



# Opportunities and Challenges for Wildlife Conservation: The Case of Alatish National Park, Northwest Ethiopia

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## Abstract

Wildlife continues to be lost rapidly across the planet in spite of the effort of conservationist organizations towards natural resources protection. The aim of this study was to assess the opportunities and challenges for wildlife conservation. A mixed research approach was devised and a cross-sectional research design was employed. Tools for primary data collection were questionnaires, FGDs, interviews and observation checklists. Secondary data were 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 16.0. The findings revealed that opportunities for wildlife conservation are inter-alia: the wealth of the park in plant and animal species, the environmental policies of Ethiopia, the attentions of conservationist organizations towards wildlife conservation, and the potential benefit of the park in terms of ecological and socio-economical significances. However, the habitat and wildlife of the park can currently be described as being badly degraded due to serious threats from a number of ongoing problems such as huge amounts of cattle of foreign nomads from Western and Eastern Africa traversing the land, recurrent fire, shortage of seasonal water, unsustainable utilization of resources, agricultural expansion, hunting, human-wildlife conflict, conflict of interest over resource utilization between host communities and foreign nomads, lack of natural buffer zones and global warming. The conclusion drawn from the study is that Alatish is an ideal ecological corridor for wildlife conservation due to its variety and abundance of fauna and flora, and if properly managed, the park can be an open air museum for wildlife conservation, and also serve as a green belt in preventing the expansion of the arid Sahara and Sahel deserts from the adjoining Sudan region.

**Key terms:** Wildlife Conservation, Ecological Corridor, Challenges, Alatish National Park

## Introduction

Ethiopia is endowed with various cultural and natural attractions with high aesthetic value. Eleven cultural and one natural outstanding heritage attraction are registered by UNESCO World Heritage Sites, and the country is the first in Africa having such a high number of world heritage sites. Despite the fact that the country is richly endowed with various picturesque cultural and natural heritage properties, it is one of the least beneficiaries of the burgeoning tourism industry in Africa (WNWTO, 2012).



Ethiopia has 21 national parks, 20 controlled hunting areas, 4 biosphere reserves, 80 national priority forest areas, 2 wildlife sanctuaries and many other commercial ranches, botanical gardens, community conservation areas, and also wildlife reserves (Young, 2012). Young also noted that protected areas in Ethiopia are gifted with unique wildlife; marvellous topographic land features with accompanying cultural manifestations that are compatible for wildlife tourism and wildlife conservation which in return help keep the functioning and healthy ecosystems which are essential for sustainable development, especially with regards to providing the services that we and future generations depend on for life. Thus, wildlife considerations have to be integrated into any poverty reduction strategy (Nielsen, 2001-cited in CBD, 2007). As a consequence, wildlife protection is being addressed to a far greater extent and increasingly receives global attention.

Ethiopia has a tremendous but to date only a partially untapped tourism potential including unique natural topographic beauty and biodiversity that is profoundly the pillar for ecotourism development and wildlife conservation, the loss of which could detrimentally affect community based eco-tourism development and the diversity of wildlife. However, due to the difficulties of implementing community based ecotourism and wildlife conservation in practice, the expected amount of return cannot be achieved yet.

Ethiopia has national parks of great economic and environmental importance, yet continually faces the threat of deforestation and loss of wildlife resulting from the expansion of agriculture, grazing land encroachment, illegal hunting, fishing and natural catastrophes like global warming, epidemic disease, and serious drought which all represent a high probability to further increases global extinction rates (Stern Report, 2006 cited in Biodiversity Analysis and Technical Support Team, 2008). Wildlife in many national parks of Ethiopia is increasingly under threat from human encroachment; poaching for subsistence purpose, habitat degradation due to deforestation, encroachment of incompatible land uses and uncontrolled fire create ever increasing human-wildlife conflicts (Melaku Tefera, 2011). In a scenario where wildlife-induced damage to human property (crops and domestic animals) are neither controlled nor compensated, negative local attitudes towards conservation and wildlife resources become entrenched in local mindsets.

The Alatish National Park covers a large area of 266,570 ha and is composed of lowland woodlands. The landscape at Alatish is relatively flat with an elevation ranging from 520m to 920m above sea level. There are a few hills in the eastern and north-eastern parts of this expanse. The twin mountains of Amdog are a special feature in the southwestern corner of the park. The soil is composed of sand and gravel. Some sections of the park have substrata that obstruct the penetration of water into the aquifer. The area provides a suitable habitat for seasonal wetlands, which are in turn productive habitats for avian, aquatic and other wildlife species.

