

# Wildlife and Ecotourism Contributions for Sustainable Natural Resource Management In and Around Bale Mountains National Park, Southeastern Ethiopia

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## Research article

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# Abstract

*Wildlife and ecotourism resources were assessed in and around Bale Mountains National Park (BMNP) to examine their contribution for sustainable use of natural resources which will improve the livelihood of local communities and conservation of park. Survey questionnaires, interview, field observation and literature reviews were employed to collect primary and secondary data. The analyses of the study revealed that natural and cultural resources such as abundance and diversity of mammals and birds, scenic landscape, cultural and historical attractions and some hotels or lodges at nearby areas are the main ecotourism potential in BMNP. The study also revealed some income generating alternatives or ecotourism potentials which could help to reduce the present degradations of natural resources of the park. About 37.2% of sampled households expressed their interests for diversified livelihood or ecotourism activities. Offering tourist facilities and services and creating job opportunities for members of local communities are the positive impacts of the tourism activities whereas, cutting trees, occurrences of seasonality and leakages are the negative impacts. Reinforcing existing off-agricultural livelihoods, introducing additional alternative options or ecotourism are important strategic directions for sustainable management of natural resources for BMNP and related protected areas.*

## Introduction

Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes. It is the largest and fastest growing industry, which has the best possibility for generating many new jobs worldwide. It could be act as business in rural areas since it does not require year's long vocational trainings [1]. Although tourism contributes to the economic development, in latter periods it resulted in very negative environmental impacts due to the large number of visitors (mass tourism) damaging destination areas of tourists. Because of this, since in the 1990s, the tourist concern for environmental issues increased and ecotourism became known and tourism is recognized as an economic sector that needs to develop sustainable [2].

In developing countries tourism or ecotourism has become one of the economic sectors that generates substantial income and maintains conservations of protected areas [3]. In case of Ethiopia because of the majority of its population are engaged in agricultural activities instead of off-farm activities like ecotourism, natural resources are exposed to extreme degradations [4]. For example, the southeastern Ethiopia areas that endowed with huge potentials of natural resources used for recreation are affected by excessive land degradation, deforestation, and overgrazing [5].

EFCOT (2003) also indicated alternative means of income generations and off-farm activities to minimize degradations pressure on endangered environments in rural areas of Ethiopia [3]. Ecotourism could be as a good example of alternative income generation and off-farm activities which benefit local communities while achieve the conservation goals of natural resources. Furthermore, assessment of ecotourism or simple nature tourism does not need more facilities and depends on locally obtained

facilities or natural capital of the poor that can be managed locally. In order to make tourism sustainable in Ethiopia case, there was an attempt to introduce ecotourism to rural areas as component of natural resources management through creating diversified livelihoods for local people [6].

Ecotourism could be a link between protected areas and local communities by generating income for local communities while conservation goals of protected areas achieved. Ecotourism could be very important where the ecosystem is fragile and other forms of natural resource management might be impossible [7]. Even though natural resources have a certain contribution for development of tourism in Ethiopia in addition to its major contribution to livelihoods of the majority of Ethiopians, large of attractive natural and cultural resources are exposed to degradations or threats due to negligence. Even though the objectives Bale Mountains National Park are to protect natural resources, its natural resources are seriously damaged [8].

As far as analysis of different literatures, indicated most of the studies have not been focused on sustainable management of natural resources relating to ecotourism in and around BMNP. Limitation or problem how natural resources of BMNP and surroundings being manage in sustainable way related to ecotourism is the main difficulties of the area while huge potentials of underdeveloped ecotourism is available. Therefore, this study focused in assessment of potentials of ecotourism and alternative options of income generating for local people and sustainable management of natural resources in BMNP and surrounding areas. The study also addresses the major management problems of BMNP and which needs the active involvement of local communities through means of ecotourism which in turn diversify their livelihood.

