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College of Natural and Computational Science

Department of Zoological Sciences

Assessment of the major impacts of threatening factors of Wildlife in
Awash National park, Afar, Eastern, Ethiopia

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A Thesis submitted to the Addis Ababa University, College of Natural and
Computational Science, Department of Zoological Sciences in partial fulfillments of the
degree of Master of Sciences in Biology

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DECLARATION

I, the under signed, declare that the dissertation here by submitted for the Degree of Master of Science in Biology (MSc) to the Addis Ababa University is my own work and has not previously been submitted at any other university. The materials obtained from other resources have been duly acknowledged.

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Thesis approval sheet

As thesis research advisor I have read and evaluated the thesis prepared by Meseret Philipos Aboye entitled "Assessment of the major impacts of threatening factors of Wildlife in Awash National park, Afar, Eastern, Ethiopia". I recommend that it be submitted as fulfilling for the Degree of Master of Science in Biology.

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List of Acronyms and Abbreviation

AFD: Agency Of French Development

ANP: Awash National Park

BioDev: Biodiversity Development

CSA: Census of Statistical Analysis

EWCA: Ethiopia Wild Life Conservation Authority

IBC: International Biodiversity Conservation,

IUCN: International Union Conservation Nature

LULC: Land Use and Land Cover

NBSAPs: National Biodiversity Strategies and Action Plans.

NSNP: Nechsar National Park

PA: Protected Area

RTFSI: Relative Threat Factor Susceptable Index

SDPASE: Sustainable Development of Protected Area System Estate

UNEP: United Nation Environment Program

WCMC: World Conservation Monitoring Center

WLCO : West Loop Community Organization

WWF: World Wildlife Fund

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Abstract

Awash National Park was initially established in 1966 E.C and officially launched as a protected area in 1969 E.C; the study took place from September to August 2017 E.C. The park experienced a variety of threats, both natural and artificial as indicated by numerous reviews. The current study identified many different threat factors, focusing on the assessing their causes, commonalities, and major impacts of the threat factors on the Wildlife through the collection of quantitative and qualitative data, using primary and secondary data collection methods. Sixty key pieces of information were gathered from respondents using nonproportional stratified and purposive sampling techniques. The study highlighted the common causes, the common, and major impacts of the threatening factors, with overgrazing, and charcoal production being identified as the most severe, followed by demands of Agricultural land , firewood, house building, and car accidents. The study aims to help identifying major common causes of impacts of threat factors and ways to reduce the impacts of thus threat factors with the collaboration of the Ethiopian government, EWCA, and the local communities. Generally, all the threat factors were interconnected by alarmingly increasing of human population that derives all the threat factors. Therefore using family planning was one of a solution to reduce the driving force of all threat factors.

A Key words/phrases: Awash National Park, threatening factors, wildlife, Impacts of threats, Alarmingly.

Chapter One

1. Introduction

1.1. Background of Study

Ethiopia is among the top 25 biodiversity-rich countries in the world, hosting two of Africa's eight and two of the world's 34 biodiversity hot spots, the Eastern Afro-montane and the Horn of Africa hot spots,(Fisum and Bikila, 2018). The country is characterized by a massive highland system surrounded by arid lowlands, providing a wide range of habitats for wildlife, from 110 meters below sea level in the Afar Depression to over 4,500 meters at Ras Dashen (Shibru, 1995). While the highlands harbor numerous endemic plants and animals, their overall species diversity is lower than that of the lowlands. The remarkable biodiversity and endemic found in Ethiopia are largely attributed to its rugged topography, diverse habitats, and variable climatic conditions (Yalden and Largen, 1992). Most of Ethiopia's biological resources, particularly wildlife, are concentrated in protected areas (IUCN, 1994). Although the government has expanded efforts to establish national parks, wildlife sanctuaries, and reserves with the aim of ensuring ecological sustainability and economic benefits, the overall value derived from these areas remains low (Solomon and Dereje, 2015). This is primarily due to increasing degradation and persistent challenges such as illegal settlement, poaching, deforestation, agricultural encroachment, resource competition, habitat destruction, overgrazing, soil degradation, bush-fires, charcoal production, and the unsustainable exploitation of natural resources (Getachew and Weldemariam, 2016). Awash and Nechisar National Parks are among the earliest established protected areas in Ethiopia and are known for their rich biological diversity as well as significant conservation challenges (Young, 2012). In particular, Awash National Park (ANP), the first officially gazetted national park in the country holds a unique place in Ethiopia's conservation history due to its diverse wildlife resources. However, in recent decades, the park has been increasingly threatened by both natural and human-induced factors. Anthropogenic pressures, especially following the demarcation of its boundaries, have

intensified threats to wildlife and habitats (Kahsay *et al.*, 2025). The rapid growth of the human population has emerged as the root cause of many of these problems, driving farmland expansion, fuel-wood extraction, and settlement pressures. As a result, several species within the park have been lost or are under severe risk, highlighting the urgent need for sustainable management interventions. Threats to Protected Areas and Biodiversity in Ethiopia, Biodiversity within Ethiopia's protected areas continues to be threatened by multiple natural and anthropogenic factors. In Awash National Park (ANP), species are subjected to pressures such as overgrazing, agricultural land expansion, settlement encroachment, firewood and charcoal collection, drought, wildfires, car accidents, and other disturbances. Although the park was legally gazetted in 1969, it still faces persistent challenges. Among the most critical threats to ANP are grazing by domestic animals, insufficient conservation funding, the spread of invasive alien species, weak law enforcement, human settlement encroachment, human wildlife conflict, and a lack of alternative livelihood opportunities for surrounding communities (Malede and Girma, 2015). Similarly, Nechisar National Park (NSNP) is severely affected by illegal activities including fishing, firewood extraction, charcoal production, deforestation, livestock grazing, poaching, and settlement (Solomon and Dereje, 2015). These challenges reflect broader patterns across Ethiopia's protected areas, where unsustainable resource use undermines conservation objectives. To address such issues, the BioDev2030 initiative was launched with the aim of integrating biodiversity into national economic sectors that significantly impact both biodiversity and development. The initiative seeks to reverse biodiversity decline while promoting sustainable and resilient economies. As part of its initial implementation in Ethiopia, the International Union for Conservation of Nature (IUCN) commissioned a national biodiversity threat assessment led by a consultancy team of experts. The assessment identified the major direct threats to biodiversity, trends in species and ecosystems, and key economic drivers influencing biodiversity loss (Mekibeb *et al.*, 2022). Ethiopia, known for its exceptional levels of biodiversity and endemism in Africa, formally began its biodiversity conservation efforts in the late 1950s through the creation of national parks and wildlife conservation areas (Vreugdenhil *et al.*, 2012). However, despite these efforts, biodiversity conservation remains constrained by weak policy implementation

and management inefficiencies. The underlying drivers of biodiversity degradation are primarily linked to rapid population growth and the corresponding rise in demand for natural resources to support subsistence livelihoods (IBC, 2005; Vreugdenhil *et al.*, 2012). Human-induced activities have had adverse impacts on wildlife both directly, through poaching and illegal killing, and indirectly, through habitat destruction and fragmentation (Kahsay *et al.*, 2025). These pressures have caused population declines and range contractions in several of Ethiopia's most iconic species, including the African elephant (*Loxodonta africana*), Ethiopian wolf (*Canis simensis*), mountain nyala (*Tragelaphus buxtoni*), and Walia ibex (*Capra walie*) (Asefa and Admassie, 2008; EWCA, 2015; Mengistu, 2017). The cumulative effects of biodiversity loss have further undermined ecosystem functioning, ecological processes, and the provision of ecosystem services within protected areas (IBC, 2005; Mengistu Wale *et al.*, 2017). Ethiopia is one of Africa's most wildlife-rich countries, with its remarkable biodiversity attributed to diverse habitats, variable topography, and climatic conditions (Mengistu *et al.*, 2022). The country currently harbors about 320 species of mammals, 36 of which are endemic (Vreugdenhil *et al.*, 2012), 926 bird species (Lepage, 2006), 242 reptiles, 73 amphibians (Abeje, 2017), and approximately 6,862 insect species (Berhanu, 2016). Globally, the fight against biodiversity loss has become a priority for governments and conservation organizations alike (Lambooy and Levashova, 2011). Consequently, various approaches have been developed to mitigate biodiversity decline over recent decades (Mengistu *et al.*, 2017). Among these, in-situ conservation of viable wildlife populations within their natural ecosystems is considered a fundamental requirement (CBD, 1992). In line with this, Ethiopia has established a network of protected areas that includes 21 national parks, 4 sanctuaries, 8 wildlife reserves, 20 controlled hunting areas, 6 open hunting areas, 6 community conservation areas, and 58 national forest priority areas (Young, 2012). Within this system, Awash National Park (ANP) stands out as a biodiversity hotspot due to its diverse habitats and central location. Its major water sources include the Awash River and its tributaries (Kessem and Kebena Rivers), Lake Beseka, and hot springs in the northern part of the park. The park's natural and cultural resources make it one of the most attractive tourist destinations in Ethiopia's Central Rift Valley. Its proximity to Addis Ababa, road accessibility, diverse cultural heritage,

scenic landscapes, abundant wildlife, and archaeological sites have strengthened its tourism potential (Jacobs and Schloeder, 1993). Surrounding human communities rely heavily on the park's resources. The Afar people inhabit the northern and northeastern parts, while the Kereyu and Ittu pastoralists, belonging to the Oromo, occupy the western and southern regions (Belay, 2015). However, ANP currently faces serious challenges due to the tension between biodiversity conservation and the livelihood needs of local communities. Prior to 1995, policy limitations were considered minor threats, but after 1995, the expansion of private and state farms was reported as a major driver of ecological change (Solomon *et al.*, 2012). Such agricultural expansion reduced the grazing lands of Afar and Kereyu-Ittu agro-pastoralists, forcing them to encroach into the park. Additionally, the expansion of Lake Beseka has contributed to settlement growth and loss of range lands. The lake's surface area expanded from 11.1 km² in 1973 to 39.5 km² in 2002, significantly affecting both local livelihoods and wildlife habitats (Gulilat, 2000). Other critical threats include deforestation for charcoal production and the spread of invasive alien species such as *Prosopis juliflora* and *Parthenium hysterophorus* (Belay, 2015). Currently, more than two-thirds of the park is either permanently or temporarily used for non-conservation activities, ranging from settlement to intensive grazing (Belay, 2015). This resource degradation is exacerbated by poor relationships between park authorities and local communities, who often have limited awareness of the economic and ecological values of wildlife. Rapid human population growth has further intensified land-use and land-cover (LULC) changes. For instance, the Kereyu-Ittu population increased by 71% between census years (CSA, 2007), resulting in higher demands for grazing and settlement land. Moreover, public service projects within the park have contributed to permanent settlement. Non-governmental organizations such as the Gudina Tumsa Foundation constructed schools, clinics, water facilities, grain mills, and storage houses inside the western part of ANP, which encouraged Kereyu households to adopt a more settled lifestyle (Belay, 2015). This trend was reinforced by the construction of religious and social infrastructures, including mosques and electricity lines, which further facilitated permanent residence within the park boundaries. As a result of these combined pressures, ANP's biodiversity and natural resources are undergoing severe degradation,

threatening both ecosystem functions and the long-term viability of conservation efforts.

