

The African Elephant (*Loxodonta africana*) in Ethiopia: A Review

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Abstract: Ethiopia is one of Sub-Saharan African countries that have elephants. Until the turn of the 19th century, it was widely distributed throughout the country except in the most northern highlands, which have been densely populated part of Ethiopia and occupied by agriculturists for thousands of years and the Denakil Desert in the northeast where there is a scarcity of food and water. Since that time, as the herds were hunted intensively and increased destruction of their habitat, the known elephant ranges have shrunk considerably. For instance in the central Rift Valley and the valley of Awash River, elephants became extinct between 1900 and 1934. Moreover, the remnant herds pushed progressively further towards low altitude arid areas around the periphery of the country. At present, elephants occur only in six to seven different wildlife or protected areas in the country. *Loxodonta africana* in Ethiopia have also suffered a considerable reduction in numbers. Since the 1980s, Ethiopia has lost about 90% of its elephant population and hence the species is nationally regarded as critically endangered. Currently, it is estimated that 1500 to 2000 elephants are found in Ethiopia. The species in the country are among the 36 mammalian species that are threatened by a variety of pressures. Poaching of elephants for ivory and problems associated with human population growth and expansion are the major threats for reduction of the species range and number drastically.

Key words: Distribution • Elephant • Number • Population growth • Species range

INTRODUCTION

The African elephant (*Loxodonta africana*) and its close cousin, the Asian elephant (*Elephas maximus*), are the only species surviving in the order Proboscidea. Both genera originated in sub-Saharan Africa in the early Pleistocene. Africa was the center of evolution and dispersal of this giant creature. Both species once inhabited most part of the continent [1, 2]. In the later Pleistocene, however, *Loxodonta* re-emerged as the dominant species after the disappearance of *Elephas* from Africa. Elephants are the largest of all existing terrestrial mammals. Globally, they are present in 50 countries, 13 of which are in Asia and 37 in Africa. Elephants are extremely adaptable, occupying a variety of habitats from desert to savanna to gallery forest. Environmental and manmade factors affect elephant population dynamics, home range, migration patterns, diet, group size and composition, all of which can vary tremendously, in turn influencing the dynamics of elephants and their habitats [3, 4]. African elephants (*L. africana*) are playing a variety of role in conservation of biodiversity. It is the ecosystem

engineers in that they create and maintain ecosystems through physically changing the habitat. The elephant is believed to be a crucial keystone species for African savannah and forest ecosystems [5]. They play a major role in maintaining the linkages in a food web and the extermination of these species is expected to cause dramatic changes or extinctions in ecosystems. Elephants do have a dominant role within ecosystems due to their huge size, large food requirements, their effect on plant species composition and their importance for dispersing seeds and fruits. Moreover, Elephants play an important role as umbrella species, maintaining biodiversity of the ecosystems they inhabit. The elephant is also a flagship species, being closely associated with the social and cultural aspects of people and this factor can be harnessed to promote its conservation. However, because of the lack of historical evidence on changes in African vegetation and wildlife, there is little direct evidence to show whether the loss of elephants from particular areas has actually led to the loss of biodiversity [5]. Globally, the species has faced a serious problem associated with the decline in their distribution and number.

Due the decline of their numbers and substantial reductions of their range, Elephants is considered as critically endangered species, but the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species classified as Vulnerable species in the 2004. However, there is no compiled review on the current status of African elephant in Ethiopia. Therefore, information on the population status and spatial distribution of elephants throughout country is urgently needed at national level, especially in the context of decreasing its range and number drastically. This review on African elephant in Ethiopia aimed to provide highlight, updated information the current population status of elephants and their spatial distribution and major threats for reduction of the species range and number.

The African Elephant in Ethiopia

Distribution: Elephants were once found throughout Africa [6] and, formerly, within the last three centuries, they inhabited all of sub-Saharan Africa in habitats ranging from tropical and montane forests to open grasslands, semi-arid bush and desert. In recent years, however, the poaching of elephants for ivory and human population growth and expansion have reduced the species' range and numbers drastically and the majority of remaining elephants exist in small pockets of protected land isolated by human habitation. Until the turn of this century, the African elephant had a very wide distribution and was more common in areas with altitudes ranging from sea level to 2500 m [7, 8]. Since that time, however, it has been greatly reduced in number and its distribution globally.