## Materials And Methods

### Description of the study area

The Bale Mountains National Park is located in Bale zone southeastern part of Oromia regional state in Ethiopia at a distance of 400 km from Addis Ababa. It belongs to the Bale massif, which forms the western section of the southeastern highlands. The boundaries of BMNP lies within five whereas; Adaba (West), Dinsho (North), Goba (Northeast), Delo-mena Angetu and Harena-Buluk (Southeast); and 26 peasant associations/ Kebeles around the protected areas. The park area is encompassed within geographical co-ordinates of 6°40'N 39°40'E or 6.667°N 39.667E.

The Bale Mountains are a land of endemic and critically important areas for a number of threatened Ethiopian endemics. BMNP is home to 20 Ethiopian endemic mammals as well as five mammals that are only found in the Bale Mountains. Mammals of paramount importance in BMNP includes: the Ethiopian wolf (*Canis simensis*), Mountain Nyala (*Tragelaphus buxitoni*), Big-headed mole rats and Bale monkey [9].

Bale Mountains National Park is home to 1,321 species of flowering plants, 163 of which are endemic to Ethiopia (12%), and 23 to Bale alone (14% of the Ethiopian's endemic plants. The forests of the Bale

Mountains are important for genetic stock of wild forest coffee (*Coffea arabica*) and for medicinal plants in Ethiopia. Three medicinal plants hotspot have been identified: two in the Gaysay area and one in the Angetu area, spanning the park boundaries [8].

The Bale Mountains National Park is divided in to five distinct and unique habitats: the Northern Grassland (Gaysay valley), Northern woodlands (park head quarter), Afro- Alpine Meadow (Sanetti plateau), Erica Moorlands, and the Haremma forest [10]. Habitats of the Bale Mountains National Park ranges from grassland areas around 3,000 meters in elevation, to Mount Tullu Demtu, the second highest point in the Ethiopia at 4,377 meters above sea level.

The Afro-alpine moorland of the sanetti plateau is the largest continuous area of its altitude on the entire continent of Africa. Carpeted in lichen covered rocks, and punctuated by Giant lobelia (*Lobelia rynchopatelum*) that grows to height of up to 12 meters. The plateau is also dotted with alpine lakes and streams, providing important resident wildlife resources as well as wintering passage stations for rare and regionally endemic birds [8].

## Method of Data Collection

This study used both primary and secondary sources of data. The primary sources involve; field survey and interviews of local community, community representatives and tribal leaders, BMNP officials and managers, Lodge owners, government representatives and NGOs participated in conservation activities. Thereafter, twenty respondents of BMNP officials were sampled randomly. In addition, the secondary source which involves the books, published and unpublished materials and annuals were examined to help the analysis this research result.

## Data Analysis

Descriptive statistics was used to analyze responses to the questionnaires and interviews to come up with results and discussions. In addition, tables and figures are also used to analyze the responses of the respondents.

## Result

### Tourists attractions and amenities in and around BMNP

The survey of natural and cultural ecotourism resources indicated that natural and cultural attractions or resources are the main ecotourism potentials in BMNP. These resources includes: wildlife, bird, scenery of landscape, water bodies, attractive culture, local handicrafts, and indigenous knowledge and accommodation facilities at nearby areas. Therefore, it is possible to say that BMNP is where ecotourism business can operate. As Table 1 presents, different types of ecotourism potentials

indifferent sites of BMNP. For example, Gaysay (Dinsho area) and Sanetti plateau are sites for endemic mammal species like Mount Nyala, Ethiopian wolf, Bohor and Menelik bush buck; and Giant mole rat and others respectively. Also village women at the vicinity of headquarter of the park offers local handicrafts to the tourists.