The impacts of various threatening factors on wildlife in Awash National Park can be attributed to several underlying causes. One of the primary challenges is the lack of clear ownership and boundary delimitation of the park (Belay Zerga, 2015). Different stakeholders perceive the park boundaries differently. While the Ethiopian Wildlife Conservation Organization (EWCO) recognizes the boundary demarcated in 1969, the Afar and Kereyu communities only acknowledge the core zone as the legitimate park, particularly the section located south of the main highway. Although EWCO has stationed staff throughout the wider area, their limited control over resource use has made conservation and management highly ineffective (Mekbebe Tessema *et al.*, 2007; Belay , 2015). This ambiguity has complicated protection efforts. Furthermore, poor coordination among stakeholders has aggravated the problem. For instance, a national conference held in August 2011 identified weak consultation and collaboration as key challenges, with the Ethiopian Wildlife Conservation Authority (EWCA) being criticized for failing to fulfill its conservation responsibilities and for not effectively engaging relevant stakeholders in decision-making processes (Belay , 2015). Another important factor is the lack of adequately trained manpower in managing protected areas (Solomon, 2014). The coordination problem is particularly pronounced at the regional and district levels compared to the federal level. By contrast, experiences from Simien Mountains National Park demonstrate that increased involvement of regional government officials can significantly improve park management by fostering positive community attitudes toward conservation (Hurni *et al.*, 2008). Despite human resettlement measures, Awash National Park continues to experience declines in both faunal and floral communities, often leading to conflicts among pastoral groups in the area (Eyasu, 2008). Interestingly, community perceptions differ: the Afar community demonstrates greater ownership and participation in conservation activities compared to the Oromo community, who generally exhibit weaker commitment to park protection (Solomon, 2014; Belay Zerga, 2015). In addition, attitudinal differences between communities often stem from misconceptions regarding the importance of the park

(Belay , 2015). Rapid development interventions have also intensified threats. For example, the establishment of a village administration known as Legebenti on the southwestern edge of the park has transformed parts of the area into farmland, with ongoing infrastructure development such as schools and other facilities (Afework *et al.*, 2008). Similarly, the state-owned sugarcane farm near Sabure campsite has expanded into the park's northeastern boundary, while large-scale irrigation projects cut across its territory. Hydro power transmission lines to Dire Dawa and Djibouti have also caused substantial damage, clearing vegetation along 14-meter-wide corridors and diminishing the scenic value of the park (Solomon, 2014). Therefore, Given these factors, the present study was conducted to identify the major causes and impacts of wildlife threats in Awash National Park and to provide appropriate recommendations for addressing them.

1.2 Statement of the Problem

Awash National Park is currently facing a series of challenges stemming from both natural and human-induced factors. Among the most pressing issues are overgrazing, charcoal production, agricultural land expansion, deforestation due to human settlement, and the excessive collection of firewood. These threats are significantly affecting the park's wildlife and overall ecosystem. The primary driver behind these problems is the rapid growth of the human population, which has led to increased demands for housing, farmland, household resources, economic opportunities, and energy for cooking. This pressure is especially intensified by the community's dependence on agro-pastoralism, which worsens the impact on the park's resources.

As a result, wildlife populations are declining, and some species are at risk of extinction. This ecological degradation not only threatens biodiversity but also disrupts the balance of the park's ecosystem. Furthermore, the decline in wildlife and habitat quality is leading to a reduction in ecotourism revenue, which in turn hampers local and national economic development. Additionally, broader environmental challenges such as climate change, global warming, and natural disasters further complicate efforts to sustain both human life and biodiversity. These combined natural and anthropogenic factors directly and indirectly impact the ability of wildlife to survive in their natural habitats, posing a

serious threat to the ecological integrity of the park.

In summary, the community is heavy reliance on agro-pastoralism is contributing significantly to the threats facing wildlife in Awash National Park. If these issues remain unaddressed, the continued loss of biodiversity will not only disrupt ecological balance but also result in long-term socioeconomic consequences. Therefore, the Current study here carried on to identified and give solution and recommendation to the major impacts of threat factors of Wildlife in Awash National park.

1.3 Objectives

1.3.1 General Objectives

- To Assess the major impacts of threatening factors of wildlife in Awash National Park of Afar, Eastern, Ethiopia

1.3.2 Specific Objectives

- To identify the more major common threat factors of wildlife among the others in Awash National Park.
- To identify the main root cause of the major impacts of threatening factors of wildlife in Awash National Park.
- To evaluate the community knowledge towards wildlife conservation.
- To suggest possible solution for reducing the impact of threatening factors of wildlife conservation
- To assess the conservation level of wildlife in the protected area.
- To identify which wildlife are decreased in number and extincted from the protected area .
- To give special conservation to which endangered wildlife in the park

1.4 Research question

- what are the major impacts of threat factors of wildlife in awash national park?

- What are the main root cause of the major impacts of threatening factor of wildlife in awash national park?
- How can reduce the most common threat factor of wildlife in Awash national park?
- what are the measure should be taken to reduce impact threat factor of wildlife in Awash national park?
- what are the economic benefit of wild life?
- Is there any wild animal species reduced and lost in case of the major impact threats factors ?
- Who are responsible for wildlife conservation?

1.5 Significance of the study

This study focuses on assessing the major impacts of threat factors affecting wildlife in Awash National Park. These threats were identified through both primary and secondary data collection methods, using a stratified non-proportional sampling and purposive sampling techniques. The findings are expected to support the reduction of wildlife challenges in protected habitats through the cooperation of the federal government, which can give special consideration to wildlife conservation by formulating effective policies for protected area management, allocating sufficient budgets, and working in coordination with the Ethiopian Wildlife Conservation Authority (EWCA). Additionally, the study aims to enhance public awareness regarding the benefits of wildlife and the importance of their conservation. The study has the potential to generate multiple benefits from wildlife conservation, particularly by boosting tourism revenue. If wildlife is effectively protected from threats, tourist numbers are likely to increase, creating more job opportunities for local communities. This can improve livelihoods by enabling people to meet basic needs such as healthcare, housing, and other essential commodities. Moreover, wildlife conservation plays a vital role in addressing climate change, mitigating global warming, reducing drought impacts, and providing recreational benefits, while preserving the natural heritage. Conservation is a shared

responsibility that transcends religion, racism, and politics, offering common benefits when implemented effectively. A well-managed wildlife conservation strategy can contribute significantly to ecosystem health and the development of the tourism industry (Yordanous Gebreyes *et al.*, 2024).

In addition, the study's outcomes are expected to positively influence both society and the national economy by promoting tourism-related activities, such as hospitality services and trade in local commodities. Although Ethiopia is endowed with diverse biodiversity, effective management, conservation, and sustainable use of its natural resources remain a challenge. The participation of local communities in conservation efforts will increase if practical solutions to threats are implemented. Therefore, this study is anticipated to improve the country's economic status by fostering positive changes in community attitudes and knowledge towards wildlife, thereby increasing the benefits derived from conservation (Mitiku Yohannes *et al.*, 2024).

1.6 .Scope of the Study

Ethiopia is among the African countries with significant wildlife potential, owing to its diverse topography and climatic conditions, which support a wide range of species. However, these natural resources are increasingly exposed to both artificial and natural challenges, posing hazards to the biotic and abiotic components of the environment. One of the primary threats to wildlife is human population growth, which drives the expansion of human activities to meet increasing demands. These activities include habitat settlement, agricultural expansion, road construction, and charcoal production, often undertaken for income generation and other needs. Such actions have direct and negative impacts on wildlife survival. Humans, therefore, bear the responsibility of safeguarding and conserving natural resources; failure to do so disrupts ecological balance, ultimately leading to the degradation and loss of natural systems. Both anthropogenic and natural factors exert pressure on the biotic components of ecosystems, making life increasingly difficult for species on Earth. This pressure results in population declines and, in severe cases, species extinction. Consequently, conserving natural resources emerges as the most effective strategy for ensuring the continuity of life on the planet.

In general, wildlife conservation is a global concern that transcends ethnic, regional, and linguistic boundaries. It is recognized as a critical issue worldwide, with international conventions establishing common policies to guide conservation efforts. Wildlife conservation delivers universal benefits, including climate regulation, mitigation of global warming, maintenance of ecosystem balance, and preservation of natural resources. In line with these objectives, initiatives such as green policy development offer strategic pathways to ensure sustainable resource management for present and future generations.