L. africana is one of a number of wildlife species being conserved in Ethiopia's protected areas. Until the turn of the 19th century, it was relatively abundant throughout the country except in the most northern highlands, the most densely populated part of Ethiopia and occupied by agriculturists for thousands of years and the Denakil Desert in the northeast where there is a scarcity of food and water [7, 9]. Since that time, however, it has been greatly reduced in number and its altitudinal range has contracted, elephant ranges have shrunk as the herds were hunted intensively and there was increasing pressure from habitat destruction. For example, the last elephant was seen in the central Rift Valley (Awash Valley) in 1934 [10], while Harrison [11] encountered herds exceeding 40 animals in the same area in 1900. But the species become extinct from Rift Valley and the valley of Awash River between 1900 and 1934 [12]. In south Ethiopia, in the areas between Lake Chamo and Lake

Rudolf, there was an intensive ivory trade and a monthly rate of 750 tusks were sent to Addis Ababa in 1899 [11]. The others fragmented population further pushed progressively towards low altitude arid areas around the periphery of the country. The greatest portion of elephants inhabits these areas while only few of the elephant populations lives in the mid and high altitude forests of western Ethiopia as small fragmented populations [13, 14].

The past distribution of elephants in Ethiopia is based on a few old records of travelers, particularly from mid 18th century to mid 20th century. An Egyptian merchant, Kosmas and a Byzantine Ambassador, Nonnosus, saw about 5,000 elephants between Aksum and Adulis during the period of the Aksumite Kingdom [3rd B.C. - 8th A.D, 12]. Drake-Brockman [15] recorded elephants near Lake Ziway, El Dimtu and Arusi (in south central Ethiopia) in early 1900. Neumann [16] observed elephants on the shoreline of Lake Ziway, Wellby [17] near the Awash Bridge, Lake Hora and Lake Ziway in central Ethiopia; Donaldson-Smith in Gorgora, north Ethiopia in 1897 [18], Plowden near Bahir Dar, north Ethiopia in 1868 [19] and Fitzinger in 1866 in the Denakil Region in the northeast Ethiopia [20]. However, at present, elephants are extinct from the above-mentioned areas.

Yalden *et al.* [7] provided clear pictures of the geographic distribution of the three elephant sub-species in Ethiopia. According to this classification, *L. a. oxyotis* occupied the areas as far north as Tekeze Valley, the margins of the Denakil lowlands to the east (the western foothills of the central plateau) and south to the Omo River, *L. a. knochenhaueri* was believed to occupy the area between the Omo and Wabi Shebele Rivers, from the Kenyan border extending north to the Middle Awash River through the Great Rift Valley and further south to the Kenyan border and *L. a. orleansi* inhabited the semi-arid region of east Ethiopia, with its western limit the Chercher Highlands and everywhere east of Wabi Shebele River (Fig. 1A). However, such arbitrary boundary limitations for the three subspecies would not prevent the movement of elephants crossing the two rivers and crossbreeding [7, 21, 22].

The number of areas containing elephants in 1990s was 16 [8, 14, 23] in 94,291 km², dropping to nine confirmed sites with fragmented populations in 2006 in 28,895 km² (Fig. 1B) [24]. Out of the total of nine separate elephant populations in Ethiopia, three populations in the west, three in the south, two in the northwest and one in the east (Fig. 1A).

