

**Addis Ababa University**  
**College of Social Science**  
**Department of Geography and Environmental Studies**

**Challenges of Protecting Protected Area in Ethiopia: The Case of Maze  
National Park, in SNNPR in Gamo Gofa Zone**

**By:**  
**Negese Nako**

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**Challenges of Protecting Protected Areas in Ethiopia: The Case of Maze  
National Park, of Gamo Gofa Zone SNNPRS**

**By:**

**Negese Nako**

**A Thesis submitted to the college of social science of Addis Ababa University  
in partial fulfillment of the requirements for the degree of Master of Arts in  
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**Approval of the Board of Examiners**

1. Advisor

Name----- Signature----- Date-----

2. Internal Examiner

Name----- Signature----- Date-----

3. External Examiner

Name----- Signature----- Date-----

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## Acronyms

|         |  |
|---------|--|
| ASLNP   | Abijata-Shala Lakes National Park                                    |
| CBC     | Community Based Conservation   |
| CBD     | Convention on Biological Diversity                                   |
| CBNRM   | Community Based Natural Resource Management                          |
| EBTFA   | Ethiopia Biodiversity and Tropical Forests Assessment                |
| EU      | European unions  |
| EWCO    | Ethiopia Wildlife Conservation Organization                          |
| FAO     | Food and Agricultural Organization                                   |
| GERP    | Gross Enrolment Rate program   |
| HUSA    | Hunting for Sustainability in Africa                                 |
| INPE    | National Institute of de Pesquisas Specials                          |
| IUCN    | International Union for Conservation of Nature and Natural Resources |
| MEA     | Millennium Ecosystem Assessment                                      |
| MzNP    | Maze National Park   |
| NBSAP   | National Biodiversity Strategy and Action Plan                       |
| NGOs    | Non-Governmental Organization  |
| NPRSEP: | National Parks Rehabilitation in Southern Ethiopia Project           |
| SNNPRS  | Southern Nation Nationality and Peoples Regions                      |
| SPSS    | Statistical Package for Social Sciences                              |
| UNEP    | United Nations Environmental Program                                 |
| UNESCO: | United Nations Educational, Scientific and Cultural Organization     |
| WCMC    | World Conservation Monitoring Center                                 |
| WCPA    | World Commission of protected area                                   |

## **Abstract**

*Even if Ethiopia has various protected areas in different part, the areas (including Maze National Park) have been challenged largely by human-induced constraints. However, unlike the other known protected areas of Ethiopia, the challenges facing Maze National Park were not rigorously investigated. So, the main objective of this study was to assess the major management challenges and conflicts between local people and park managers. Survey questionnaire was employed to collect primary data and literature was reviewed to acquire secondary data in order to assess the socio-economic situation of households, and problems of natural resource management. Four kebeles were selected using purposively sampling from out of 17 kebeles in and around MazeNP. In addition to questionnaire, four focus group discussions were made with park staff and other eight key informants(two from each kebele); and again, other ten focus groups(five from park resource dependents and five from non-park resources dependents) were used to acquire data. Participants of focus group discussion and key informants (except households of local people) have been selected by purposive sampling. Result of the study revealed that Grazing (open), uncontrolled fire, expansion of farmland, cutting living tree, conflict, hunting, and voluntary settlement on the government side are the major management problems of the Park. Most respondents had a negative attitude towards conservation of the Park for two main reasons: frustration of losing free access for grazing and their interest to expand cultivated land into the park area. Attitudes were significantly related to locally perceived benefits, education, family size and age of the local people. The perception of the local people on the conservation and management of the resource completely contradicts with the views of staff members of the park.*

**Key words:** *management, challenges of Maze National Park, livestock, fire, attitude, conservation.*

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# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 BACKGROUND

East Africa is noted for its diversity and abundance of large mammalian herbivores. The Horn of Africa shows a great diversity of landscape and Environment (Kutilek, 1979). The wide range of habitats in Ethiopia, from arid desert, open grassy steppe, and semi arid savannas to highland forest and afro-alpine moor lands, support an exceptionally diverse fauna and flora species. Ethiopia is one of the few countries in the world that possesses a unique and characteristic biota with high level of endemism (Jacobs and Schloeder, 2001).

However, wildlife population and forest in Ethiopia has diminished over the past century both in number and distribution. Therefore protected areas are seen as a key to conserving natural resources. Ethiopia is one of the few countries in the world which established protected area to conserve unique characteristic fauna and flora with a high level of endemic species in the country (World Conservation Monitoring Center, 1991). To conserve this unique endemic species in the country establish a number of national parks, sanctuaries, wildlife reserves and controlled hunting areas (Desalegn 2004).

However, these protected areas in the country now a day are degrading and facing different challenges due to growth of population and settlement, illegal agricultural expansion, habitat loss and destruction, grazing, deforestation, soil degradation (Tedla, 1995; & Ashenafi et al., 2005) and misuse of natural resource in the country (Darren et al., 1998). On other hand lack of comprehensible national and international policies, less commitment from government organs, shortage of finances, and requirement of education to raise awareness are the other challenges of protected areas in the country (Almaz Tadesse, 1996).

Maze National park is one of the protected areas in the country found in Gamo Gofa Zone of SNNPRs and it is established in 2005, and is one of the last remaining sites for the conservation of the Swayne's Hartebeest. Now a day the management challenges of the park was unknown

because of its newly establishment no research conducted on it. Basically this study was focused on the major management challenges of area.

## **1.2 Statement of the Problem**

In order to conserve the wildlife genetic resources, Ethiopia has established protected areas at different levels and dedicated land to biodiversity and wildlife protection area (Desalegn, 2004). However, all the important ecosystems in the country are not represented in the existing proper protection zone. Even the areas dedicated for wildlife protection are facing many problems. The major problems to protected areas in Ethiopia emanate from demographic pressure, settlement within the parks or adjacent to them; deforestation, farm land expansion, grazing, and cutting living tree, illegal encroachment by people, uncontrolled fire, soil erosion and hunting. (Darren et al., 1998); while conflicts between park management, and local people, alien invasive species and change in fire regime are other problems of protected area in the country (NBSA, 2005).

The significance of management of protected area in Ethiopia was that protected area embraces different biodiversity within it. This biodiversity provides ecosystem services worth hundreds of billions of Ethiopian Birr every year that are crucial to the wellbeing of Ethiopia's society (NBSA, 2005). These services include clean water, pure air, soil formation and protection, pollination, crop pest control, and the provision of foods, fuel, fibers and drugs and tourism industry (MA, 2005). Almost 85% of the populations in Ethiopia live in rural areas, and a large part of this population depends directly or indirectly on natural resources (Desalegn, 2004). The conservation for biodiversity in Ethiopia is crucial to the sustainability of sectors diverse as energy, agriculture, forestry, fisheries, wildlife, industry, health, tourism, commerce, irrigation and power services.

However recently, habitat loss and disintegration, soil deprivation, over grazing, uncontrolled fire deforestation and soil erosion in the country have resulted in loss and decline of biodiversity (Darren et al., 1998). These challenges of protected areas in Ethiopia are related mainly to human population growth and settlement. The demographic pressures and concomitant demands for ecosystem services have revolted in the various problems and challenges threatening the very

existence of our life support system (biodiversity) and ecosystem serves we drive from them. To curb the continuing degradation of biodiversity, the Ethiopian government has long been establishing and expanding various sorts of protected areas in Ethiopia including Maze National park.

Both the old and newly established National Parks of Ethiopia are facing enormous challenges. Although Maze Park is among the recently established National Parks of the country, it is an area with undeniable flora, fauna, and other natural resource endowments (e.g. water); but, the Park is said to have been losing its resource endowments and also its tour values since some years past. Despite this fact, studies conducted about this protected area (Maze Park) before are very rare. Therefore, very little is known about the intricate and multifaceted problems of managing Maze National Park. This requires a careful insitu investigation on the matter so as to overcome management problems of Maze national park, and also to address the social and livelihood constraints of the people residing within and around the protected area.

## **1.3 Objectives**

### **1.3.1 General Objective**

The general objective of this study is to assess the main challenges of Maze National Park and the causes of conflicts between local community and park management.

### **1.3.2 The Specific Objectives**

1. To identify the major challenges and problems related to management and conservation of Maze National park.
2. To investigate the nature and cause of conflict between local communities and park management.
3. To explore the local communities involvement and participation in the management processes of the Maze national park.
4. To assess perception of the local community towards park management.

## **1.4. Research Question**

- What are the major challenges and problems of managing Maze national park?
- What are the causes of conflict between local communities and park management?
- How do is the local community involve and participate in the management of the Maze national park?
- How do the local communities perceive towards the Maze national park management?

## **1.5. Scope and Limitations of the Study**

The study specifically focuses on analyzing or investigating challenges of protecting protected areas in Ethiopia particularly in Maze National park SNNPRs in Gamo Gofa Zone. The study area was also related to the ongoing limited management challenges related to maze national park.

The challenges of protected areas was too wide in its components .It may not be possible to address all management challenges in this paper due to limited time and resources. Therefore, the paper covers only some selected challenges of maze national park. Further, the study was done under several constraint challenges, particularly during the process data collection. The time spent is not sufficient to collect the necessary data from the selected kebeles situated at different areas. Further due to inaccessibility of some of the household found scattered from the study area. The researcher couldn't find some the anticipated respondents and again the shortage of money to fulfill useful things during data collection processes. Hence this can be taken as the major limitation of study.

## **1.6 Organization of the Thesis**

The thesis has five chapters. The first deals with the introductory section, the problem statement, and its approaches. The second chapter presents the review of literature. The third part describes the study are, methodology, and features of the selected FUGs. Chapter four presents characteristics of the sample respondents, treats the analysis and interpretation of data, and discussion. Finally, chapter five deals with summery, occlusion and recommendations.

## **CHAPTER TWO**

### **2. Literature Review**

#### **2.1. Theoretical Literature**

##### **2.1.1. Malthusian Theory on Protected Area**

The connections that bind human and natural systems are innumerable, but arguably, one of the most discussed through human history has been the ever increasing size of the human population and its relationship with the natural resources upon which it depends. Modern theories on the association between population growth and the environment date to 1798, with Thomas Malthus's statement that, "The power of population is indefinitely greater than the power in the earth to produce subsistence for man (Malthus, 1986). Malthus envisioned an impending doomsday scenario where excessive human population growth would overtax a limited supply of natural resources (Malthus, 1986). He argued that agricultural production grows geometrically and arable land is finite while population growth is exponential. He hypothesized that as human numbers grew, food supplies would be insufficient to feed humankind and human numbers.

##### **2.1.2. Fortress Conservation**

###### **2.1.2.1. Model 1**

Fortress conservation is an approach that gives primacy to the biological aspect over the human/social dimension of conservation. It is preservationist or protectionist in approach. As a way of preserving nature, it employs militaristic style and infrastructure through its "fine sand fence" approach and hence its depiction by critics as "fortress conservation" (Fisher et al., 2005). It presumes that nature is best conserved in protected areas wherein disturbance from human activities should be precluded. Certain areas are designated as protected amid the wide environment. This idea has been shaping the planning and designing of protected areas in the 20th century and beyond. Consequently, protected area policies based on this model either restricted access to natural resources or led to the total eviction of local people living inland around the protected areas (Neumann, 2005).

Historically speaking, this was the main approach to the conservation of nature in the 1960s and 1970s. This approach in turn has its roots in the thinking that magnifies the aesthetic value of wild nature as serving to uplift the spirit of man. Thus follows the dichotomization between man and the environment wherein the former is pictured as destructive and ignorant. By this equation, local rural residents and indigenous peoples who lived in and around the wilderness areas are seen as inherently destructive and hence their activities were seen as incompatible with nature conservation. Backed by elites both from the developed and the developing world, this gave rise to the prominence of parks as safe-havens to nature from the ravages of ordinary use or the meddling hand of man (Fisher et al., 2005).

Therefore, it is argued that such an approach was undoubtedly elitist and very much favored the value of nature to humans in general. Little interest in the value of nature to poor rural people (Fisher et al., 2005). Such elitist perspective becomes even a more serious problem to the livelihood of the poor rural people (particularly in Third World Countries) when it is combined with the environmental theories and thus:

*Threats to nature in developing countries were usually framed in terms of the 'ignorant behavior' and 'reckless management' of rural peoples and in the context of 'uncontrolled population growth'. Problems identified with these threats included overgrazing and exceeding carrying capacity, slash- and -burn agriculture, the impoverishment of vegetation leading to the disappearance of climax vegetation, as well as the poaching of wildlife. Solutions for protecting nature inevitably followed. In the early years conservation funds financed preservationist approaches to conservation, such as establishing protected areas and reserves, removing local populations, supplying anti-poaching equipment, and conducting animal and plant surveys (Fisher et al., 2005).*

This paradigm of conservation policy whereby local residents are expelled from the areas designated as national parks and other protected areas has been the dominant conservation approach in the developing countries until very recently. In Africa, this conservation policy was introduced by colonial powers and later expanded by conservation experts (Hanna, 2006).

The practical manifestation of this conservation approach comes as exclusion. As a result of such exclusion, resettlement of local people to other location; restriction of access to livelihood resources; break up of communal lands; collapse of local management systems and social structures; fines and imprisonment; and increased rural conflict and famine are among the impacts generated. Such conservation thinking influenced how the local people living in and around protected areas are perceived in conservation and thus: Local people were – and still are – labeled as poachers or squatters rather than hunters or settlers (Fisher et al., 2005). Consequently, resource extractions like grazing, hunting, gathering etc are no more accessible to the local people. They rather become under direct state ownership and designated as protected areas for the conservation of the flora and the fauna and for their touristic importance (Neumann, 2005).

#### **2.1.2.2. Model 2**

The protectionist nature of fortress conservation with its philosophy of viewing nature conservation and human habitation as inherently incompatible prompted a heated debate about nature conservation. In this regard, it is the human dimension of biodiversity conservation that is the most debated. That is done both in an abstract way (relation between humans and nature) and on a more practical level (how to deal with people living in and around protected areas) (Buscher & Whande, 2007). According, to Attwell & Cotterill (2000) rising the issue of community stake in natural resource conservation is like questioning the role and legitimacy of conservation science. Sanderson & Redford (2004) would argue that conservationists have no responsibility for economic enhancement of the local people.

On the other hand, Brockington & Schmidt (2004) argue that conservation should consider the immediate need of the local people and thus should contribute to poverty alleviation. This is because there is ethical and practical reason to consider in the creation and maintenance of protected areas (that usually involves the exclusion of local people) Cernea & Schmidt (2006). Rolston (1996) argued that there is ethical responsibility wherein saving nature. (Hanna, 2006) wrote that Rolston III's idea is preservationist and that he gives ethical responsibility to the North (Developed Countries of North America and Europe) for nature conservation. In the same manner, (Fisher et al., 2005) argument reinforces this assertion when they write that fortress conservation is criticized because of its ethnocentric orientation favoring Western ideas of

nature; its elitist approach ignoring the land rights of the indigenous inhabitants; its neglect of the wider ecosystem approach in which human are also a part in influencing landscape; and its separation of people from protected areas which has resulted in ecological simplification and pressure on resources outside of the protected areas that finally impacts on the protected areas themselves.