Chapter Two

2. Review Literature

2.1 The major impacts threat factor of wildlife

Ethiopia (PA's) had faced major impact of threat factor of wildlife's. particularly in awash national park, according to some review literature the protected areas faced different types, pattern and extent of threats were identified(Mengistu Wale *et al.*, 2017). Globally wildlife is highly threatened by various natural and anthropogenic factors, Such as the loss of biodiversity in-general and wild fauna in particular is a comprehensive global environmental challenge, habitat loss,over exploitation of wildlife ,forest resources and climate change are the majors causes impacts of biodiversity loss.(Belay Zega, 2015; Nigus Demelash Melaku *et al.*,2017).The situation is more severe in tropical region, such as human population growth, particularly in developing countries which use high consumption of land and wild resources, which is considered as an indirect driver of biodiversity loss(Abeje kassie *et al.*, 2017).

The most important cause threats to eastern Ethiopia protected areas are increasing human population, expansion of invasive alien species, weak law enforcement, encroachment of human settlement, human wildlife conflict,lack of alternatives livelihood activities and others, (Mengistu Wale *et al.*, 2017). according to some study Babile elephant sanctuary and Yangudi-Rassa national park are the two most threatened PA's.when comparing the eastern Ethiopia(PAs) Awash national park susceptible index was 3.70 and rank of 3 according to (Mengistu Wale *et al.*, 2017), and the predominant ecosystem type is *Accacia-camiphora* and grassland. But, the biodiversity(Bio) and development(DEV) or BIODDEV-2030 initiatives aim to accelerate the mainstreaming of biodiversity in economic sectors which are the key to biodiversity and development to bend curve of biodiversity decline and promote more sustainable and resilient economies.The BIODDEV-2030 empowers 16 pilot countries with diverse ecological, economic, political and institutional contexts to catalyse voluntary national and sectorial commitments for biodiversity to reduce pressures over the next decades.The project

funded by the French development Agency(AFD),coordinated by expertise France, and implemented by international union of conservation of nature(IUCN) and world wildlife fund (WWF). France in 8 countries each, Ethiopia is among the 8 countries where BIODIV-2030 is implemented by the IUCN, aims to initiate and facilitate tangible, voluntary national and sectorial commitments to reduce pressure on biodiversity over the next decades, such voluntary contribution will be a big step towards building ambitious common goals to halt the decline in biodiversity by 2030 and restore biodiversity by 2050.(Mekebeb Tessema *et al.*,2022).

2.2 The major cause of impacts of threat factors

According to some review literature's shows for-example twelve majors threat factors operating in the five PA's were identified, from five (PA) 39% of the threat factor were operating at higher level than the average relative threat factor susceptible index score or(RTFSI), of these poaching, subsistence farming and overgrazing being the three top severe threats, namely, Babilie elephant sanctuary, Kafta sheraro and Omo(NP) appeared to be susceptible to the majority of threat factors identified.The underling cause of the threat factors were almost similar across the (PA),included several factors such as political,socioeconomic and ecological.(Mekebeb eshetu *et al.*, 2019). Awash and Nechisar national-park are the biggner protected areas in Ethiopia, it is the oldest national park in Ethiopia history, contain biological diversity of richness and conservation challenges(Young , 2012). Even-though Awash national park is legally gazzeted in 1969 E.C.The park is still has many problems, the most important Awash national park threats include grazing by domestic animals, shortage of funding for conservation, expansion of invasive alien species, weak low enforcement, encroachment of human settlement, human wildlife conflict and lack of alternative livelihood activities for the community(Malede Birhan and Girma Gebreyes, 2015). Therefore it has been facing a great challenge in protecting the continuous decline of both faunas and floral of Awash national park(Solomon, 2014). while illegal activities like illegal fishing, fire, fuel-wood collection, charcoal-wood production, deforestation, livestock grazing, poaching and settlement are the major threat to NSNP(Solomon and Dereje , 2015).

Awash national park(ANP) , it was the first national park to be established in the country and only one of the two gazetted national parks in Ethiopia(Blower, 1968). It was established in 1966 and gazetted in 1969(IBC, 2007). Awash national park previously had an area of 760km² ,but since 2002 it was reduced to 598km²(Yirmed and Girum, 2013) according to Bikila workineh, Which is characterized by semi arid range land ecosystem(Zewdu Tessema *et al.*,2012). At the time of establishment the park was given a classification of " a strict conservation area" and defined as excluding all kinds of human use in the area like settlement, exploitation of natural resources and grazing(Moore, 1982). Awash national park is one of the most important conservation areas of Ethiopia.The park is found in the Great Rift valley region of Ethiopia, it is situated between 8 40' and 9 9' North and 39 50' to 40 10' East at about 225km to the south east of Addis Abeba(Tefera , 2015). The altitude of the park ranges from about 712m at its lowest point at Sabure to its highest point at 2007m a.s.l . At the peak of the mount Fentale and average annual rainfall is 619mm and the park has relatively hot temperature which varies from 22^o C at night to 42^oC during the day. It has a savanna ecosystem and contains variety of endemic , rare and endangered wildlife resources.The Awash national park was designed to protect these natural heritages that have national and international values(Habtamu, 2014).

The flora diversity of Awash national park; from the nine vegetation types of Ethiopia, the vegetation type of (ANP) is classified as *Acacia cammiphora*, woodland(Sebsebe and Friis , 2009). The total abundance of woody species in the park is not influenced by grazing pressure(Tessema *et al.* , 2011).There are 8 major vegetation types dominated by grasses and *Acacia* species(Jacobs and Schloeder , 1993; Solomon, 2014 ; Tefera , 2015). Fauna diversity and trends; Awash national park was protected firstly as a private hunting reserve for the majesty of Emperor Haile Selassie I(Petrides ,1972) and was designed to protect wild animals, such as Beisa oryx(*Oryx beisa*), Lesser kudu(*Tragelaphus imberbis*), Soemmering's gazelle(*Gazella soemmerings*), Hamadryas baboon, (*Papio hamadryas*) and Swanes Hartebeest(*Alcelaphus biselaphus swaynei*). Beisa oryx(*Oryx beisa*) is the flagship species which is commonly found in Illalsala grassland and wooded grassland of the park year round. Moreover, ANP is home to five

vulnerable Animal species,(Lesser horseshoe bat(*Rhinolophus Liposideross minimus*); Trident leaf-nosed bat(*Asollia patrizzi*); spot-necked otter(*Lutra macuricollis*), lion (*Panthera leo*) and soemmering's gazelle(*Gazzele soemmering's*) (Jacobs and Schloeder , 1993). In the past many years Awash national park supports had at least 81 species of animals, and 453 species of birds and 43 species of reptiles but, the exact figure of species of Amphibians and Invertebrates in the park is unknown(Jacobs and Schloeder , 1993)

After 20 years re-assessment the status of ANP wild animals has changed, and harbours 78 mammals and more than 472 bird species, including six endemic species(Yirmed and Girum, 2013) As reviewed by Bikila Workineh. Endemic species; are that only found in particular area and nowhere else in the worlds, as a result, they need more conservation concerns, because they are not wide spread and may be confined to only one or two protected area(IUCN, 2001). Mammals; according to (Petrides ,1961), the endemic mammals in Awash national park were Swayne's Hartebeest(*Alcellaphus biselaphus Swaynei*) which had totally absent after 1961. Although more endemic species of birds have been added to Ethiopia, but, until now total of 24 endemic species of birds are registered (Weldemariam Tesfahunegn ,2016). This list combine with the status of IUCN and distribution of the species for serious conservation concerns(IUCN and UNEP- WCMC, 2014). ANP comprises 6 endemic Bird species, these are Wattleed ibis(*Bostrychia carunculata*), Black-winged love bird (*Agaporuis taranta*), Banded barbet(*Lybiusum datus*), Golden-backed wood pecker(*Dendropicas abyssinicus*), White-billed starling(*Onychognathus albirostris*) and Thick-billed raven(*Corvus crossirostris*) (Weldemariam Tesfahunegn, 2016). The status of large wild animals; It includes 31 large animal species, among these(30 Mammals and one- Bird species) during its establishment. However the existence of these animals were changed after 40 years period assessment. The number and species richness of the wild mammals were greatly reduced when compared the study of Robertson (1968) with (Alemayehu Molla *et al.* ,2008) study. Those Gravy's zebra, Bush buck, Leopard, cheetah, ostrich, Giraffe, Grey duiker were totally absent. Moreover, after two years assessment of large mammals available census data indicate that the number of Bisa Oryx (*Oryx bisa*) and

soemmering's gazelle (*Gazella soemmering's*) population has declined between 2008 and 2010.

Thirteen potential threat that affect the biodiversity of eastern Ethiopia were identified. The most important cause of the threat factors include, grazing by domestic animals, shortage of funding, increase human population growth, expansion of invasive alien species, weak law enforcement, encroachment of human settlement, human wildlife conflict, lack of alternatives livelihood activities and others.

In addition; the causes of the major impacts of threat factor were;

1. Policy factors are among the underlying cause for ineffectiveness of (PA) management as reviewed (Mekbebe Eshetu *et al.*, 2019).
2. Rapidly growing of human population and consequently increasing demand of natural resources for subsistence use(IBC, 2005; Vreugdenhil., *et al*/2012)As cited by Mekibeb Tessema.
3. Anthropogenic factor directly affect wildlife of country directly through poaching and indirectly by causing habitat loss and fragmentation, such activities results decline in both number and distributional ranges of wildlife in the country, Such as, Elephants(*Loxodonta africana*), Ethio-wolf(*Canis simensis*), Mountain nyala(*Tragelaphus buxtoni*) and Walia ibex(*Capra walie*) (Asefa, 2008; EWCA, 2015; Mengistu Wale *et al.*, 2017).
4. Lack of information on the nature and severity of threats across the protected areas of Ethiopia has led managers to apply the same threat mitigation strategies(Aseffa Admassie *et al.*, 2015; Mengistu Wale *et al.*, 2017; Wolde Gebre Chufa , 2018). So, the cumulative effect of biodiversity degradation brought about by human-induced threats had contributed to continued decline in ecosystem functioning, processes and ecosystem service delivery of the (PA).for example drying out of perennial rivers, land degradation, erosion, flooding and climate change (IBC, 2005; Mengistu Wale *et al.*, 2017). From the most threat factors shown below according to (Mengistu Wale, *et al.*, 2017) were ;

1. grazing by domestic animals was the highest(0.86)(RTFSI)threat factor index in eastern Ethiopia (PA).