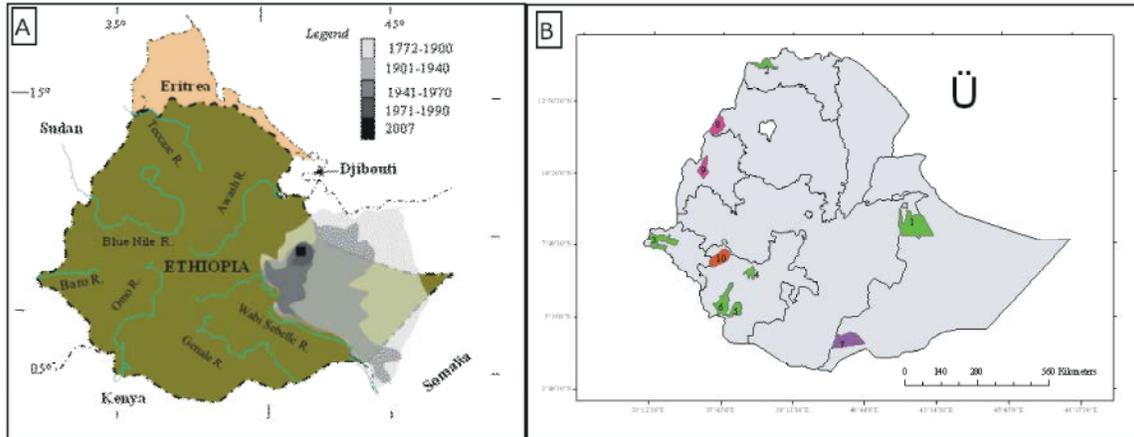


Fig. 1: Geographic distribution of elephants according to their subspecies recognized by Ansell (1971) and Lydekker (1907), from Yalden *et al.* [7] and Elephant distribution in Ethiopia; Babilie Elephant Sanctuary (1), Kafta Sheraro National Park (2), Gambella National Park (3), Chebera-Churchura National Park (4), Mago National Park (5) Omo National Park (6), Alatash National Park (8), Dabus Controlled Hunting Area (9) and Omo-Gambella landscape (Mizan Teferi Controlled Hunting Area, 10), Ethiopia (B) from Yirmrd *et al.* [22].

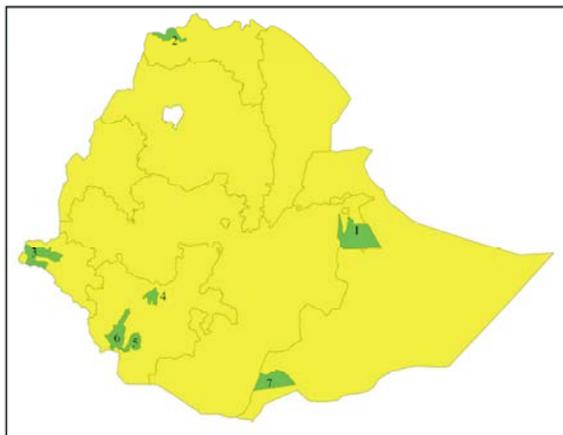


Fig. 2: Current distribution elephant in Ethiopia, Babilie Elephant Sanctuary (1), Kafta Sheraro National Park (2), Gambella National Park (3), Chebera-Churchura National Park (4), Mago National Park (5) Omo National Park (6), Grile National Park (7), Ethiopia adopted from Sintayehu *et al.* [25].

At present, elephants in Ethiopia exist in six protected areas, in a variety of habitats of Ethiopia, from the semi-arid environment of Eastern Ethiopia at Babilie Elephant Sanctuary to the moist tropical forest in Chebera-Churchura National Park in the southwest. The conservation areas in the south-western part of the country at Omo and Mago National Parks, encompass the semi-desert scrubland and *Acacia-commiphora* woodland ecosystem types. Gambella National Park represents the

lowland moist evergreen forest ecosystem type with a humid savanna and at Kafta Sheraro National Park in the north [25] (Fig. 2). But there is no confirmed data on the presence of elephant in Grile National Park. In general, all elephant areas in the country are marginal lands and until recently were inhabited by many people. Elephants occupy these areas not by choice, but because they have been displaced from more suitable habitat by humans (Fig. 2). Elephants from Mizan Teferi and Dabus Controlled Hunting Area have possibly moved to Gambella National Park. Elephants from Alatash National Park may move to Kafta Sheraro National Park.

The reasons for the decline of ranges of elephants from time to time due to various factors that are common for the majority of elephant range states in the continent. These include deterioration of habitat quality, investment activities near conservation areas like the case of BES, poaching for ivory, increased human activities near conservation areas and competition of wildlife with large density of livestock [26, 27, 28, 29, 30, 31, 32].

Trends in population over the centuries in Ethiopia: Elephant population decline until 19th century was linked to both the ivory trade and habitat loss, but the decline between 1979 and the late 1980's was mainly attributed to illegal killing of elephants for ivory [23]. Although continent-wide there is a general paucity of accurate data, it is clear that elephant numbers have fallen drastically during the second half of the last century. In 1979, there were an estimated 1.3 million elephants in Africa but by the year 1989 this had shrunk to around 0.6 million [33].