In general, fortress conservation marginalizes, criminalizes and impoverishes local people. This has resulted in the protest of the local people against conservation injustices. As a result, illegal hunting and grazing and other everyday forms of resistance became the signals of the failure of fortress conservation. From this it follows that fortress conservation often works towards its own demise. However, such protests from people are usually presented as a problem caused by population growth and thus pressures from the surrounding areas and lack of appreciation of nature conservation from the part of the local people. Such view ignores the ways in which protected areas are historically implicated in the conditions of poverty and underdevelopment that surround them (Hanna, 2007).

### **2.1.2.3. Model 3**

Therefore, the efficiency of fortress conservation has been questioned since the 1980s. As an alternative, Community Based Conservation (CBC) has come to dominate conservation discourse. Here it is argued that local people should be involved in the planning of protected areas and should get tangible economic benefits out of it thereby giving an economic stake for local communities in conservation. This has been the result of development thinking wherein participatory and bottom up approaches has been put forwarded. With that the focus of conservation has consequently shifted from preservation to sustainable use, with income creation through controlled resource extraction, ecotourism, regulated trophy and subsistence hunting, and other activities integrated with conservation objectives playing a central role (Hanna, 2006). But today privatization of nature reserves is looked upon as necessary by many people and community conservation is thus seen as in line with market logic that correlates conservation and development. This can be problematic, because in areas of the world where land rights and conservation are contested issues or where there are high levels of poverty, privatized nature

reserves represent a new form of dispossession or obstacle to effective re-distributive reforms (Buscher & Whande, 2007).

## **2.2. Challenges of Protected Area**

### **2.2.1. Conflicts**

Historically, the now evicted locals had been sparsely inhabited in many of the conservation areas for a long time. Upon the eviction, the indigenous people are forced to use resources that are outside the protected areas (Fiallo & Jacobson, 1995). However, as population increased unsustainable land use practices outside the protected areas made life difficult. Thus, demand for resources found people illegally use and then destroy the natural resources inside protected areas and getting into conflict with conservation authorities (Lumprey, 1990). Complete removal of the local people from using the resources in protected areas at the time of establishment resulted in conflict between the conservationists and the people (Davey, 1993). As a result, different illegal activities were carried out inside the protected areas against the law and regulations of conservation. These activities destroyed the natural resources (Wells & Barandon, 1992).

The conflict between park and local people living adjacent to protected areas can probably never be entirely eliminated. However, the conflict can be mitigated by discouraging agricultural activities associated with high human density on land adjacent to protected areas that attract wildlife (Newmark et al., 1994). With increasing human pressure on many protected area, human-wildlife interactions are becoming more common. In particular, crop raiding is becoming a more widespread and complex problem throughout the developing part of the world (Hill, 1997; Southwick & Siddigi, 1998).

The success of protected area and human wildlife conflict reduction largely depends on the ability of managers to recognize, embrace and incorporate differing stakeholder values, attitudes and beliefs (Messmer, 2000). Traditionally, management decisions have relied more heavily on insight from the biological sciences than social assessments of the human dimension (Decker et al., 1992). A major bottleneck in wildlife conservation is the inadequate direct benefits that local communities derive from wildlife related tourism (Earnshaw & Emerton, 2000).

Most of the African wildlife institutes were established around the same period, i.e., in 1950's. Some of them started conservation practices late, during 1970's and these wildlife institutes are successfully managing and utilizing their wildlife resources. In Kenya for instance is the country's principal source of foreign exchange, exceeding the revenue from coffee and tea combined in 1989 (Kenya Wildlife Service, 1991).

However according to (FAO, 2003) represent Eastern Africa has a high human population have also contributed biodiversity loss can be attributed to multiple causes; a large part is accounted for by the real and widespread conflict between people and wildlife. For example in Mauritania unsustainable natural resource exploitation, habitat conversion and destruction, pollution and soil degradation, coastal erosion, seawater intrusion, bush fires, overfishing in lagoons, long line and fine net fishing, coastal urban tourist development, building on wetlands, water pollution, land reclamation with its degradation of lagoons and coral reefs (Republic of Seychelles, 2004), sand mining in lagoons, islets and coastal areas (Government of Mauritius, 2005), hunting (Louette and others, 2004), inadequate management of waste and intensive farming are the major causes of conflict. The loss of key dispersal areas for wildlife leads to greater pressure within the protected areas, and heightened human wildlife conflict. Hostilities have built up as consecutive governments ignore the hardship that wildlife causes people (Yeager and Miller, 1986, Western, 1997).

In many parts of East Africa, human-wildlife conflict falls under the jurisdiction of wildlife conservation authorities, which often ends at the boundary. The question of who should be responsible for dealing with the conflict and addressing the issue is not often clear, resulting in unresolved problems (Nyhus and Tilson, 2004). Park managers increasingly recognize that the survival of the remaining wildlife populations in Africa depends upon the willingness and ability of people living in and adjacent to areas inhabited by wildlife to support their presence (Anderson and Grove, 1987). Africa, compared to other continents, has the largest number of endemic families and genera of big games with high degree of endemism. This is one of the reasons for the African fauna to be so interesting and spectacular (Delany and Happold, 1979).

Despite the obvious economic benefits that wildlife brings, many farmers, herdsman and ranchers living adjacent to parks look upon wild animals with considerable respect (Kaltenborn

and others, 2003). Many nations accept the desirability of protecting their natural heritage to contribute for the protection of natural resources and conservation of the biological diversity of the world (Mackinnon et al., 1986). Realizing the need of conserving and protecting its biodiversity, Ethiopia has become one of the nations of the world that ratified the Convention on Biodiversity. The country commenced its wildlife conservation and development program in 1965 (Andebrhan Kidane, 1992; Hillman, 1993).

Ethiopia's geographical location and physical feature has resulted in the diversification of wildlife (Shibru Tedla, 1995). The large altitudinal and latitudinal ranges make Ethiopia an ecological diverse country and home of several unique habitats. Out of the 277 mammalian species known to occur in Ethiopia, 31 are endemic (Hillman, 1993).

Many of Ethiopia's protected areas exist on paper only, while others have declined in size or quality (Schloeder and Jacobs, 1993). Maze National park is one of the protected areas that faced different challenges. For example the area became under increasing human pressure impacting the habitat available to the native wildlife. Although efforts have been made to prevent habitat loss, lack of law enforcement and lack of alternative available to the local people have resulted in continuing encroachment and habitat conversion (Birdlife International, 2003). In the surrounding area, livestock and crop production is the major sources of income. The park is the only available for grazing. The resultant reduction in space and the poor quality of grazing land have forced the livestock and native mammals to compete (Birdlife International, 2003). Park management should adapt new situations and new understandings emerging from experience and the supporting biological and social sciences (Riley et al., 2002).

Considering the actual population growth rate of humans, increasing demand for natural resources and the growing pressure for access to land, it is clear that the human-wildlife conflict may not be eradicated in the near future. This needs to be managed urgently (IUCN, 2003). The subspecies is threatened by further loss of habitat to subsistence agriculture, overgrazing by domestic cattle and by increasing number of new settlements in and immediately around the protected area. Hence the same problems that mentioned in the above are created in Maze National park.

### 2.2.2. Grazing

Grazing by livestock has been an important issue for the management of the national parks and protected areas. Overgrazing by domestic livestock is an important cause of land degradation in arid (Perveen *et al.*, 2008) and semi arid ecosystems (Huang *et al.*, 2007). Grazing frequently operate through the reduction of plant cover and fragmentation followed by disappearance of vegetation patches, reducing their size and/or numbers (Perveen & Hussain, 2007) and leading to soil erosion and losses of nutrients from the exposed soil (Holm *et al.*, 2002). Grazing increased, reduced or lacked consistent effect on plant diversity (Proulx & Mazumder, 1998). These contrasting patterns of response have frequently been attributed to differences in grazing intensity.

Overgrazing represents the most obvious impact on the native biodiversity of grasslands. As overgrazing causes retrogression, stimulates growth of weeds and loss of diversity. Overgrazing reduces the tall grass cover to tufted grass type (Olsen and Larsen, 2003). Livestock impact on biodiversity through trampling and removal of biomass, alteration of species composition through selective consumption and changed inter-plant competition. Changes in grazing intensity and selectivity will inevitably change biodiversity; under grazing and overgrazing can both have negative effects, but overgrazing by livestock is increasingly problematic Khan (1994).

Grazing animals influence species composition, change in biomass and distribution of biodiversity. Similarly, Pratt and Gwynne (1997) and Sher and Hussain (2009) observed that overgrazing reduces the ground cover vegetation, plant diversity and productivity. Furthermore, the impact of grazing on rangeland vegetation Grazing animal may exert beneficial or mutual influences on the vegetations for their own good but on the other hand, large concentration of them often have harmful effects on the plants because of selectivity and over grazing.

Quantifying the impact of livestock grazing on natural communities (forages) has become a major issue (Sher *et al.* 2005:147) in the management of rangelands especially where the grazing is very widespread and its impacts may be in conflict with conserving biodiversity (Olsen and Larsen, 2003; Sher *et al.*, 2005). Lamprey (1979) documented that grazing is among the

important agents, which influence the distribution of some vegetation types. Grazing animals influence species composition, change in biomass and distribution of biodiversity. Despite this, the overuse by grazing of protected areas could result in irreversible vegetation changes (Van de Koppel *et al.*, 2002). These changes are generally characterized by the replacement of grasses by woody species, leading to shrub and/or tree invasion and the concomitant increase in the scale of the spatial pattern of plant patches and soil resources (Adler *et al.*, 2001).

In Ethiopia Overgrazing results in decreased soil cover, increased erosion, decreased quality and productivity of range resources, reduction or elimination of the natural regeneration of woody species and preferred forage species, bush encroachment in some areas and loss of biodiversity (EBTF, 2008). Awash, Abijata-Shala and Nechsar national parks, encroachment and grazing forced many wildlife species out of the park due to increased competition for forage (Hillman, 1991, Gebre Michael and others, 1992, Jacobs and Schloeder, 2001). According to Zewdu and Yemisrach (2003), the level of rural poverty, lack of incentives, increasing demand for grazing and many other multi-faceted problems have put a lot of stress on the conservation strategy of the country.

Desalegn stated that authorities consider cattle grazing on Nechsar NP as the most pressing problem of the park for several reasons as the park warden explained:

*“Grazing in the park negatively affects biodiversity by exhausting grasses and related resources; common use of the grassland plains by wildlife and domestic animals increase the risk of disease transmission to and from wildlife; and their presence in the park makes the park less attractive to tourists as they are interested more in observing wild animals (Desalegn,2008).*

These referring to the signs of exhaustion in the grass cover, the authorities argue that the park area suffered from overgrazing by the cattle emphasizing that the cattle population is well beyond the carrying capacity of the area (Bolton, 1973). A similar case of habitat loss and fragmentation has also been reported for all National Park in Ethiopia, the shortage of pasture land to the local people and the local community direct involve on protected area in order to feed their cattle (Hillman, 1988).

Hence the same problem in the Maze National park occurred and the cases will be describe and explain in detail when the study on going.

### **2.2.3 UN Controlled Fire**

Fires are the major disturbance of the earth ecosystems, and it is impossible to understand plant and ecosystem evolution without considering their impact (Bond and Kelley, 2005; Pausas and Kelley, 2009). During the whole geological period fire shaped the landscape without human intervention. We assume that fire is a natural component of our ecosystems; however wildfires (non-controlled fires) often pose important threats to public safety, properties, and forest resources (Martell, 2007). (Rego et al., 2010) said that wildfires are problem to all ecosystems of Europe and the world, especially in a context of climate warming, where drier and warmer conditions are expected.

Harvest of moist tropical forests inevitably increases the risk of destructive forest fires. The potential to intensify the fire regime so severely that tropical forests are irreversibly replaced by Cerrado or other biomes is a serious problem in emotional areas along the "Arc of Deforestation" extending from eastern Para to central Bolivia (Negreiros et al., 1998). Increased fire risk associated with climate change and timber exploitation either at the emotional areas or in interior in Amazon forests. Most of smoke emission assessments are based on aerial or remote sensing measurements (Andrae, 1991) these results biomass consumption and carbon release rates during the process of forest clearing by fire (Andrade and others, 2002). On the other hand many of the ecosystems that we protect were actually influenced or created by fire. For example, grassland ecosystems around the world were strongly influenced by fire. Without the existence of fire, such ecosystems would be substituted by forests (Bond et al., 2005; Wilgen, 2009).

Fire favors the spread of grasses and the creation of numerous ecosystems that nowadays are considered to be key habitats for many species of herbs, grazing animals, butterflies, reptiles, and birds. Grasslands are the largest habitat in the world with an estimated area of 52.5 million km<sup>2</sup> in the world or 40.5% of landmass (FAO, 2005). In the EU the grasslands are habitats with great biodiversity. Nowadays, in the EU countries the grassland area decreased by 12.8% in the period

of 1990 -2003. In the causes of the abandonment of traditional activities, including fire, are responsible for this decrease (European Commission, 2008).

According to National Institute of de Pesquisas Species in Brazil, estimates that during 1995, 20.5 million hectares of the Brazilian Legal Amazon burned. Extensive deforestation in the Amazon basin has created a highly fragmented forest in regions with an extensive rate of land use conversion and use of fire for land clearing and agriculture and grassland maintenance. The forest on the interface with land clearings suffers drastic changes in micro weather, vegetation composition and structure, and ecological processes (INPE, 2002; INPE, 2003). Accidental fires cause approximately one-half of the area burned in the Amazon forest of Brazil, and are often associated fires that start in adjacent areas cleared for agriculture or transportation corridors (Nepstad and others, 1999, Uhl and Kauffman, 1990).

Africa clearing and burning of forest habitat for agriculture in tropical forests is the main challenges (Ferraro, 1994). Limited land availability and increasing population pressure have resulted in decreasing the Antongil Bay landscape; an estimated 1,500 ha of primary forest are threatened by fire and changed in to deforestation annually (Meyers, 2001). According to (Travis, 2006 ) fires are the major problem in Zambia caused by local residents to clear agricultural fields, remove wild honey and searching for pasture land. Fire is the case for disappearing slow-growing species at the edge of the forests are and gradually being replaced by pioneer species. Regeneration of slow-growing species, which have high value timber, requires long fallow periods, which is often not allowed by the bush fires (UNEP, 2004). Human activities are thought to be primarily responsible for the current pattern of vegetation change by burning: grassland wildfires set by herders either to stimulate regrowth during the dry season or to eliminate unpalatable herbaceous species and forest clearing for agriculture, timber and charcoal production (Kull, 2000).

