Wildlife in Ethiopia: Endemic Large Mammals

Melaku Tefera

College of Veterinary Medicine, P.O. Box: 144, Haramaya University, Ethiopia

Abstract: This study documented species riches of endemic large mammals and their biogeography, conservation status and threats in Ethiopia. Overall there are 280 mammalian species and subspecies 31 are endemic. Out of this, 12 of them are endemic large mammals, namely Canis simensis, Theropithecus gelada gelada, Theropithecus gelada obscurus, Capra walie, Capra ibex, Capra nubiana, Eurus assinus africanus, Equus assinus somalensis, Alcelaphus buselaphus swaynei, Tragelaphus baxtoni, Tragelaphus scriptus menelikii, Loxodonta africana knochenhau and Panthera leo abyssincum. Regarding the conservation status of these animals Equus assinus africanus and Panthera leo abyssincum were extinct in wild another 2 Theropithecus gelada gelada and Tragelaphus baxtoni fall in presently least concern the rest 8 were in endangered category. Wildlife populations in Ethiopia are under continuous threat, despite the presence of parks and protected areas, over the past several decades, deforestation, farm expansion, drought and illegal hunting were widespread and they were ranked in order of severity from most severe to lesser threats. It is recommended that community based wildlife conservation is an important solution. However, for self sustaining ecosystem benefiting the people around the park although important, the ultimate goal should be to educate them.

Key words: Biogeography · Biodiversity · Community based conservation · Extinct · Habitat loss · National parks

INTRODUCTION

Manifold as the landscape is the Ethiopian wildlife. Ethiopia is one of the world's rich biodiversity countries and it deserves attention regionally and globally [1, 2]. It has a very diverse set of ecosystems ranging from humid forest and extensive wetlands to the desert. Ethiopia has a total land area of 1.22 million hectares, with a varied topography from 116 m below sea level at the Afar triangle to 4533 m above sea level at mount Ras-Dashen. Alpine and mountainous vegetation vary with coniferous and broadleaved forests, vast savannah, steppes and deserts are interrupted by lakes and intersected by permanent and seasonal rivers accompanied by galley forests [3]. The variations in climate, topography and vegetation have contributed to the presence of a large number of endemic species. Ethiopia’s high faunal biodiversity reflects the existence of a large number of species of mammals and other higher vertebrates. This in turn reflects a diversity of habitats, created by differing combination of elevation, rainfall, geology, soil surface and ground water. Ethiopia is among the world leaders in terms of richness and endemism of mammalian species [4]. Ethiopia and Tanzania are among the top 25 endemic-rich countries of the world in terms of higher vertebrate species where as Ethiopia, Kenya, Uganda and Tanzania are individually, among the world leaders in terms of species richness and endemism of mammal species [5]. However, wildlife population in Ethiopia has diminished over the past century both in amount and distribution through loss of habitat, hunting and land clearance for farming; land degradation due to overgrazing is also intense. The forest cover of Ethiopia declined from 47% to only 3% [6]. Even more important to conservationists, many endemic wild species occur within the country some of which inhabit only very small areas. In Ethiopia, 40 protected areas (National Parks, Animal Sanctuaries and Area Enclosure) cover roughly 16.4% of the country’s land area (186,000 km2). These areas face many challenges due to growing populations, border conflicts and recurring drought. A chronic and growing issue for Ethiopia’s largely pastoral people is local access to grazing lands [7, 8]. Given the recurring nature of conflict between conservation and local communities, it is critical that conservationists better understand local views with respect to wildlife and protected areas.
Mammals are often the first taxa to be listed for a site. Ethiopia does contain, within the national parks one of the world largest concentration of large mammals [5]. But, a complete inventory does not exist and endemism are not well documented. The study of the species richness, endemism and rarity across geographical areas is essential to select the best places for conserving biodiversity [9], besides wildlife are not evenly distributed throughout the country but instead vary in abundance, composition and these aspects are also not well documented. For this reasons the objective of this study was to investigate the current conservation status, threats of endemic large mammals, factors involved in community based wild life conservation and assess the economic potential of wildlife in Ethiopia, with particular emphasis on endemic large mammal species and subspecies.

