

Historical Wildlife Policy Development and Major Wildlife Threats under the Recent Three Regimes of Ethiopia

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Abstract: This review paper was aimed to analyze the past, examine the present and forecast the future historical development of wildlife policy of Ethiopia. Moreover, through the analysis of the past and present major threats, the future fate of wildlife in Ethiopia was inferred. The review was conducted by auditing government and non-government documents and thorough review process of the various literatures, including scientific articles, review articles, country reports, proclamations, policies and strategies issued over a period of time. A qualitative historical analysis method was employed to gather and interpret data with the analytical dimension of the policy arrangement approach. The development of wildlife policy in Ethiopia has been exhibits a change and challenges under different regimes. The dynamic process of policy change in Ethiopia was due to several factors such as national political orientation, economic priorities; environmental factors such as threats on wildlife and the change in global wildlife related policy. Wildlife of the country has been faced great challenges from human influences: human settlement and encroachment into protected area, habitat conversions, fragmentation, illicit wildlife trafficking, introduction of invasive species, climate changes, disease, lack of awareness and weak law implementation due to institutional incapacity and resource limitations. The findings of this review paper confirm the need to approve strong wildlife policy to enhance the country's economic contribution from wildlife resources. Therefore, the futures of Ethiopia wildlife conservation needs to consider strengthening community-based conservation approaches, practicing of wildlife-friendly farming, regular monitoring of wildlife populations and creating atlas of Ethiopia wildlife for managing and conserving wildlife resources efficiently.

Key words: Ethiopia · Historical Development · Threats · Wildlife Policy

INTRODUCTION

State structure establishment, progress and dynamic process strongly influenced the development of wildlife policy in Ethiopia. Since restored imperial regime (1941-1974), Ethiopia has been established different state structure that went through a series of changes in policy and politics [1]. The former two regimes, the long monarchical rule of Haile sellase and the socialist dictatorship of Marxist-Leninist ideology were highly authoritarian and governed through centralized power structure [1, 2]. Currently, however, the governance of a decentralized federal policy and a democratic political process is more or less practiced.

The term wildlife under different regimes conceptualized differently. For instance, the first proclamation [3] declared “to make a provision for the preservation of game” defined wildlife as “animals which include birds, fish and their young as well as eggs.” Presently, it's defined as “any live or dead vertebrate or invertebrate animal, other than domestic animal” [4]. Mulualem and Tesfahunegny [5] defined it also as “all living organisms that are not domesticated and found in the wild.” In more general sense, however, it's cover all natural diversity, including vertebrate animals, invertebrate animals, microorganisms, fungus and plants that exist in the country Ethiopia [6].

The Ethiopian government has been established protected areas in different parts of the country for wildlife conservation and its natural habitat. Throughout the country there are many designated protected areas including National Parks, Wildlife Reserves, Sanctuary, National Forest Priority Areas, Biosphere Reserves and Community Conservation Areas [2]. Parks, sanctuaries and game reserves cover 14% of the total area of the country [7, 8]. Due to the conducive geographic, topographic and altitudinal variations; diversified habitats of the country harbored different fauna. This might be the reason for one quarter of Africa's wildlife is documented here in Ethiopia [9].

Natural resources, including wildlife are believed as the foundation of any economic development, food security and other basic necessities for the people in Ethiopia [8]. As an integral part of the livelihood development of the society; their natural, ecological and cultural values of protected areas are perceived as reasons for receiving due attention worldwide for protection. Of the values they provide to us includes: provisions of environmental services; provision of goods and direct benefits through tourism and employment [10]. In addition, they provide economic and cultural values to us. It has also a role in maintaining the ecological balance of the nature. This is not the case in Ethiopia, because they have played less substantial role in the sustainable development of our national economy. This might be due to threatening factors which are induced either environmentally or Anthropocene sources or synergistic of both sources and affect wildlife here in Ethiopia. In fact, they are the cornerstones of modern biodiversity conservation their effectiveness is low [11].

Indeed, protected areas are increasingly degraded. Notable reasons for such degrading are conversion of land and forests to subsistence and agriculture expansion and loss for fuel wood and construction. Other factors also are a growing population, unsustainable natural resource management and poor enforcement of existing legislation [8]. Climate changes, wealth and educational disparities among the nations are also some others reasons that threatened protected areas worldwide [10]. Consequently, wildlife populations have been under continuous threats [7]. Reviewing the trends of policies and strategies established during different governmental regimes of Ethiopia provides a road map to the future for knowledge-based conservation initiatives. The aim of this review article was to analyze the past, the present and infer the future fate of wildlife in Ethiopia. Specifically, (1) to review the wildlife conservation policies established under the latest three regimes; (2) to portray the current

major threats of wildlife in Ethiopia and (3) to show some possible future scenarios in area of wildlife conservation. This review article was based on auditing government and non-government documents and thorough review process of the various literature, including scientific articles, review articles, country reports, proclamations, policies and strategies issued during the last two governments and the current regime of the Ethiopia.