Ethiopia is one of the worlds known biodiversity and forest reigns, but current these protected areas are highly influenced by fire. Bushfire is the major destructive agent in Ethiopian protected area which was impacted by the local peoples. (Desalegn, 2008) argued that in Nechsar National Park the indentifying problem is fire by Guji people. They said that, “in our culture, we had a

practice of burning grass before the rain”. Such practices can destroy tree and grasses at the early stages of their growth. Fire is a basic part of the ecology of semi-arid rangeland ecosystems; it often results in bush encroachment, greatly reduced forage production and major changes to the structure and species composition of the vegetation. Fire bans result from well-meaning initiatives taken by politicians and technicians who lack a good understanding of the role of fire in the ecology of dry land ecosystems (EBTF, 2008). There for similar factors was found in Maze National park.

#### **2.2.4. Hunting**

Although many parks have been notified for their protection, they continue to face serious threats. Historical records (Murray, 2003) tell us that numerous species are extinct or have been locally extirpated at least partly because of unregulated hunting, often in synergy with habitat alteration (tertiary animal mega fauna, pacific islands large fauna, passenger pigeon, American bison, and North-African elephants for example), local hunters being the one most important challenges for protected areas. Local hunting is carried by a large number of people, and it targets a wide variety of species. The biological impacts of hunting are poorly understood around protected area (Madhusudan and Karanth, 2002).

Nyaoi and Bennett (2004) found that hunting wild animal in Asia particularly in Batang Al national park is the major challenges predominantly carried out by men; in park bearded pigs were a regular hunted animal and sometimes large snakes such as pythons were hunted for local trade in the Lubok Antu market. The main animals hunted by local hunters are ungulates, with bearded pigs being the main prey (Bennett, 1992). In Latin-American the Chiquita no communities and the Ayoreo of Santa Teresita, use hunting, and for subsistence use and local sale are similar problems in the countries protected area (Linzer et al., 1998). In the Tangkoko Duasudara Nature Reserve in Sulawesi, Indonesia, between 1978 and 1993, the population of crested black macaques declined by 75%, while anoa and maleo bird populations declined by 90%, and bear cuscus numbers fell by 95% (Brien and Kinnaird, 2000). Similar situations have been reported inside national parks of northern Thailand (Doi Inthanon and Doi Suthep) where all elephants, wild cattle and tigers have been hunted out. Similarly in Viet Nam, 12 species of large vertebrates are either extinct or on their way to extinction as a result of hunting. These

extinct species include Eld's deer, wild water buffalo, batagur turtle and Siamese crocodile. While the tiger, elephant and banteng are close to extinction in the country (Bennett & Rao, 2002).

In Africa Elephants are hunted for ivory and bush meat, this illegal killing of Elephants may reduce the number and increasingly confined to protected areas and their immediate peripheries (Blake, 2002). The expansion of bush meat hunting is a major threat (Robinson and Bennett, 2002, Robinson and Bennett, 2004). Casualties of the bush meat trade include the great apes (gorillas, chimpanzees, and baboons), which coupled with the real and growing threat from the Ebola virus could be driven to the verge of extinction within a decade (Walsh and others, 2004). In a report from IUCN (Eves & Ruggiero, 2002), it was estimated that the number of all duikers decline through illegal hunting. The same document estimates the harvest rates of blue and bay duikers at 18 and 0.25 million respectively, based on the assumption that 50% of the forest area is hunted in Central Africa (Mayaux et al., 2004). Between 1925 and 1950 up to 800,000 duikers pelts were annually exported from French Equatorial Africa (Fargeot, 2003).

However in several countries much of the hunting takes place in the more productive forest-agriculture mosaic. For example 385,000 tons of bush meat is harvested yearly in Ghana (Ntiamao-Baidu, 1998 in Cowlishaw et al., 2004) and 118,000 tons in Côte d'Ivoire (Caspary, 1999) are harvested in the forest. The status of such species may not be of immediate conservation concern, and will not attract tourists but they have both economic and ecological value and deserve to be taken into account in management decisions (Naughton-Treves et al., 2003). Note however that many of the original species inhabiting these areas are now locally extinct.

For example in Cameroon, many species of large mammals, including elephants, gorillas and other primate species, have become locally extinct in the past 50 years due to hunting (Maisels et al., 2001). Bush meat hunting is also a significant challenge in Madagascar (Golden, 2005). Hunting can include damage to forest structure; traditional trapping techniques for lemurs require clearing forest areas for a single snare (GERP, 2006). On the other hand in Lukusuzi NP Illegal hunting reduce wild life condition in Luangwa's Pas in Zambia (Lewis, 2005). Food unconfident

families living in areas where wildlife is an available resource sometimes compensate for poor farming results by snaring wildlife and using game meat for barter. This coping strategy is widely practiced in Luangwa Valley by relatively unsuccessful farmers and in previous years accounted for annual losses of over 3,000 wild animals (Lewis and Travis, 2006).

Ethiopia is a country exceptionally high in globally unique biodiversity, however wildlife populations throughout the country have been reduced to a fraction of what they were due to a number of causes, including hunting. This appears to have several root causes, including cultural traditions, subsistence, and buffers during famines and reprisal against government (HUSA, 2012). Several national parks and controlled hunting areas are spread across the country, but the institutional and financial capacity for protected area management is low and benefit sharing mechanisms with communities are lacking (HUSA, 2012). Hunting management is highly focused on revenue derived from concessions and trophy fees, particularly those targeting the endangered mountain Nyala - the world's rarest mammal still subject to commercial harvest. HUSA examines the multiple drivers and impacts of hunting in both highland and lowland areas and assesses the potential for benefit sharing to help develop sustainable approaches to wildlife conservation.

Illegal hunting tends to destroy wildlife; further exacerbating the status by decreasing the number (including lions and their prey species). So does human-lion conflict, resulting the reductions in lion numbers (through indiscriminate killing; poisoning, trapping and shooting) (Gebresenbet et al., 2010). The Awash-Shala lake national park in Ethiopia also provides deference mammalian species (Fekadu and Rezenom, 2002). Historically, as noted by "Stephenson (1978), abundant species including Oryx (*Beisa oryx*), Swayne's hartebeest (*Alcephalus busephalus swayeni*), Buffalo (*Syncerus caffer*), Waterbuck (*Kobus ellipsiprymnus*), Giraffe (*Giraffa camelopardalis*) and Lion (*Panthera leo*) in the park but currently these animals have been exterminated through illegal hunting and replaced by other species in ASLNP".

Hence In southern Ethiopia, illegal hunting, usually described as a culturally important economic activity; there for Maze National park also one of the protected area in southern Ethiopia the similar problem create repeatedly in the park

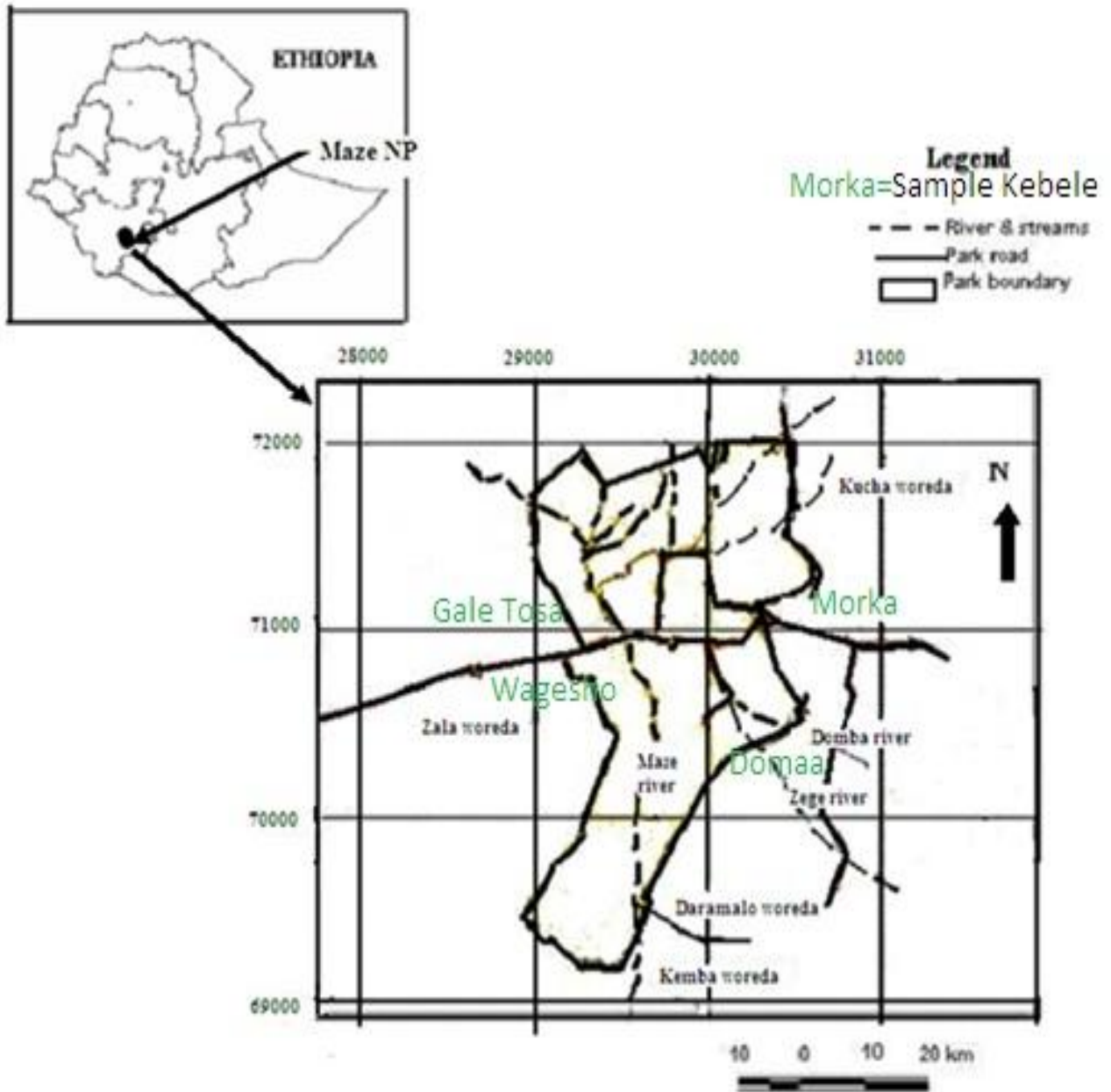
## **CHAPTER THREE**

### **Background to the study area and Methodology**

#### **3.1. Background to the study area**

##### **3.1.1 Location**

The study area is located in Gamo Gofa zone of Southern Nation Nationalities and People's regional states (SNNPRS). It is one of protected area found in Gamo Gofa Zone of SNNPRS and administered by the SNNPRS Culture and Tourism Bureau. It is about 468 km and 250 km south west Addis Ababa and Hawassa via Wolaita Sodo-Sawla road, respectively. It is situated  $6^{\circ}31'N$  latitude and  $37^{\circ}40'E$  longitude. Its altitude lies between 900-1400m above sea level. Relatively, it lies in between four woredas: Cucha woreda in North and North West, Deramallo woreda in the East and South, Kambba woredas in south and Zala woredas in the West and South West. The park covers an area of  $220\text{km}^2$ . Maze is located in the surrounding of middle Omo valley and named after the name of the river which drains towards of Omo River.



**Fig. 1: The study area**

### **3.1.2 Climate and Drainage**

The agro-ecology of maze national park and its surroundings may be recognized as kola (which lies between 500-1500m above sea level) and is characterized by a warmer, climate following the traditional classification of agro-ecological zones in Ethiopia. The region is characterized by very hot condition and experienced recurrent drought is recent part. The hottest months of the

area include December, January, February and March and annual average temperature of maze is 25<sup>0</sup>c (highest 25.4<sup>0</sup>c and lowest 24.5<sup>0</sup>c). The coldest month in the area include June, July and august.

The rainfall season extends from March to September. Maze national park is situated within Omo river basin. It is owns a number of rivers and tributaries which is drains to Omo rivers. Maze River stands from maze national park. Major River from maze national park in ascending order of their size is Masta, zagie, Daho, Domba, Lemasie and Maze (MzNPstaff, 2014).

1. **Masta River:** Located southern part of the park and drains into maze river during the rainy season only
2. **Zagie River:** Is located south eastern part of the park and drains towards Domba River all the year round
3. **Daho River:** Is locates northern part of the park and drains into Lemasie River during rainy season only.
4. **Domba River:** Is a permanent stream located south eastern part of the park and drains in to Maze River all the years round then it stopping its drain after join to maze river.
5. **Maze River:** It starts from the southern parts of the surrounding highland and passes through the park from south to north direction and drains in to Omo River. It is a longest river which crosses the park from south western direction. All the rivers drain in to maze.

### 3.1.3 Geology

The Geological structure of the park has produced diverse topographic features including a vast plain, some sloppy areas, small hills, river vales, escarpments and chain of mountains at its boundaries. Maze national park and its surroundings have unique natural, physical features such as, hot spring, natural caves, cliffs and high mountains peaks, like Mt Guge.



**Fig: 2, Bilbo hot springs**

**Source: photo captured by Negese Nako: during Field survey (2014).**

### **3.1.4 Fauna and Flora**

Maze National Park has viable population of mammalian species and viable groups of fauna species in addition to diversified flora and possesses a good number of the endangered endemic Swayne's Hartebeest population and also involves Varieties of bird species, reptiles and amphibians as well as insects are also found. The park is known to be home of one of the endemic mammals in Ethiopia, Swayne Hartebeest (*Alcelaphus buselaphus*). Besides, Orbi, Bohor red buck, Buffalo, Warthog, Bush buck, Water buck, Greater kudu, Lesser Kudu, Bush pig, Anubus baboon, Vervet monkey, Colobus monkey, lion, leopard, Wild cat, Serial cat, are among the common species. The wild animal of Maze National Park supports a wide range of savannah species; So far 39 larger and medium sized mammals (MzNP office, 2014). (See appendix1). And 196 bird species have been recorded (MzNP office, 2014). (See appendix 2).

Concerned to vegetation part, the park is covered by savannah grassland with scattered deciduous broad laved trees as well as River line growth along the main water courses. Most of the area is plain, and is covered by open Combretum-Termnalia woodland vegetation (MzNP office, 2014). (See appendix 3).

### **3.1.5 Socio-economic profile of the area**

The total population of the sample kebele around Maze National park is estimated to about 10,475 living in 3,835 numbers of households (see appendix, 4). Based on samples which were taken during field survey each household has on the average about 2 .56 ha farmland and the total households of estimated of 3,835 could owned about 9,817.6 ha farmland that covered the park. On other hand; based on samples, which were taken during field survey each household has on average about 8 cattle, and 5 goats, which estimated to 49,855 total livestock owned by 3, 835 of total households.

Pastorals and subsistence farming are mainly dominating the socio-economic conditions in Maze national park and the surrounding areas (MzNP staff, 2014). Being among the major socio-economic problems, highly increasing size of population and livestock density, could account for the deterioration of the general situation of the park. The park area was suitable for agriculture and heavy grazing (MzNP office, 2014).

