

## Full Length Research Paper

# Conflicts between the conservation of Elephant and Human activities: In the case of Babile Elephant Sanctuary (BES), Ethiopia

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**Conflicts between the conservation of wildlife and human activities occur in all habitats and can impact severely upon socio-economic and biological parameters. Babile Elephant Sanctuary which is located in the semi-arid part of eastern Ethiopia is part of the Somali-Masai Centre of Endemism. It is established to protect the only surviving African Elephant population in the Horn of Africa. The sanctuary is shrinking in size and deteriorating in quality. The vegetation of the sanctuary has been used for fuel wood, construction and other purposes. Grazing, fire and deforestation were intensive, affecting the distribution and conservation of Elephant in the area. Recently, as a result of mass influx of a large number of farmers and their livestock from the east and north, the home range of elephants of Babile has shrunk by about 65.5 %. Moreover, 10,000 hectares of the north western part of the land given recently to a private company engaged in the cultivation of castor used for production of fuel, is being described as a calamity to the already declining elephant population and other wildlife. Of the total land granted to the company, 87.4% was proved to fall within the boundary of the Sanctuary and of this 79.2% were within the present elephant ranges movement corridors and regular feeding grounds for elephants. Recent socio-economic and land use changes in BES such as the demand for more area for agriculture and livestock production have reduced the quality of the Elephants habitat. Local communities around the area are highly dependent on vegetation for fencing, medicine, construction and fuel wood.**

**Key words:** Babile, Conflict, Conservation, Elephant, Sanctuary, Sustainability.

## INTRODUCTION

African elephants (*Loxodonta africana* Blumenbach) are 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. They play a

major role in maintaining the linkages in a food web and the extermination of this species is expected to cause dramatic changes or extinctions in ecosystems. Moreover, Elephants play an important role as umbrella species, maintaining biodiversity of the ecosystems they inhabit.

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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 other species. *L. africana* is one of a number of wildlife species being conserved in Ethiopia's protected areas. Until the turn of the 19th century, the African elephant was widely distributed in the country. At present, elephants in Ethiopia are among the 37 mammal species that are threatened by extinction (Yirmed et al., 2006). Since the 1980s, Ethiopia has lost about 90% of its elephant population and hence the species is nationally regarded as critically endangered (Yirmed et al., 2006). Since then, however, the poaching of elephants for ivory and problems associated with human population growth and expansion has reduced the species range and number drastically. As a result, it is restricted to remote protected areas and a few fragmented populations also exist in the eastern part of the country at BES.

BES, located in the semi-arid part of eastern Ethiopia, is part of the Somali-Masai Centre of Endemism (Yirmed et al., 2006). This sanctuary is one of the protected areas in the country established to protect the only viable elephant population in the Horn of Africa. These elephants have been separated from other populations in Ethiopia for more than eight decades. Despite the establishment of the Sanctuary in 1970, their range of distribution has shrunk considerably. As a result of mass influx of a large number of farmers and their livestock from the east and north, the home range of elephants of Babile has shrunk by about 65.5% since 1976 (Yirmed et al., 2006). Moreover, a recent year 10,000 hectares of the north western part of the land given to hjuja private company engaged in the cultivation of castor used for production of biofuel (Yirmed et al., 2006) is being described as a calamity to the already declining elephant population and other wildlife. Of the total 10,000 hectares of land granted to the company, 87.4% was proved to fall within the boundary of the Sanctuary and of this 79.2% were within the present elephant ranges movement corridors and regular feeding grounds for elephants (Yirmed et al., 2006). Local communities around the area are highly dependent on vegetations for fencing, medicine, construction and fuel wood (Anteneh and Feaven, 2008). However studies dealing with conflicts between the conservation of Elephant and human activities are scarcely known in many region of Ethiopia including Babile Elephant Sanctuary where large numbers of Elephants are found (Yirmed et al., 2006). So, the present investigation was aimed to provide information on human impact and interference on conservation of elephant (*Loxodonta africana*) and their wider habitat in the area. This study quantifies the history, type and nature of the conflict between conservation of elephant and human activity in the study area.

## STUDY AREA

The study area, BES is located in the eastern lowlands of Ethiopia (Figure 1). The Sanctuary is situated at about 560 km from Addis Ababa. Its geographical position is within latitudes of 08°22'30" to 09°00'30"N and longitudes of 42°01'10" to 43°05'50"E and has an elevations range of 850 m to 1,785 m a.s.l. The mean annual temperature of the area is about 19.6° C. The mean annual rainfall is 702.9 mm year. When the Sanctuary was established in 1970, it covered about 6,982 km<sup>2</sup> (Yirmed et al., 2006). Most importantly, this protected area supports the only surviving African Elephant in the horn of Africa.