Historical Development of Wildlife Policy in Ethiopia:

The modern conservation policy in Ethiopia has set out during the period of Emperor Menelik II (1889-1913), against poachers and illegal hunters. In 1908, wildlife regulation was introduced and hunting of young elephants was strictly forbidden [12]. However, Ethiopia's wildlife policy has been subject to a series of changes and challenges [13, 14] (Table 1).

Wildlife Policy during the Haile Selassie regime

(1940's-1974): The first proclamation endorsed for the preservation of Game was proclaimed during the imperial regime [3] which defined wildlife as finite natural resources (Table 1). The modern conservation practice was started after Ethiopia participated in the 1962 Paris International Conference prepared by UNESCO on the issue of conservation of nature and natural resources [15]. In 1965, the Ethiopian Wildlife Conservation Organization (EWCO) was officially established to manage game reserves and National Parks, most of which were established shortly thereafter [16]. Besides, created to manage game reserves and National Parks the organization has responsibility to ensure the proper conservation and management of wildlife resources.

In realizing the roles of wildlife in various sectors an order to provide for the establishment of a wildlife conservation organization was proclaimed [17]. As an autonomous Public Authority the organization had central administration power for the achievement of its purposes and the discharge of its responsibility. The conservation efforts during the reign focused on administering conservation areas and enacting any legislation or regulations regarding conservation, protection and management of wildlife resources. Furthermore, it can also have roles in supplying license for hunting or capture of wild animals or birds and to fix and collect any fee related to wildlife and their conservation areas [17].

Since, the Imperial regime has long Monarchical ruling systems in 1972 a regulations issued to the Game proclamation of 1944 and the Wildlife Conservation Order of 1970. These regulations were cited as the "Wildlife Conservation Regulation, 1972" [18] and issued by the

Table 1: The progress of wildlife policy over different historical periods

Policy development dimension	Historical periods		
	Haile Selassie regime (1941-1974)	Derg regime (1974-1991)	FDRE regime (1991-up to present)
Ruling system of the government under each regime	Monarchical rule (Divine Right), Authoritarian and governed through centralized power structure	Socialist-Dictator (Marxist-Leninist ideology), Authoritarian and governed through centralized power structure	A decentralized federal policy and a democratic political systems
Principal Economic Policy	A kind of 'laissez-faire' (i.e. abstention by government from interfering in the workings of the free market).	A command economy	Free market economy
Wildlife policy under each regime	Proclamation No. 61/1944 to make provision or preservation of Game, Wildlife Conservation Order No. 65/1970, Wildlife Conservation Regulation Legal Notice No. 416/1972 and Wildlife Conservation (Amendment) Regulations Legal Notice No. 445/1974	Forest and Wildlife Conservation and Development Proclamation No. 192/1980	Development Conservation and Utilization of Wildlife Proclamation No. 541/2007, Ethiopian Wildlife Development and Conservation Authority Establishment Proclamation No. 575/2008, Wildlife Development, Conservation and Utilization Council of Ministers Regulation No. 163/2008
Organization /Authority	Ethiopian Wildlife Conservation Organization (EWCO), Autonomous	Forest and Wildlife Conservation and Development Authority, Semi-autonomous	Ethiopian Wildlife Conservation Authority (EWCA), Autonomous
Principal purposes or Responsibility of the organization /Authority	To preserve Game, to ensure proper conservation and management of Wildlife Resources and to establish, develop and administer wildlife Conservation areas designated to provide for the better protection of fauna and flora and for purposes of education and scientific research	To ensure the proper protection, development, rational utilization and management of forest and wildlife resources; to establish and administer wildlife conservation areas and to initiate the local community to have better and greater participation in the development, rational utilization and management of forest and wildlife resources of the country. The authority have all powers necessary for achievement of its objectives	The main purpose of the authority shall be to ensure the development, conservation and sustainable utilization of the country's wildlife resources. The authority have the powers and duties to prepare and submit to Ministry draft of wildlife policy, develop and administer wildlife conservation areas, issue hunting permits and establishment of recreational sites, control the utilization of wildlife products , to promote wildlife-based tourism and to encourage private investment
Responsible bodies for wildlife policy implementation	Ministry of Agriculture	Ministry of Agriculture	Ministry of Agriculture and Rural Development; Ministry of Culture and Tourism; Environment, Forest and Climate Changes Commissions
Wildlife Conservation areas under each regime	National Parks, Wildlife and Game reserves, Sanctuary and Controlled Hunting areas	National Parks, Game reserves, Sanctuaries, Natural forest, Afforestation areas, Controlled Hunting areas	National Parks, Wildlife reserves, Wildlife Sanctuaries, Wildlife Controlled Hunting areas, Community Wildlife Conservation Areas
Prohibitions tasks	Hunting, capture and photograph game; Illegal exportation and importation of game animals and trophies; Residence, Human occupation, Transfers of licenses and permits; Unauthorized possession of Game Animals or Trophies.	Illegal hunting; settlement in wildlife conservation areas; Grazing cattle in any wildlife conservation areas; fell trees, collect, load or transport any state forest product; remove any natural resource or commit any other act detrimental thereto.	Illegal hunting or fishing; illegal wildlife trade; possessing or transferring of weapons; Undertaking agricultural activities, grazing and water domestic animals; planting, removing, taking, damaging or transferring any plant species; setting or attempting to set fire; bee keeping or honey harvesting, removing wildlife products; constructing roads or other structures or disturbing the existing natural resources.
Penal system for breaches of any regulations made under the proclamations and regulations	Providing for penalties, not exceeding 1000 Maria Theresa dollars and confiscation of weapons, Punishable in accordance with the provisions of article 364 and other relevant provisions of penal code and confiscation of weapons	Punishment with fine from 2000 -5000 and imprisonment ranging from one to two years or with such both fine and imprisonment for settle, ploughs and grazing livestock; hunting wild animals and obstructs the implementation of regulations.	Punished with fine not less than Birr 5000 and not exceeding Birr 30,000 or with imprisonment from 1-5 years or with both such fine and imprisonment, Punishable in accordance with the provisions of the Proclamation and Criminal Code