### **3.1.6 Human resource development of Maze National park**

The current records from Maze National park indicated that there are 32 employees in the park. It is worth maintaining that out of, these 32 employees, 29 are from the local community (MzNP office, 2014) (Table 1).

Table 1: Summary of human resources of Maze National park.

| No    | Job title                  | Quantity |
|-------|----------------------------|----------|
| 1     | Park warden                | 1        |
| 2     | Wildlife expert            | 1        |
| 3     | Human resources management | 1        |
| 4     | Store man                  | 1        |
| 5     | Office guards              | 2        |
| 6     | Driver                     | 1        |
| 7     | Office cleaner             | 1        |
| 8     | Casher                     | 1        |
| 9     | records officer            | 1        |
| 10    | Purchaser                  | 1        |
| 11    | Free collector             | 2        |
| 12    | Scout gardens              | 19       |
| Total |                            | 32       |

**Source:** field survey of February, 2014

**Note:** Staff members including support staff of the headquarter office of Maze NP are 13 in numbers whereas the remaining scout employers are in different sites of the park.

## 3.2 Methodology

### 3.2.1 Research Design

The nature of research problem most often dictates the methodology of the study. The current study aims at examining the challenges of managing protected areas .Hence the study commanded methodological pluralism, whereby, both, qualitative and quantitative methods of data collection were employed. Such methods were helpful to find adequate information and to get individual group and institutional views.

### 3.2.2 Data Source

Both primary and secondary source of data were used for this study. The primarily data would be gatherer through house hold survey, focus group discussion, key informant interview, and direct observation techniques. The survey generated both qualitative and quantitative data pertaining to their socio-economic and demographic characteristics, aspects of participations and perception. Views of those non user households were also included through focus group discussions. Secondary data sources included published and unpublished materials, books, journals, project reports and maps.

### 3.2.3 Sample Size and Sampling Method

The study focused primarily on management challenges of Maze National Park; however the challenges were created by four bordering woredas recently. In order to undertake the study four kebeles from three bordering woreda of the park were purposely selected out of seventeen kebeles more closely to the park. These were Mashamork from Cucha Woreda and Womalla Dome from Deramalloy woreda, Wagesho and Gayle Tossa from Zala Woreda (see figure 3)



**Fig: 3, Method of selecting sample kebeles in study area.**

**Source,** modified from wildlife protected areas in SNNPR, 2014.

The four kebeles were purposely selected based on the distance from the park. The selected kebele households-marginalized occupational groups believed to heavily depend on the resource of the park to meet their subsistence needs. Hence, it is highly conceivable that the study area kebeles represent perhaps the major challenges of the park.

The simple random selection method of the selected kebeles household was made purposely to the distance of the park. Accordingly, 100 sample households were taken, i.e.; 40 households from Morka kebele, 30 households from Womalla kebele, 20 households from Wagesho kebele and 10 households from Gayle Tossa kebele.

### **3.2.4 Methods of Data Collection**

#### **3.2.4.1 Primary Data**

**Structured questioners** .The study was based mainly on sample *kebeles* household cross sectional survey using pre-tested structured questioner organized in logical order of presentation. The survey generated qualitative and quantitative data pertaining to demographic characteristics, aspects of participation, park resource use and dependence.

#### **Key Informant Interview**

In-depth key informant interviews were conducted with selected informants who were depending on park resources. These include eight male local people (two from each kebele, another eight female from local people representing each kebele, from park management department (4 in number). Moreover, in-depth interviews were also conducted with local government officials within selected kebeles.

#### **Focus group discussion**

Focus group discussion is also another qualitative method of data collection instrument which is used in this study. Accordingly, four focus group discussions from four selected kebeles and another four focus group discussions with non user household members were held. A total of 8 to 10 participants in each focus group are participated. And the general directions pursued in those

discussions were left for the researcher to trigger issues for discussion and promote active group perception.

### **3.2.4.2 Secondary Data Sources**

The major secondary sources of data were utilized during the study. These are books and periodicals which are related to challenges of park managements, seminar papers, conference proceedings, previous works done as Master's thesis and PhD dissertations as well as socio-economic and park related studies, statistical publications and maps and all relevant documents and project reports.

### **3.2.5 Data Analysis**

Regarding the analysis, the survey data was analyzed employing mainly descriptive statistics with the help of statistical software's (SPSS). Further information obtained from focus group, key informants and officials has been summarized and used in the triangulation of evidences.

The process of analysis was carried out by using qualitative description and descriptive statistics. The portion of data that is readily quantifiable (information from closed question of the questionnaire) was discussed using tabulation and cross-tabulation of variables with percentage values and other descriptive statistics. Readily non quantifiable data (information from open ended question, key informant interview, and focus group discussions) were discussed through qualitative description open ended questions were grouped into different categories based on similarity.

## **CHAPTER FOUR**

### **4. Results and Discussion.**

#### **4.1 Result**

##### **4.1.1 Background Characteristics of Respondents**

The four investigated kebeles of selected woredas were assumed as homogenous groups of the study area. Among 100 selected sample households; 40 from (Cucha woreda), Mashamork kebeles, 30 from (Deramallo woreda), Womalladomaa kebele and 30 from (Zala woreda) (20 from Wagesho kebele and 10 from Gayletossa kebele) were selected randomly from respective kebeles.

Conducting the distribution of respondents by age group, were 57%. Sample households were in adult age class (28-40). Such age class was important in identifying the detailed information of management challenges of the area. Further respondents (64 %) have a family size of 5-10. Such large family size with small landholdings will increase the demand for more resources. As a result, communities have been imposing maximum pressure on the park resources.

The local people around Maze National park are agro-pastoralists and their household economy depended exclusively on agricultural and livestock production. All the respondents depended on land to generate income from farming. Majority of respondents had a landholding less than 0.5 hectare; only 23.0% have land size greater than 0.5 hectare and 9% were land less. They produce maize as staple food crop. Separate plots are not allocated for livestock grazing. All members of the kebeles consider Maze national park as protected area. According to the respondents, the productivity of the land for the majority of farmers is less than sufficient and has no guaranteed source of income to supplement their livelihood. Besides, such low income groups around the park do not get any incentive from the park. In the absence of alternative sources of income, the local people are more likely to oppose rules and regulations, and continue to encroach upon the park resources.

Based on the questionnaire survey it was gathered that, all agro-pastoralists in the study area migrated to the park recently to get alternative land for settlement, crop production and grazing. Such continued movement of local people into the park has led to the deterioration of the wildlife habitat making the park unsafe place for the normal activity of wildlife. Information obtained from the staff of the park and key informants showed that hunting was not a problem for the last three years.

**Table: 2, Sex of respondents in sample selected kebeles.**

| No           | Sex of Respondent | Count with % | Kebele of Respondent |              |         |                  | Total |
|--------------|-------------------|--------------|----------------------|--------------|---------|------------------|-------|
|              |                   |              | Masha Morka          | Womalla Doma | Wagesho | Mella Gayle toss |       |
| 1            | Male              | Count        | 39                   | 24           | 20      | 7                | 90    |
|              |                   | %            | 97.5                 | 80.0         | 100     | 70.0             | 100.0 |
| 1            | Female            | Count        | 1                    | 6            | 0       | 3                | 10    |
|              |                   | %            | 2.5                  | 20.0         | 0.0     | 30.0             | 100.0 |
| <b>Total</b> |                   | Count        | 40                   | 30           | 20      | 10               | 100   |
|              |                   | %            | 40.0                 | 30.0         | 20.0    | 10.0             | 100.0 |

**Source:** Field survey February, 2014

The table in the above show that the gender profiles of the 100 respondents show that female were 1(2.5%) and males were 39 (97.5%) from 40 respondents of Mashamork kebeles, from Womalladomaa kebeles, females 6(20%) and males 24 (80%) among 30 respondents, from Wagesho kebeles, females 0(0%) and males 20 (100%) among 20 respondents and from Gayletossa kebeles males 7 (70%) and females 3 (30%) among 10 respondents.

In all kebeles more than 80% of the respondents were married. In the case of Mashamork kebeles all of the respondents were married.

**Table: 3, Educational status of respondents**

| No    | Educational status       | Count with % | Respondent kebeles |              |         |                  | Total |
|-------|--------------------------|--------------|--------------------|--------------|---------|------------------|-------|
|       |                          |              | Mashamork          | Womalladomaa | Wagesho | Mella Gayletossa |       |
| 1     | Illiterate               | Count        | 9                  | 4            | 3       | 4                | 20    |
|       |                          | %            | 22.5%              | 13.3%        | 15.0%   | 40.0%            |       |
| 2     | read & write only        | Count        | 9                  | 6            | 13      | 1                | 29    |
|       |                          | %            | 22.5%              | 20.0%        | 65.0%   | 10.0%            |       |
| 3     | Elementary               | Count        | 14                 | 7            | 4       | 2                | 27    |
|       |                          | %            | 35.0%              | 23.3%        | 20.0%   | 20.0%            |       |
| 4     | junior secondary & above | Count        | 8                  | 13           | 0       | 3                | 24    |
|       |                          | %            | 20.0%              | 43.3%        | 0.0%    | 30.0%            |       |
| Total |                          | Count        | 40                 | 30           | 20      | 10               | 100   |
|       |                          | %            | 40.0%              | 30.0%        | 20.0%   | 10.0%            |       |

Source: Field survey February, 2014.

Generally the table shows in the above that there was high prevalence of illiteracy in all the four respondent kebeles. The effects of low level of education on people's participation in the activity of are restricted. Especially in the womalladomaa kebeles majority respondents were junior secondary school and above as compare that of Wagesho and Mashamork kebeles.

The four selected sample kebeles predominantly mean family size 1.78. With the respect to the selected kebeles household members Womalla Doma and mella Gayle Toss were the highest family size (42.9 %) followed by Masha morka (14.3 %). One can see from the data that there is large family size around the study area which may add additional pressure on park recourse.

(See table4) below

**Table: 4, distribution of respondents by Family size and kebeles**

| No    | Total family size | Count and % | Kebele of respondents |              |         |                  | Total |
|-------|-------------------|-------------|-----------------------|--------------|---------|------------------|-------|
|       |                   |             | Masha morka           | Womalla Doma | Wagesho | Mella Gayle toss |       |
| 1     | 1_4               | Count       | 6                     | 15           | 7       | 1                | 29    |
|       |                   | %           | 15%                   | 50%          | 35%     | 10%              |       |
| 2     | 5_10              | Count       | 33                    | 12           | 13      | 6                | 64    |
|       |                   | %           | 82.5%                 | 40%          | 65%     | 60%              |       |
| 3     | >10               | Count       | 1                     | 3            | 0       | 3                | 7     |
|       |                   | %           | 2.5%                  | 10%          | 0.0%    | 30%              |       |
| Total |                   | Count       | 40                    | 30           | 20      | 10               | 100   |
|       |                   | %           | 40.0%                 | 30.0%        | 20.0%   | 10.0%            |       |

Source: Field survey February, 2014

With reared to age distribution the majority (70%) of the respondents are adults ranging between the ages of 31 – 60.(see table 5)

**Table: 5, Age distributions of the respondents**

| No    | Age of Respondents | Count with % | Kebeles of respondent |              |         |                  | Total |
|-------|--------------------|--------------|-----------------------|--------------|---------|------------------|-------|
|       |                    |              | Masha morka           | Womalla Doma | Wagesho | Mellagayle Tossa |       |
| 1     | 20-30              | Count        | 6                     | 18           | 4       | 2                | 30    |
|       |                    | %            | 15%                   | 60%          | 20%     | 20%              |       |
| 2     | 31-40              | Count        | 24                    | 7            | 9       | 6                | 46    |
|       |                    | %            | 60%                   | 23.3%        | 45%     | 60%              |       |
| 3     | 41-50              | Count        | 8                     | 1            | 6       | 2                | 17    |
|       |                    | %            | 20%                   | 3.3%         | 30%     | 20%              |       |
| 4     | 51-60              | Count        | 2                     | 4            | 1       | 0                | 7     |
|       |                    | %            | 5%                    | 13.3%        | 5%      | 0.0%             |       |
| Total |                    | Count        | 40                    | 30           | 20      | 10               | 100   |
|       |                    | %            | 40.0%                 | 30.0%        | 20.0%   | 10.0%            |       |

Source: Field survey February, 2014

Within the four kebeles respondents have slightly deferent age distribution. The majority of respondents within Mashamork, Wagesho and Gayletossa range between 31-40 where as in Womalladomaa kebele respondents were below the age 31.

**Table: 6, the distribution of respondents by occupation and kebeles.**

| No    | Occupation     | Count with % | Kebeles of respondents |              |         |                 | Total |
|-------|----------------|--------------|------------------------|--------------|---------|-----------------|-------|
|       |                |              | Masha morka            | Womalla Doma | Wagesho | Mell Gayle toss |       |
| 1     | Farmer         | Count        | 38                     | 21           | 20      | 7               | 86    |
|       |                | %            | 95 %                   | 70%          | 100%    | 70%             |       |
| 2     | Gove's workers | Count        | 1                      | 9            | 0       | 3               | 13    |
|       |                | %            | 2.5 %                  | 30%          | 0%      | 30%             |       |
| 3     | Merchant       | Count        | 1                      | 0            | 0       | 0               | 1     |
|       |                | %            | 2.5%                   | 0.0%         | 0.0%    | 0.0%            |       |
| Total |                | Count        | 40                     | 30           | 20      | 10              | 100   |
|       |                | %            | 40.0 %                 | 30.0%        | 20.0%   | 10.0%           |       |

Source: Field survey February, 2014

In terms of occupation the majority of the households (86 %) of the four respondent kebeles (Masha morka, Womalla Doma, Wagesho and Mellagayle toss) are in predominantly engaged in subsistence farming and produce cereal crops such maze, sorgame ,Teff...etc for their house consumption. The rest (13%) are government workers and (1%) Merchant. For example if we take farmers on each kebeles standard (95 %), (70 %), (100 %) and (70 %) in mash morka, Womalla Doma, Wagesho and Gayle toss respectively.

The majority (86%) of respondents are farmers. Focus group discussions with Mash morka and Womalladomaa household members at Cucha and Deramallo Woredas revealed that farming and raring animals around the park area was the dominant economic activity of this economically poor group with low status of educational level.