MATERIALS AND METHODS

In this study, only critically threatened endemic large mammals were considered. Data were collected using Participatory Rural Appraisal PRA [10]. The following Parks and Sanctuaries were considered: (1) Abijata-Shalla National Park; (2) Awash National Park; (3) Semien National Park; (4) and shire Sanctuary for park location (Fig. 1). A total of 40 people 10 people per park with people coming from, in and nearby parks have participated on first come first serve basis in an interview questionnaire survey and in group discussion for problem identification. Matrix score ranking and mapping of habitats, benefits, sabotages and the different threats in the park were asssed. Also local people’s perception on wildlife, wildlife conservation, management of protected areas and household demographic questions and household’s source of income were incorporated in the questionnaire.

Additional data were also collected from available secondary data and information has been collected by scanning available literature. The main source for data was the checklist of mammals of the national parks. Data was also collected from Individual interviews with staff of the Ministry of Agriculture and Rural Development, Ethiopia wild life authority, park attendants and

Fig. 1: Approximate spots of National parks and Animal sanctuaries


Fig. 2: Flowchart for determination of conservation status
Wondogenet College of forestry. Conservation status was determined according to International Union for Conservation [10]; the guidelines are summarized on Data was compiled and descriptive statistics was made.

RESULTS

The populations in and around Semien National Park were agriculturalists as it is located in the highlands. While, in Awash National Park which is located in the lowlands livestock herding was important. The majority of the people practiced mixed agriculture crop-livestock forestry and some off farm activities as depicted on Tables 1, 2. The main threats to the animals in the park were draught followed by farm expansion and increased settlement the results are shown on Table 3.

In addition Shire sanctuary is the most vulnerable to threats followed by Awash National Park. The attitude of the people to wildlife and park was positive except push factors two most important factors for contravention of park policy were land misappropriation, lack of benefit from park as shown on Table 4. Counter reaction of the local people dissatisfaction towards park was that manifested in the form of sabotage the main ones are driving away the animals at night and they also cut trees as shown on Table 5. The various benefits needed by people in and around park were school, roads and clinic in that order (Table 6). However, for short term benefit they need fodder and fire wood. The contribution of local people in and around the park to conservation of forest and wildlife were services like guarding, reporting illegal activity such as poachers above all tree planting was ranked number one as shown on Table 7. The distribution map of the wild animals in the park was found not to differ from the literature, the main reason was parks do not conduct inventory of wild life regularly.

Table 1: Household demography and lively hood

<table>
<thead>
<tr>
<th>National parks</th>
<th>Agriculture%</th>
<th>Forest Product%</th>
<th>Wage labor%</th>
<th>Animal husbandry%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awash</td>
<td>30</td>
<td>10</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Simien</td>
<td>70</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Abjata-Shala</td>
<td>40</td>
<td>20</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Shire</td>
<td>60</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Mean %</td>
<td>50</td>
<td>25</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Rank</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2: Pair wise ranking of subsistence patterns in all parks

<table>
<thead>
<tr>
<th># Subsistence mode</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Agriculture</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>2 Forest/wildlife</td>
<td></td>
<td>3</td>
<td>1</td>
<td>5</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3 Wage labor</td>
<td></td>
<td>4</td>
<td></td>
<td>3</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>4 Animal husbandry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: Main wildlife threats in and around the park*

<table>
<thead>
<tr>
<th>National parks</th>
<th>Threats</th>
<th>Awash</th>
<th>Simien</th>
<th>Abjata-Shala</th>
<th>Shire</th>
<th>Total score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farming</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Hunting</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>deforestation</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fire</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>draught</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Over population</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Increased settlement</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>28</td>
<td>24</td>
<td>27</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rank</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Criteria were weighted from 1 (least important) to 5 (most important) according to their relative significance
Table 4: Reasons for contravention park policy by people

<table>
<thead>
<tr>
<th>Contravention</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage caused by wild life to their crops (Birds and antelopes)</td>
<td>7</td>
</tr>
<tr>
<td>Perdition of farm animals by wild carnivore</td>
<td>6</td>
</tr>
<tr>
<td>Punishment by sanctuary staff</td>
<td>5</td>
</tr>
<tr>
<td>Non local park attendants</td>
<td>8</td>
</tr>
<tr>
<td>Land miss appropriation Loss of land for park territory</td>
<td>1</td>
</tr>
<tr>
<td>No benefits from the park</td>
<td>2</td>
</tr>
<tr>
<td>Unfair distribution of park revenue</td>
<td>3</td>
</tr>
<tr>
<td>Lack of compensation for damage</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5: Types of sabotages created by displeased people