Ministry of Agriculture pursuant to authority vested in him by the former proclamation and order. Under the regulation Conservation areas is defined as “an area set aside and declared for the conservation and management of wildlife including National Parks, Game reserves, Sanctuary or Controlled Hunting Area”. Game and Game animal is defined as all wild animals including birds, fish, reptiles of any class or species and the young and eggs of thereof. And also National Parks is defined as a wildlife conservation area whether it includes land covered by sea or other water and designated as such for the purpose of conserving and protecting wildlife and objects of aesthetic, ecological and scientific interest [18]. Under chapter 2 of this regulation residence, hunting and human occupation in National Parks are strictly forbidden unless such activities are used for the development and management of the parks. In contrary, there are exemptions of regulations such for defense of human life; when game animals causing damage to human property; report of the killing or wounding of game animals in defense of life or property and conditions for killing any game animals by authorized officers.

In a very interesting way, the organization shall, up on court order for the confiscation, pay a reward up to thirty percent (30%) of the estimated sale value of the game animal or trophy to the person giving information leading to the recovery of an illegal possessed game animal or trophy, 10% to the person who actually caught the violator and 40 % to the person who did both [18]. However, livestock’s grazing in Protected Areas and hunting wildlife was practiced conflicting [13]. For instance, the case of Arssi Oromo and Sidama peoples in Senkelle Swayney’s Hartebeest Sanctuary continued as they were depending on for fodder and food in the area. The conservation approaches utilized during the regime was on fortress conservation approach. Since the natural resources, including wildlife has ordered for the interest of land lord and state centered [17], protection system was excluded the role of community. Later on, the Wildlife Conservation Regulation [18] was replaced by the Wildlife Conservation (Amendment) Regulation, 1974) to issue the general game license and to provide check list for fauna of the country [19].

Wildlife Policy during the Socialist Regime (1974-1991): The Ethiopian socialist revolution of 1974 overthrew the imperial regime with the regime known as “Derg”. The wildlife policy proclaimed during that regime was cited as “Forest and Wildlife Conservation and Development Proclamation No. 192/1980”. The Authority

established was semi-autonomous and its objectives were (1) to ensure the proper protection, development, rational utilization and management of wildlife resource of the country, (2) to establish and administer National Parks, game reserves and other conservation area and (3) to empower the stakeholders to have better and greater participation in wildlife protection, management and proper utilization. Like the imperial regime, any activities within the Protected Areas system were not permitted unless s/he taken a written permission from the authority. However, the local people unwillingly accepted the hunting prohibition by interpreting those wild animals in the major Protected Areas was belonged to a manager or a warden. As a result, conflicts between park rangers and peoples near Protected Areas happen frequently [13, 20]. The conservation areas chosen for wildlife focused exclusively on those areas harbored large mammals or the remnant populations of endemic species [21]. Events happened during the regime such as famines, civil unrest and armed rebellions made impossible for effective wildlife conservation in Ethiopia.