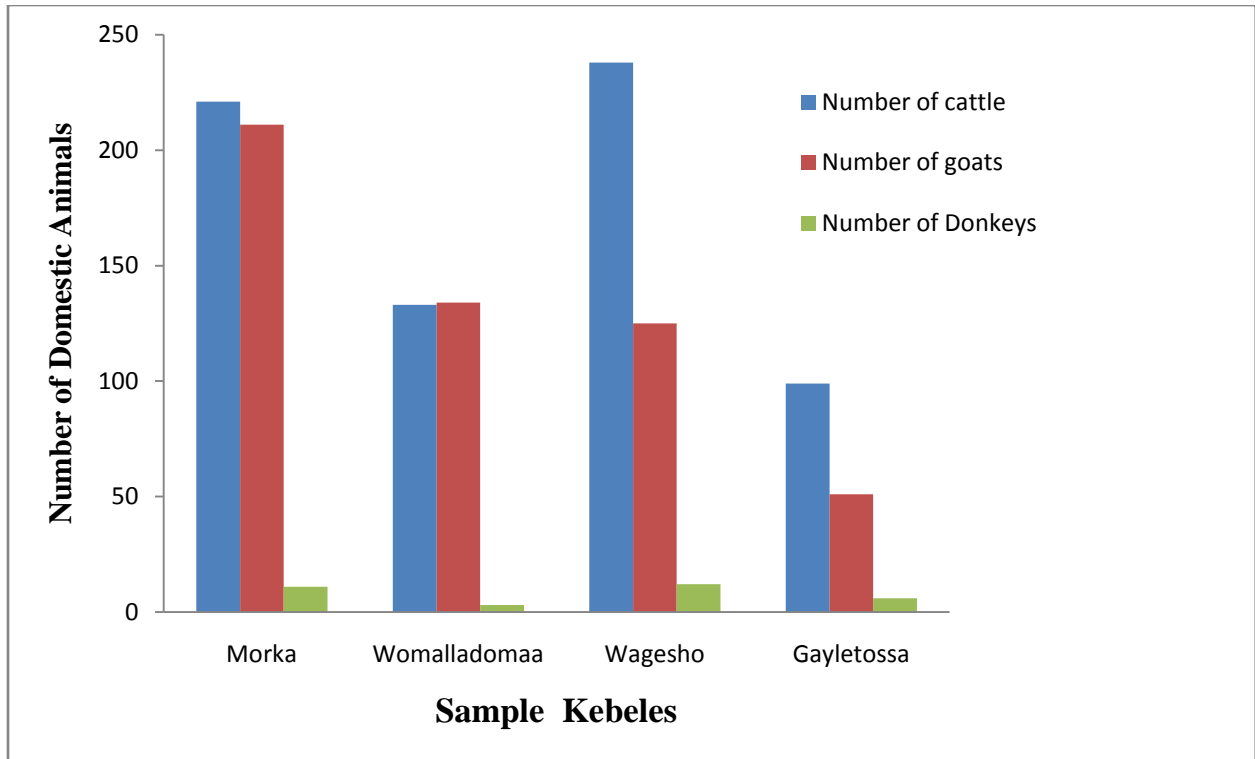
**Table: 7, Distribution of the respondents by land holding and kebeles**

| No    | Kebele of respondent | Count with % | Kebele of respondent |              |         |                 | Total |
|-------|----------------------|--------------|----------------------|--------------|---------|-----------------|-------|
|       |                      |              | Masha morka          | Womalla Doma | Wagesho | Mellagayle toss |       |
| 1     | 0 hectare            | Count        | 0                    | 7            | 0       | 2               | 9     |
|       |                      | %            | 0%                   | 23.3%        | 0%      | 20%             |       |
| 2     | < 0.2 hectare        | Count        | 3                    | 4            | 0       | 1               | 8     |
|       |                      | %            | 7.5%                 | 13.3%        | 0.0%    | 10%             |       |
| 3     | 0.3-0.4 hectare      | Count        | 9                    | 7            | 5       | 1               | 22    |
|       |                      | %            | 22.5%                | 23.5%        | 25%     | 10%             |       |
| 4     | 0.5-0.8 hectare      | Count        | 19                   | 6            | 11      | 4               | 40    |
|       |                      | %            | 47.5%                | 20%          | 55%     | 40%             |       |
| 5     | >0.8 hectare         | Count        | 9                    | 6            | 4       | 2               | 21    |
|       |                      | %            | 22.5%                | 20%          | 20%     | 20%             |       |
| Total |                      | Count        | 40                   | 30           | 20      | 10              | 100   |
|       |                      | %            | 40.0%                | 30.0%        | 20.0%   | 10.0%           |       |

Source: Field survey February, 2014

Patterns of land holding system of the respondents in the study kebeles shows that only 9 % were land less. While (40%) of the respondents had land size ranging from 0.5 to 0.8 hectare and the rest (22 %) of the responding kebeles had land size greater than 0.3 to 0.4 hectares. The patterns of land holding in each kebeles showed that in Masha morka and Wagesho kebeles all respondents have their own land ; the over whelming majority 40% had land size ranging 0.5-0.8 hectare 22% had land size of 0.3-0.4 hectare, 21% had >0.8 hectare,8% had < 0.2 hectare and the rest 9% had 0 hectare. In Womalla Doma 7 (23.3%) among 30 household and in Gayle toss 2(20 %) among 10household were land less.

Households in the study area keep quite a high number of cattle and goats. Yet 98% of the respondents have livestock such as cattle, goat and donkey. The remaining 2% have no livestock.



**Graph: 1, The total number of livestock in sample house holds**

**Source:** Field survey February, 2014

**Table: 8, Major sources of income of the respondents.**

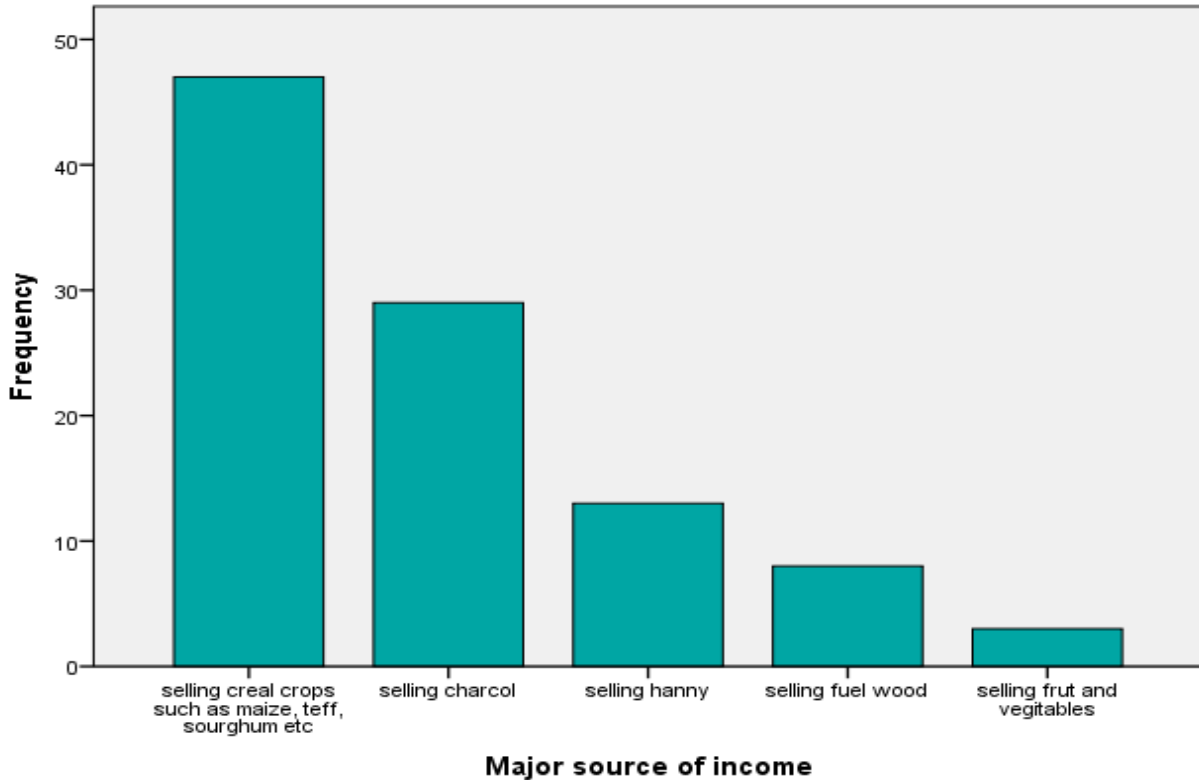
| No    | Kebele of Respondents | Count % | Major source of income |                  |               |                   |                           | Total |
|-------|-----------------------|---------|------------------------|------------------|---------------|-------------------|---------------------------|-------|
|       |                       |         | sell cereal crops      | selling charcoal | Selling hinny | selling fuel wood | sell fruit and vegetables |       |
| 1     | Masha Morka           | Count   | 21                     | 12               | 6             | 1                 | 0                         | 40    |
|       |                       | %       | 52.5%                  | 30%              | 15%           | 2.5%              | 0%                        |       |
| 2     | Womalla Doma          | Count   | 10                     | 11               | 1             | 5                 | 3                         | 30    |
|       |                       | %       | 33.3%                  | 36.7%            | 3.3%          | 17%               | 10%                       |       |
| 3     | Wagesho               | Count   | 10                     | 5                | 4             | 1                 | 0                         | 20    |
|       |                       | %       | 50%                    | 25%              | 20%           | 5%                | 0%                        |       |
| 4     | Mella Gayle Tossa     | Count   | 6                      | 1                | 2             | 1                 | 0                         | 10    |
|       |                       | %       | 60%                    | 10%              | 20%           | 10%               | 0%                        |       |
| Total |                       | Count   | 47                     | 29               | 13            | 8                 | 3                         | 100   |
|       |                       | %       | 47%                    | 29%              | 13%           | 8%                | 3%                        |       |

Source: Field survey February, 2014

The major source of income were investigated for the surveyed kebeles primarily two basic source of income were identified these were farm based and park resource based incomes. The farm based income is generated through production of cereal crop such as maze, Teff, sorghum and fruit and vegetables. Park resources based some include selling charcoal, wild honey, fuel wood and grass. Among the four respondent kebeles 47 % of the primarily depend on selling cereal crops. The rest depend on selling charcoal (29%), wild bunny (13%), and selling fuel wood (8%). Other 3% depend on the sale of fruit and vegetables and others as a major source of income.

According to each selected sample kebeles, 52.5% of Mash morka respondents had their income from sale of cereal crops, 30% obtain their income from sale of charcoal. 15% from sale of wild honey, and 2.5% sale of fuel wood. Similarly, 33.3% of Womalla Doma respondents were gets their income from sale of cereal crop, 36.7% from sale of charcoal and 3.3 % from sale of fuel wood. The remaining, 17% and 10 % got their income from sale of fruit and vegetables and wild honey respectively. 50% of Wagesho kebeles respondents had their income from sale of crop, 25% from sale of charcoal, 20% from sale of wild honey and others 5%of from fuel wood. The

same to Gayle toss 60% get there income sale of crop, 10%from sale of charcoal, 20% from honey and 10% from sale of fuel wood.

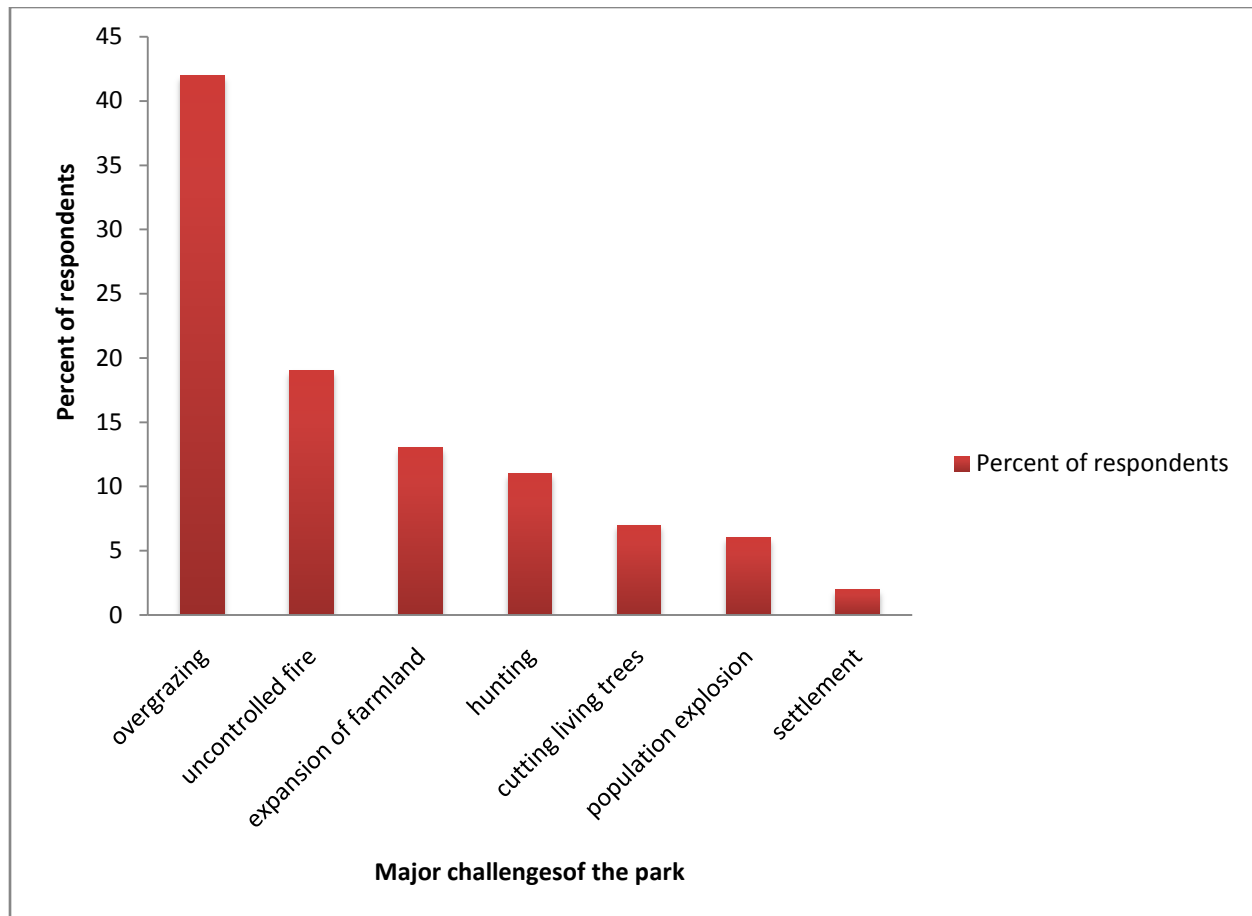


Source: Field survey February, 2014

**Graph: 2 Distribution of sample household by major source income**

#### **4.1.2. Major Management Challenges and Problems of Maze national park**

The major management problems of the Maze national park as identified by the respondents are: grazing, uncontrolled fire, expansion of farming, hunting, cutting living tree and, conflicts between the park management and local communities, population explosion, and expansion of built up area . These problems result in soil erosion, vegetation degradation, wildlife depletion and deforestation. The graph is represents the major challenges of the park as preceding the respondents.



**Graph: 3, Distribution of the Respondents (%) by major challenges of the park**

Source: Field survey February, 2014

Accordingly, responses of respondents during household socio-economic survey relating to management or conservation problems of natural resources of Maze national park indicated that overgrazing, uncontrolled fire, expansion of farming, hunting, cutting living tree, population explosion and settlement are the major management problems of the park respectively For example, estimation based on responses of park management staff indicated that the recent free grazing; expansion of farmland and uncontrolled fire might be the main management problems of the park, which exposes natural resources for severe degradation.