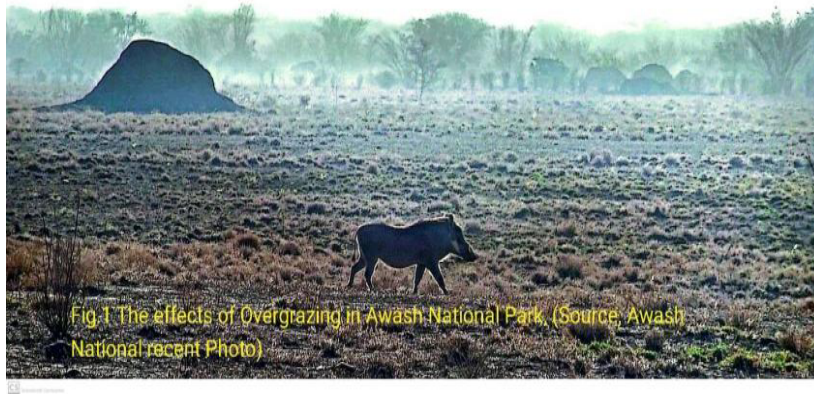


Figure.1The Effects of Overgrazing in ANP, (Source; Awash National Park, recent photo)

2. Shortage of funding for (PA) management affect biodiversity conservation at(0.83) of RTFSI eastern Ethiopia (PA) As reviewed by (Mengistu.Wale, *et al.*,2017).

3. Destruction of wild animals habitat as a result of increasing of human population, (0.79)(RTFSI) of eastern Ethiopia protected areas, According to (Mengistu.Wale, *et al.*,2017).

4. Lack of alternatives livelihood activities is 0.79(RTFSI) in eastern Ethiopia(PA), as are viewed (Mengistu Wale, *et al.*,2017).

5. Encroachment of human settlement in and around the eastern Ethiopia (PA) is at 0.77 RTFS, based on (Mengistu Wale *et al.*,2017).

6. Lack of well-organized law enforcement in eastern Ethiopia as the view of (PA) at 0.77 (RTFSI), as indicated in (Mengistu.Wale *et al.*, 2017).

2.2.1 Population growth

As the population increases the requirement of peoples will increase for house construction, wood infrastructure, firewood and selling the some body part of Wild animals all this pressured by population growth, (Tesfaye Hundesa, 1992 ; WLCO 1992), Destruction of Wild animals habitats as a result of human population growth (Mengistu

Wale *et al.*, 2017)

2.2.2 Poverty

This is one of the threat factor of wildlife in Ethiopia protected areas, such as the way of getting money by selling the different body parts of wildlife(Tesfaye hundessa, WLCO 1992) and lack of alternative livelihood activities(Mengistu.Wale *et al.*, 2017). BIODIV 2030 supporting Ethiopia vision plan to becoming a climate resilient, middle income economy by 2025, this project aims to identify key biodiversity threats and to achievement of revised vision of Ethiopia (NBSAP), it conserve, restore and value biodiversity and ecosystem of the country, maintaining rich biodiversity and ecosystem that deliver benefit to all Ethiopians peoples, as review (Mekibeb Tessema *et al.*, 2022).

2.2.3 Human Wildlife Conflict

Ethiopia protected area faced many challenge one is human wildlife conflicts, due to expansion of land use for agricultural needs both crop cultivation and livestock population, the study on semen mountain national park, indicated that the population of walia ibex(*Capra wale*) and their habitat has decreased due to agricultural expansion, (Mesele Yihune *et al.*, 2017). Human wildlife conflict is on the rise in several of Ethiopia National park, as a result of subsistence hunting, habitat loss from deforestation, encroachment of incompatible land uses and uncontrolled fires. Mainly the expansion of Agriculture, livestock encroachment, deforestation, illegal fire, and an increase human population have been often cited as the major cause of bird habitat degradation, fragmentation, and loss in Ethiopia, ultimately affecting the survival of wildlife (Demeke datico, Lema tiki, Challenges of human settlement on wildlife in Bale mountain national park, south east Ethiopia, International journal of Biodiversity and conservation, 2019).Human wildlife conflict could be particularly series in conserved areas where peoples live in close association(Misganaw Tamirat *et al.*,2020). These creates conservation efforts are facing substantial challenges (Bezihalem Nibret *et al.*, 2017). For instance, when carnivores kill livestock peoples frequently retaliate against carnivores they perceive to be responsible for the losses, this in turn threatening the persistence of carnivore population (Israel Sebsebe, 2022; Misganaw Tamirat, 2024).

This case also present in Afar peoples, they are mainly livelihoods by pastoralism so they have a lot of cattle production, and they were eaten by population of lion as a result the peoples will retaliate the carnivores. Several studies had revealed that the intensity and economic losses due to livestock predation vary widely among areas. For instance, in Ethiopia there was total of 29,207 USD losses in senekela Swayne's hartebeest sanctuary due to livestock predation over three year period (Misganaw Tamirat *et al.*, 2020). Total of 704 livestock were reported to have been killed by wild carnivores, mainly spotted hyenas(*crocuta crocuta*), Leopards(*Panthera pardus*) and African wolves(*Canis lupaster*) in bale mountain national park, southern Ethiopia, which caused an estimated 13054 USD in economic losses(Anagaw Atickem *et al.*, 2010).

Chapter Three

3. Materials and Methods

3.1 Description of the study area

Awash national park was the first(NP) to be established in the country and only one of the two gazetted national park in Ethiopia(Blower, 1968).It was established in1966 and gazetted in1969(IBC, 2007). ANP previously had an area of 760km² but since 2002 it was reduced to 598km² (Yirmed and Girum, 2013), As cited in Bikila Workineh which is characterized by semi-arid range land ecosystem, At the time of establishment the park was given classification of "strict conservation area" and excluding all kinds of human use in the area like settlement, exploitation of natural resources and grazing (Moore, 1982). Awash national park is one of the most important conservation areas of Ethiopia. It is found in the Great Rift Valley region of Ethiopia. It is situated between 8 40' and 9 9' north and 39 50' to 40 10' east at about 225 km to the south east of Addis Ababa,(Tefera , 2015). The altitudes of the park ranges from about 712m at its lowest point at Sabure to its highest point at 2007 m a.s.l. at the peak of mount fentale and average annual rainfall is 619mm and the park has relatively hot temperature which varies from 22^o c at nights and 42^oc during the day. It has savanna ecosystem and contains varieties of endemic, rare and endangered wildlife resources (Belay Zerga, 2015). ANP is located 225km away from Addis Ababa and situated between latitudes 8^o50' and 9^o 10' north and longitudes 39^o45' and 40^o 10' east. It established in 1966 and gazetted in 1969 as strict conservation area. Its altitude ranges from705 to 2007 m a.s.l. ANP is characterized by semi-arid climate and bi medial rainfall with the annual rainfall ranging between 400 and 700 mm, (Belay zerga, 2015). Out of the nine vegetation types of Ethiopia, the vegetation type of Awash national park is classified under Accacia-camiphora Woodland, in the Somali Masai regional center of endemism. Grassland, savanna, and shrub land dominate the park. More than 81 species of Mammals, 453species of Birds, (6 of them endemic) have been recorded in the park. ANP is home to five vulnerable species, lesser horse shoe bat, (*Rhinolophus hiposiderose minimus*), Trident leaf nosed bat, (*Asselia patrizii*), spotnecked otter, (*lutra*

macuricollis), Lion (*Panthera leo*) and Sommering gazelle(Belay zerga , 2015)

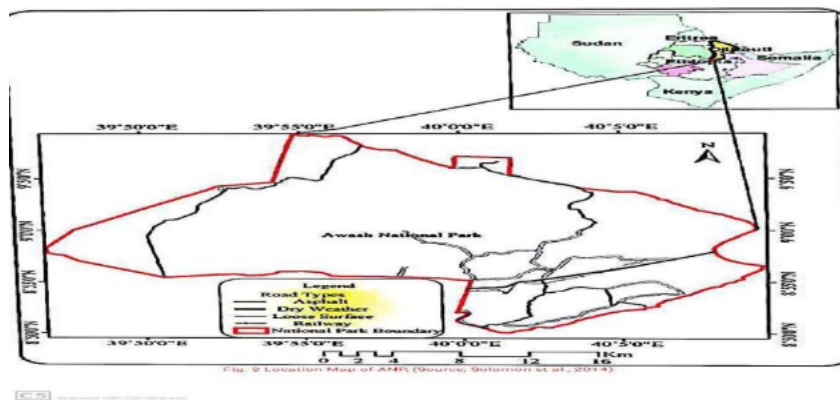


Figure. 2 Location Map of ANP, (Source; Solomon, et al., 2014)

3.1.1 Social demography

The demography of Amibera woreda, specifically werer kebele, is characterized by amix of settled agriculturalists and pastoralists. A significant portion of the population in Amibera woreda was pastoralists, with 38.69% living a nomadic lifestyle. In contrasts, 5.75% were urban dwellers .The total population of amibera woreda was reported as 63,378 in the 2007 census, with population density of 31.58 per-square kilometer.

Here is more detailed breakdown: Population; The 2007 reported a total population of 63,382 for Amibera woreda.