Having studied the significance of Alatish National Park from the point of wildlife abundance and diversity, recreational and economic values, and the national and international significance being served as a green belt in combating the expansion of Sahara and Sahel desertification in the region, its potential for community based ecotourism development and wildlife conservation is huge as the area is rich with various wildlife and indigenous cultures. The park is in one of low land plain protected areas of Ethiopia, and was established legally on 20 February 2006 and this feat was published in Amhara regional legal issues publication newsletter *Zekere Heg* by the Amhara National Regional State Council under the Regulation Act No. 38/2005(GMP, 2009).

Alatish National Park which is located in Quara Wereda and near the Dinder National Park in neighbouring Sudan is an ideal site for an ecological corridor to wildlife conservation. Even if the park is rich in natural beauty, diversity of fauna and flora as well as cultural and historical heritages in its vicinity, it is rarely visited by domestic or foreign tourists. Why this is the case? This research tries to investigate the opportunities and challenges of wildlife conservation in Alatish, and identify why ecotourism and wildlife could not be developed and conserved in spite of the amalgamation of so many attractions and possibilities.

There have been some valuable studies conducted at Alatish National Park. For example, Hailu Menale (2011) studied the potentials and challenges of Alatish and Dinder National Parks for implementing trans-boundary park cooperation. Girma Mengesha and Afework Bekele (2008) have investigated diversity and the relative abundance of birds of Alatish National Park, however, **none of these studies provides a portrait on the subject of wildlife conservation.** The objective of the study was thus focussed on assessing the opportunities and challenges of wildlife conservation.

## Methodology

**Location:** Alatish National Park, with an area of 2665.7 km<sup>2</sup>, is located at 11°47' N and 12°21' E, and shares its boundaries in the south with Benishangul - Gumuz Region, in the west with Dinder National Park of Sudan, and the park is 1080 km, from Addis Ababa and 330 km from the historic town of Gondar. Its rainfall ranges between 500-1500 mm (Amhara National Regional State Culture Tourism and Parks Development Bureau, 2009).

Map of the study area



(Source: adapted from <http://www.nationalparks-worldwide.info/eaf/ethiopia/national-park/wildlife-ethiopia.html>)

## Study Design

A mixed research approach was employed as it provides more comprehensive answers to research questions going beyond overcoming the limitations of a single approach (Creswell, 2003). A cross-sectional study design (i.e. investigations and data collections have been



undertaken simultaneously only at one time) was selected as it is best suited to study existing situations, problems and phenomena.

### Sources of Data

To attain a significant contribution of the effective use of a variety of data sources (data triangulation), both primary and secondary sources of data were used to collect the required information for this study. Primary sources of data included questionnaires, focus group discussion and key informant interview methods as well as personal observation, whereas relevant scientific journals and academic articles, published and unpublished materials describing the park, office reports, documents from park office, culture and tourism office, Ethiopian Environmental Protection Authority, wildlife conservation authority were used as the major sources of secondary data.

### Data Gathering Tools

Key Informant Interview: Structured and semi-structured interviews were undertaken with 2 park officials, 1 culture and tourism expert, 1 natural resource experts, Focus Group Discussion incorporated 6 informants (one =park expert, 1 Natural Resources Management, 2 scouts, 1 local representative, 1 elder), and Questionnaires were organized in the form of a Likert scale, and some open-ended questions were also used for both local and tourism experts.

### Sample Size and Sampling Technique

Five kebeles found near buffer zones of the park (*Bambuha, Gelegu, Mahadid, Diza Gumuz Wuha, and Bermil Terara* with a total number of households, 802, 613, 431, 425 and 575 respectively) were selected (Finance and Economic Development Bureau of Amhara Regional State, 2007). The total sample size was determined using Israel formula (1992) which is

$$\frac{N}{1 + N (E)^2}$$
 Where; N = the total population that will be studied, n = the required sample size