According to the sample respondents the park management strongly needs external supports for example within the park infrastructures are poor to visit deferent parts in the park. Addition to the shortage of transportation, such as motor vehicles, cars etc, and clean waters, housing facility to park staff, shortage of funds, in accessibility of deferent recreation centers. So the park wants

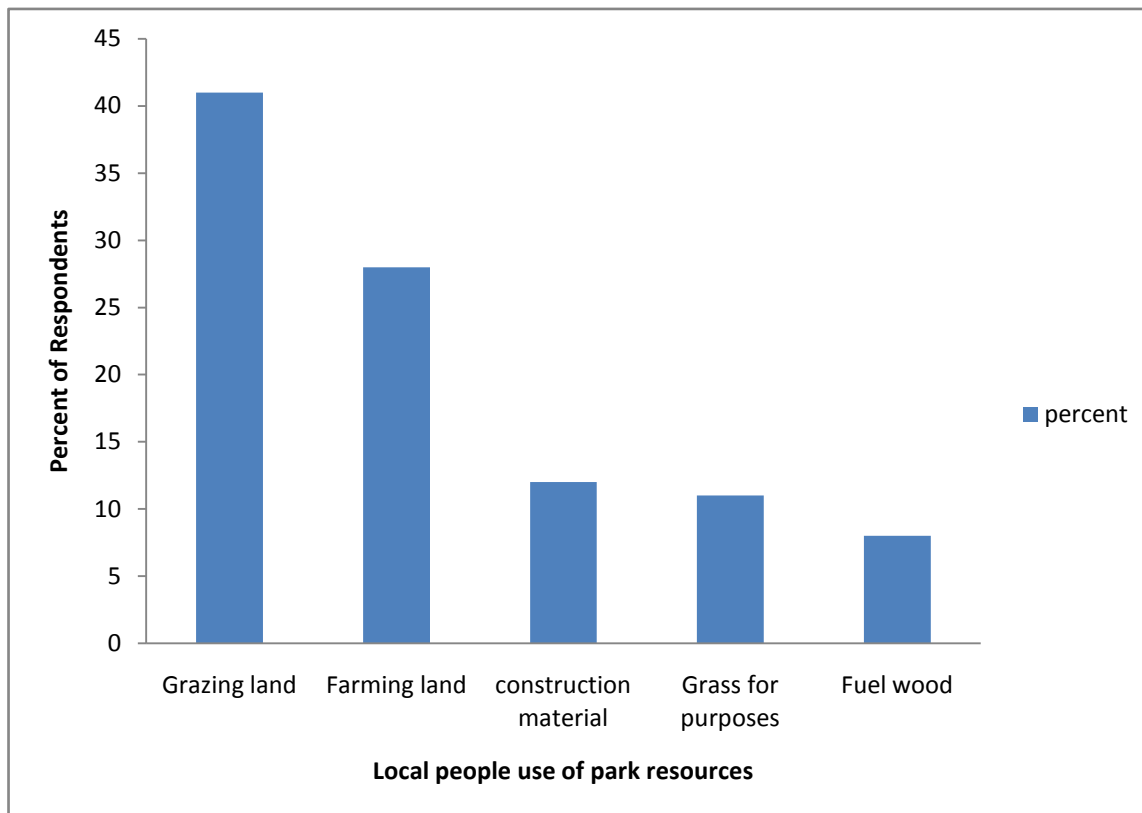
governmental or the nongovernmental organization support strongly to facilitate the listed internal problems of the park for its rehabilitation.

### 4.1.3 Socio-economic conditions of local communities around Maze National Park

#### 4.1.3.1 Household’s livelihood sources

According to the sample respondents most of them were engaged in mixed farming depend only on farming and livestock production leaving no scope for other livelihood options. The demand of farm land and grazing land for the local community was very high, to fulfill their sustained livelihood.

#### 4.1.3.2 Livelihood linkages of the local people to the Maze NP



**Graph: 4, Distribution of Respondents by livelihoods linked park resources**

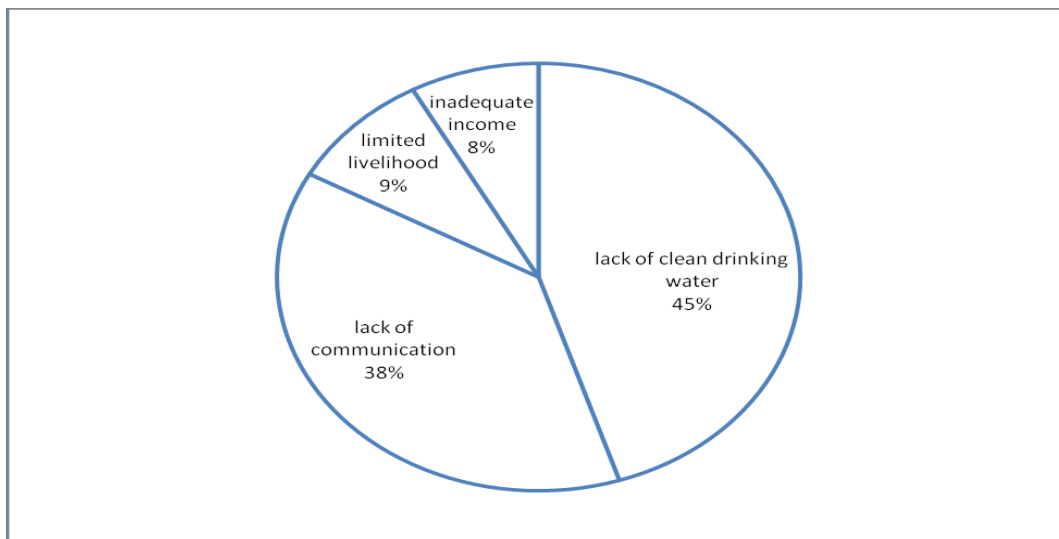
Source: Field survey February, 2014

As it could be observed from graph 4, households' responses confirmed that grazing land farming land, fuel- wood, constructions materials, grass for other uses and the necessity resources by which their livelihoods linked to the park. Tesfaye Hundessa (1997) confirmed that the Ethiopian rural poor's depend on natural resources of their basic needs. Shibru Tedla (1994) also stated that the local people in and surrounding the ASLNP use grazing land, cut trees and cultivate the lands of the park for sources of their livelihoods . Therefore, it is possible to conclude that the livelihoods of local communities are closely related to the natural resources of Maze national park. The major resources identified by the respondents in order of their importance are listed in the beginning of the park.

#### **4.1.4 The Major Problems of local people and their status of relation with management of the park**

##### **4.1.4.1 Major Problems of the local people**

According to the respondents besides management problems of natural resources, lack of clean drinking water, lack of communication, limited livelihood and inadequate income are the major problems of local communities in and around the park.(Graph 5)



**Graph: 5, Major problems according to sample households**

Source: Field survey February, 2014

It is clear that of 45% of respondents pointed out to lack of clean drinking water other identified were lack of communicate (38%), limited livelihood opens and (9%) and inadequate income (8%). These problems of local people emanated from socio-economic conditions and contributed to increase on participation park resources and consequently can affect the natural resources of the study area since local people entirely depend on these resources. These problems may affect the local people and express them to use park resource which led to degradations of natural resources in the park. According to Brodnig (2006) the poor people in rural areas depend directly on natural resources, which might lead to loss of these resources.

#### **4.1.5 Resources utilization and conflict**

The natural resources of the study area are mainly controlled by the government as a national park and local community around the area. The newly established national park had a variety of natural resources (wildlife, vegetations, land form topography, spring water and surface water) as a tourist attraction and the community uses the park resource as the source of animal feed, farming land, pastoral land, and fuel wood resource. These attributes could cause some conflicts between park officers and the local community.

The use of the term conflict in the context of this study refers to land use conflict in the study area between the government and the local community, which reflects ongoing compaction over access to farmland, grazing, house building materials and other range resources. The respondents respond that there was slight conflict between the park offices and the farmers. The cause for the conflict between the park offices and the farmers were shortage of grazing land and water, inadequate area for settlement and farm land, demand for house building materials, demand for fuel wood and fodder and owner ship of territory.

##### **4.1.5.1 Dependence on Park resources**

According to my respondents local community directly or indirectly depend on the park resources which leads to the conflicts between park management staff and local community. Table 9 as many as 94% of respondents accepted the idea.

**Table: 9, Respondents opinion on conflict over use of park resources**

| Question  | Responses |            |           |     | Total |
|---|-----------|------------|-----------|-----|-------|
| Are there conflicts concerning use of park resources? |           | Very often | Sometimes | No  |       |
|   | Frequency | 72         | 22        | 6   | 100   |
|   | Percent   | 72.0       | 22.0      | 6.0 | 100.0 |

Source: Field survey February, 2014

Depending on the table most of the respondents (72) were respond that there were conflict between local community and park management due to the use of park resources. According to the park manager all of the surrounding kebeles of the park were farmers and low level of income. Again in all kebeles there was no rangeland for their livestock. So they fulfill their livelihood totally or partially depend on the use of park resources show the table 10 below.

**Table: 10, resource use and conflict**

| Question  | Responses |              |               |            | Total |
|---|-----------|--------------|---------------|------------|-------|
| Do you and your family use park resources for livelihood? |           | Fully depend | Partly depend | Not at all |       |
|   | Frequency | 23           | 71            | 6          | 100   |
|   | Percent   | 23.0         | 71.0          | 6.0        | 100.0 |

Source: Field survey February, 2014

Further, focus group discussions and individual interviews revealed that the conflicts often encountered are of two types in nature. One is minor conflict among park resource users with the regard to the use of park resource products. In relation to this, some informants stated that they are dissatisfied due to the restoration imposed over the previous unlimited access. This ill-feeling

intensify and create problems on the park management. The second one and the most important are related with the border demarcation. In the time of field observation the park bordered in between four woredas and within this woredas seventeen kebeles are closer to the park. During the border demarcation process fertile soil which is found at the bank of the river and the vast grazing area included in to the side of the park. Especially in dry season the local people practices in using these resources from the park.

Many of the local communities and the park officers agreed that the tension of conflicts between the park and local community has decreased during the rainy season and this was mainly due to reduction of firing and hunting, availability of sufficient amount of forage sources for the animals and government interferences settle the problems. And most respondents have agreed that conflicts were managed by community elders, religious leaders, respected individuals and government bodies. This is similar to earlier report that the inter-clan and community conflict can often be solved using traditional and social organizations. The same authors further suggested that traditional and institutions have a key role to play in resolving conflicts, management of natural resources and to maintain peace between local community and protected areas.

#### **4.1.5.2 Benefits derived from protected area**

Many scholars argue that local people need to be benefit in some way if they are to manage common pool resources to meet the border social goal of environmental. In other Worde, while it is arguing that one of the prerequisites that the local peoples active and continued participation, such a sustained participation in resource management is a function of incentives. Correspondingly, in all sample selected kebeles incentives investigated in this study. The majority of them (82.0%) also reported that the benefit received from the park initiate them to protect the park.

In general 76.0% of the survey household believe that access of the park for free grazing, fuel wood, for construction materials, fodder, bush meet, farm land, for forest resource such as honey...etc. Exercise of controlling and keeping encourage community in developing strong sense of use right over the park resource. One of the key informants from Womalla Doma kebeles also stressed that as long as he protect and develop the park the sustainability of the park

resource is available in the future. Further interview with park warden also revealed that the savanna grass land of the area was charming the local community to graze their livestock on dry season. So these resources extracted and its unregulated grazing has been causing serious damage on the park. The latter views are in fact wide spread among household who entirely depend on the park particularly sale of grass and fuel wood.

**Table: 11, users' assessment of the benefits from park**

| Types of benefit   | Responses |           |      |          |      |          | Total |
|--------------------|-----------|-----------|------|----------|------|----------|-------|
|                    |           | very high | high | moderate | low  | Very low |       |
| Grazing            | Fr        | 19        | 36   | 13       | 13   | 3        | 84    |
|                    | %         | 19.0      | 36.0 | 13.0     | 13.0 | 3.0      | 84.0  |
| Fuel wood          | Fr        | 7         | 5    | 35       | 17   | 10       | 74    |
|                    | %         | 7.0       | 5.0  | 35.0     | 17.0 | 10.0     | 74.0  |
| Building materials | Fr        | 5         | 7    | 25       | 18   | 18       | 73    |
|                    | %         | 5.0       | 7.0  | 25.0     | 18.0 | 18.0     | 73.0  |
| Fodder             | Fr        | 21        | 32   | 22       | 5    | 1        | 81    |
|                    | %         | 21.0      | 32.0 | 22.0     | 5.0  | 1.0      | 81.0  |
| Bush meat          | Fr        | NR        | NR   | 1        | 4    | 11       | 16    |
|                    | %         | NR        | NR   | 1.0      | 4.0  | 11.0     | 16.0  |
| Farmland           | Fr        | 16        | 14   | 13       | 6    | 7        | 56    |
|                    | %         | NR        | 4.0  | 13.0     | 6.0  | 7.0      | 56.0  |
| Forest product     | Fr        | 4         | NR   | 5        | 8    | 20       | 37    |
|                    | %         | 4.0       | NR   | 5.0      | 8.0  | 20.0     | 37.0  |

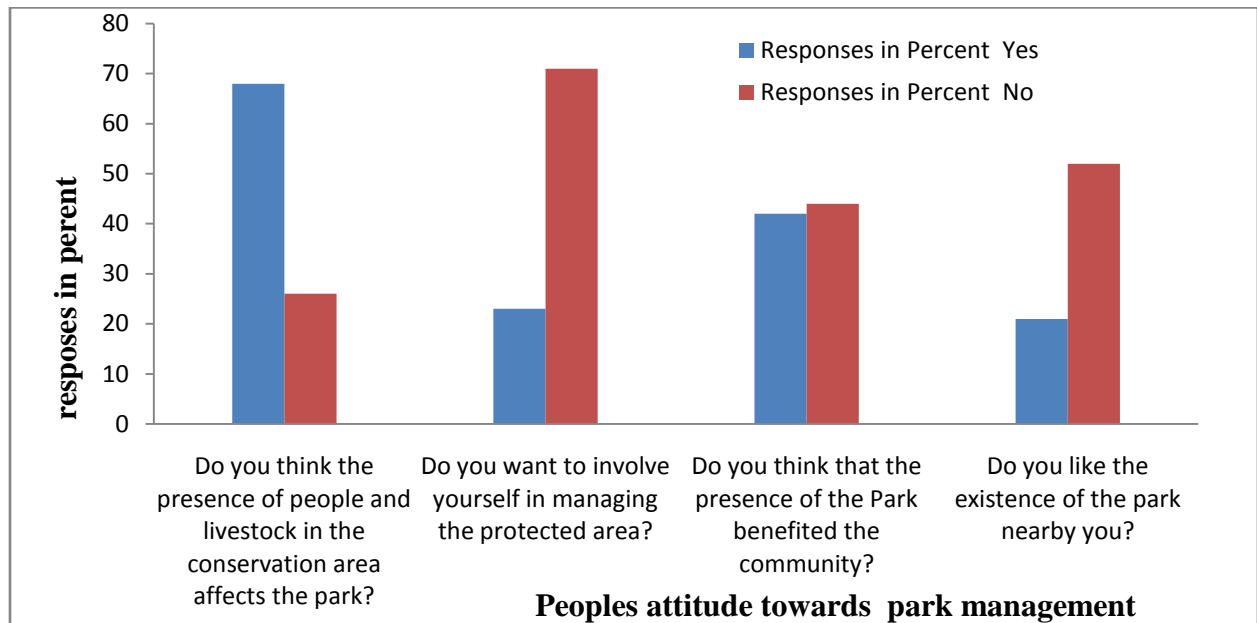
**NB:** The total number of respondents may not equal to the total number of sample respondents. This is because of the missing responses.