## METHODS

Data and information was collected with regard to conflicts between the conservation of Elephant and human activities, both primary and secondary data. (Were used). Direct field observations, questionnaire surveys and group discussions with the local people and Park Scouts were made to collect the relevant information. For each household (and) with the help of local interpreters and guides. A questionnaire was administered to the head of the household or a (present) adult member present. The questionnaire was prepared so that it includes information regarding land use change, human-elephant conflict and the impact of human interference on their ecological status. Field assessments was undertaken during day and night to directly observe the conflict and human impacts. Notes on elephant signs in the area, elephant groups involved in crop raiding, the time in the night when elephants come and leave crop lands, control measures used by the local people and the response of elephants to these measures was recorded. Any illegal activity including elephant killing was also recorded. This included signs and kinds of illegal activity, the time and date of the activity and the possible origin of the individuals taking part in the activity.

## RESULTS

### Attitude of the local people towards conservation area

Out of the 220 respondents, 86.4% opposed the existing Elephant conservation systems, while 9.5% supported them. However, there was significant difference in attitude towards the conservation of Elephant in the area among village residents ( $\chi^2 = 4.3$ , DF=6, P>0.05). There was a significant difference in the attitude towards wildlife conservation between different age classes ( $\chi^2 = 181.24$ , DF=6, P< 0.05). Younger generation, age class (16 to 30) showed more significantly positive attitude than older age groups (age>31 years). Sex was important in determining the attitude towards conservation area ( $\chi^2 = 29.2$ , DF=2, P< 0.05). Male respondents had more positive attitude (81%) than females (19%). conservation systems.

### Benefits from protected area

Out of the respondents, 83.2% believe they did not

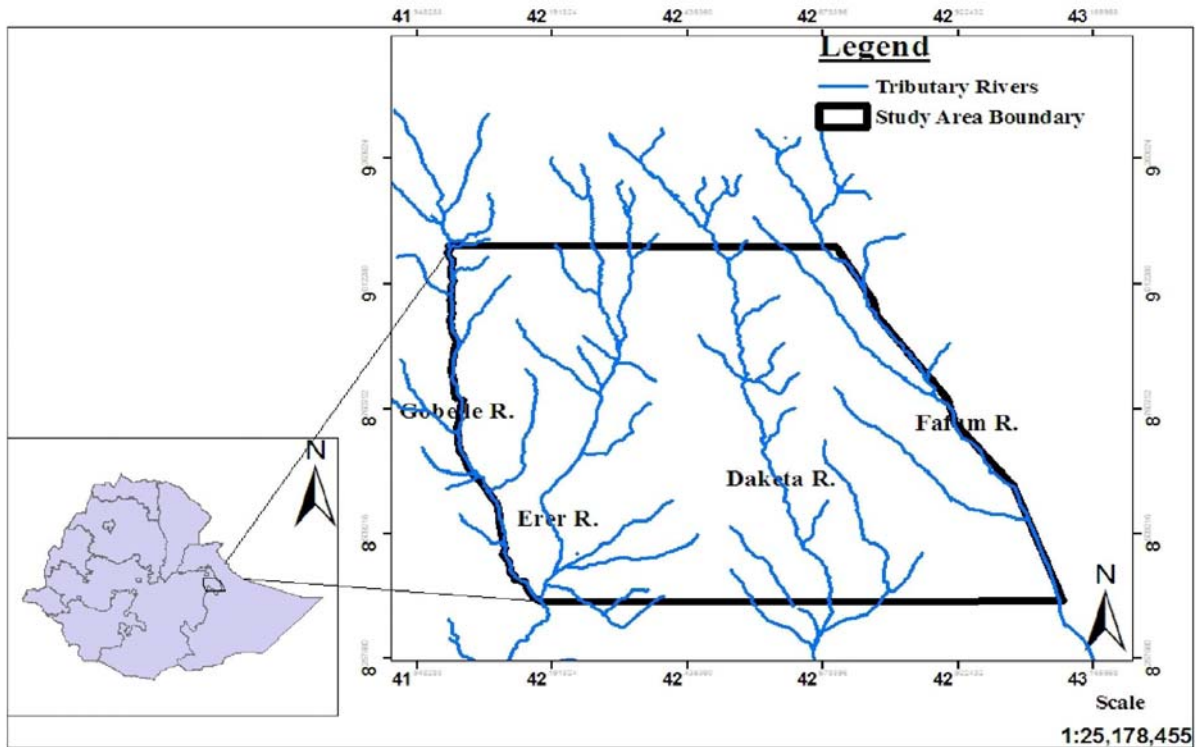


Figure 1. Map of the study area.