e = the precision level which is = ± 5%, Confidence Level is 95% at P = ± 5 (maximum variability) So, sample size for five kebeles, n = 167. Hence, 167 sample households were identified. A random systematic sampling method was employed to ensure the representativeness of the study population (Babbie, 2008 cited in Bith, 2011). To do so, the first household was randomly selected and thereafter every tenth household was visited. To determine the sample size of each kebele from the total sample size of 167 respondents, percentage (ratio)(p) is calculated as total sample size(n) divided by total number of households (study population)(N) (Yallew Endaweke, 2011). Mathematically, it is expressed as  $p = 167/2846 = 0.058$ . The sample size for Gelegu is  $802 \times 0.058 = 46.5 \approx 47$ ; for *Bambuha*,  $613 \times 0.058 = 35.5 \approx 36$ ; for *Mahadid*  $n = 431 \times 0.058 = 24.9 \approx 25$ ; for *Diza Gumuz wuha*,  $n = 425 \times 0.058 = 24.6 \approx 25$ ; and for *Bermil Terara*,  $n = 575 \times 0.058 = 33$

### Data Analysis

Careful data analysis was undertaken in both approaches namely the quantitative and qualitative methods used. For the quantitative data analysis, the data was gathered using a questionnaire which was first arranged and organized in tables and changed into frequency and percentages, mean, and standard deviations. In addition to SPSS version 16.0, MS-Excel was employed. Narration and descriptions was employed in the case of qualitative data analysis. Data was



collected through interviews, focus group discussions and observations and was analyzed systematically by condensing and summarizing information.

### **Ethical Considerations**

While undertaking interviews and focus group discussions, the full consent of the persons being selected for interview and FGD was first obtained. The objective of the study was expressed in brief for the respondents who could also ask questions. Every participant was informed that the aim of the study was not to blame anybody, but rather to collect relevant information about pertinent issues under investigation. Respondents could also access the final report of research.

### **Results and discussion**

#### **Opportunities for Wildlife Conservation**

**Variety and Abundance of Fauna and Flora:** the park is rich in diversity of Fauna and flora, (mean= 4.56, std.dev=.527). There are about 130 woody plant species of 84 are trees and shrubs, 29 herbs, and 17 grass species, and the ecosystem of the park is divided in to four (Abraham et.al, 2008).

**1. Riverine Ecosystem:** The riverine ecosystem occurs on the river banks of Alatish, Galegu, and Ayima and other streams and tributaries of these large rivers that extend up to 1 km on both sides from the river bed (Hailu Menale, 2011). It is rich in complex and multilayered forest vegetation cover which is dominated by tall trees such as the *Terminalia laxiflora*, *Ficus sycomorus*, *Stereospermum kunthianum*, *Tamarindus indica*, *Accacia sieberiane*, and *Comberetum collinum*. The numerous rivers that drain into Sudan from Alatish are significant tributaries of the Nile.

**2. Wooded Grassland Ecosystem:** This ecosystem vegetation is represented by a variety of shrubs and small trees of thorny plants of different *Acacia spp.* *Bamboo* and *Comberetum molle* scattered in patch of open grasslands. This ecosystem is largely threatened by fire and water shortages in the dry season. It is a feeding area for Oribi, Bushbuck, Warthog and Kudu as they can run and are not easy to hunt,. There are also carnivores such as Lion and Leopard. This type of ecosystem covers an estimated 30-40 % area of the park with grass dominated open areas of Amejalie, Alega and north-western grass dominated areas of Amdok Menta terara, Abune meda and Alemetani to southwest open areas around Omedela, Balankure and Hymenshmesh that extends to Bamboo dominated flat lands of Tsequa, Demir, and Aybeza (GMP, 2009).

**3. Seasonal Wetland:** Being dominated by cracking and dessicated clay cotton soils, it is suitable for *Acacia seyal* and related species of *Acacia sieberiana*, *Ziziphus spina-christi* and *Terminalia spp* flat areas of seasonal wetlands (Sambri) and partially a part of it covered with *Balanties aegyptiaca* scattered in relatively drained clay soils habitat for waterfowl in wet season. Seasonal wetlands remain as pool area for months in most areas dominated by excessively growing water loving grasses (Abraham et.al, 2008).

**4. Wooded Land Ecosystem:** This ecosystem covers the majority of the park and is rich in different sized mixed trees and shrubs, multilayered vegetation dominated by *Terminalia* and *Combretum spp.* *Oxytenanthera abssinica*, *Acacia spp.*, *Lannea* woody plants and shrubs characterize the wooded land.

