside more than 8 kilometers (km) from the national park, compared to 19 respondents (6.4%) who do not. Significant variance has been seen in the respondent's home's distance from the National Park (X2=8.561, df=9, p=0.000) (*Figure 3*). Approximately 241 (81.1%) of respondents engaged in agricultural activity, 33 (11.1%) in mining activity, 18 (6.1%) in employment activity, and the remainder 5 (1.7%) engaged in other activities (*Table 3*).

According to the socioeconomic characteristics of the respondents the current study's findings (*Table 3*) indicate that the local communities in the researched areas produce a variety of crops. Zea mays, sorghum, and barley were all produced by respondents; 219 (73.7%) produced maize (Zea mays), 67 (22.6%) produced sorghum (Sorghum bicolor), and 11 (3.7%) produced barley (Hordeum vulgare) (*Table 4*). From the above finding, figure4, showed that about 239 (80.5%) of the respondents have farmland of 1 hectare while 51 (17.1%) of the respondents have 1-3 hectare. This shows that as the farm size increase the existence of the wildlife resource is at risk. According to the data gathered from local communities, a variety of factors influence how local communities feel about the study area's wildlife resources. One of the most significant variables influencing how local residents feel about animal resources in various regions is education. This also plays a significant role in the local communities in the locations currently under study. The following finding (*Table 5*) shown that education level is a significant factor influencing how local residents feel about wildlife resources (Wald=9.102, df=1, p=0.003). Education therefore plays a crucial role because as levels of education improve, so does local community understanding of the wildlife resource. Unless otherwise stated, persons who lack education may have a bad opinion about wildlife resources. The respondents' ages (wald=6.406, df=1, p=0.011) are yet another factor influencing how the local communities in the study locations feel about the animal resources (*Table 5*).

Another element influencing local communities' attitudes is the distance between the National Park and their place of residence. Given that the dangers may be amplified if the local communities resided close to the national park, the distance between the national park and their homes is a very significant factor (wald=4.470, df=1, p=0.034). However, the hazards to the park's natural resources might be lessened if people lived far from it (*Table 5*). Another important factor affecting for attitude of local communities in the study area is number of family size. Some local communities might think to use many resources from the conservation area if they have many family sizes. If the local communities resided such type of idea due to the number of family size, there is a significant factor between number of family size and threats of wildlife

resource (wald=6.302, df=1, p=0.012). Approximately 175 (89.7%) of the respondents from Ulaw kebele believed that the various threats might affect wildlife resources in GNP/in the study area, according to data gathered from local communities of each kebele (*Table 6*), while 20 (10.3%) of the respondents had a negative reaction to the effect of threats on wildlife resources in the study area. About 77 (92.8 percent) of respondents from the Utowol01 kebele had a good response to the effects of threats on animal resources, whereas 6 (7.2 percent) have a negative response. Additionally, from Utowol02 kebeles, roughly 17 (89.5%) respondents thought that the various threats had an impact on the GNP's wildlife resources, whereas 2 (10.5%) respondents had a negative opinion of such impact.

According to data gathered from local communities (*Figure 5*), the majority of respondents (270, or 90.9 percent) believed that local communities in the study area were engaging in high-intensity threats to wildlife resources, while 27 respondents, or 9.1 percent, believed that local communities were engaging in low-intensity threats to wildlife resources. One of the key informants claimed that "*because local residents in the research region were not sufficiently aware of the value of wildlife resources; the level of threats to wildlife resources was high*". The above result (*Figure 6*) showed that about 291 (98%) of respondents revealed that the local community has a good association with the national park, while 6 (2%) of respondents revealed that there is no association between local communities and the national park. However, still now most of the local communities haven't enough knowledge about the importance of the wildlife resource. The detrimental environmental effects in Gambella National Park were being exacerbated by a number of challenges. Numerous risks to the park's wildlife resources have been identified based on information gathered from the surrounding community. The above result (*Table 7*) thus revealed that the major threats to wildlife resources in the study area were the entry of Murlea groups from South Sudan, agricultural expansion, a lack of infrastructure, the construction of kebeles in and around the National park, wildfire disturbance, and human-wildlife conflict. Based on the aforementioned finding, some respondents (163; 54.9%) believed that the major danger to animal resources is the entry of Murlea groups from South Sudan.