Wildlife Policy under the Federal Democratic Republic of Ethiopia (FDRE) (1991- up to Present): A reform in social, economic and political spheres of the country viewed in mid-1990s [1]. In line with this, wildlife conservation policy after 1991 has led to improvements and empowering community’s participation for wildlife conservation [22]. In FDRE constitution of 1995 Article 40, Sub-article 3 the right to ownership of all natural resources is assigned to the state and the peoples of Ethiopia [23]. Similarly, Article 51, Sub-article 5 of the same constitution vested the power to enact laws for the utilization and conservation of land and natural resources to the federal government [24]. The responsibilities of the Forest and Wildlife Conservation and Development Authority of the Dreg regime were transferred to the Ministry of Natural Resources Development and Environmental Protection and then to the Ministry of Agriculture and Rural Development [4, 25].

In 2007, a proclamation to provide for the Development Conservation and Utilization of wildlife was proclaimed [4]. One purpose of this policy was that it promoted wildlife-based tourism, encouraged private investment and to improve the community-based conservation and has great potential for providing improved solutions for convicts due to increased understanding, appreciation and valuing of local livelihoods by the government [25]. This can allow enhancing the contribution of the wildlife sector towards

poverty reduction strategy by maximizing the economic and social benefits derived from the wildlife resources. Under this proclamation wildlife habitat is defined as “area within or out of the wildlife conservation area, in which wildlife inhabits and includes land, water bodies or both” and wildlife conservation areas are given the same definition as that of Legal Notice [18]. Here also National Parks defined as “an area designated to conserve wildlife and associated natural resources to preserve the scenic and scientific value of the area which may include lakes and other aquatic areas”. Since the proclamation allowed the local communities residing around conservation areas to actively participate in wildlife development, conservation and utilization wildlife reserves is recognized and it’s defined as “an area designated to conserve wildlife where indigenous local communities are allowed to live together with and conserve the wildlife” [4].

The major objectives of the proclamation are to conserve, manage, develop and properly utilize the wildlife resources and to promote wildlife-based tourism and to encourage private investment. The wildlife conservation areas power of administration was cascaded in to different stakeholders such as federal government, regional government, private investors and local communities. The federal government is responsible for administrating National Parks that are nationally and globally significant and known to have representative ecological zones and embrace immense diversity of wildlife. Also, conservation areas inhabited by the country’s endemic and endangered species and situated geographically between two regions or neighboring countries are administered by the federal government [4]. However, there is a limitation in clarifying the respective conservation roles of regional and federal governments, as well as the private sector [22].

From the Ministry of Agriculture and Rural Development the responsibilities for Wildlife Conservation and Development were transferred to Ministry of Culture and Tourism and now to Environment, Forest and Climate Change Commission. The proclamation cited as “Ethiopian Wildlife Development and Conservation Authority Establishment Proclamation No. 575/2008” was issued. The Authority was autonomous and accountable to the Minister. The objective of the Authority was to ensure the development, conservation and sustainable utilization of the country’s wildlife resources. Sub-article (17) of Article 2 of the wildlife Proclamation No. 541/2007 was repealed and amended as “Authority” means the Ethiopian Wildlife Conservation Authority (EWCA).

The Authority has powers and duties of which the most significant were to prepare and submit to the ministry draft policies and law, issue permits for the establishment of recreational areas in wildlife conservation areas, conduct research and training programs and provide to users up-to-date information on the conservation, development and utilization of wildlife, prevent and control incidents of wildlife diseases within or outside of conservation areas and supervise or provide support to wildlife conservation areas administered by private investors or to regions with respect to the development and conservation of wildlife [26]. EWCA was established in 2007 with a mission to scientifically conserve and manage Ethiopian wildlife and its habitats in collaboration with communities and stakeholders for the ecological, economic and social benefits of the present generation and pass to the next generation as a heritage [25]. Since community based conservation approach is at its initial stage, local people are not fully involved in management and planning in wildlife conservation process. The local peoples were competed with Ethiopian Wildlife Conservation Authority over land and natural resources [13].

A council of ministers regulation to provide for Wildlife Development, Conservation and Utilization [27] was issued followed Article 5 of the definition of powers and duties of the executive organs of the FDRE and Article 17, Sub-article 1 (i.e. the Council of Ministers may issue regulations necessary for the implementation of this proclamation) of the Wildlife Development, Conservation and Utilization [4]. There 13 National Parks such as Simien Mountains, Bale Mountains, Nechsar, Awash, Omo, Abijata Shala Lakes, Senkele Swayne’s Hartebeest and Babelle Elephant sanctuary, Gambella, Altash, Kafta Shiraro and Geralle were administered by Ethiopian Wildlife Conservation Authority [27].

However, the law also regarded local communities as important stakeholders in PA administration. For example, under the Wildlife Development, Conservation and Utilization Council of Ministers Regulations No. 163/2008 ensured that “Community Wildlife Development and Utilization Areas,” located outside the Protected Areas and administered by the government or private concessionaires, were managed and utilized by the local community. Thus, local communities, which had long been prevented from accessing natural resources within Protected Areas, are now allowed to partake in their economic utilization (such as in ecotourism and sport hunting), providing that the income is used for community development and conservation activities [14, 25].