**Fauna:** Alatish national park is rich in zoological resources and it is a habitat of various types of wild animals which require conservation including 37 mammalian, 23 rodent species, 26 specious



fish diversity and abundance of which 10 are very large, 204 bird species of which 143 are recorded 7 types of reptiles and amphibians and 6 insectivore species (Shimels & Shegaw 2011). It is especially rich in reptile diversity such as the *African rock python*, *Monitor lizard*, *Egyptian cobra*, *Black mamba*, *Sizira* and *Tree snake*. It also a home to endangered and rare species of Elephants (*Loxodonata Africana*), Leopard (*Panthera pardus*), Lion (*Panthera leo*) and also low risk but conservation dependent Lesser kudu (*Tragelaphus imberbis*) and Greater kudu (*Tragelaphus strepsicero*) (Ethiopian Wildlife Conservation Authority, 2012).

**Environmental Policies of Ethiopia:** Ethiopian has signed conventions and agreements such as a convention on climate change, biological diversity and conventions to combat desertification, International Trade in Endangered Species of Wild Fauna and Flora (CITES), Conservation of Migratory Species of Wild Animals (CMS), and a range of Agreements on the Conservation of African Eurasian Migratory Water birds (Asayehgn Desta, (n.d) ).

**Attention of International and National Organizations:** Alatis and Dinder National Parks have the opportunity to get the needed attention from the International Union for Conservation of Nature (IUCN), Global Environmental Facility, United Nations Developmental Program, and Worldwide Fund for Conservation, United Nations Environmental Program, and especially Ethiopian Wildlife Conservation Authority and the North Gondar Sustainable Natural Resource Management Program which are devoting time and resources to the provision wildlife conservation. The government has given national priority to conserve natural resources of the park (Mean=4.02, std. deviation=.618) and management programs are undertaken to keep, wildlife, ecological and cultural values of the park and its vicinity (mean= 4.02, std. Deviation=.677)

**Ecological significance:** Alatis National Park shares Sudan-Guinea Savanna Biome/ecological zone and is the only in the region serving as the home of Lion (*Panthera leo*), Elephant (*Loxodonta Africana*), both classified as vulnerable in the IUCN Red List (IUCN, 2010). So, conservation of the park is for regional, national and global importance and the topographic features can be taken as an opportunity for conservation because almost 97% of the park is plain and not exposed to degrading soil erosion. (Mean=1.77, std. dev =.519)

**Potential socio- economic significance:** The Park is rich in plants which are used for traditional medicine, incense and gum with high economic value for the country which in return generate alternative jobs and incomes for local rural communities.

**Conservation of the Park - Political significance:** As the region is in a border area, it has been a place for bandits, robbers and the Ethiopian Peoples' Coalition Party (locally known as ኢህአፓ) (personal communication, Ezedin Belay, May11, 2013). But now the region is relatively peaceful and secure compared to the recent past. Being a national park, it is easy to control illegal transfers of animal products (skin, ivory, ostrich egg, horns etc), stop drug trafficking as well as prevent the illicit traffic of precious cultural treasures. The park also has the potential to be a trans-national and international biosphere reserve.

**Topographic features of the Park:** The most striking feature of the park is the presence of a huge plain (97 % of the park) which dominates the region and which is not exposed to soil erosion. This offers the greater opportunity for conservation of the natural resources. Due to its remarkably plain flatland features and its covering of densely populated vegetation and migratory wild animals, the park has the potential to raise consciousness for conservation among visitors. The region is the only protected area serving as a greenbelt that helps to alleviate the expansion of the world's largest desert areas including the Sahara and Sahel.



**Global increasing demand for Ecotourism:** Nature-based tourism is one of the fastest-growing tourism sectors worldwide. It depends on the conservation of natural landscapes and wildlife, so that using ecosystems in this way can jointly promote human well-being and biodiversity conservation provided it is well managed. The God-fearing people of Ethiopia with their smiling and welcoming faces have the potential to motivate tourists to visit the park and cultural aspects in its vicinity. Responses from tourism experts indicate that the park has the potential to catch the attention of international and domestic researchers in the field of biology, medicine and pharmacology, ornithology, zoology, geology, natural resource management and/or conservation and others who want to study rodent species, snakes types, and fishery and aquatic species.