3.1.2 Social Demography of Amibera Woreda

Gender; The population was roughly divided with 35,378 men and 28,004 women, Urban and rural split; 28,137(44.40%) of the population were classified as urban inhabitants, while 6,555 (10.34%) were pastoralism. Households; 13,729 households were recorded, with an average of 4.6 persons per household. Religion; The religious breakdown of the population was Muslim(68.6%) orthodox Christian(21.2%) and protestant(9.18%). Pastoralism; A significant portion of the population 38.9% practices trans-human pastoralism, with livestock such-as, cattle's, camel's, goats, and sheep's being central to their livelihood.(Amibera woreda 2007 census).

3.1.3. Vegetation type

The vegetation type of (ANP) is classified as acacia-camphorwood land (Sebsebe Demissew and Friis IB, 2009) in the Somali-Massai regional center of endemism in Africa (White, 1983). The bush land and woodland are most commonly found vegetation types in areas with shallow and soils and alluvial soils (Jacobs and Schloeder, 1993). The vegetation is dominated by grass, shrubs and acacia woodland that are well adapted to periods of long drought (Abule *et al.*, 2005; Sebsebe and Friis 2009), the total abundance of woody species in the park is not influenced by grazing pressure (Belay Zerga, 2015).

3.1.4. Fauna diversity

(ANP); was protected firstly as a private hunting reserves for the majesty of emperor Haile Selassie I (Petrides 1961) and was designed to protect wild-animals such as Beisa oryx (*Oryx beisa*), Lesser kudu (*Tragelaphus imberbis*), Sommering's gazella (*Gazella sommeringi*), Hamadras baboon (*Papio hamadryas*), and swan's hartebeest (*Alcelaphus biselaphus swaynei*). Beisa oryx (*Oryx beisa*) is the flagship species which is commonly found in Illalsala grass land and wooded grassland of the park year round. Moreover, (ANP) is the home to five vulnerable animal species Lesser horseshoe bat (*Rhinolophus hipposideros minimus*); Trident leaf-nosed bat (*Asellia patrizii*), spot necked otter (*Lutramacuricollis*), lion (*Panthera leo*) and Sommering's gazella (*Gazella sommeringi*) (Jacobs and Schloeder, 1993; IUCN, 2022). (ANP); supports had at least 81 species of mammals, 453 species of birds and 43 species of reptiles but the exact figure of species of Amphibians and invertebrates in the park is unknown (Jacobs and Schloeder, 1993), after 20 years reassessment the status of ANP wild animals has changed and harbors 78 mammals and more than 472 bird species, including six endemic species (Yirmed and Girum, 2013) as cited in Bikila workneh. Endemic species are those that are found only in one or two protected areas (IUCN, 2001). Mammals; in (ANP) according to (Petrides, 1961) endemic Mammals were Swayne's Hartebeest (*Alcelaphus biselaphus swaynei*) which had totally absent after 1966. Birds; in (ANP) more endemic

species of birds have been added to Ethiopia protected areas, but until now a total of 24 endemic species of birds are registered(Weldemariam Tesfahuny , 2016).This list combines with the status of IUCN and distribution of the species for series conservation concern(IUCN and UNEP-WCMC,2014). ANP comprises 6-endemic bird species these are Wattled ibis(*Bostrichia carunculata*), black-winged lovebird(*Agaporis taranta*), Banded barbet(*Lybiusun dotus*), Golden backed-wood pecker(*Dendropicos abyssinicus*), White-billed starling(*Onychognathus albirostris*) and Thick-billed raven(*Corvus crassirostris*), (Woldemariam Tesfahunegny, 2016).Status of large wild animals were had 31 large animals (30 mammals and one bird species), during its establishment.However the existence of these animals were changed after 40 year period assessment.The number and species richness of the wild-mammals was greatly reduced when compared the study of Robertson(1968) with (Alemayehu Molla *et al.*, 2008) study.Thus Grevy's zebra, Bush-buck, Leopard, Cheetah, Ostrich, Giraffe Greyduiker were totally absent.Moreover, after two y assessment of large mammals available census data indicate that the number of Bisa oryx(*Oryx beisa*) and Sommerig's gazella(*Gazella sommeringi*) population has declined between 2008 and 2010(Tefera , 2015).

3.2 Methodology

3.2.1 Study design

The impacts of major threat factors of wildlife can be asses by using different way of scientific methods, like using both quantitative and qualitative data collecting approaches to assess the majors , common, and severity of impacts of threat factors by using primary and secondary data collecting methods.The primary data collected by strata sampling and purposive sampling techniques taken based on the professional levels, like teachers, Agriculture, health, sector office, park guarder, wardens, park manager and others from the population that lives nearest to the Awash national park and secondary data collected from park office manager files , store file, books, journals, reports and seminar those source had supported more the study.

First, preliminary survey was carried out to identify the major impacts of threatening

factors from different sources that previously identified threat factors existing in the study areas. The study tried to gathering important information by questioner, observation and interview about the major impacts of threatening factors of wildlife when selected.

To carry the study was used strata sampling and purposive sampling techniques based on the professional level of the society lives around the park, like teachers, Agricultural, health, stakeholder, park manager, warden, guarder and others.

3.2.2 Sampling techniques

Random sampling and purposive Sampling was used, which was stratified random sampling, Stearate sampling and purposive sampling methods was used to gather information from the society found near to the park areas, which was six group selected each group had different members of respondents then sixty key information gathered from the respondents using strata non proportional sampling and purposive Sampling techniques from the total population.

3.2.3 Sampling procedure

The population was divided in to sub-group chosen by the researcher based on the type of professionalism level of the society, like teacher group, Agricultural group, health group, park office managers, park warden and others. The strata sampling could be proportional and no proportional data sampling but, now this study was used non proportional data sampling and purposive Sampling techniques, because both methods used based on mostly the educational level and it had not negative effect using non-proportional data sampling techniques on the result of the studies.

3.2.4 Data collection procedure

The study was used questioner list, open and closed questioner, observation, interviews and secondary data collection methods. Data was collected by questioner list, open and closed questioner, during the data collection the study gathered data by physically contact with the respondents by giving guideline to how to fill the questioner and told them. The purpose of the study to get facts, by questioner list, open and closed questioner by following each step of filling the data.

3.2.5 Statistical Analysis

According to kiringe and okello, (2007) A tally of the major cause and impacts of threatening factors were identified from the protected area of Awash national park by non-proportional strata random sampling techniques and the proportion of the major cause and impacts of threatening factors, who is responsible to wildlife conservation, the common impacts of the threat, their prevention measure, has wildlife benefit to society, what was the benefit of wildlife, to whom, is there any wildlife reduced in number, and finally is there any wildlife extinct in two or three years ago(recently), all these sum of the data was considered as the measure of the protected area susceptibility index(PASI) to the threat factors.

3.2.6. Sample size taken from the Population as follows;

$n = \text{Total population} / 1 + N(e^2)$ $e^2 = \text{margin of errors}$

$N = \text{Total population of woreda}$

$n = \text{sample of kebele of woreda}$

$n = N / 1 + N(e^2) = 63382 / 1 + (63382)(0.05^2)$

$n = 63382 / 1 + 63382 * 0.0025$

$n = 397.49 = \text{sample of total population}$

Therefore, sample size kebele, $n1 = n1 / N * n = 9500 / 63382 * 397.49$, $n1 = \text{sample of one kebele were, approximately, 60}$

Table 1; Jop Status Sample of data

Sex	R/N	Teacher	Agricultural	Health	Sector	others
Male	43	15	8	7	4	6
Female	17	5	6	3	2	4
Total	60	20	14	10	6	10

Table .2 The Age Status Sample of data were, as follows

Sex	<u>No</u>	15-20	21-25	26-31	32-37	>=38
Male	43	6	8	10	9	10
Female	17	2	3	3	1	8
Total	60	8	11	13	10	18

3.2.7. Expected outcomes

The findings of this study underscore that wildlife conservation yields significant social, political, and economic benefits at the national level. These benefits can be realized through the collaborative efforts of all stakeholders both within and beyond the boundaries of the protected area acting as responsible citizens. The conservation and sustainable management of wildlife contribute to economic growth through tourism revenue, provide recreational opportunities, and maintain ecological balance by sustaining both biotic and abiotic components of the environment. This, in turn, supports the provision of clean air, climate regulation, and the prevention of drought and soil erosion. Moreover, wildlife-based tourism generates employment opportunities for local communities through hospitality and related services.

In addition, the study addresses gaps in public knowledge regarding the ecological and socioeconomic value of wildlife, thereby promoting greater awareness and commitment to conservation. Wildlife conservation holds immense significance for Ethiopian society at all levels, as the country is home to a high diversity of species, including many endemics, which are integral to its national identity and provide geopolitical advantage. It is therefore imperative to conserve wildlife as a natural heritage and invaluable resource. Although Ethiopia is endowed with exceptional biodiversity, these resources face the risk of extinction due to adverse human activities. Such losses would disrupt the natural balance making the continued existence of life from microorganisms to large organisms on earth increasingly difficult.

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Chapter Four

4. Result

Eastern Ethiopia protected area especially, Awash national park had faced many threat factors, the study would overview these the major cause, impacts and the common threat factor of Awash national park and their impacts to wildlife directly and indirectly would affect the economic development, the climate change, nature unbalancing and others impacts had occurred in the biotic as well as abiotic component of the environment. Here, the study had presented in the table and figure form the cause of the major impacts of threat factors and their severity rank in awash national park.