Activities such as possessing or transferring of any weapon, hunting or fishing, agricultural activities, grazing, exploration and mining, setting or attempting to set fire, etc. were forbidden in the wildlife conservation areas. In addition, people inhabiting the regions surrounding Protected Areas are permitted to engage in the seasonal utilization of natural resources, such as beekeeping, honey harvesting, cutting, taking, or foraging of vegetation, under controlled conditions [27].

Recent wildlife policies and regulations emphasize development-oriented conservation, use of tourism and the local people's participation in natural resource management and utilization [14]. The economy of Ethiopia has prospered for many years on agricultural products but currently, the country expands to industrialization for additional incomes [28]. The wildlife policy established under the current regime is aimed to generate and share benefits from the tourism and game hunting [4]. However, tourism and employment creation from wildlife resources is still at low attention. As one of the world's largest economic sectors, Travel and Tourism creates jobs, drives exports and generates prosperity across the world. In their annual analysis of the global economic impact of Travel & Tourism, the sector is shown to account for 6.8% of total GDP and 6.1% of total employment in 2017 in Ethiopia's economy [29].

Ethiopia has huge ecotourism potential in the form of wildlife, local culture and natural sites [30]. However, several ecotourism attraction sites of Ethiopia are in danger due to the exclusion of the local communities in the decision-making and management of wildlife [31]. The information on ecotourism contribution to the development [32] and institutional mechanism to redistribute the benefits from conservation efforts in the country is lacking [31]. Therefore, effective utilization of ecotourism potential of the country has economic contribution and providing the rationale for the further protection of nature, habitats and biodiversity.

Current Threats to Wildlife in Ethiopia: The variety of all living things on the planet Earth can be threatened in one or more factors. These factors are caused either by environmental or anthropocentric sources or synergistic of both sources. Several studies did worldwide indicate expansion in agricultural schemes, overgrazing, deforestation, desertification, industrial pollution, artisan mining and over exploitation resulting from economic activities which may cause habitat loss and impose threats to wildlife [33]. In Ethiopia, several threats have

been investigated. Biodiversity loss is usually caused by deforestation, expansion of investment activities, overgrazing, expansion of agricultural activities, poverty and lack of appropriate policies that encourage conservation and management of biodiversity [12]. The current mass extinction of wildlife entirely relies on human being's day to day activities [34].

Human Settlement and Encroachment: The inhabitant where wildlife existed is also the home or resource base for many people at the proximate. As an integral part of protected area, human beings may consider both as contributor for their conservation and source of problems to wildlife. National Park, an area set aside by a national government for the preservation of the natural environment. It might be set aside for purposes of public recreation and enjoyment or because of its historical or scientific interest. However, those National Parks in Africa in general and Ethiopia in particular exist to conserve animals. This neglecting the lands and focusing only on animals leads most of National Parks of Ethiopia under continuous degrading from human influences. Studies suggested in most of Ethiopian National Parks where wildlife existed human settlements and spreads are intensified.

For instance, encroachment in and around the Simien Mountain National Park [35]; increasing anthropocentric pressure, due to continuously expanding human settlements and increasing demands for farming and grazing land, is the main reason why relatively large wildlife areas have been subjected to over-exploitation, degradation and destruction in Abijata-Shalla Lakes National Park [36] and livestock grazing and the growing pressure of the local communities in search of resources in Awash National Park [37] are the threats posed to wildlife existed within the parks. Abijata Shalla Lakes National Park is severely threatened due to large scale settlement and expansion of other infrastructural services in the park [5]. Human settlement in Chebera-Churchura National Park is increasing [11] and settlement near/inside Bale Mountain National Park for forage and farming adversely challenges on wildlife particularly large mammals [38, 39].

Furthermore, livestock and human encroachments affect the population distribution and abundance of mountain Nyala and Menelik's bushbuck in Arsi Mountains National Park [40]. Human settlement and investment programs undertaken in adjacent areas to Alatsch National Park because of agricultural expansion

and demand for grazing land are challenges for wildlife [41]. Therefore, in all directions PAs faced by these threats are burdens for the wildlife. As human beings increase the settlement and encroachment of their livestock the potentiality of PAs to sustain the well-being of wildlife is deteriorated. Thus, opening mind is important to have open eye to overcome such threats.

Habitat Degradation and Fragmentation: Habitat destruction is the mechanisms by which the natural habitat where wildlife existed is deteriorated functionally and unable to support the species found there. Landscape modification and habitat fragmentation are key drivers of global species loss [42, 43]. In Ethiopia during the course of different regimes impacts on wildlife habitats have been increasing. Several authors portrayed in various localities of Ethiopia the impacts of the habitat degradation and fragmentation on wildlife magnifies [37, 38, 44, 45, 46]. They described that destruction, fragmentation and degradation are reduced the wildlife habitat quality in which it affects the populations of wildlife [40]. Deforestation resulted in wildlife habitat destruction is one of the main problems for wildlife throughout the world [12]. However, there is no study conducted on the extent of effects of this threat on Ethiopia's wildlife and its population trends. Therefore, more researches are needed to be conducted to document the effects of habitat fragmentation and destruction on wildlife.