The dominancy of impacts associated with entering Murlea groups from South Sudan in the park could be due to those who have an interest to steal livestock, to kill wild animals which are found in the National Park and to steal and kill for the local community's resources. From the key informants, one participant said that "*Entering Murlea groups from South Sudan are the main and serious threat to Gambella National Park*". Human populations increase year after year. This resulted in the expansion of agricultural activities. Some of the respondents 62 (20.9%) (*Table 7*) revealed that the expansion of agricultural activities is the main threat to wildlife resources in the study area. Presently, due to anthropogenic effects, these protected areas are extremely threatened. As the population increases, there is an increasing demand for space and resource utilization, which affects wild animals' habitats in the protected areas. The study of Yihune et al. (2009) on Simien Mountains National Park indicated that the population of WaliaIbex (*Capra walie*) and their habitat has decreased due to agricultural expansion. Additionally, comparable findings were reported in various regions of Ethiopia (Tadesse and Kotler, 2013; Tefera, 2011; Stephens et al., 2001); and in Kenya, where recent agricultural expansion and other incompatible land use changes posed the biggest threats to the biodiversity of protected areas. Given that the animal resources in the research region decreased as a result of the large-scale farming, this

suggests that agricultural expansion is one of the concerns harming the wildlife resources in GNP.

Another factor influencing the wildlife resources in the research area (*Table 7*) is a lack of infrastructure. 47 respondents (15.8%) thought that poor infrastructure was a significant issue for the GDP. The biggest issue in the study area, in the respondent's opinion, was also a lack of infrastructure, such as roads. Evidence of risks to the area's natural resources was found during the field observation. Wildfire disturbance in the study area, which is mostly related to changes in land-use patterns, posed another hazard to wildlife resources. Some respondents stated that wildfire disruption was the primary threat in the research area based on the results from the aforementioned survey (*Table 7*). The direct and indirect effects of fire and air pollution have a significant impact on people's property, health, and welfare in these locations. Every community relies heavily on fuel wood for activities like making charcoal and smoking fish. "*Wildfire disturbance is the most frequent hazard practiced by people in the research area and has a major impact on wildlife resources*," one participant claimed. Although fuel wood is the primary source of energy for the majority of communities, this condition has numerous negative impacts on the environment. According to the results of the current survey, most respondents indicated that gathering fuel wood from the wild is how they obtain it. Evidence of risks to the area's natural resources was found during the field trip.

Another anthropogenic activity in the study region that we noted during field observation was the building of kebeles inside and outside the GNP. 11 respondents (3.7%) thought that one of the biggest dangers to the study area's natural resources was the development of various kebeles inside and surrounding it. This resulted from the settlement of the human population; that is, as the human population grows, so do human desires. As a result, individuals built several kebeles in and around the study region. Conflict between people and wildlife was seen by some respondents (6, or 2 percent) as another concern in the research area. Lack of resources (land, fodder, and water) and the need for human development may have contributed to HWC. It was in line with studies done elsewhere in Ethiopia (Yihune et al., 2009). They concluded that common water use posed the greatest harm to species in Seimen Mountain National Park, citing factors such rising livestock pressure inside the park, fuel wood gathering, and common water use. This suggested that the survival of wildlife in GNP might be impacted by the paucity of fuelwood, open pasture, and water. The majority of respondents said that the use of common resources (fodder, land, and water) from the national park and the local residents visiting and living near the national park were to blame for the incidence of human-wildlife conflict. In several other cases, people from different groups and cattle grazers have managed to enter the park. Another significant danger to animal resources is this.