**Table 1:** Locations and major tourist attractions in BMNP

No	Location sites in BMNP	Tourist attractions
1	Grassland/Gaysay (Head quarter and vicinity area)	<ul style="list-style-type: none"> <li>· Mammal species Eg. Mountain Nyala, Menelik's bush buck, Bohor red buck</li> <li>· Local handicrafts / products</li> </ul>
2	Fincha Haborra	<ul style="list-style-type: none"> <li>· Water falls</li> </ul>
3	Tulu Dimitu	<ul style="list-style-type: none"> <li>· Mountain-hiking</li> </ul>
4	Sanneti Plateau	<ul style="list-style-type: none"> <li>· Some mammal species Eg. Ethiopian Wolves, Giant mole rat, wild dog, Lion...</li> <li>· Bird watching</li> </ul>
5	Harana Forest	<ul style="list-style-type: none"> <li>· Some endemic and other bird species, E.g Blue-winged goose, Harwood's francolin ...</li> </ul>

In general, as it could be observed from table 5 and there are ecotourism potentials in and around BMNP, which can attract tourists and may contribute to conservation of natural resources, if they are developed. Holden (2003) also acknowledged that the ecotourism resource in protected areas could generate more revenues, which could benefit the local people and contributed to conservation of protected areas [2].

## Rich diversity of wildlife Resources

Responses of experts of natural resources of BMNP headquarter office, indicated presence of numerous species of mammals, water bodies and scenery of landscapes, which attract tourists. During assessment of ecotourism resources, the responses of sample households and warden of the park indicated the disappearances of endemic Ethiopian wolf from the park at Senatti plateau. Their responses also indicated that the encroachments of human beings in to protected area resulted in hybridization of Ethiopia wolf with domestic dog; and this cases in loss of genetic materials in produced offspring of Ethiopian wolf, and therefore the numbers of Ethiopian wolf in the park are reduced [9].

During the socio-economic survey, the responses of households indicated that the area under the BMNP was a home for diversified and populated wildlife species. However; recently due to

deforestation and over-grazing their frequency decreased. But as responses of park wardens indicated there are some mammals such as Mountain Nyala, Menelik's bush buck, Bohor and others are observed around headquarters of the park and at a distant area from the park headquarter.

Responses of experts of BMNP headquarter office indicated presence of numerous species of birds, water bodies, and scenery of landscapes, which attract tourists. Rated by African Bird Club (ABC) as the number four birding site in Africa, the Bale Mountains are home to over 282 species of birds, including nine of the 16 species endemic to Ethiopia [9]. Furthermore, over 170 migratory birds have been recorded within the park. BMNP is home to almost every highland Abyssinian and Ethiopian endemic. With over 863 species of birds recorded, representing approximately 9.5% of the world's bird diversity and 39% of the bird species in Africa. Ethiopia is often considered one of the most avifauna –rich country in Africa. Sixteen of Bale's bird species are endemic to Ethiopia [8]. Due to the diversity and density of rodents, the Bale Mountains are also an extremely important area for resident as well as wintering and passing raptors [9].

Ethiopian endemic bird species found in the Bale Mountains include: Blue-winged goose (*Cyanochen cyanoptera*), Spot-breasted lapwing (*Vanellus melanocephalus*), Yellow-fronted parrot (*Poicephalus flavifrons*), Abyssinian catbirds (*Parophas magalinieri*), Bale parisoma (*Parisoma griseiventris*), Ethiopian siskin (*Serinus nigriceps*), Fawn-breasted waxbill (*Estril dupaludicola*) and the Abyssinian owl (*Asio abyssinicus*) [9].

## Cultural and Historical Attractions

Ahead of nature based tourism resources, built features and cultural artifacts are important tourist attractions in and around MBNP. The area around BMNP is also endowed with intact tangible and intangible cultural heritages. For instance, the people in the Bale have their own cultural values composed of traditional activities, and religious ceremonies with old aged traditional dances, music, dressing, hair style, language dialects (Afanoromo), handicrafts production, architecture, and traditional cuisine preparation.

According to the respondents, tangible cultural sites includes: churches, monasteries, shrines, mosques, monuments, buildings and palaces are the most important cultural attractions of the area. Secondly, the living cultures of the local communities like ways of living, hospitality and friend lines, festivals, and social holidays and events are the other potential cultural tourism resources around BMNP [8]. The people of Bale also have enormous colorful cultural values and norms. For instance, gastronomic habits, dressing code, language, social ties and organizations, traditional ceremonies and events like Gada system, Muda ceremonies, Oda ceremonies, funeral and wedding ceremonies, dance and traditional and modern music are the living intangible cultural assets which attract both domestic and international visitors [10].