Introduction of Invasive Species: Species introduction into the new environment can adversely cause wildlife loss on native and ecologically adapted species. Capacity of reproduction, adaptation to the environmental conditions and their interactions with surrounding can cause invasive species make the most threats to wildlife. In such a way, the invasive species competing with native species for feed, space and shelters. In Ethiopia, the great geographic diversity and climatic variability created diverse and suitable ecosystems, which are home to large number of fauna species [47]. There are about 35 invasive alien plants species found in Ethiopia. Some of these species include *Prosopis juliflora*, *Parthenium hysterophorus*, *Eichhornia crassipes* and *Lantana camara* which are the major threats to biodiversity losses. Biodiversity losses from such invasive species are increasing now a day [48]. Invasive species happens frequently both in terrestrial and aquatic ecosystem. For instance, water hyacinth is one of the world's most invasive aquatic plants and is known to cause significant

ecological and socioeconomic effects [49]. Most water bodies of Ethiopia are under invasions from water hyacinth. However, its effects on wildlife residing within aquatic environment are not well studied and documented in the country.

Poaching and Illegal Wildlife Trafficking: One of the fastest growing forbidden trades worldwide is illegal wildlife trafficking [50]. Its scale is extremely high, but poorly documented [51]. It became a topic of international attention and concern over recent years [52]. It's also a major concern in Ethiopia's wildlife. During the different governmental regimes of Ethiopia, illegal hunting is forbidden in principle. But, due to several factors, wildlife is at declining state from both threats such as illicit trade and poaching. Ethiopia is considered as both the source and transits for wildlife and their products trafficking in the horn of Africa [53, 54], as they stated focusing on electronic devices and other goods, the customs authority neglects checking for wild animal's product [55]. Illicit trafficking of wild animal and their body parts are unnoticed in the country [5].

Several scholars recorded the presences of poaching in some National Park of Ethiopia. Due to illegal hunting, Grevy's zebra population in Ethiopia is declined by 93% over a 23 year period (1,600 to 110 from 1980 to 2003) and elephants are declined by 90.5% in the country [8]. About eight species of wild fauna were hunted in Chebera-Churchura National Park [11]. Gumuz society highly depends on hunting of rodent species and large mammals such as Greater kudu in Altash National Park, first trans-boundary Park established in Ethiopia [41]. Hunters from different parts of Quara and nomads from neighboring countries such as the Felata of Nigeria, the Minamir of Eritrea and the Rubtan of Kenya are one of the most devastating factors for wildlife and habitat destruction in Altash National Park. To solve the problem, effective law enforcement and participating communities are the two major solutions proposed [54, 56]. As a result, it needs to assess the current real situations of this act and dry up the sources in the country and the horns of Africa. Ethiopian wildlife resources also has shown dramatic decline in type and size from road kill [5].

Climate Change: Climate change has created potential threats to global biodiversity [57]. Species may respond to the change either through modification, move or die. To date, the major consequences of climate change are altered ecosystem and landscapes, changes in species

Table 2: Infectious Disease Outbreaks in Some Wild Animal during Different Periods in Ethiopia

Types of wildlife	Areas where wildlife found	Types of Infectious disease infestations	No. of death	Year of death	Authors
Ethiopian Wolves	BMNP	Rabies	41	1991-1992	[67]
	BMNP	Canine Distemper Virus	14	2005-2010	[69]
	BMNP	Rabies and Canine Distemper Virus	>100	2011	[68]
	Delanta, Wollo highlands	Rabies and Canine Distemper Virus	7	2017	[73]
	BMNP	Canine Distemper Virus	34	2015	[74]
Wild animals (Zebra)	Nechsar National Park	Trypanosomiasis and Tick infestation	-	-	[75]

life history, conflicts between human and wildlife, wild land fires, wildlife disease, invasive species and pest's infestations [58]. That is why it is the international agenda in current time. Many studies in recent years have investigated the effects of climate change on the future of biodiversity [59]. One of the first global studies estimated that by 2050, 15-37% of species are committed to extinction under intermediate climate warming [60]. However, in Ethiopia the impact of climate changes on animals is not well documented. Only few reviewed literature are available [61-65]. There is also a study on climate change and its effects on vegetation phenology across Eco-regions of Ethiopia [63]. In this study the authors conclude that climate variability was affecting the phenology of vegetation across all Eco-regions of Ethiopia. In the review did by those authors, the impacts of climate change is immense in Ethiopia. Tesfahunegny and Mulualem [64] reviewed on the impact of climatic change on avian populations. In their review suggested that climate change has already led bird species becoming listed as threatened or endangered under the endangered species act. Thus, as the issue of climate induced wildlife loss is of major concern in the world, further detail study is required to have full information on rate of its effects on Ethiopia's wildlife.