NR: No response

Source: Field survey February, 2014

## 4.1.6. Perception and participation of the local community towards the park management

### 4.1.6.1. Attitude of the local people



**Graph: 6, attitudes of local community towards the park.**

**Source:** Field survey February, 2014

Among respondents, 57.27% did not have good relationship nor had conflict with the park staff. However, 15.91% of the respondents had smooth relationship with the park staff members and 26.82% had neutral relationships. The gap between the park authority and local people was wide because of opposing views on protected area. Local communities often perceived park as a liability, means of restricting livestock grazing and demand the land for settlement and farming. Moreover, the need to use the resource freely without any limitation widened the graph

## 4.2 Discussion

The main significant management challenges of Maze National park are due to human induced impacts through Livestock grazing, illegal farm land expansion, and cutting of trees (grass collection) for deferent purposes, uncontrolled fire and hunting wild animals. So, in order to manage the park resources and to effectively conserve wildlife, in the area cooperation of local community and work with them is essential. Lack of a buffer zone, high number of cattle and other domestic animals graze on the edges of the Park. There for deterioration of vegetation close to the edges that might influence the destruction of park resources.

The data obtained from all selected sample kebeles indicate that, there is a great increase in livestock population and human pressure in and around park areas. Human-park interactions are becoming more common (Corti *et al.*, 2002). This makes the park resources more degraded, through commonly practiced activities, such as: large number of livestock overgrazing, expansion of farm land and uncontrolled fire are considered primary factors that affect the park resources.



**Figure: 4, grazing on Maze national park.**

**Source:** photo captured by the researcher during Field survey, February (2014)

Moreover, this enhances bush encroachment in the area. The effect of overgrazing by livestock population for many years has resulted in a significant change on the vegetation cover. One of the accepted causes of bush encroachment is the reduction or degradation land of grass, e.g. by overgrazing, which allows more water to penetrate to deeper soil layers thus becoming available for woody growth (Messana and Bereket Nestereab, 1994).

The local people besides imposing pressure on the park disturb the vegetation of the park through uncontrolled fire. In the present study, the grassland within the park was burnt between December and February. According to the park warden the fire was ignited by the illegal farmers in the park and unknown persons who enter the park. Fire is set in the area year after year. Other studies also show that herders set fire to grassland to maintain it for grazing. However, the frequency of fire resulted in the deterioration of the quality of habitat and eliminated many native species of plants that could not adapt (Allan and Warren, 1993).

This is observed in the Maze national park. Fire is set by illegal farmers in Maze because of improving the forage resource available in the park for their livestock population. However, the hartebeest also benefited from the fire as evidenced by the dramatic shift in habitat utilization from the unburned area to the freshly burnt area to get more off shoots. The problem was that fire was set without any firebreak and at night when most wild animals were inactive in the park. This shows loose law enforcement, poor management system and lack of devotion and commitment of the staff of the park.



**Figure: 5, the result of fire in the park**

**Source:** photo captured by the researcher during Field survey, February (2014)

Expansion of farmland and human activities around protected areas causes great management challenges in the country (Schloeder, 1996). It is important to plan traditions in the outlook for the preservation of the park in cooperation with the local community (Lakew Birhanu, 2001). It is recognized that protected area management is successfully achieved only with the teamwork with local people (Balakrishnan and Ndhlovu, 1992).

Grass collection is one of the severe challenges of the Park. Cutting of grass, continuous movement of the people through the park, firewood collection, and cultivation of the land by the settled communities in or around the area, exceedingly influences park management. The local community cut grass to feed their cattle, sell in the market and for thatching houses. This may cause shortage of grass for herbivores animal in the park and disturb the natural behavior of wildlife. Like any other Park in Ethiopia, local people exploit the resource from Maze national park as well. Forest exploitation inside the Park and traditional farming activities close to the Park might cause strong impacts on the park resources.



**Figure: 6, farm land expansion in the park.**

**Source:** photo captured by the researcher during Field survey, February (2014)

During the group discussions and interviews held with the local communities, most of them were not happy and did not volunteer to tell the facts about the interaction with the park, since they did not get enough benefit from tourist income and other sources of the park. The attitudes of the local communities toward the park in all selected kebeles were almost the same. They need to live harmoniously with the conservation area, by utilizing the park resources as a free grazing land for their livestock, farmland and fuel wood collection site.

Even though they pretend, as if they had not been causing problems in the park, they knew well that they are creating pressures of the resource in the area. The local communities, especially those having cattle, need the area to be conserved, not for the sake of the wildlife of the park but for the need of their livestock. Some other people with scarce of farmland, want the area for farming activities. In general, the common understanding of the community was, if they have improved standard of living, especially having potable water and other infrastructures, such as

communication, electric power, health center, road, market, etc for the local people, they believe that the pressure on the park resources will decrease.

Most respondents considered that the existence of the park had a negative impact on their livelihood. Lack of free access, grazing, fear of displacement from their farm land area was the major causes. However, only few of the respondents expressed a positive attitude to conservation and indicated that the existence of the park will serve as a means of generating income and services. They recommended that the park has to be free from human intervention. A study in East Africa equally reiterates that the attitudes of local people on protected areas were subjective to armed forces and settlement they personally get from the protected area (Newmark et al., 1994). People determination simply seeks to manage natural resources when they become conscious that the incentive exceeds expenses (Murphree, 1991).

At the same time, expansions in terms of convention the need of the local people are very significant part of conservation. In addition to lack of benefits, low level of awareness on the importance of protected area makes the problem more severe in the area. Understanding the importance of protected area was a common problem in all sample kebeles. Ato Ayele dolsha from Womalla kebele farmers group whose age is 38 and is living in that kebele during his life experiences said, “The government does not tell us what the benefits of wildlife are or the benefits obtained from looking after it”. Such low level of awareness considered the park management to the disadvantage of the local community. They viewed the government, foreign tourists and staff of the park as the sole beneficiaries of protected area harbored in their locality.

Most respondents did not know the prime objectives of the park. Only few respondents knew the need to conserve endemic species and its habitat. Lack of awareness on the purpose of the park may be one of the reasons for the antagonistic attitude of the local communities towards conservation of park resources. Women showed less positive attitude and more neutral “do not know” response than men towards park conservation. This may be due to the low awareness of park conservation among women than men.

Education is an important factor in understanding the role of protected areas and conservation in general. The educated respondents strongly supported protected areas. The product showed that most of the local people are opposed to park conservation as a consequence of low level of education and longer family size. Support for conservation was positively correlated with the level of education ability of the respondents. Heinen (1993) investigational of comparable condition in a find out of people's attitudes towards the protected area in Kosi Tappu protected area in Nepal. The study discovered that those respondents with higher household literacy rates had positive attitude about wildlife in the area. Hence, education is considered as the first step in improving the people's attitude towards protected area.

## **CHAPTER FIVE**

### **5. SUMMERY CONCLUSION AND RECOMMENDATION**

#### **5.1 Summary**

The aim of the paper was to identify the main management challenges of Maze National park and investigate the cause of conflict between the local people and park managers. Maze National park is one of the recently established park of Gamo Gofa zone SNNPRs. However, the park was recently May faced different challenges due to human activity, such as over grazing, uncontrolled fire, farm land expansion, and cutting living tree. And the local people may processes on these resources in the park sometimes may make the conflicts between park managers and the local people.

To investigate the challenges of the park the study used a wide range of methods such as: Survey questionnaire which was employed to collect primary data. Relevant documents were reviewed to acquire secondary data in order to assess the socio-economic profile of households, and problems of natural resource management. Four kebeles were selected using purposive sampling from surrounding kebeles in and around MazeNP. In addition to questionnaire, four focus group discussions were conducted with park staff and other eight key informants (two from each kebele). Moreover, a focus groups discussion composed of five from park resource dependents and five from non-park resources dependents was also conducted to acquire data. The survey data was analyzed employing mainly descriptive statistics with the help of statistical software (SPSS) Package version 20. The process of analysis was carried out by using qualitative descriptions and descriptive statistics.

The study found that all local communities around Maze National park were agro-pastoralists and their household economy depended exclusively on agricultural and livestock production. The productivity of the land was insufficient to supplement their livelihood and they did not get any incentive from the park and absence of alternative sources of income lead them to oppose rules and regulations and continue to encroach in the park resources.

The study also identified that the local people engaged in subsistence farming and have high number of cattle and goats. So these situations lead them to encroach on the park and use the natural resources of park. The study revealed that grazing by domestic animals, uncontrolled fire, illegal farm land expansion, cutting living trees and hunting wild animals in the park were the major management challenges of the park. On the other hand, lack of potable water, communication, limited livelihood and inadequate income, low level of awareness on protected areas made them to use park resource in unlawful and unsustainable manner.

The study has also investigated that range land resources utilization and ownership of territory, shortage of grazing land, water, inadequate area for settlement and farm land were the main causes of conflict between the park offices and the farmers mainly during the dry season. The study discovered that educating and awareness creation should be the first step in changing the negative perceptions of local communities around Maze National park. This could help use the park resources in sustainable manner by the local communities surrounding the park and maximize the benefits from the park which in turn ensure the sustainability of the park itself.

## 5.2 Conclusion

Maze National park is one of recently established parks in Ethiopia which is located in Gamo Gofa Zone of SNNPR. However, due to human interference the natural resources base of the park has been overexploited and hence facing numerous challenges. Accordingly, the main challenges are disturbance of habitats and ecosystem by human settlement, illegal farming, free grazing, hunting, deforestation, extraction of forest resources, forest fire, poor range land management technique, negative attitude of the local people and increase in human population.

It was found that the majority of the respondents surrounding the park oppose the presence of park in the area. Contrarily, they believe that the eradication of park will make possible for them to take over the area which is occupied by the park for their livelihood. For instance, they want the park area for a free grazing land for their livestock as well as farmland. Discussion with the local community has also revealed that the attention of community members is to have some part of the park for their own use. Thus, shifting the attitude of local communities through education and allocation of benefits from the park can serve as a means of protective measure. In this respect, several studies have revealed that the rate of protection is the consequence in unenthusiastic attitudes whereas profit makes an optimistic outlook (Fiallo and Jacobson, 1995).

The study explored the perceived and actual benefits from the park, family size, and level of education; age and association by the staff of the protected area are the major factors that determine the perceptions of local communities. For example, most communities powerfully require without charge to have access to grazing for their livestock inside the park. They also maintain that they have the right to use the natural resources of the park. Therefore, to bring sustainable park management in Maze, it requires awareness creation by the stakeholders for the surrounding communities. This may help create sense of ownership on the part of the communities settled surrounding the park. Moreover, this may help mitigate the conflicts that could happen between the interest of the local people and the park.

A number of procedures need to be taken in order to mitigate the problems such as introducing family planning, reducing the livestock number, emphasizes on fineness, foreword of animal feed extension, and responsive plan towards park protection, supplying clean water, grazing land

shortage, low production and productivity and introducing other community services. In addition, technologies that could improve the fertility status of farm plot and the use of new technologies that would improve the income of the local community. It was found that the park has been facing serious management challenges which should be solved in a sensible way. This may require concerted and coordinated efforts by the relevant stakeholders so as to ensure the sustainability of the park and maximize the benefits from the park to the local communities surrounding the park and the region and the nation at large.

### 5.3 Recommendations

Based on the findings of this research the following recommendations have been forwarded.

- The government should transfer those people living in and very close to the park to the area that is comparable in climate and other necessary conditions should be met.
- The park authority and NGOs cooperatively should work hand in hand to increase awareness of the local people about the importance of wildlife conservation.
- The government should take consideration to the number of tourists visiting the park in a season when making tourism development strategy on the area.
- Family planning services should be given extensively for the local communities to reduce future pressure on park resources.
- Proper demarcation of the park area bordering should be completed by park administration and Ethiopian wild life conservation Authority in continuous conservation with local people.
- Resource use zonation should be marked to control frequent access by the local people without affecting conservation in the core zone.
- Sharing of benefits with the communities living inside and adjacent to the Park will help to reduce conflicts between wildlife managers and local communities. There should be close link between the Park authority and the local communities living around. Local communities should also have a role in designing, planning, implementation and evaluation of wildlife conservation programmes.
- Farmers and herders have to shift from open grazing to a controlled grazing system (i.e. they may feed livestock on their individual land-holds) by reducing the number of livestock and focusing on the quality of animal products; and to this end, professionals in livestock raising, from the Zone (Gamo-Gofa) Department/Office of Agriculture, should offer continuous awareness and training for livestock owners.
- Experts in natural resource management (i.e. members of Department of Agriculture) and in those evolved environmental education, and staffs of tourism management need to provide a continuous awareness to the local people about the adverse effects of frequent grass collection, open livestock grazing and encroachment of the park

- Land-use system authorities should work with the local people in guiding the people to use land resource sustainably in harmony with wildlife.
- The tourism board should invite and strengthen the cooperation between NGOs (UNESCO; ASDCE) for the sustainable development of the park.
- Share the benefits that might be generated from the park to the local population in order to win their active support for the protection of the park.
- Encourage the local people to participate in the protection and management of the park through various mechanisms including boundary demarcation, decision making processes and livelihood support schemes.
- Conservation measures will not be successful without the active participation of the local people. So community based conservation system (co-management) should be an integral component for the conservation of the park.