Based on data collected from interviews and field observation, the areas around BMNP has not much historical historic tourism resources comparing to natural and cultural tourism resources. The majority of the respondents suggested that the main historical tourism resources are historical buildings, palaces, the

legendary people of Bale, like General Waqo Gutu and their birth places, Bale peasant rebellion, battle fields and related historical sites are the potential historical tourism resources around BMNP.

## Tourist facilities and services

The information obtained from BMNP headquarter indicated that some tourist facilities and services such as main asphalt road on western side of BMNP, mobile network, guiding services, camping sites, guest rest house, at west of Gaysay and view-points are offered to the tourists in BMNP. In addition to these, there are hotels/ lodges in and around BMNP that provides accommodation and other services to tourists throughout the year. According to head quarter office, there are two hotels and two lodges around and in BMNP respectively. According to BMNP head quarter office (2017) report as blow table 2 summarizes these hotels and lodge and the length of days tourists stay there.

**Table 2:** Summary of average number tourists staying days at each hotels/lodges

No	Hotels/Lodges	Av. no of days tourists stay
1	Dinsho Lodge	2
2	Bale Mountains Lodge	1
3	Bekele Mola Hotel	3
4	Wabe Shebele Hotel	2
Average		2

The responses of BMNP headquarter office indicated that increasing tourist stay days could increase expenditures of tourists which increases the income of hotels/ lodges and indirectly increases job opportunities for local people. Their responses also revealed that the staying days of tourists depends on quality of attractions, tourist facilities and services. WTO (2002) confirmed that creating alternative facilities for tourists could increase stay days of tourists for larger part of the year [11]. Consequently, hotels/ lodges, tour operators, the employee and local people of the destination area or the poor people more benefited.

The information obtained from park records, and the oral discussion with park warden revealed that the BMNP offered some tourist facilities such as guiding, camping site, and guest rest house in and around the park. As responses of warden of the BMNP confirmed during interview, BMNP also created some job opportunities for 82 members of local communities from total employee of 110. The responses of the BMNP warden also revealed that the village women at the vicinity of headquarter of BMNP, which offered cultural handicrafts to tourists, are other positive aspects of the tourism activities at vicinity of BMNP.

Even though the study revealed the tourism activities in and around BMNP has benefited some members of local communities, there are indicators for occurrences seasonality in tourism activities

and destructions of natural resources around tourist destination sites [12] like vegetation for fire-wood, construction materials and other purposes in BMNP. Seasonality in tourism as fluctuation of customers or visitors in different months of the year.

## The status tourists in BMNP

The analysis based on the records from headquarters of park office in the past 11 years (2004 to 2014), indicated that the tourists of BMNP were Ethiopians, resident foreigners, international tourists and students or researchers in total figured 14, 423. Table 11 summarizes of tourists' types and numbers of BMNP in the past 11 years, from 2004 to 2014. So, as it could be observed from table 11, the students or researchers covered the largest share (46.21%) whereas the resident foreigners covered the least share (9.92%) of those visited BMNP in the past 11 years.

**Table 3:** Summary of visitors' types and numbers of BMNP from 2004 to 2014

Year	Ethiopians	Resident foreigners	International tourists	Students (education)	Total visitor of the year	Revenue collected (in Birr)
2004	393	66	101	269	829	8477
2005	273	97	177	301	848	34,524
2006	180	57	204	470	911	60,740
2007	366	81	188	304	939	81,800
2008	503	90	200	493	1286	77,609
2009	322	104	266	670	1362	94,248
2010	400	57	300	589	1346	104,087
2011	577	443	221	778	2019	145,094
2012	455	233	192	840	1720	119,779
2013	391	77	308	1045	1821	136,641
2014	212	125	99	906	1342	115,902
Total	4072	1430	2256	6665	14,423	978,901
Percent	28.23	9.92	15.64	46.21	100	-

**Source:** Adopted from headquarter of BMNP Office, 2017

When data of tourists of 2004 to 2014 were analyzed, a total of 7758 paying customers and 6665 not paying customers or students visited the park based on records of the past 11 years. The data indicates that about 46.21% of the visitors were students, who were traveled to the site for educational

purposes. This is because of Bale Mountains National Park is one of the protected area in Ethiopia that provides not only for tourism development in the country but also it serve as research site for both national and international researchers. From the data it is observed that about 978,901 Ethiopian Birr was collected from tourists who were visited the site and that contribute to GDP of the country.