According to Blanc *et al.* [34] total estimate of elephants in Africa are 472,269, with 29.1% in the East Africa Region. Classification of the continent into four regions is based on Said *et al.* [3]. Tanzania contributes 80% of the Eastern Regional population, with 137,485 elephants. Ethiopia is fourth in the region with a population of only 1,200 elephants [34]. African elephant in Ethiopia have suffered a considerable reduction in numbers [7]. At present, elephants in Ethiopia are among the 36 mammalian species that are threatened by a variety of pressures. Ethiopia has lost about 90% of its elephant population since the 1980s and hence nationally elephants are regarded as critically endangered [22, 24, 31].

There is little accurate information about the total number of elephants in Ethiopia. In the early 1970s, the total population estimate of elephants in Ethiopia was in the range of 5,000-6,000 [35]. Yalden *et al.* [7] provided a national estimate of 8,700 elephants. Allen-Rowlandson [36] suggested a total population of 2,450. In the report of the African Elephant Database, Barnes *et al.* [23], Blanc *et al.* [37] and Blanc *et al.* [34] estimated the total population of elephants for Ethiopia to be 321, 396 and 634 in 1998, 2002 and 2006, respectively. The 2006 estimate, confirmed the presence of 1, 228 elephants [8, 24]. At present, the population of elephant in Ethiopia is estimated between 1500 to 2000 animals [25]. The largest elephant population was recorded from Omo National Park, followed by Gambella National Park [25]. This estimate doesn't confirm the downtrend of the population compared to the 2006 estimate. However, compared to other African countries, the population of elephant in Ethiopia is very low. The elephant population decline in Ethiopia has been mainly due to poaching and the increase in the human population and hence the growing demand for land, resulting in loss of elephant habitat [7, 27, 28, 36, 38, 39, 40].

Poaching of elephants for ivory has been the major cause of the disappearance of elephants from large areas of Ethiopia mainly in the East, south and southwestern regions. Regardless of the occurrence of hunting throughout the 20th century, the continued slaughtering of a large number of elephants in the 1990s was inexcusable. Such a population crash was especially noticeable in the Babile Elephant Sanctuary, Eastern Ethiopia and Mago National Park, south Ethiopia. During its establishment of Mago and Babile, they were rich in wildlife [8, 22]. For instance Mago National Park known with the presence of more than 81 species of mammals and 236 species of birds [8, 26]. The occurrence of abundant large mammals: elephant, buffalo, giraffe, lion, leopard,

hartebeest, waterbuck, lesser and greater kudu and zebra in diverse habitats, made the park one of the prosperous areas in the country. In the 1980s, Mago and its adjacent Omo National Park held the second largest number of elephants in the western region, mainly in Gambella National Park and Mizan Teferi Controlled Hunting Area [8, 22, 40]. In the first two decades of Babille's Elephant Sanctuary establishment, the management and law enforcement operations were very effective and the government's support for conservation was encouraging. However, from the 1990s onwards, the situation was reversed and the conservation system deteriorated. Intensive killing of elephants for ivory became uncontrolled [25].

CONCLUSIONS

In general, all elephant areas in the country are marginal lands and until recently were inhabited by many people. Elephants occupy these areas not by choice, but because they have been displaced from more suitable habitat by humans. The conservation and management of the African elephant is a complex undertaking, requiring skills and strategies that deal with its population both in and outside the protected areas throughout its range. The increased proximity of human population and the expansion of their activities into elephant range are increasingly calling wildlife authorities to consider not only the welfare of the species and its habitat, but also the problems that arise between neighbors competing for limited resources. Today, although there are efforts being made by concerned bodies to improve the management of protected areas that have elephants and to upgrade the conservation status and to bring other areas under protection, the population size and home ranges are greatly decreasing inside and outside protected areas. Lack of awareness in all groups of people, lack of established structure and political will to improve the management and protection of protected areas, population growth and dependency of agriculture, illegal settlement and enrichment of wildlife area, illegal trade of ivory in the market, lack of proper land-use and wildlife policy and other socio-economic problems cast shadow on the conservation and management of the elephant population in the country. The future of the animals and the elephants in particular, in Ethiopia is far from assured.

Therefore, there is a great need of reform the country's wildlife policy and legislation. The currently national elephant conservation proclamation needs to be completed through the development of detailed

regulations to ensure adequate protection of the country's threatened wildlife species like elephants. There should also be needed a nationwide public awareness campaign about the need of wildlife conservation, the various forms of utilization and the law-enforcement procedures. The increasing encroachment of human populations with their domestic livestock into wildlife conservation areas and the consequent destruction seriously threatens the existence of wildlife in the country and has to be halted.

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