According to Dolnicar (2006) there is growth in especially interest in ecotourism, that involves learning-while-travelling such as wildlife viewing, attending festivals, cultural appreciation and nature study which are triggered by advances in global communications and information technology. Among wealthier societies at any rate, many people are now accessing a huge volume of information on protected areas and travel options through the Internet and other communication technologies.

### Challenges for Wildlife Conservation

From the descriptive statistics results, the main threats for the survival of wildlife of Alatish National Park are: fire (Mean=4.51, std. deviation= .519 ), hunting (Mean=4.45, std. deviation=.518), foreign and local nomads (Mean=4.55, std. deviation=.629), fishing (Mean=4.47, std. deviation=.502), settlement programs (Mean=3.99, std. deviation=.772), water stress specially during dry season (Mean=4.45, std. deviation=.552) agricultural expansion towards the park (Mean=4.00, std. deviation=.835), human-wildlife conflict (Mean=4.29, std. deviation=.623), collection of wood for timber and house construction (Mean=3.85, std. deviation=.906), and lack of community awareness about wildlife's significance (Mean=2.09, std. deviation=.830).

**Recurrent fire:** (Mean=4.51, std. deviation= .519 ) is a critical factor that devastates wildlife resources, and is generally caused by honey collectors who seek to dislodge bees. Once a fire is raging, it is difficult to extinguish manually since there are no modern fire extinguishers in the area. The rain may be stopped after the area receives rain.

**Hunting:** (Mean=4.45, std. deviation=.518):- *Gumuz* society highly depends on hunting of rodent species and large mammals such as Greater kudu, gathering and fishing in and around the park. Hunting can be purposeful and can consist of up to 20 members who pack their food, prepare guns, and select a site where animals live. Their journey, said one of the informants, is similar to that of pilgrimage in preparations. To transport their food and dried meat, people use donkeys. The peak season of hunting is two weeks before lent and one month before Easter since many Christian hunters from different parts of Quara come to the park to hunt animals for Easter, or it can be unintentional hunting, meaning people who enter the park to collect rope, wood (bamboo), gum, incense, and honey may hunt animals for personal reasons such as pleasure, or pride, based on their status in the community. They kill animals such as leopard and lions. Some people also believe that if they kill a lion and wear its mane, they will be active in energetic speaking known in local circles as *fukera*. Others believe that having killed a lion, they become winner in any debates in courts they may come across. 53.56% of the respondents were 'strongly in agreement', and the rest were in the category 'agree' about illegal hunting in the park. A study undertaken by Kiringe and Okello (2006) in Serengeti National Park about game hunting



ascertained that a problem for sustainable livelihood is consistent with the findings of Alatish National Park.

**Local nomads and foreign nomads** of *Felata*, *Rubtana* and *Minamir* from western and eastern Africa are mainly dependent on the natural resources. They also practice hunting for subsistence consumption and see to sell precious animal products like ivory, ostrich eggs, and skins and horns of animals with high prices to Sudan (Mean=4.55, std. deviation=.629). Hunting resulted in conflict of interest over resource utilization between foreign tribal nomads and local communities (mean=4.17). There are ground water ponds in the park used for drinking by nomads and their cattle and nomads also cut down trees for construction purposes.

**Unwise utilization of fishing** is practiced at different sites of the *Ayima* River and particularly at *Omedla*, *Ayibeza* and *Abulda*. Fishermen add some poisonous chemicals, and plants in the water, called *lalo* (*Balanites aegyptiaca*) which kills aquatic mammals (Mean=4.47, std. deviation=.502).

**Water stress specially during dry season:** (Mean=4.45, std. deviation=.552) severity of drought is high in April and March as there is high temperature usually up to 42 °c which results in intermittent flow of rivers that causes migration of birds and mammals (Mean=4.49) to Dinder National Park of Sudan.

**Human-wildlife conflict:** (Mean = 4.29, std. Dev=.513) conflict exists at the villages of Marwuha and Diza Gumuz where wild animals such as ape (*Cercopithecus patas*), monkey (*Papio anubis*) and Warthog (*phacochoerus aethiopicus*) damage crops. In addition to these, leopard (*Panthera pardus*), lion (*Panthera leo*), hyena (*Hyaena*), crocodiles are eating domestic animals. A study undertaken by Okech (n.d) about wildlife-community conflicts in conservation areas in Kenya was inconsistent with the findings of Alatish National Park.