Emerging Infectious Disease: During the last decade, infectious diseases have posed a major risk to populations of wild vertebrates [66]. An outbreak caused by rabies and canine distemper virus in the world's rarest canid, the endangered Ethiopian wolf (*Canis simensis*) is reported by different authors. The Ethiopian Wolf occurs in several Protected Areas, including Bale Mountains National Park, Simien Mountains National Park; Borena Saiynt National Park; Menz-Guassa Community Conservation Area and Arsi Mountains National Park. It is also found in Abune Yoseph Mountains and Aboi Gara Mt in isolated mountain ranges of the Ethiopian afroalpine highlands, at altitudes of 3,000–4,500 m.a.s.l. Ethiopian wolf populations are threatened by rabies and canine distemper virus [66-70] (Table 2). Mycobacteria (*Bovine tuberculosis*) infected 27% of tested wildlife

particularly in lesser kudu, Grant's gazelles, Mountain Nyala and Ethiopian Wolf [71, 72]. Due to the nature of close proximate in habitation between human and wildlife, the transmission of zoonotic disease is of intense and it needs comprehensive assessment.

Lack of Community Awareness Towards Wildlife: Creating awareness is the main concerns for wildlife protection and conservation now days. Although we now have a great deal of information on the status of wildlife, there is also some key knowledge gaps at all level of the nation's [76]. Several studies revealed that lack of environmental awareness fostered the problem of environmental degradation in which wildlife is threatened [46, 54]. Lack of community awareness about the wildlife's significance is the major challenge for wildlife conservation in Altash National Park, Northwest Ethiopia [41]. In scenario, where wildlife-induced damage to human property negative local attitudes towards conservation and wildlife resources become deep-rooted in their mindsets. Kumssa and Bekele [36] assess the attitude and perceptions of local residents towards the Abijata-Shalla Lakes national park and portrayed 85% of the respondents were unhappy on the existence of the Park. Local community in Harena Forest pays less attention to conservation of forest and wild animal [77].

This resulted from their low awareness and their less involvement in the participation of wildlife conservation. Wale *et al.* [78] also strengthen this idea as a threat for the eastern Ethiopian protected areas is due to low awareness of the local people towards the importance of national parks. Limited awareness towards wildlife conservation areas significance's is the major challenges to national park conservation and management in Ethiopia [79]. However, educated and people with access to information and awareness mostly supported conservation of wildlife in most of the National Parks in Ethiopia. Besides, Ethiopia biodiversity threats and analysis of their root causes shown that, conservation gaps are associated with lack of adequate capacity, commitment and lack of monitoring of the implementation strategy on the status and trends of threats [80].

The Future Directions for Conservation of Ethiopian Wildlife:

A future scenario for wildlife protection and conservation is a great challenge. Unless, the current situations reduced the welfare of wildlife in their natural habitats are jeopardized. Wildlife conservation and protection for the future requires collaborative efforts with all stakeholders for the success in national level. There is a great need of planning different strategies for protection, conservation and minimizing the loss of natural resources.

Several authors argued that strengthening community participatory approaches is crucial for enhancing wildlife conservation [5, 54, 81]. This approach is positively enhancing wildlife development, which in turn; affect the livelihoods of local community. When the local communities are engaged in wildlife management and planning, it can reduce the management cost, enhances benefits sharing and protects the biological resources of the area [82, 83]. Besides, enhancing protection for wildlife this type of conservation approach is universal for maintenance of sociocultural practices, community development, promotion of indigenous knowledge, development of ownership feeling and responsibility at individual, community and government level [84].

Recently any conservation area outside PAs administered by government or private put under the management and utilization of the local community [27]. However, still very little effort has been made to involve local people in wildlife management [31]. Since local peoples have a deep psychological attachment to wildlife PAs they recognized the areas as crucial to their survival. Sharing either conservation efforts or benefits with local people can increase their positive attitudes towards wildlife, PAs and conservation practices [22, 83]. In such a way community participation can support the economic wellbeing of the country [5]. Therefore, it need to be strengthened community based participatory approaches to achieve both goals of conservation and rural development because what communities consider could agree to be an acceptable strategy [81]. Several scholars argued the low level of local people participation in wildlife conservation [13] and the infancy of community based conservation and its incomplete cascading to all stakeholders in the country [5, 11]. If the successes of wildlife conservation are wanted to be insured, these problems must be timely addressed and solved by the conservationists and concerned bodies in the country. The denial of local communities from wildlife and wildlife products access has negatively shaped the attitudes and

perceptions of the local society toward wildlife conservation [31]. Fair and equitable sharing of wildlife resources and other related profits for the local community should be installed to ensure the spirit of ownership of the resources among the local people. Benefits of local community from wildlife conservation should be increased by infrastructural developments, revenue sharing and increased involvement in wildlife conservation decision makings and employment opportunities.