The response of stakeholders revealed a much greater threat level by communities of Ulaw kebele, according to the finding (*Table 8*) above. This might be because the kebele is inside the park's boundaries, which can have various anthropogenic effects there. The finding above (*Table 9*) showed that the majority (278, 93.6%) of respondents from the local community had a positive response on managerial factors contributing to wildlife resources in the studied areas, while 19 (6.4%) of respondents from the local communities said that there were no managerial factors contributing to wildlife resources in the studied areas. The finding (*Figure 7*) showed that the majority of 135 respondents (45.5%) believed that various anthropogenic activities in the study

area were to blame for habitat loss. The national park's soil, water, plant, and animal species could disappear as a result of those anthropogenic activities. It was in line with studies done in other parts of Southwest Ethiopia, which discovered that crop loss and livestock depredation were major issues with HWC in the Gera District. This demonstrated that habitat loss may be a result of agricultural growth in and surrounding the study area, as well as close to the primary habitat of wildlife resources. Therefore, harm to wildlife's habitat may result in a reduction in the GNP's wildlife resource. Wildlife disturbance is another effect of anthropogenic activity in the study area. Wildlife disturbance was viewed by 72 respondents (24.2%) as the primary and most serious issue in the research area (*Figure 7*). The increase of agriculture in and around the conservation area could lead to this kind of issue. Wildlife resources and other species could be harmed by agricultural expansion in and near the national park, and emigration of various wild animals has also taken place. According to the key informant's response, "*fuel wood collection and wildfire were the main threats for disturbance of wildlife in GNP*". Therefore, different anthropogenic activities may cause wildlife disturbance in GNP.

Conflict between people and wild animals, which is brought on by many threats, was another effect of GNP. 22 respondents, or 7.4%, claimed that various threats to GNP were to blame for conflicts between people and wild animals (*Figure 7*). The majority of respondents said that the usage of common resources (fodder, land, and water) from the national park and the local residents visiting and living near the national park were to blame for the incidence of human-wild animal conflict. In several other cases, people from different groups and cattle grazers have managed to enter the park. This is another major impact of the conflict between the people and the animals. Some key informants said that "*the root causes of the human-wild animal conflict were bad management of the resources used and other threats such as illegal hunting*". In addition to this, the KIs said that "*human-wildlife may where species of wildlife threaten human lives and /or their livelihoods*". According to the aforementioned conclusion (*Figure 7*), 51 respondents (17.2%) believed that anthropogenic activities in the research area had the most negative influence on habitat corridors. In the GNP, habitat corridors are crucial passageways for a variety of animals. However, unlawful resource extraction and the existence of extensive livestock grazing may be to blame for the degradation of habitat corridors in the park. The majority of Kenya's vulnerable protected areas, including natural forests and mountainous ecosystem protected areas have been weakened by livestock grazing and deforestation, comparable to the study there.

Threats to biological resources have been brought about by competition with wildlife, the degradation of their habitats, and environmental degradation. The Ethiopian Abijata-Shalla National Park saw the same outcome. Because humans are taking more resources out of the environment, the environments in National Parks have already undergone significant changes. Increased dangers to wildlife and their habitats stem from this subsequent rise in human activities. Therefore, this suggests that the primary and significant influence on the GNP and its surrounds was the degradation of ecological corridors. Some respondents (17, or 5.7%) indicated that wildlife harassment was also another consequence of humans in the study area. Wildlife harassment is related to the negative environmental impact and is caused by pollution. Opportunities for the conservation of natural resources are present in the GNP in a variety of forms, according to how local populations see them. There are several chances for the maintenance of animal resources in GNP, depending on how the local population

responds. According to the aforementioned conclusion (*Table 10*), the majority of respondents (288, or 97 percent) believed that one opportunity for the protection of wildlife resources in GNP was an enhancement in local populations' understanding of wildlife resources and their importance.

The main chance to promote conservation is the supportive attitude of the surrounding communities, especially the local elders, toward the wellbeing and existence of the National Park and its conservation actions in GNP. People from the surrounding communities that engage in unlawful resource extraction activities lack respect for and acceptability from their culture. Therefore, the protection of the park will be beneficial if various strategies are used to enhance the lives of residents. This suggests that raising local community awareness of wildlife resources (GNP) is essential for community-based conservation efforts. Additionally, this improves how correctly local communities view different types of wildlife resource management. 9 people (3%) disagreed and had a bad opinion of wildlife resources and their value to the GDP (*Table 10*). The presence of alternate employment possibilities presents another possibility for the conservation of natural resources in GNP. For diverse people, GNP offers a variety of work opportunities. This occurs if and only if local communities and stakeholders protect the resources of the protected area. The majority of respondents (285, or 96 percent) said that the preservation of the national park was crucial to the availability of alternative employment for many people. However, 12 (4%) of respondents disagreed with the prevalence of alternative job opportunities in the study area. This shows that some people may have a negative attitude towards wildlife resources in different protected areas.