receive any benefit from the existence of sanctuary in their area. The expected benefits were opportunities for jobs, social services such as clinics, schools and resources (firewood, free grazing and grass for own use and sale). Few of the respondents (16.8%) noted that they have received benefits from the protected area. There was difference in the vision of benefit ( $\chi^2 = 0.876$ ,  $DF=3$ ,  $P > 0.05$ ) between respondents among the study sites.

### Views of respondents on Elephant

Among the respondents, 40.91% stated that Elephant is not important and the continued existence of Elephant had a negative impact on their livelihood, while 30.45% had no idea on the matter. However, 28.64% of these considered the elephant as important. Reasons given for the importance of elephants includes elephant attracting tourists, enjoyment of seeing and importance for future generations. The views of elephant did not differ significantly ( $\chi^2 = 1.3$ ,  $DF=6$ ,  $P > 0.05$ ) among respondents from the four study sites.

### Trends in Elephant population

The surveys in the villages around BES revealed the views of villagers on trends of elephant populations in the

Sanctuary. Most of the respondents (56.8%) have remarked that elephant populations have declined in their areas. However, 27.3% of the respondents remarked that the elephant populations have increased. Only 15.9% of the respondents were unsure whether the population of elephant is increasing or decreasing. The view of respondents among the different villages was statistically significant ( $\chi^2 = 27.8$ ,  $DF=6$ ,  $P < 0.05$ ).

### Resource conflict between human and elephant

The basic premise in the present study, the conflict between conservation of elephant and human activities has escalated because of a change in land use especially, the expansion and intensification of arable farming land in and around the Sanctuary and the high increase in livestock number and settlement in the Sanctuary.

### Human population

The Babille ES has been continually under threat from growing human populations, particularly in the northern and northwestern parts of the Sanctuary and its adjacent areas, where agriculture is the predominant activity of the residents. Population pressure in and around the area has resulted in high environmental degradation and loss

of habitat for the elephant. Based on the crude estimates of the Population and Housing Census of 1994, the population density of Babilie District had increased from 18 persons per km<sup>2</sup> in 1990 to 26 persons per km<sup>2</sup> in 1995, an increase of 47.8% (EHPEDO, 2004)

### Habitat destruction and disturbance

Results of direct field observations in the study area showed that the habitat and vegetation of the BES has changed dramatically. The major components of habitat destruction and disturbance in the study area were settlement in and around the Sanctuary, overstocking livestock, frequent fire and bush encroachment and tree cutting. Tree cutting was mainly associated with new settlements, expansion of agriculture and use of trees as raw materials for households and for fuel, sale and construction of huts and used the grass primarily for grazing, thatching house and sale which resulted in deterioration of Elephant habitats. This also minimizes the feeding and mating and resting site of the Elephant. Disturbance through the habitat and constant passage of local people on horseback and on foot by uttering and shouting along the length and width of the Sanctuary have become a common activity.

### Clearing of the Sanctuary area for investment

The company started its operations inside the Sanctuary in March 2007 with the consent of the Ethiopian Investment Agency (EIA) and the Oromia Investment Commission for plantation of castor seeds for biofuel production. With the help of about 15 tractors, Flora Ecopower cut down the *Acacia commiphora* and bush vegetation in the northern and northwestern sections of the Sanctuary. No Environmental Impact Assessment was prepared by or required from the company before commencing these activities. The consequences of allowing the investment project to operate in this core elephant conservation area were outlined. According to Yirmed (2008) of the total 10,000 hectares of land granted to the company, 87.4% was proved to fall within the boundary of the Babilie ES and of this 79.2% were within the present elephant ranges.

### Elephant poaching

According to the questionnaire survey, 65% of the respondents claimed that elephant poaching had been practiced in the area while the rest said it was not practiced in the area. Out of those claiming the presence of elephant poaching, 37% said it was practiced until the establishment of EPRDF, while most (63%) claimed it is practiced even now in the area. Regarding the period at which elephant poaching was intense, most of the respondents (86%) said it was very intense during the

Transitional Government, 7% of them said it was during the Dergue Regime, while the remaining said they did not know about it. The main causes reported to contribute for intense elephant poaching during the Transitional Government were illegal firearm trade, political and social instability in the country. Subsequent restoration of political and social order in the country, local disarmament of illegal firearms and the initiatives taken by the local governmental body to protect the area might reduced the poaching pressure on elephants.