Another approach for enhancing the community participation is through awareness creation at all sectors. Different authors confirmed that there is a gap of understanding about wildlife conservation among community from different localities [36, 85, 86]. Different sectors of our society could not have enough information about the wildlife resources of Ethiopia. They have little awareness about real importance of wildlife beyond as subsistence for their livelihoods. Lack of good governance, lack of accesses to wildlife conservation policy declared at the federal level to local community and difficulty for the mainstreaming of wildlife courses with field work at higher institutions are some of the challenges that might be reasons for lack of awareness. The provision of adequate awareness on the importance of wildlife conservation for the local people in different places such as at religious, at schools, on social media and non/governmental agencies has created positive attitudes in the local community around PAs [85]. There should also be additional and adequate capacity building training and mainstreaming of wildlife conservation ideas and concepts down to all stakeholders to enhance their knowledge of wildlife conservation and their existence values [5, 36]. Education and training programs such as conservation awareness, educational tours and outreach programs, workshops and training and conservation education in schools, in clubs and various associations enable the local human resources to contribute to conservation efforts [41, 84]. Effective awareness creation in different sectors of our society is needed to be recognized for the long-term success of conservation efforts.

The major challenge for agricultural production now a day is an integration of farming with wildlife conservation. The losses of vegetation and land-use patterns and their synergistic interaction resulted in loss of biodiversity [87]. As a strategy integrating wildlife-friendly agricultural production, common use of resources managed by the communities, joint effort

between the community and private companies for getting more benefits from trophy of hunting and enhancing the welfare of wildlife need to be considered [81]. Failed to do so, might be resulted in human-wildlife conflict which is a serious problem in Ethiopia. Several studies on human-wildlife conflicts were investigated and documented in Ethiopia, for instances [31, 35, 83, 86, 88]. The aforementioned wildlife threats are considered as major causes of human-wildlife conflicts. This challenge might be overcome through the use of local indigenous knowledge for conservation of natural resources. Thus, managing challenges of conflicts among human and wildlife needs prime tasks for wildlife conservationists and managers. This will be accomplished by initiating wildlife-friendly farming strategies in area where wildlife and human being in habitation overlap.

Finally, regular monitoring of wildlife populations should be made in their natural habitats within the PAs and outside of it. As it's discussed above wildlife threat factors has a wider conservation implication for reducing the operating threats. Among the various threats impacts on wildlife one of them is emerging disease. Long-term disease management plans are vital for conservation of susceptible species and vaccination of host and target populations remains a key strategy for disease management [67, 69]. Through ecological monitoring approaches so as to saving the natural capital for our benefit and the future generation is crucial [5]. This can allow for developing wildlife safety management measures within PAs. An involvement of multi stakeholders is essential to develop PAs management strategies by prioritizing the identified threats to reduce wildlife loss [78]. This can be only possible if regular monitoring of wildlife undertaken unless the wildlife is in the ways of gone to be extinction for bad. And also to meet the challenges of climate change impacts on wildlife a multi sectoral approach on wildlife issues with broader policies, strict strategies and programs at international, national and local levels is essential [57]. In addition, to mitigate the impacts of climate changes on wildlife effectively implementing measures of adaptation such as maintaining current ecosystem, adapting management which reduce climate changes from efficient country, restoring damaged or changing ecosystems are mandatory [58]. This can be done with a strong focus on effective management of PAs [81]. Finally, establishing atlas for wildlife population, detailed study on Ethiopian wildlife, promotion of Ethiopian wildlife for the rest of the world and potential wildlife areas should be identified.

CONCLUSIONS

In conclusion, Ethiopia has a variety of wildlife resources as a result of variation in topography, climatic condition and different habitat that harbored in different ecosystems. Ethiopian's wildlife conservation areas have been declined immeasurably from various threats which are human driven issues. The wildlife conservation policy of the country was frequently changed under different period of a time. Now a day, progresses related to reducing the impacts of these threats on wildlife are made continuously, however wildlife losses have not yet been addressed substantially. Therefore, the futures of Ethiopia's wildlife conservation need to consider relies on strengthening community-participatory approaches; practicing of wildlife-friendly farming; establishing atlas of Ethiopia's wildlife Database; providing public awareness creation via social, print and electronic media; mainstreaming wildlife conservation, development and utilization in all stakeholders down the society; regular monitoring of wildlife populations and establishing PAs Authority as an autonomous body for managing conservation and protections of wildlife is crucial.

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