Another option for the conservation of the study area's animal resources was the existence of conservation organizations there. Governmental or non-governmental organizations may be the conservation organization. Table 10 of the aforementioned result shows that 263 respondents, or 88.6% of those who responded, believed that one opportunity for the conservation of animal resources in GNP was the presence of conservation organizations in the research region. The Jore district would benefit from the conservation of wildlife resources if there were a conservation organization there. This suggests that stakeholders and conservation organizations both support the preservation of wildlife resources in the Jore district. However, some respondents (11.4%) thought that the existence of conservation groups in the research region was not viewed as a chance to save the area's animal resources (*Table 10*). One of the most significant potential for the conservation of animal resources is the development of a community-based conservation approach. The majority of respondents (277, or 93.3 percent) believed that the establishment of a community-based conservation approach is a very important opportunity for the protection of animal resources in the research region, according to the findings in *Table 10* above. To conserve animal resources and their values, a community-based conservation method is employed.

This suggests that local communities play an important part in preserving various wildlife resources in various protected regions. Similarly, a community-based conservation strategy is a crucial instrument for the preservation of animal resources in GNP. However, 20 respondents, or 6.7%, said that they did not believe the establishment of a community-based conservation strategy presented a chance for the preservation of wildlife resources in the research area. From the interview with key informants, one participant said that "*community-based conservation approach is an essential tool for the conservation of wildlife resources and it is a good opportunity for*

the maintenance of wildlife in the study area". A healthy relationship between the local residents and the national park, according to the majority of respondents (291, or 98 percent), is a crucial opportunity for the conservation of wildlife resources in the research region (see above result, *Table 10*). The study area's animal resources could not be harmed by various threats provided there was a positive interaction between the locals and the national park. This is a significant method because it allows for the exchange of ideas on the management of wildlife resources between the employees of the national park and the local communities, who may employ various strategies to protect the animal resources in the research region. Key informant interviews revealed that several participants held the opinion that strengthening linkages between the neighborhood and the national park was a vital opportunity for the preservation and protection of wildlife resources.

Conclusion

The discovery confirmed the existence of dangers to the area's natural resources. The results of the current study demonstrated that the various dangers frequently caused issues for GNP. The primary determinants of how the local community felt about the study area's animal resources were the respondent's family size, sex, age, and distance from the park. The main risks to Jore district's animal resources are the entry of Murlea groups from South Sudan, agricultural growth, a lack of infrastructure, the construction of kebeles within and surrounding the National Park, wildfire disturbance, and human-wildlife conflict. Different effects are being had by these threats on the study area's wildlife resources. In the Jore district, consequences include habitat degradation, wildlife disturbance, human-wildlife conflict, habitat corridor spoilage, and wildlife harassment. In the National Park, numerous prospects for the preservation of animal resources are also acknowledged. Opportunities include raising local residents' awareness of wildlife resources, the prevalence of alternative employment options, the presence of conservation groups in the study areas, the existence of a community-based conservation approach, and the positive relationship between the locals and the National Park. Local communities in the research region react favorably to possibilities for and initiatives for conservation. Additionally, some respondents provide unfavorable feedback regarding all of the conservation initiatives and programs in the Jore district. The following suggestions are made to lessen the dangers to wildlife resources in light of the findings and conclusion: (1) reduced agricultural activity may lessen threats to wildlife resources, thus local farmers and herders must look for alternate sources of income; (2) to raise people's positive understanding of the importance of the park and its species, education levels in the surrounding community should be increased; (3) threats to wildlife resources may be mitigated through active community involvement in decision-making; (4) stakeholder interest is necessary to implement sustainable wildlife management and rural community development surrounding Gambella National Park; (5) there has to be the creation and application of a community-based conservation strategy; and (6) additional study is required to improve solutions and lessen the dangers to the Jore district's wildlife resources.

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Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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