### Elephant induced damage

The result of group discussion with the local peoples revealed that elephants were consistently raiding crops, vegetables and fruits and attacking crop-stores around their home range. They were also causing social problems including preventing people from walking at night. According to the group discussion and direct observation in the study area showed that crop-raiding by elephants is often a severe problem in the area and individual farmers lose an entire year's crop overnight and risk their lives in defense of their crops. Among the households, 58.2% experienced crop damage. The majority of respondents (45%) reported elephant caused very little damage to their crop and none of the respondents faced very much damage. Respondents differed ( $\chi^2= 45.43$ ,  $DF=2$ ,  $P<0.05$ ) in their views on whether or not elephant caused problems in relation to distance from their respective areas. People who live inside the Sanctuary area generally face many problems compared to those living within 4 km vicinity of the Sanctuary. Regarding the seasonal distribution of the crop damage problem, 71.1% said that it occurs during the wet season. When asked about other problems caused by elephants, out of the 73 households surveyed, 46.6% claimed that elephants have not caused any other problem, 33.3% claimed that elephants brought Tsetse flies and as a result livestock are attacked by trypanosome, while 30.2% expressed that elephants caused sleeplessness and extra labor cost on family members.

### Protective measures adopted

All the respondents used different traditional methods to mitigate crop damage due to elephants. These include staying in the field watching, throwing objects, producing noise by beating drum or shouting loudly, keeping fire burning, use of brightly colored objects and a wide and deep trench as a barrier and using banging on tins or drums to chase away approaching elephants. The technique has been used for millennia and is successful.

## DISCUSSION

Protected areas are a cornerstone of conservation policy.

However, such areas are continually under threat from growing human populations in the tropical developing countries. This is particularly the case in the Babile area, where the growing population has developed as a threat to protected areas directly by encroachment of wildlife area. Community perspectives towards the conservation area stem from a variety of contributing factors including loss of access to resources and benefits generated from conservation area, awareness concerning the importance of wildlife and crop depredation by wild animals. Human-wildlife conflict in BES is longstanding issue (Yirmed et al., 2006). The increased number of human population resulted in a severe competition with the wildlife resources of the conservation area. The Sanctuary is fully affected by human impact throughout the year. Such intense pressure will curtail the normal activities of Elephant. The absence of a proper fence also makes people and livestock easily to move through the Sanctuary in all direction without any limit. The failure to take action to revert illegal firearm possession in the past fifteen years makes the country lose its wildlife resources due to poaching (Shibru, 1995; Yirmed, 1997). Since 1995, however, local disarmament of illegal firearms from the local people and the interest local officials have developed and the action they have taken to bring the area under protection could have played major role in minimizing elephants and other wildlife killing in the area and mentioned that the extent of crop raiding varies depending on habitat type, elephant use pattern and distance from the boundary. The relatively high incidence of crop raiding in BES was also related to the above three factors. Many studies have shown that the cost of conservation is the result in negative attitudes while benefits create a positive outlook. Most communities strongly need free access to grazing for their livestock in the Sanctuary. They also claim that they have the right to utilize the natural resources of their area. To bring sustainable wildlife management and rural community development at Babile, it requires reconciling the interest of stakeholders. These will be achieved only when their interest becomes balanced. To balance, it requires solving the conflict between the interest of the community and the conservationists. Some of the measures to reduce the problems are introducing family planning, reducing the livestock number, emphasizes on quality, introduction of animal forage extension, awareness program towards wildlife, solving the problems of potable water, grazing land shortage, low production and productivity and introducing other community services.

## CONCLUSION

There is a continuing decline in the extent and quality of elephant habitats in BES. Having poor conservation status, BES is faced with many threats attributed to an increase in human activities including intensive agricultural activities, incursions of large number of livestock, deforestation for fuel wood and construction, uncontrolled bush fires for charcoal production, investment for biofuel production and poaching. The activity of humans is increasingly affecting elephant conservation as many elephants get killed (by) illegally by local people in attempts to reduce the conflict. Uncontrolled human activities will ultimately result in considerable loss of biodiversity, hamper movements of large herbivores such as elephants and consequently intensify human wildlife conflicts. The destruction of elephant habitats is caused by alteration of natural habitats for different human uses such as cultivation, livestock grazing, investment and space for human settlement. Changing the attitude of local communities through education and sharing of benefits associated with the wildlife can serve as a means for sustainable conservation measure.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

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