<table>
<thead>
<tr>
<th>Sabotage</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive away animals</td>
<td>1</td>
</tr>
<tr>
<td>Kill animals</td>
<td>3</td>
</tr>
<tr>
<td>Cut trees</td>
<td>2</td>
</tr>
<tr>
<td>Set fire</td>
<td>5</td>
</tr>
<tr>
<td>Attack park staff</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6: People’s benefits from park and sanctuaries

<table>
<thead>
<tr>
<th>Needs and Benefits</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>1</td>
</tr>
<tr>
<td>Clinic</td>
<td>3</td>
</tr>
<tr>
<td>Other Forest product</td>
<td>12</td>
</tr>
<tr>
<td>Roads</td>
<td>4</td>
</tr>
<tr>
<td>Electrification</td>
<td>2</td>
</tr>
<tr>
<td>Income from tourists</td>
<td>6</td>
</tr>
<tr>
<td>Job opportunities</td>
<td>7</td>
</tr>
<tr>
<td>Transport during emergency</td>
<td>8</td>
</tr>
<tr>
<td>Fodder</td>
<td>9</td>
</tr>
<tr>
<td>Honey</td>
<td>10</td>
</tr>
<tr>
<td>Cutting fire wood</td>
<td>5</td>
</tr>
<tr>
<td>Loans borrowing money</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 7: Contribution of local people to parks maintenance

<table>
<thead>
<tr>
<th>Contribution</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting trees</td>
<td>2</td>
</tr>
<tr>
<td>Respecting the law</td>
<td>1</td>
</tr>
<tr>
<td>Reporting illegal activity</td>
<td>3</td>
</tr>
<tr>
<td>Guarding</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 8: Abundance, conservation status and endemism of wildlife in Ethiopia

<table>
<thead>
<tr>
<th>#</th>
<th>Taxonomy</th>
<th>Synonym</th>
<th>Habitat/altitude</th>
<th>Population/ Status</th>
<th>Treats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Canis simensis</td>
<td>Ethiopian Wolf; Simen Jackal</td>
<td>Afroalpine (Bale, Arsi, Semyen 3000-4000m)</td>
<td>400 endangered</td>
<td>Small population, diseases such as rabies, interbreeding with dogs, loss of habitat</td>
</tr>
<tr>
<td>2</td>
<td>Theropithecus gelada gelada</td>
<td>Gelada Baboon, Theropithecus gelada obscurus</td>
<td>Edges and steep slopes or precipices (Semyen, Debresina, Debrelabanos 2800-4600m)</td>
<td>20,000-30,000</td>
<td>Hunted by man for their mane</td>
</tr>
<tr>
<td>3</td>
<td>Capra walie Capra ibex Capra nubiana</td>
<td>Walla walie</td>
<td>Semyen (2300-4000m)</td>
<td>500 endangered</td>
<td>Hunted for meat, horn and destruction of habitat by local people</td>
</tr>
<tr>
<td>4</td>
<td>Equus assimus somalensis</td>
<td>African Wild Ass</td>
<td>Desert (Danakil along Awash river in to Ogaden as far as Shebelle river)</td>
<td>200 C2</td>
<td>Critically endangered</td>
</tr>
<tr>
<td>5</td>
<td>Equus assimus africanus</td>
<td>African Wild Ass</td>
<td>North Ethiopia</td>
<td>Extinct in wild Some in zoos</td>
<td>Hunted for meat, traditional medicine competition with domestic animals</td>
</tr>
<tr>
<td>6</td>
<td>Alcelaphus buselaphus swaynei</td>
<td>Swayne’s Hartebeest</td>
<td>Danakil, Rift valley lakes, Alileteghi, Awash valley</td>
<td>600 Least Concern</td>
<td>Destruction of habitat by human beings</td>
</tr>
<tr>
<td>7</td>
<td>Tragelaphus boxtori</td>
<td>Mountain Nyala Doga Agazin</td>
<td>Mountain forest Arsi, Bale (3000-4000)</td>
<td>4000-5000 Endangered</td>
<td>Destruction of habitat</td>
</tr>
<tr>
<td>8</td>
<td>Tragelaphus scriptus meneliki</td>
<td>Menelik’s Bushback Dukala</td>
<td>Highland forest, Bale and Savanna (Up to 4000m)</td>
<td>Not known due to nocturnal life</td>
<td>Destruction of habitat by human beings</td>
</tr>
<tr>
<td>9</td>
<td>Loxodonta africana Knochenshaeri</td>
<td>African Elephant</td>
<td>Mago national park</td>
<td>300 Endangered</td>
<td>Extinct in the wild now are only found in Addis Aabaa Zoo</td>
</tr>
<tr>
<td>10</td>
<td>Panthera leo abyssinicum</td>
<td>Ethiopian Lion</td>
<td>Previously inhabiting the western part of Ethiopia</td>
<td>Extinct in the wild now are only found in Addis Aabaa Zoo</td>
<td>Inbreeding, Disease and mismanagement</td>
</tr>
</tbody>
</table>