## Major Management Problems on Natural Resources in and around BMNP

The major problems on the management of natural resources of the BMNP are: deforestation, expansion of farming, overgrazing and over extraction of water including conflicts between the park management and local communities. These problems results in soil erosion, vegetation degradation, wildlife depletion and associated factors. The responses of sampled households about management problems of the BMNP are presented in table below.

Accordingly, responses of respondents during households survey relating to management or conservation problems of natural resources of BMNP indicated that 45%, 25%, 15% and 15% respondents responded that deforestation, expansion of farming, overgrazing and over extraction of water respectively (Fig 1) are the major causes of degradation of natural resources in BMNP.

The above causes of natural resource degradation can leads to many effects [12]. These includes: soil erosion, vegetation degradation, wildlife depletion, and bird reduction. The responses of respondents indicated that soil erosion and vegetation degradation (85%) are the serious effects of natural resource degradation.

The respondents of the study perceived that the management problems on natural resources led to severe degradations that can affect the whole ecosystems of the park and the tourists' attraction quality of BMNP. For example, estimation based on responses of total sampled household indicated that the recent expansion of farmland and uncontrolled free grazing might be the main management problems of the park, which exposes natural resources for severe degradation (Fig 2).

## Conclusions And Recommendations

### Conclusions

The assessment of ecotourism potentials revealed some of the natural and cultural tourism resources of BMNP and its surroundings. The absence of alternative options or ecotourism and sustainable management of natural resources are the major problems of BMNP and its surroundings where ecotourism potentials are available. The main ecotourism potentials in and around BMNP include diverse species of mammals, scenic landscape, rich diversity of birds, cultural and historical attractions, lakes, beaches, and some hotels or lodges and their recreational activities such as swimming, boating, horse riding... etc. at nearer of BMNP.

The diverse species and abundant bird are residing in BMNP that contributed to attract ecotourists or bird watchers to BMNP. Some potentials of diversified livelihoods or alternative options like local handicrafts, story-telling, guiding services, local drinks and foods, local recreational activities, cultural shows and historical heritages that could be indicators of ecotourism potentials and could be offered by local communities were also detected. Furthermore, some tourist facilities and services like tracks, camping sites and guiding services in BMNP and hotels or lodges nearby BMNP which were offered to the tourists. On the other hand, some management problems on natural resources like deforestation and social related problems like food insecurity which are contributed to aggravate poverty that might be a major threat to natural resources of study area were revealed.

The study also revealed that offering tourist facilities and services and creating job opportunities for members of local communities are positive impacts of tourism activities whereas seasonality in tourism and leakages are negative impacts. The negative impacts of tourism might be able to aggravate poverty and consequent deterioration of tourism resources or natural resources, whereas the positive impacts contributed to reduce degradation pressures on natural resources.

## Recommendations

There are ecotourism potentials in Bale Mountains National Park for Sustainable Natural Resource Management. However, the following issues are outstretched as recommendation.

- Off-farm diversified livelihoods should be reinforcing and introducing additional alternative options sustainable management of natural resources in and around BMNP.
- The concerned stakeholders should create alternative options for local communities, create attractive tourist facilities and services, and protect sensitive areas or sites of park and integrating the surrounding tourism activities with local economic development or agricultural activities.
- Development and diversified livelihood creation, promotion of the development of ecotourism, encouragement of benefit sharing and conservation of natural resources of the park and give the ownership sense of the local people over the natural resources of the park should be focused for sustainable use of ecotourism resources of study area.
- Further study should be done which contributed to alleviation of poverty of study area.