As presented in table 3. below the ranking of threats by severity indicates that charcoal production is perceived by respondents as the most critical threat to wildlife in Awash National Park (Rank 1). This is followed by habitat degradation resulting from house construction (207 respondents, Rank 2), expansion of agricultural land (195 respondents, Rank 3), overgrazing (189 respondents, Rank 4), natural factors such as drought and climate variability (174 respondents, Rank 5), and wildlife mortality due to car accidents (153 respondents, Rank 6)

If we take the total respondents as the sum of all tallies:

$$\text{Total} = 210 + 207 + 195 + 189 + 174 + 153 = 1,128$$

Table 3; The Major threat factors to Wildlife in Awash National Park ;Percentage of Respondents per Threat

Threat Factor	Respondents	% of Total Respondents
Charcoal production	210	18.61%
Habitat degradation for	207	18.35%

house building		
Expansion of agricultural land	195	17.29%
Overgrazing	189	16.76%
Natural factors	174	15.43%
Car accidents	153	13.56%

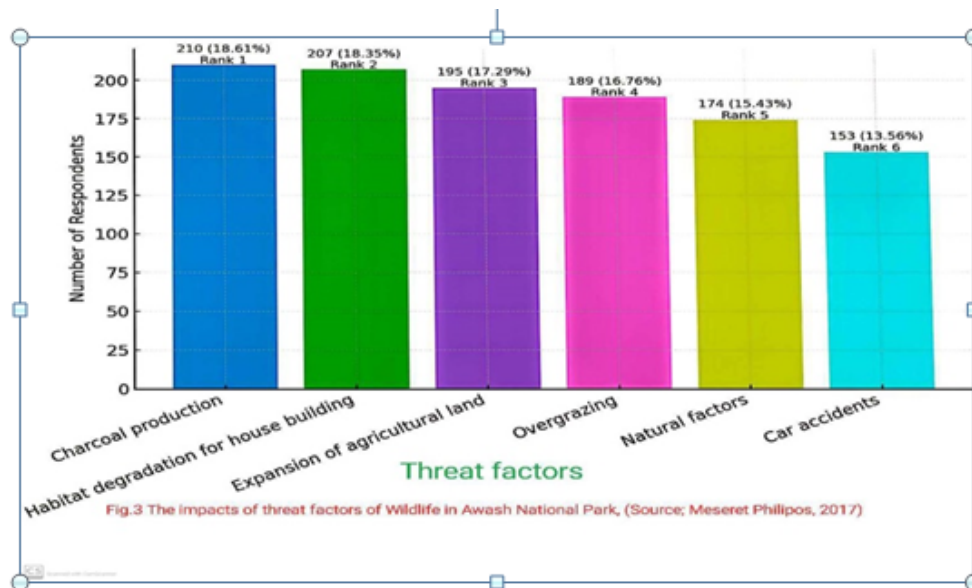


Figure 3.The impact of threat factors of wildlife in Awash National park (source: Meseret Philipos, 2017)

As table 4 results show below; that the Wildlife Conservation Authority received the highest number of responses (207, 37.5%), placing it first in perceived responsibility for wildlife protection. The Community ranked second (195 responses, 35.3%), indicating

that local residents are also viewed as key contributors to conservation. Woreda Stakeholders ranked third (183 responses, 33.1%), representing a slightly smaller yet still substantial share.

Table. 4 who are responsible for Wildlife Conservation

Responsible	Response	Rank
Woreda Stakeholder	183	3
Wildlife Conservation Authority	207	1
Community	195	2

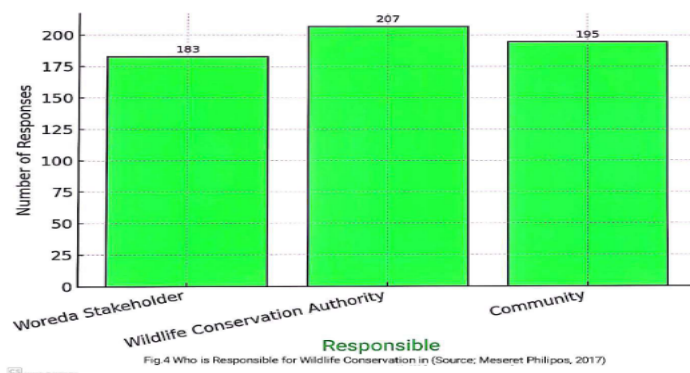


Figure.4 who is responsible for Wildlife conservation in ANP (source: Meseret Philipos, 2017)

As shown below in table 5. The survey results indicate that respondents ranked foreign tourists as the primary beneficiaries of wildlife (207 weighted responses). This was followed by government and the Wildlife Conservation Authority, which received equal weighted scores (204 each), and then the community (189). Overall, the data reveal only minor differences in perceived benefits among the community, government, and Wildlife Conservation Authority, reflecting the view that wildlife is a common natural asset. In some cases, community members have directly benefited through employment opportunities in tourism offices, non-governmental organizations, and private enterprises.

Table.5 Benefits of Wildlife

Benefit Recipient	Respondents	Rank
Government	204	2
Community	189	3
Wildlife Conservation Authority	204	2
Foreign tourists	207	1

Total respondents (sum of tallies) = 204 + 189 + 204 + 207 = 804

Ranking (from most to least benefit)

1. Foreign tourists – 207 respondents (25.7%)
2. Government – 204 respondents (25.4%)
3. Wildlife Conservation Authority – 204 respondents (25.4%)
4. Community – 189 respondents (23.5%)

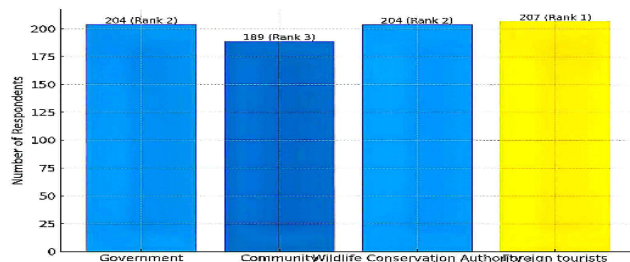


Fig. 5 Who is Benefited from Wildlife Conservation (Source: Meseret Philipos, 2017)

Figure 5. who is benefited from Wildlife conservation (source: Meseret Philipos, 2017).

According to table 6. below Shows ; which presents the causes and impacts of wildlife threat factors, charcoal production ranked highest with a weighted score of 30, followed by overgrazing (27). Overgrazing was also linked to the transmission of diseases between domestic animals and wildlife in both directions. Car accidents shared the same score (27). Drought received a weight of 21, while house construction and farmland expansion each scored 15. Fire incidents scored 12, urbanization 9, diseases

6, and flooding, lack of awareness, and civil war each had the same weight of 3, these scores reflect their severity rankings.

Table 6. below Shows ; which presents the causes and impacts of wildlife threat factors,in (ANP) as, respondents;

Cause factor	Tally of respondents	Severity rank
1.Charcoal production	30	1
2. House making	15	4
3. Expansion of Agricultural land	15	4
4. Drought	21	3
5. Firing	12	5
6. Deases	6	7
7. Flooding	3	8
8. Overgrazing	27	2
9. Car accident	27	2
10. Urbanization	9	6
11. Civil war	3	8
12. Lack of awareness	3	8
13. Poaching	15	4

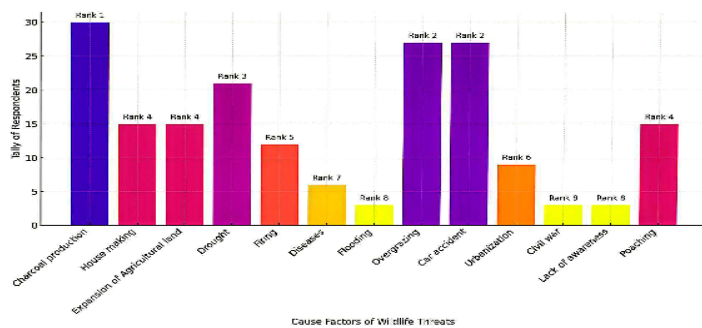


Fig. 6. Causes and Impacts of Threat Factors of Wildlife Conservation (Source: Meseret Philipos, 2017)

Figure. 6 causes and impacts of threat factors of Wildlife conservation in ANP (source: Meseret Philipos, 2017)

Based on Table 7.below Shows; here's the analysis:

The results show that law enforcement in protected areas ranks first (39 responses, 35.8%), making it the most significant measure for preventing wildlife threats in ANP. This reflects the critical role of legal frameworks and strict protection in mitigating illegal activities like poaching, charcoal production, and habitat encroachment. Raising community awareness ranks second (33 responses, 30.3%), emphasizing that knowledge and education are essential in changing attitudes and behaviors toward wildlife conservation. Awareness efforts can also strengthen cooperation between local residents and authorities. Involvement of all individuals comes third (27 responses, 24.8%), indicating that while personal responsibility is valued, it is slightly less prioritized compared to institutional actions and awareness campaigns. This suggests the need to better mobilize individuals as active conservation participants. Speed breakers are ranked last (3 responses, 2.8%), showing they are seen as the least impact measure in addressing the broader threats to wildlife—though still important for reducing road-related animal deaths.

Table.7 how can prevent the major threat factor of wildlife;

Prevention	Tally of respondents	Rank
By the role of individual	27	3
Law enforcement	39	1
Giving awareness	33	2
Speed break	3	4

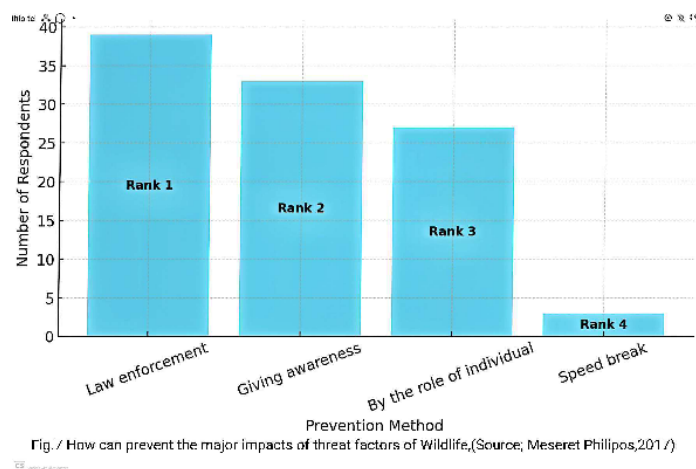


Figure. 7 How can prevent the major impacts of threat factors of wildlife conservation in ANP (source: Meseret Philipos, 2017)

As shown in table 8. Below, respondents identified overgrazing and charcoal production as the most common and widespread wildlife threat factors, each receiving the highest weight (36). These were followed by firewood collection and house building (both 27), car accidents (21), poaching and agricultural expansion (both 18), urbanization (15) according to natural factors (12), and veterinary problems (6). In Awash National Park specifically, overgrazing, charcoal production, settlement expansion, and firewood collection emerged as the most prevalent impacts on wildlife.