The abundance, conservation status and threats to wildlife are shown on Table 8. Ten out of twelve endemic large mammals (83%) are under endangered list. Two subspecies are extinct in wild Panthera leo abyssinicum (five lions of this subspecies are found at Addis Ababa zoo) and Few numbers of Equus assimus africanus are in zoos around the world. However, there are also other subspecies in the country which are endangered but not endemic. According IUCN classification there are 94 large and small mammalian species endangered in Ethiopia, 18 species are endemic. That is 8 species of the non endemic are also endangered. For quicker identification photos of the animals is shown on Figure 3. One can identify the large ears of Loxodonta africana, the ventral main of Panthera leo abyssinicum, the leg strips of Equus assimus somalensis, the head mains of the lion monkey Theropithecus gelada gelada. The unique horns of Cpra ibex, Tragelaphus boxtori and Alcelaphus buselaphus.
Fig. 3: Pictures a-h showing: (a) Alcelaphus buselaphus swaynei, (b) Tragelaphus boxtoni, (c) Equus assinus somalensis, (d) Capra walie, (e) Panthera leo abyssinicum, (f) Canis simensis, (g) Theropithecus gelada, (h) Loxodonta africana, respectively.

Fig. 4a-f: Maps showing the habitat range of (a) Elephants circular area shows Loxodonta africana Knochenhauri, (b) lions, circular area shows former range of Panthera leo abyssinicum (c) shows location of Tragelaphus boxtoni and Tragelaphus scriptus meneliki (d) represents the habitat of Capra walie (e) depicts Equus assinus somalensis (f) Shows the home range of Canis simensis.
Figure 4 depicts the biogeography of the endemic mammals. The animals are found in limited pockets in much localized areas mainly Bale, Semien, Nechisar, Awash and mago national parks. The most abundant endemic mammals are the Gelada and Nyala. The Gelada have a greater range of habitat while Nyala is limited in Bale National park.

**DISCUSSION**

Out of 280 mammals found in Ethiopia 8 are domestic mammals the rest 272 are wild mammals. 11.3% are endemic wild mammals or 34.5% are endangered out of this 31 of the 94 species 11.%, (n=31) are endemic mammals. Of the total mammals 34.5 are endangered (n=94). Unfortunately all endemic mammals were endangered category, among these five are larger mammals (Walia ibex Capra walie, Theropithecus gelada, Tragelaphus buxtoni and Ethiopian Wolf (Canis simensis) and the rest (83.9 per cent) are smaller ones including 2, 9 and 15 species of bats, insectivores and rodents, respectively[18]. Panthera leo abisinicum and [17] and Equus asinus africanus [19]. While there are few remnants up to 200 E. asinus somalensis, its surrogate E. asinus africanus extinct in the wild and the two are differentiated by their distinct future leg stripe and shoulder stripe respectively.

The larger mammals are mainly concentrated in the south and southwest peripheral border of the country; in fact, out of the 9 national parks, only 2 are not in the dry lands. For this reason they are prone to drought this makes them prone to migration and extinction. Given the restricted distribution and potential small size of population, these endemic species are most likely to be susceptible to anthropogenic environmental degradation [20].