## Declarations

### Acknowledgements

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### Availability of data and materials

The data used and analyzed during the current study is available from the corresponding author on a reasonable request, without disclosure of the interviewees.

## **Declarations**

We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

## **Ethics approval and consent to participate**

The ethics approval is not applicable.

## **Consent for publication**

This manuscript does not contain any individual person's data, and further consent for publication is not required/ applicable.

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## Figures

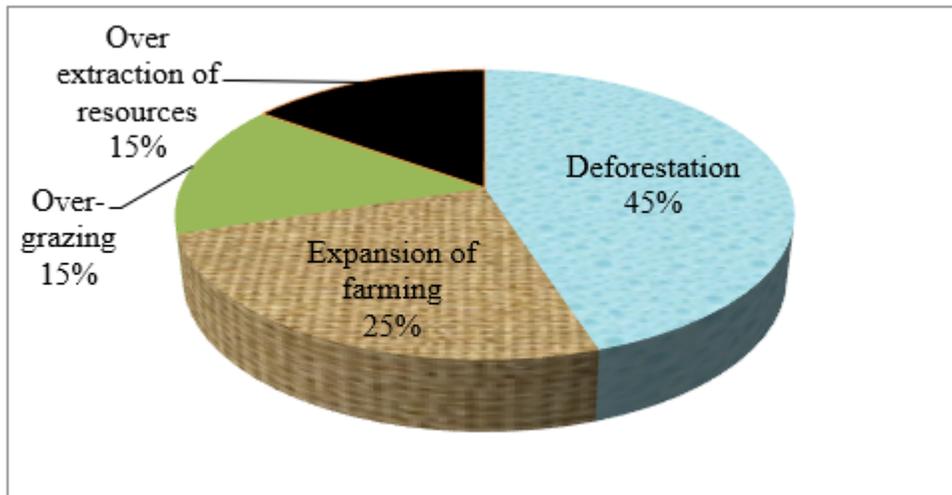
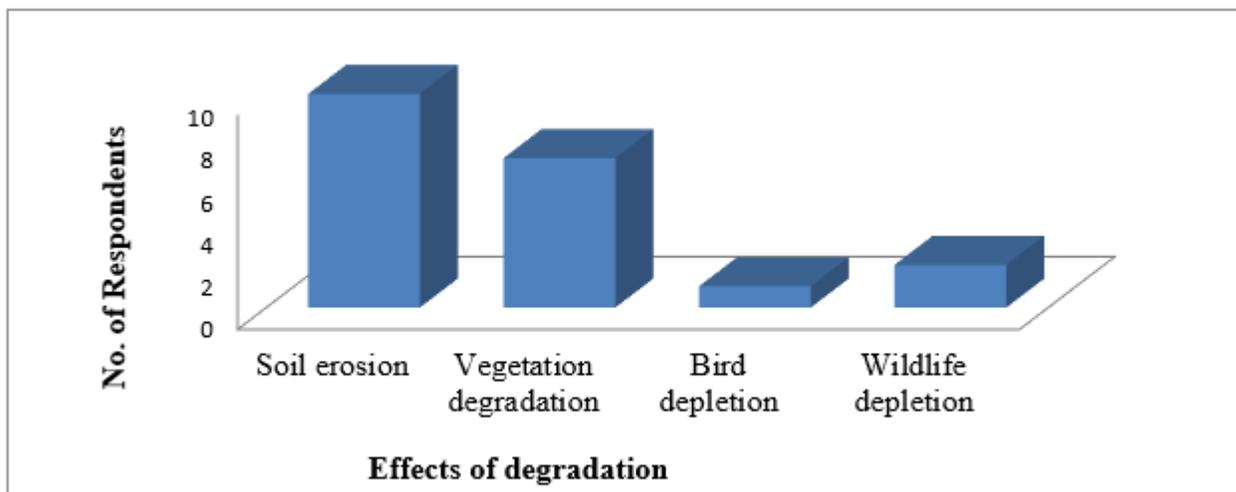


Figure 1

Management problems of Bale Mountains National Park



## Figure 2

Effects of degradation of natural resources