Table.8 The common and wide impacts of threat factor of wildlife in(ANP)

Factors	weight of response	severity rank
Overgrazing	36	1
Charcoal production	36	1
Firewood	27	2
House building	27	2
Agricultural requiring	18	4
Poaching	18	4
Car accident	21	3
Veterinary problems	6	7
Urbanization	15	5
Natural factor	12	6

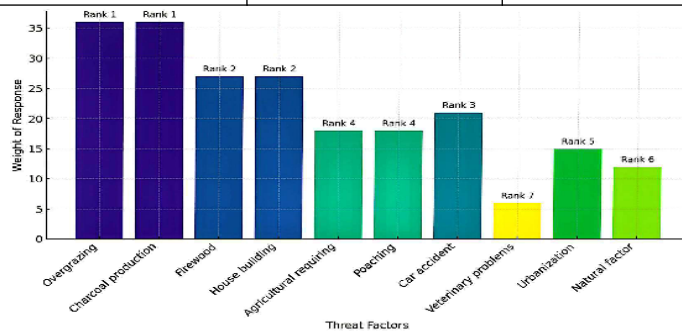


Fig. 6. Common and Wide Impacts of Threat Factors of Wildlife
(Source: Meseret Philipos, 2017)

Figure.8 Common and wide impacts of threat factors of wildlife in ANP (source: Meseret Philipos, 2017)

Chapter Five

5. Discussion

The survey findings across tables 1–8 provide a holistic picture of the major threats to wildlife, the perceived responsibility for conservation, the distribution of benefits, the root causes and impacts of threats, preferred prevention measures, and the most common ongoing impacts in Awash National Park (ANP).

According to table.1 data analysis shows; most of the respondents' job status belongs to Teachers focus group discussion, followed by Agriculturalist, health, others and sectors respectively, this intensifies the data collection to be reliable. Therefore, age status and job status sample selected by based on strata sampling and purposive sampling techniques because of rationale of respondents, based on (Genet Yohannes *et al.*, 2024).

According to table.2 shows; the Age status of the sample collected, mostly were greater than or equal to thirty-eight(≥ 38), followed by twenty-six to thirty-one(26-31), thirty-two to thirty-seven(32-37), twenty-one to twenty-five(21-25) and fifteen to twenty(15-20) respectively, this intensifies the data collection to be reliable, because the data depends on purposive and strata sampling techniques to get valid information there by rationality and insightfully, According to (Genet Yohannes *et al.*, 2024)

Major threats to Wildlife; from table 3, charcoal production emerged as the most severe and most frequently mentioned threat (18.61% of all responses), closely followed by habitat degradation for house building (18.35%). Expansion of agricultural land (17.29%) and overgrazing (16.76%) also featured prominently, while natural factors (15.43%) and car accidents (13.56%) were less frequently cited. The dominance of human-driven factors in the top ranks aligns with earlier findings by (Belay Zerga, 2015); Mengistu Wale *et al.*, 2017) highlighting the extent of anthropogenic pressure on wildlife habitats. While natural causes do contribute, they are overshadowed by deforestation, settlement expansion, and land-use changes. Notably, even the lowest-ranked factor

road wildlife collisions was mentioned by over one in eight respondents, indicating a non-trivial impact. Perceived Responsibility for Wildlife Conservation.

Charcoal production emerged as both the top-ranked and most frequently mentioned threat, highlighting significant human-driven habitat loss and deforestation. Habitat degradation for house construction ranked nearly as high, reflecting direct competition between human settlement expansion and wildlife habitat. Agricultural expansion and overgrazing had comparable impacts, underscoring that land-use changes for food production are a major driver of wildlife decline. Natural factors ranked lower than human activities, indicating that anthropogenic causes dominate. Although car accidents were the least severe, they still accounted for over 13% of mentions, showing that road-wildlife conflicts remain a notable concern, According to (Mengistu Wale *et al.*, 2017; Belay Zerga, 2015).

According to table 4 , shows that respondents place primary responsibility on the Wildlife Conservation Authority (37.5%), followed by local communities (35.3%) and Woreda stakeholders (33.1%). This pattern reflects strong recognition of institutional authority but also emphasizes the vital role of community engagement, particularly given their proximity to threats like overgrazing and charcoal production. The relatively lower but still significant perception of Woreda stakeholder responsibility may indicate lesser visibility or involvement compared with national authorities and local residents. These findings align with (Belay Zega, 2015; Mekbebe Tessema *et al.* , (2022) and others, who stress shared stewardship between institutions and communities. Distribution of Wildlife Benefits, According to table 5, foreign tourists were perceived as the primary beneficiaries of wildlife (25.7%), slightly ahead of the government and Wildlife Conservation Authority (both 25.4%), with the community ranking last (23.5%). Although the differences are small, they point to a perception that local communities benefit less directly from wildlife compared to external actors. This suggests a potential gap in benefit-sharing mechanisms. Nonetheless, the data also reflect the view echoed in the Convention on World Wildlife Conservation that wildlife is a shared natural asset whose benefits extend beyond local and national boundaries, contributing to ecosystem stability and climate regulation.

Overall, the findings point to strong recognition of institutional responsibility, with the Wildlife Conservation Authority seen as the primary custodian of wildlife conservation. The high score for communities underscores the value placed on local involvement, likely reflecting their close link to challenges such as overgrazing and charcoal production. Woreda Stakeholders, though still important, scored slightly lower, which may suggest less direct engagement or visibility compared with national authorities and local communities. Since all three groups received over 30% of responses, the results emphasize that wildlife conservation is widely perceived as a collective responsibility rather than the duty of a single actor, as many review, (Belay Zerga, 2015; Mengistu Wale *et al.*, 2017; Mekbebe Tessema *et al.*, 2022)

As shown in table 5. The survey results indicate that respondents ranked foreign tourists as the primary beneficiaries of wildlife (207 weighted responses). This was followed by government and the Wildlife Conservation Authority, which received equal weighted scores (204 each), and then the community (189). Overall, the data reveal only minor differences in perceived benefits among the community, government, and Wildlife Conservation Authority, reflecting the view that wildlife is a common natural asset. In some cases, community members have directly benefited through employment opportunities in tourism offices, non-governmental organizations, and private enterprises.

In general, wildlife is regarded as the shared property of all individuals. As responsible stewards, people are encouraged to think beyond regional or linguistic divisions, recognizing it as a global and critical issue. This perspective aligns with the Convention on World Wildlife Conservation, which promotes a unified international policy for protecting wildlife. The benefits of wildlife conservation extend across borders, including contributions to climate change mitigation, global warming reduction, ecosystem balance, and the preservation of all natural resources.

Accordingly, the World International Convention on Wildlife Conservation actively works to safeguard natural resources through the development of regulations, strategic plans, and policy frameworks. Ethiopia's current green development policy is one example of

national action aligned with this global initiative, (Belay Zerga, 2015); Mengistu Wale *et al.*, 2017 ; Mekbebe Tessema *et al.*, 2022)

Causes and Impacts of Wildlife threats In table 6, charcoal production (weight = 30) and overgrazing and car accidents (both weight = 27) were ranked highest among threat causes. Drought (21) was the most severe natural factor, while house construction, farmland expansion, and poaching (all 15) highlight ongoing land-use pressures. Urbanization (9), disease outbreaks (6), and rare but impactful events like flooding, civil war, and lack of awareness (all 3) round out the list. The findings suggest that the main drivers of wildlife decline in ANP are linked to rapid population growth, livelihood pressures, and expansion into protected areas—trends consistently reported in past studies (Belay Zerga, 2015 ; Mekbebe Tessema *et al.*, 2022).

In general, the causes and impacts of wildlife threats in Awash National Park and similar protected areas — as reported in multiple reviews, are largely driven by rapid human population growth. Human encroachment into protected areas has had a profound impact on wildlife habitats and other natural resources. Local communities, seeking to sustain their households, frequently extract resources from the park through activities such as deforestation for agricultural expansion, settlement construction, charcoal production, firewood collection, and overgrazing. This is tied to the aggro-pastoral lifestyle prevalent around the park. Additionally, urban expansion and both small- and large-scale farming investments have significantly restricted the natural movement of wildlife within their habitats (Belay Zerga, 2015; Mekbebe Tessema *et al.*, 2022).

Preferred prevention measures according to table 7 , indicates that respondents prioritize law enforcement (35.8%) as the most effective prevention measure, followed by community awareness programs (30.3%). Involvement of individuals (24.8%) ranked third, while speed breakers (2.8%) were considered the least impactful though they remain relevant for reducing wildlife–vehicle collisions. This pattern suggests that respondents see formal legal action and social awareness as complementary pillars of conservation, with a need to strengthen both institutional and grassroots engagement.

Overall insight, the ranking suggests that respondents view formal protection (law enforcement) and social engagement (awareness) as the primary strategies for safeguarding wildlife in ANP. However, a balanced approach combining policy enforcement, community participation, and targeted infrastructure (like speed breakers) would offer the most comprehensive protection, According to review of (Belay zerga , 2015 ; Mengistu Wale *et al.*, (2017).