There are also plentiful games along the stretch of the Great Rift Valley System. Mountain massifs in the north are also home to endemic species of mammals, particularly the Walia ibex, Canis simensis and Theropithecus gelada. Hunting has been a major factor in reducing wildlife numbers in the past. Both by local people and European hunters were shooting large number of game animals (for trophy, ivory, skin for trade, protection of crops and livestock). Uncontrolled hunting (poaching) was also a problem. At present many other factors are involved including climate change. This pattern of change mirrors that for the entire continent where the population of black rhino has shrunken from 60,000 to 4,000 over the last two decades, the elephant population is declining at the rate of 10% per year and many other previously abundant species are now either completely or locally extinct or gravely threatened [21].

The greatest overall threat to wildlife is the loss of habitat. Drought is accelerating shrinkage in forest areas, continent-wide, 65% of wildlife habitat has been lost [21]. In eastern Africa the growth of human settlements and cultivation is removing land from use by wildlife and is constraining access to migration routes and wet season dispersal areas around national parks such as the Semien and Bale. This does not only reduces wildlife numbers generally but also, by concentrating wildlife especially herbivores within parks, places severe pressure on natural ecosystem [22]. Habitat deterioration through deforestation, overgrazing by livestock and pre-empting of dry season water supplies by agriculture and stock raising also strongly contribute to the depletion of wildlife numbers Simonetta and Simonetta, 1983, (Cited [22]). Although most wildlife in Ethiopia still live outside of parks, the area available for wildlife conservation outside of protected area has decreased considerably, in southern Ethiopia little wildlife occurs outside of protected areas.

Many species traditionally viewed as common are also showing dramatic falls in their numbers and habitats have become shrunken like the case of the Mountain Nyala. Declines in common species indicate the widespread deterioration of our environment. Some people had the negative attitude towards birds particularly towards Baboons for the damage they cause to crops and hyenas for predation of animals. A decline in the quality of the habitat can be as detrimental as the loss of the habitat itself, for example through grazing by livestock and illegal logging.

The main threat to Ethiopian wolf is breeding with domestic dogs from the nearby settlement area a good indicator for the increased settlement in park area [8]. The past civil war in Northern Ethiopia and non-enforcement of game laws during that time has undoubtedly further aggravated the decimation of wildlife. In Ethiopia, the various ecosystems of high biological importance need strong conservation action. Because, our current practices on agriculture and forestry management are not sustainable for the environment and biodiversity. The fences-and-fines approach to wildlife protection is now perceived by many conservationists to have failed in Africa [6]. An alternative approach whereby rural communities are given ownership rights or custodianship and management responsibilities for the resource has been introduced under the name Community-based Wildlife Management. However this is not self sustaining,
the most critical point is that how to satisfy the people around the parks as resources shrink obviously these people will not halt from invading the sanctuaries and national parks.

Humans have an obligation to protect fellow creatures whether they have intrinsic value or not. However, whenever there is an opportunity to generate revenue it could serve as benefit to local people. Generally, wildlife has the potential to significantly contribute to both local and national economies. Wildlife in eastern Africa have a major aesthetic value to tourists who want to see and appreciate wild game species, especially if this can be done within their natural environment/ecosystem or some approximation if not establishing zoo is equally relevant. Wildlife provide a variety of goods such as hides, skins, ivory, horns, meat traditional medicine and subsistence hunting 1% in Ethiopia [22]. The life-support services provided by natural ecosystem such as disposal of wastes and cycling nutrients. Predator control, germination of grasses, by opening dense forests creating new habitat. For example the spotted hyena crucuta crucuta are everywhere in Ethiopia they scavenge on dead animal carcass and house wastes decontaminating the environment. The main advantage of wildlife is utilization as an alternative land use is possibility of increasing income without increasing animal biomass and thereby placing undue pressure on the environment. This is possible because wildlife species are better adapted to their environment than domestic livestock. In some habitats, which have little available water and/or are infested with tsetse fly, wildlife flourish where livestock can no. Wildlife are less likely to degrade the environment also makes more efficient use of available food resource than any nonspecific herbivore community, such as cattle Herlocker, [22]. This includes better control of woody species. The recreational/aesthetic importance of wildlife may be its single greatest economic value [5]. Wildlife has the potential to contribute to local and national economies. The revenue generated from wildlife is vis a vis neighboring countries is insignificant in Ethiopia.