**Local people also collect plant products** for not only sticks, rope, furniture and house construction, but there is also an unsustainable collection/gathering of non-timber products (wild honey, fruits, medicinal plants, mushrooms and roots) as well as gum and incense (Mean=3.85, std. deviation=.906), and **lack of community awareness about wildlife significance** (Mean=2.09, std. deviation=.830). The findings of studies conducted by Meduna, Ogunjinmi, and Onadeko, (2009) about biodiversity conservation problems and their implications on ecotourism in Kainji Lake National Park in Nigeria are also consistent with Alatish National Park.

**Human Settlement and Investment Programs:** Settlement programmes are undertaken in adjacent areas of the park. In line with this there has been agricultural expansion towards the park (Mean= 4.00; std. deviation= 0.835) and demand for grazing land (Mean =4.32; std. deviation=.541). Investors are given arable land without limitation and they plough up to the park.

**Incomplete River Ecosystem of Ayima and Gelegu:** Important ecosystems of the *Ayima* and *Gelegu* rivers which are a habitat for more than 16-20 fish species and other aquatic mammals is not included in the park. Most importantly, a huge Baobab (*Adansonia digitata*) historical palace hewn tree cave that Emperor Haile Sellasie stayed in for a week, is not part of the park.

**Collection of Wild Gum and Frankincense:** According to the interview, there is gum on some acacia plants and stones inside the park, and people collect these unsustainably and also cut down trees. In addition to gum, they collect incense from incense trees called *Boswellian papyrifera*. Besides, searching for gum and incense, these people are engaged in hunting, and





making fire to prepare food which results in accidental fires in park. Sadly, many people also lost their lives due to a lack of food and by missing directions to their villages. There is huge collection of non-timber products of gum, incense and medicinal plant (mean=4.23, std. deviation=.659).

**Collection of Wild honey in the Park:** As per the information from focused group discussions it is evident that the Gumuz and Agew societies are engaged in harvesting of wild honey inside the park through traditional but unsustainable methods. For example, the Gumuze people collect it through cutting the plant (even if it is large) since they are not active in climbing. These people use fire to dislodge bees from the area and the fire often devastates the wildlife of the park. The Agew people follow their traditional method of making beehives and placing these on trees in the park. Harvesting of wild honey is practiced by them in February and April.

### Conclusions and Recommendations

The study illustrated that Alatis National Park is indeed rich in a variety and abundance of fauna and flora, with striking topographic features such as rivers as well as cultural attractions and ethnic groupings. It is thus an ideal place for wildlife conservation and community based ecotourism development. Generally, the area has potential significance in terms of biodiversity conservation (ecological), tourism and recreation, scientific research and education, and also social and economic value.

The findings of the study also proved that there are a number of threats to wildlife conservation in the park, and these are listed below:

- destruction of wildlife by neighbouring nomads from the Falata, Rubtana and Minamir communities and their marauding livestock,
- conflict of interest over resource utilization between local communities and foreign nomads,
- recurrent fires, both natural and man-induced,
- unwise harvesting of wild honey,
- collection of gums and incense,
- unsustainable fishing practices,
- an increasing demand for grazing lands,
- hunting for meat,
- non-meat products and community status,
- human-wildlife conflicts,
- problem of awareness and a sense of ownership,
- the collection of bamboo,
- the incomplete eco-system of the Ayima river,
- and severe drought induced water stress which results in massive wildlife migration,

and all of these are all major concerns.

On the other hand, the study has suggested opportunities for wildlife conservation like the global increased demand for ecotourism, given the land is rich in variety and has an abundance of fauna and flora, and the reasonable environmental policies of Ethiopia. In addition, the attention of international and national organizations towards wildlife conservation (wildlife conservation being a global issue) is growing and there is thus potential benefit for the park in terms of ecological, socio-economic and political developments.



The following recommendations are suggested, based on the major findings of the study with respect to opportunities and challenges for wildlife conservation.