Most Common and Widespread Ongoing Threats. Finally, According to table 8 shows that overgrazing and charcoal production (both weight = 36) are currently the most prevalent threats, confirming their prominence in both perceived severity (table 3) and root causes (table 6). Firewood collection and house building (both 27) follow, while car accidents (21), agricultural expansion and poaching (both 18), urbanization (15), natural factors (12), and veterinary problems (6) also contribute. The heavy reliance on agro-pastoral livelihoods in the surrounding communities continues to fuel habitat degradation and resource extraction, a trend well documented by, similarly, (Mesele Yihune , 2017; Misganaw Tamirat *et al.* , 2020)and others. The present study primarily focused on assessing the major impacts of factors threatening wildlife in Awash National Park. In the course of the research, the principal causes of these threats were identified, along with their economic, social, and political implications at the national level. Furthermore, the study explored potential measures that could be implemented to mitigate the adverse effects of these threats on wildlife, local communities, and the country as a whole, according to both respondents and prior studies (Young , 2012 ; Belay Zerga, 2015 ; Mesele Yihune, 2017; Mengistu Wale *et al.*, 2017; Misganaw Tamirat *et al.*, 2020 ; Mekibeb Tessema, *et al.*, 2022).

Overall, the study confirms that in Awash National Park, the leading causes and major impacts of wildlife threats are overgrazing and charcoal production. This is largely because nearby communities rely heavily on aggro-pastoralism, which directly pressures wildlife habitats—findings that align with multiple previous reviews, including (Belay Zerga, 2015 ; Mengistu Wale *et al.*, 2017).

Overall Interpretation; The integrated findings reveal that, Human activities

overwhelmingly dominate the list of threats, with charcoal production, overgrazing, and settlement expansion at the forefront. Conservation responsibility is seen as shared among national authorities, communities, and local government actors. Benefit distribution is uneven, with local communities perceived to gain less than external actors like tourists. Effective solutions must combine strong law enforcement with awareness-raising to foster sustainable coexistence. The persistence of the same top threats across multiple tables indicates systemic, livelihood-linked pressures that require integrated management approaches addressing both conservation and community economic needs. These results provide a clear evidence base for prioritizing interventions that address both the ecological and socioeconomic dimensions of wildlife conservation in Awash National Park and similar ecosystems in Ethiopia.

Chapter six

6. Conclusion and Recommendation

6.1 Conclusion

The analysis of tables 1–8 demonstrates that wildlife in Awash National Park is under sustained and multifaced pressure, with human-driven activities—particularly charcoal production, overgrazing, and settlement expansion—emerging as the most critical threats. These pressures are not only persistent but also deeply tied to the livelihoods of surrounding communities, making them challenging to address through isolated measures. While natural factors such as drought also contribute to wildlife decline, their impact is overshadowed by anthropogenic drivers. The findings highlight a shared perception of conservation responsibility among the Wildlife Conservation Authority, local communities, and Woreda stakeholders, underscoring the need for collaborative management. However, the perceived imbalance in benefit distribution where local communities feel they gain less from wildlife compared to external actors points to a critical gap that may undermine conservation efforts if left unaddressed.

Preventive strategies identified by respondents, such as strengthened law enforcement and community awareness programs, indicate that both institutional action and grassroots engagement are essential for success. The recurrence of the same top threats across severity rankings, causes, and current prevalence underscores their entrenched and systemic nature.

Overall, the results call for an integrated, multi-level approach that combines effective law enforcement, equitable benefit-sharing, and sustainable livelihood alternatives. Addressing both ecological conservation and socioeconomic realities will be crucial to ensuring the long-term survival of wildlife and the integrity of Awash National Park's ecosystems.

6.2 Recommendations

Based on the integrated analysis of tables 1–8 the following recommendations are proposed to address the identified threats and ensure the long-term conservation of wildlife in Awash National Park (ANP):

1. Strengthen Law Enforcement Mechanisms

- Increase the capacity and resources of the Wildlife Conservation Authority to monitor and control illegal activities such as charcoal production, poaching, and unauthorized settlement.
- Implement stricter penalties for repeated offenses, coupled with regular patrols and surveillance using modern technologies like drones and GPS tracking.

2. Enhance Community Awareness and Education

- Develop targeted education programs that emphasize the ecological and economic value of wildlife conservation.
- Engage schools, local associations, and traditional leaders in awareness campaigns to foster long-term attitudinal change.

3. Promote Sustainable Livelihood Alternatives

- Introduce and support alternative income-generating activities such as Eco-tourism, beekeeping, and sustainable handicrafts to reduce dependence on resource-extractive practices.
- Provide microfinance schemes or cooperative-based support to help communities transition to more sustainable livelihoods.

4. Improve Benefit-Sharing Mechanisms

- Establish transparent systems to ensure local communities receive a fair share of revenue from tourism and other park-related activities.
- Prioritize community-led conservation projects funded by park revenues to build

local ownership and commitment.

5. Foster Multi-Stakeholder Collaboration

- Strengthen partnerships between the Wildlife Conservation Authority, Woreda administrations, NGOs, and community-based organizations for joint planning and implementation of conservation strategies.
- Create formal platforms for dialogue to resolve conflicts and coordinate activities across sectors.

6. Mitigate Human–Wildlife Conflict

- Introduce measures such as buffer zones, controlled grazing systems, and wildlife corridors to reduce pressure on core habitats.
- Install speed breakers and warning signs in high wildlife-crossing areas to minimize road–wildlife collisions.

7. Integrate Conservation into Local Development Planning

- Ensure that land-use planning in surrounding Woredas incorporates wildlife conservation priorities, limiting habitat fragmentation.
- Align conservation strategies with Ethiopia’s broader climate adaptation and rural development policies, By implementing these recommendations in a coordinated manner, ANP can address both the ecological threats to wildlife and the socioeconomic needs of surrounding communities, creating a more sustainable and resilient conservation framework.

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Appendix. 1 Quaternary list /ቃለመጠይቅ/

በቃለመጠይቁ መሰረት ትክክለኛውን መረጃ በመስጠት ለሚሰራው ስራ ውጤታማነት የበኩሉን ድጋፍ እንዲያደርጉልን እና ስለሚሰጡት መረጃ ከወዲሁ ከልብ እናመሰግናለን።

1. Unknown/መረጃ የለኝም/ 2. satisfactory/ዝቅተኛ/ 3. Verygood /መካከለኛ/ 4.Excellent/ ከፍተኛ/

Age group/ እድሜ/	15-20	21-25	26-31	32-37	>=38	1	2	3	4
Jop type /የስራ አይነት/	Yes /አለ/	No/ የለም/	Teachers	Health professional	Agricultural professional	Sector professional	partner	Partner	Others
Marriage/ጋብቻ/									
1. Wildlife benefit to the society/የዱር እንስሳት ለማህበረሰብ የሚሰጠው ጥቅም/									
2. The causes of the major impacts of threat factors of wildlife are/ ለዱር እንስሳት ዋና ስጋቶች ውስጥ መንስኤዎች/									
2.1 habitat degradation in the case of house building/የዱር እንስሳት መጠለያቸው መጨፍጨፍ/									
2.2 in demands of Agricultural land/ለግብርና ስራ ሲባል/									

2.3 The case of overgrazing/ ከመጠን በላይ ማሰጋጥ/									
2.4 The demands of production of charcoal/ለከሰል ምርት ሲባል/									
2.5 car accident/የመኪና አደጋዎች/									
2.6 natural factors/የተፈጥሮ አደጋዎች/									
3. Who is responsible for wildlife conservation/የዱር እንስሳት ጥበቃ የማን ሀላፊነት ነው/									
3.1 The woreda stakeholder/የወረዳ አመራሮች/									
3.2 wildlife conservation Authority/የዱርእንስሳት ጥበቃ ባለስልጣን/									
3.3 The community/ማህበረሰቡ/									
4. The benefit of wildlife is for/የዱር እንስሳት ጠቀሜታ/									
4.1 government/ ለመንግሥት/									
4.2 community/ለማህበረሰብ/									
4.3 wildlife conservation Authority/ለዱርእንስሳት ጥበቃ ባለስልጣን/									

4.4 Foreign tourists/ለውጭ ሀገር ጎብኚዎች/									
open and closed equation(Interview) Appendix - 2									
1. The cause impacts of threat factors of Wild life conservation in awash national park, are/ በአዋሽ ብሔራዊ ፓርክ ለዱር እንስሳት ዋናዋና ስጋቶች ለሚያመጣው ጉዳቶች መንስኤዎች ምንድን ናቸው? -----,-----,-----									
2, how can prevent the major threat factors of wildlife, /በአዋሽ ብሔራዊ ፓርክ ያሉ የዱር እንስሳት ዋና ዋና ስጋቶችን እንዴት መከላከል ይቻላል? -----,-----,-----									
3. The major and main common impacts of threat factor of wildlife, /ዋናዋና እና የተለመዱ በስፋት ያሉ የዱር እንስሳት ስጋቶች ና ጉዳታቸው ምን ምን ናቸው?? -----,-----,-----									
4. The benefit of wildlife is -----,-----, -----, to whom /የዱር እንስሳት ጠቀሜታ ለማን ነው ??-----,-----									
5. Have wildlife benefits, to the society/የዱር እንስሳት ለማህበረሰብ ጠቀሜታ አላቸው??.									
yes/ አዎ --- No/የለም -----									
6. Is there any wildlife reduced in number of population in awash national park,if present say yes and write their name, -----,-----,----- and if not present say No, / በአዋሽ ፓርክ ቁጥሩ እየቀነሰ ያለ የዱር እንስሳት አለ/ የለም? ካለ ስማቸውን									

ጸፍ/ፊ? _____, _____									
7. Is there any wildlife species extinct in awash national park, /በአዋሽ ብሔራዊ ፓርክ ዝርያቸው የጠፉ የዱር እንስሳት አሉ/የሉም?? ካሉ ስማቸውን ጸፍ/ፊ _____, _____									