Wildlife-based tourism is central plank in the economies of Kenya, Tanzania and Uganda [23]. For instance, national parks are the mainstay of Kenya’s tourism industry [23], which is the second largest earner of foreign exchange next to agriculture. Tourism attributable to Kenya`s wildlife parks and reserves earned roughly $ 208 million dollar during 1989-1992 Griffith and Southey, 1995 (Cited byHerlocker [22]). Wildlife- based tourism has also benefited some local economies as is the case with the Narok Country Council, which earns 90% of its income from the Massai Mara Game Reserve in Kenya [24]. In Ethiopia, there is no well organized wild life tourism. There is shortage of hotels and roads. Although tourists are able to view a wide Varity of wildlife within the region, certain individual species appear to be especially important to tourism industry. For example, each lion in Amboseli Park in Kenya generates a direct value of $27,000/year in tourist revenue while elephants generate $610,000 Western and Henry, (1979) (cited by Herlocker[22]).

Establishment of zoo has two advantages recreational and Conservation. Ex situ conservation efforts, with reintroduction programmes designed to rehabilitate animal species in the wild, has some success rates [25, 26]. Ex situ conservation serves as a gene bank to provide the germplasm for establishment of wild relatives of animal species in their natural habitat. At the sometime wild animals kept in zoo benefit secure living place. And can generate income from displays.

As with tourism, safari hunting is a high value use of wildlife, which does not depend directly on total animal biomass. It is the most lucrative from wildlife utilization and most easily implemented assuming that desired trophy species are present. Safari hunting can provide local communities with high returns with little investment. Tourist hunting plays a large and growing role in the economy of Tanzania where in 1992, it generated revenue to the government $5.34 million and to the industry as a whole $13.96 million, which does not include the benefits to other sectors of the economy, such as hotels [22].

The cropping of game for the commercial production of meat is another economic use of wildlife. It can be carried out in conjunction with livestock raising or in locations where economically viable livestock production is not possible, as in areas that are waterless, disease-ridden and/or otherwise of low productivity (and generally communally owned). Game cropping is also carried out on a large number of private ranches in South Africa and few in Kenya, Tanzania and Uganda. This activity is based on the fact that wild game and livestock managed on the same area provide the highest maximum possible biomass/unit area especially if the game species have different eating habits preference than livestock. The giraffe for example does not compete for grazing with domestic animals as it is a browsing animal.

Only few African species, such as eland, gazelle and buffalo, have ever been domesticated [5] a number of species, which have been either domesticated, or semi domesticated within the region. These include impala, Grants gazelle, Thomson’s gazelle, Fringe-eared
Oryx, African Buffalo and, African civet and ostrich. Most of these species provide meat, while the civet provides musk and the ostrich provides meat, skin and feathers.

Over the last decade or so increasing efforts have been made to make local communities responsible for the conservation and management of wildlife within their areas in return for which they will benefit directly from the receipt of hunting fees, sale of wildlife products and local employment (such as tourism industry or as park rangers). The assumption is that if local farmers and pastoralists benefit directly from wildlife populations in their area they will be more willing to ensure their conservation and management on a sustainable basis.

In Conclusion, there are good moral, aesthetic, economic and ecological reasons for conserving wildlife. Wildlife are important economically primarily because their management provides for possibility of increasing income without having to increase animal biomass, which might place undue pressure to the environment. The principal economic uses of wildlife are: (1) tourism, which is possibly the single greatest economic use; (2) displayed in zoo; (3) domestication of game species; (4) safari/trophy hunting, which is most lucrative and easiest to implement and (5) game cropping.

From the revenue generated local people should get benefits from the conservation and management of wildlife. Although there has been some success in this, doubts exist as to whether such activities will be able to continue over the long without outside help or even it is biologically sound to base human needs, which will grow, on harvesting wildlife populations which will not grow. Indeed, the strong correlation between protected area benefits and local community support is critical to sustaining conservation efforts. Community-based forest management constitutes a powerful paradigm that evolved out of the failure of state forest governance to ensure the sustainability of forest resources and the equitable distribution of access to and benefits from them. But Benefits might not always available, there is always risk. The best strategy is to educate the people.

REFERENCES