- ✎ To mitigate human instigated threats to wildlife survival, there is an urgent need for biodiversity conservation to be formally addressed as an issue at all levels of society. Education and training programmes should be provided at school level, and also in clubs and associations (youth associations, environmental association clubs, traditional music clubs, and farmers association) and at religious places, so as to encourage greater dedication towards conservation, and the raising of human consciousness on the essential role of wildlife in the ecosystem. How the ecosystem functions and its ethical and economic value, as well as its recreational and aesthetic significance are important as is the role of Alatish National Park which acts as a 'guard' or 'green belt' in combating the expansion of the encroaching Sahara and Sahel deserts into the region.
- ✎ Especially awareness-raising and capacity-building efforts could be extended to fishermen, hunters and the local people who settle near the buffer zone and adjacent areas of the park and particularly to immigrant communities so as to create awareness about sustainable utilization of resources and the values of conservation of wildlife and other natural a resource of the park. It would be wise to increase their involvement in conservation and urgently. Resolutions for human-wildlife conflict such as people looking after their livestock and crops better, and using replicas (fear provoking stimuli) to protect damages of wildlife on farms, and seeking alternative means of livelihood for hunters, fishermen such as agriculturalists, as the region is very fertile.
- ✎ One of the most devastating factors for wildlife and habitat destruction is the impact of nomads from neighboring countries such as the Felata of Nigeria, the Minamir of Eritrea and the Rubtan of Kenya. These nomads and their huge herds of cattle excessively depend on natural resources of the park that place the park in jeopardy. The federal government should take measures through diplomacy to evacuate these nomads from the park since their actions are beyond the capacity of the park office. Artificial ponds and dams which can retain water in dry seasons at different sites of the park should be effected and especially in the northern part of the park at Amjale, and south part of the park at Ayibeza, Yelkuk, Bayiwa and Tsequa where there is an abundance of wildlife including elephants. Such ponds and dams will serve to reduce daily and seasonal migration of wild animals. The concerned bodies should learn and apply experiences from management and conservation of wildlife in Dinder National Park. In Dinder National Park, management bodies add salt to artificial ponds so that wildlife is attracted to these areas and it is easier to protect the wild animals. Additionally, tourists can observe them without tiresome trekking. To reduce the impact of fires on the park, proactive and protective measures should be taken in advance, such as controlling honey collectors, contrabandists, and nomads who cause fires, and developing alternative fire controls and using modern fire extinguishers or fire break mechanisms.
- ✎ To avoid clashes between policies and programs, there should be an effective integration and collaboration amongst all governmental bodies and other stakeholders. For example, the adverse effect of settlements and investment programmes on environmental and natural resources should be taken into consideration and feasibility studies about such adverse impacts on the national park should be conducted in a holistic manner. This should be between natural resource conservation and land administration, park office management, culture and tourism and host communities, and possible reduction mechanisms prior to the commencement should be forwarded to relevant authorities.

There should be clearly defined buffer zones and demarcation of the park especially at the north and south east areas of the park adjacent to the kebeles of Mehadid, Bambuha, and Bermil Terara. This is important particularly, at Beril Terara settlement which is near the park. The park's demarcation had been undertaken by dying colors on trees (which will be lost/washed by rain)



and by putting only a few beacons (86) up, which located at great distances from each other and are thus ineffective. So, to reduce impacts from adjacent kebeles, the effective demarcation by suitable fences, and placing of far more beacons should be undertaken

- ✎ To incorporate the relatively incomplete ecosystem of the Ayima and Gulegu rivers, much work has to be done with the support of local involvement. Particularly, the Ayima, which is in effect beyond, but near the park, can act as buffer zone so that the aquatic community and especially fish, crocodiles and other wild animals which depend on the river, can be conserved. The Amhara regional national state, the Gumuz-Benshangul regional national state, and the federal government in collaboration with the two regions of host communities should all reach an agreement to incorporate this important ecosystem into the park.
- ✎ There should be a regular inventory check and monitoring of at least the major plants and endangered and rare species of elephants, lions, leopard and kudu. To do so, human resources especially plant and animal science professionals should be recruited and employed on a permanent basis to ensure sustainability and preservation for future generations to enjoy.

Alatish is the first Transboundary Park created in Ethiopia, and it thus possesses great national and also international significance. It has very beautiful and distinctive ecosystems and is gifted with a wide variety of remarkable resources and sites. The inclusion of local people and increased local community participation in the management of the park, will go a long way to mitigate challenges facing the park. It is clear that the park can be an open air museum for wildlife conservation, and also serve as a green belt in averting the expansion of the parched Sahara and Sahel deserts from the contiguous Sudan region. National parks such as Alatish, should almost always be open to visitors. The park should provide outdoor recreation and camping opportunities as well as courses designed to educate the local population on the importance of conservation and the natural wonders of the land of Ethiopia in which the national park is located.

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