## REFERENCE

- Abunie, L., 1991. Range use in Ethiopia: A case study of wildlife/livestock interfaces in Yabello wildlife sanctuary and adjacent areas, Borana region, Norway. M.Sc Thesis, Agricultural University of Norway, Oslo.
- Allen, C.M., 1991. *A checklist of African Mammals*. Cambridge university press, Cambridge pp: 641.
- Almaz Tadesse (1996). Nature conservation and indigenous people approaches in conflict resolution. Unpublished report. Ethiopian Wildlife Conservation Department, Addis Ababa. PP. 2.
- Anderson, D., & Grove. R., 1987. The scramble for Eden: Past, present and future in African conservation. In *Conservation in Africa: People, Policies and Practice*. D. Anderson and R. Grove, eds., Cambridge University Press, Cambridge.
- Ashenafi, Z.T., T. Coulson, C. Sillero-Zubiri and N. Leader-William, 2005. Behavior and ecology of the Ethiopian wolf (*Canis simensis*) in a human dominated landscape outside protected areas. *Anim. Conserve*, 8(2): 113-12
- Ashenafi, Z.T., T. Coulson, C. Sillero-Zubiri and N. Leader-William, 2005. Behaviour and ecology of the Ethiopian wolf (*Canis simensis*) in a humandominated landscape outside protected areas. *Animal Conserve* 8(2): 113-12.
- Balakrishnan, M. and Ndhlovu, D. E. (1992). Wildlife utilization and local people: A case study in Upper Lupande Game Management Area, Zambia. *Environmental Conservation* 12:135-144.
- Bardhan, P., 2002. Decentralization of governance and development. *Journal of Economic Perspectives* 16(4):185–205
- Bennett, E.L. & Rao, M. 2002. Wild meat consumption in Asian tropical forest countries: is this a glimpse of the future for Africa? *In* Links between Biodiversity, Conservation, Livelihoods and Food Security: The Sustainable Use of Wild Species for Meat (Mainka, S. and Trivedi, M., eds) pp. 39–44, IUCN.
- Bennett, E.L. and Robinson, J.G. 2000. Hunting of Wildlife in Tropical Forests. Implications for Biodiversity and Forest Peoples. Biodiversity Series, Impact Studies, Paper no 76, the World Bank Environment Department, Washington D.C.

- Bilborrow, R.E. and D.L. Carr. 1998. Population, agricultural land use and the environment in developing countries. Paper presented at the AAEA International Conference on Agricultural Intensification, Economic Development, and the
- Bird Life International 2011. Important Bird Areas factsheet: Nechisar National Park.
- Blake, S., 2002. The Ecology of Forest Elephant Distribution and its Implications for Conservation. Ph.d.Thesis. University of Edinburgh, Edinburgh
- Bodmer, R.; Penn, J.; Fang, T.G and Moya, L. (1990). *Management programs and protected areas: The case of the reserve communal Tanshiyacu-yacu-Tahuayo, Peru*. 1: 21-25.
- Boer, W. F. and Baquete, D. S. (1998). Natural resource use, crop damage and attitudes of rural people in the vicinity of the Maputo elephant reserve, Mozambique. *Environmental Conservation* 25: 208-218.
- Bourn, D. and Blench, R. (1999). *Can Livestock and Wildlife Co-exist? An Interdisciplinary Approach: Livestock, Wildlife and People in Semiarid Rangeland of Eastern Africa*: Overseas Development Institute, London.
- Brockington D, Duffy R, Igoe J., 2008 Nature unbound: conservation. *Capitalism and the Future of Protected Areas*, Earthscan, UK and USA
- Brodnig, G. (2006). Biodiversity Conservation and the Millennium Development Goals: Toward Sustainable Development. Regional Development Dialogue,
- Bruner AG, Gullison RE, Rice RE, Da, Fonseca GAB., (2001) *Effectiveness of parks in protecting tropical biodiversity*. *Science* 291:125–128. Doi:10.1126/science.291.5501.125, Doi.
- Burgess, N., D'Amico Hales, J., Underwood, E., and Dinerstein, E., (2004). *Terrestrial Ecoregions of Africa and Madagascar: A Conservation Assessment*. Island Press, Washington
- Burgess, N.D., Kuper, W., Mutke, J., Brown, J., Westaway, S., Turpie, S., Meshack, C., Taplin, J., McClean, C. and Lovett, J.C. (2005). Major gaps in the distribution of protected areas for threatened and narrow range Afrotropical plants. *Biodiversity and Conservation*. 14, 1877-94. [http://www.botanik.unibonn.de/system/mitarbeiter\\_homepages/kueper/Burgess\\_et\\_al\\_2005\\_Gap\\_analysis.pdf](http://www.botanik.unibonn.de/system/mitarbeiter_homepages/kueper/Burgess_et_al_2005_Gap_analysis.pdf) (last accessed, November, 2013)

- Butchart SHM., (2010) Global biodiversity: indicators of recent declines. *Science* 328:1164–1168. doi:10.1126/science.1187512
- Caspary, H.U., 1999. Utilisation de la fauna sausage in Côte d’Ivoire et Afrique de l’Ouest. Potentiels et contraintes pour la coopération au développement. Deutsche Gesellschaft für Technische Zusammenarbeit(GTZ) GmbH, Eschborn
- CBFP(2005). *The Forests of the Congo Basin: A Preliminary Assessment*. The Congo BasinForesPartnership.[http://carpe.umd.edu/products/PDF\\_Files/FOCB\\_APrelimAsses.pdf](http://carpe.umd.edu/products/PDF_Files/FOCB_APrelimAsses.pdf) (last accessed November,2013)
- Chambers, R. (1992). *Rural appraisal: rapid and relaxed and participatory*. Institute of Development Studies. Discussion paper, 311: 1-90.
- Corti, G., Fanning, E., Gordon, R. J., Hinde, J. and Jenkins, R. K. B.(2002). Observation on the Puku antelope (*Kobus vardoni* Livingstone 1857) in the Kilombero Valley Tanzania. *Afr. J.Ecol.*40:197-200.
- Darren JB, Thomas AC, Lenore F. 1998. Habitat loss and population decline: A meta-analysis of the patch size effect. *Ecology* 79(2):517-533.
- Dasmann, R. F., (1975). *The Conservation Alternative*. John Wiley and Sons, New York.
- Davis, W.B. & D.J. Schmidly. 1994. *The Mammals of Texas*. Texas Parks and Wildlife Press, Austin.
- Delany, J. & Kansieriimubanga K., 1979. Observations on the ecology of rodents from small arable plot near Kampala, Uganda. *Revue de Zoologie et de Botanique Africaines* 81: 417-427, Kampala.
- Desalegn Wana . 2004. “Strategies for Sustainable Management of Biodiversity in the Nechsar National Park, Southern Ethiopia”. A Research Report Submitted to OSSREA: Addis Ababa.
- Desalegn Wana 2008. Local people’s perceptions and attitudes towards the management of Nech-Sar National Park, Ethiopia. In: Jeffery, M.I., Firestone, J. and Bubna-Litic, K(eds.) *Biodiversity conservation, law + livelihoods: bridging the North-South divide*.Cambridge University Press. Cambridge, pp. 233-250.
- Dewar, R.E. (1997).Were people responsible for the extinction of Madagascar’s sub-fossils, and how will we ever know? In *natural Change and Human Impact in Madagascar* (eds. Goodman, S.M. and Patterson, D.), pp 364-77. Smithsonian Books, Washington, D.C

- Dublin, H. T. (1995). Chairman's report: African Elephant Specialist Group. *Pachyderm* 20: 8-9.
- Dudley N (ed) (2008) Guidelines for applying protected area management categories. Gland Switzerland: IUCN., Norwich
- Dudley N, Hockings MT, Stoltons (2004) Options for guaranteeing the effective management of the World's protected areas. *Journal of Environmental Policy and Planning* 6(2):131–142. doi: 10.1080/1523908042000320713
- Dudley N, Mulongoy KJ, Cohen S, Stolton S, Barber VC, Gidda SB., (2005) Towards effective protected area systems: an action guide to implement the convention on biological diversity program of work on protected areas. Technical Series 18, Secretariat of the Convention on Biological Diversity, Montreal
- Dudley N, Stolton S (1999) Conversion of paper parks to effective management: developing a target. Report to the WWF-World Bank Alliance from the IUCN/WWF Forest Innovation Project
- Dudley, N. (ed.) 2008. Guidelines for applying protected area management categories. IUCN, Gland, Switzerland.
- Dudley, N. and Stolton, S. (eds.) 2008. Defining protected areas: an international conference in edited by Jane Carter Ingram, Fabrice DeClerck, Cristina Rumbaitis del Rio
- EEA (European Environment Agency) (2010) 10 messages for 2010: protected areas.
- Erdenebatar, B. (1996). Socio-economic aspects of the pastoral movement pattern of Mongolian herders. In: *Culture and Environment in Inner Asia*. Humphrey, C. and Sneath, D. (eds). The White Horse Press, Cambridge. PP. 42-51.
- FAO (1997). *The State of the World's Plant Genetic Resources for Food and Agriculture*. FoodandAgricultureOrganizationoftheUnitedNations,Rome.<http://www.fao.org/ag/AGP/AGPS/Pgrfa/pdf/swrfull.pdf> (last accessed February, 2013)
- FAO (2003). *Forestry Outlook Study for Africa – African Forests: A View to 2020*. Food and Agriculture Organization of the United Nations, Rome. <ftp://ftp.fao.org/docrep/fao/005/Y4526B/y4526b00.pdf> (last accessed on February,2013)
- Fiallo, E. A. and Jacobson, S. K. (1995). Local communities and protected areas: attitudes of rural residents towards conservation. *Environmental Conservation* 22: 241-249.

- Fiallo, E. A. and Jacobson, S. K. (1995). Local communities and protected areas: attitudes of rural residents towards conservation. *Environmental Conservation* 22: 241-249.
- Firouz E, Hassinger JD, Ferguson DA (1970) The wildlife parks and protected regions of Iran. *Biological Conservation* 3(1):37–45
- Fisher, (2005) A system of assumptions, accepted principles, and rules of procedure devised to analyze, predict, or otherwise explain the nature or behavior of a specified set of phenomena. (American Heritage Dictionary, 1969).
- Fuller S (2004) Strategy for alternative livelihoods development: conserving biological in the Central Zagros Mountains ecosystem. Final Report, International Mountains Consultancy, Kingston
- GebreMichael T., Hundessa,T. and Hillma, J.C. (1992).The effects of war on world heritage sites and protected areas in Ethiopia. In: *World Heritage Twenty Years Later. Papers presented during the workshops held during the IV World Congress on national parks and protected areas, Caracas,Venezuela, February 1992* (ed.Thorsell, J.C.), pp 143- 50. IUCN – The World Conservation Union, Gland
- Gebresenbet, F., H. Bauer, L. Hunter, K. Gebretensae (2010) Proceedings of the national lion conservation workshop. EWCA, Addis Abeba, 47 pp. .
- GoIRI (Government of Islamic Republic of Iran) (1995) Islamic Republic of Iran: environment strategy study. Committed by Natural Resources & Environment Division, Maghreb and Iran Department, Middle East and North Africa Region, Report No. 12806-IRN. World Bank, Washington DC
- Görgens,A.H.M. and van Wilgen,B.W. (2004). Invasive alien plants and water resources in South Africa: current understanding, predictive ability and research challenges. *South African Journal of Science*. 100,27-33
- Görgens,A.H.M. and van Wilgen,B.W. (2004). Invasive alien plants and water resources in South Africa: current understanding, predictive ability and research challenges. *South African Journal of Science*. 100,27-33
- Gorkhali, C. P. (1986). Some principles for resolving conflicts about protected areas. *Parks* 11: 15-16.

- Government of Mauritius (2005). Mauritius – Staking out the Future. Ministry of Environment and National Development Unit Port Louis.
- [http://www.nssd.net/pdf/peer\\_review/Mauritius.pdf](http://www.nssd.net/pdf/peer_review/Mauritius.pdf) (accessed on February, 2013)
- Green, M. and Paine, J. (1997). *State of the world's protected areas at the end of the twentieth century*. Social Science Research Network, Albany.
- Groombridge, B., 1992. *Global biodiversity: status of the earth's living resources*. Chapman and Hall, London, pp: 465.
- Hackel, J. D. (1999). Community conservation and the future of Africa's wildlife. *Conservation Biology* 13: 726-734.
- Hammill, A. and Besancon, C. (2003). Promoting conflict sensitivity in Trans-boundary protected areas: a role for peace and conflict impact assessments. The 5th World Parks Congress, Durban. PP. 56-61.
- Hannah, L. 2004. *African People, and African Parks: An Evaluation of Development Initiatives as a Means of Improving Protected Area Conservation in Africa*: Conservation International. Washington, D.C.
- Hegazy, A. K., Diekman, M. and Ayad, W. G. (1999). Impact of plant invasions on ecosystems and native Gene Pools. In *Environment 2000 and Beyond* (ed. Hegazy, A.K.), pp. 275-310. Horus, Cairo
- Heinen, J. T. (1993). Park-people relations in Kossi Tappu Wildlife Reserve, Nepal: a socio economic analysis. *Environmental Conservation* 20: 25-34.
- Herlocker, D., 1999. *Rangeland resources in eastern Africa: their ecology and development*. GTZ, German Technical Cooperation, Nairobi, Kenya.
- Hill, C.; Osborn, F. and Plumptre, A. J. (2002). *Human-Wildlife Conflict: Identifying the Problem and Possible Solutions*. Albertine Rift Technical Report Series Vol.I. Wildlife Conservation Society, Kampala. PP. 23-35
- Hill, K., McMillan, G. and Farina, R., 2003. "Hunting-related changes in game encounter rates from 1994 to 2001 in the Mbaracayu Reserve, Paraguay." *Conservation Biology* 17(5): 1312-1323.
- Hillman, C.J. (1988) The Bale Mountains National Park Area, Southeast Ethiopia, and Its Management. *Mountain Research and Development*, African Mountains and Highlands Vol. 8,

- Hillman, J. C. 1993. *Ethiopia: Compendium of Wildlife Conservation Information. Vol. 1 Wildlife Conservation Areas*. New York Zoological Society and Ethiopian Wildlife Conservation Organization, Addis Ababa.
- Hilman, J. C., (1991). The current situation in Ethiopia's wildlife conservation areas. Ethiopian Wildlife Conservation Organization, Addis Ababa
- Holm, A.M., W.A. Loneragan and M.A. Adams. 2002. Do variations in a model of landscape function assist in interpreting the growth response of vegetation to rainfall in arid environments? *J. Arid Environ.*, 50: 23-52.
- <http://www.birdlife.org> (accessed on February 2013).
- Hunnam P., (2004) *Conservation of biodiversity in the Central Zagros landscape conservation zone*. GEF, UNDP and Government of Iran, Tehran
- HUSA (2012) *Hunting for Sustainability in Africa (HUSA)*
- IUCN (2003). 2003 Red List of Threatened Species. [www.redlist.org](http://www.redlist.org), accessed on October 15, 2004.
- IUCN, 1994. *Guidelines for Protected Area Management Categories*. IUCN, Cambridge, UK and Gland, Switzerland.
- IUCN, 1998. *United National List of Protected Areas 1997*. IUCN, Cambridge, UK and Gland, Switzerland.
- IUCN, 1998b. *From Islands to Networks – report on the midterm expert meeting, Albany, Australia, November 1997 (unpublished)*
- IUCN, 2003. IUCN Red List of Threatened Species. Version 2003.
- IUCN, 2010 b. Standards and Petitions Subcommittee. Africa 2010. Guidelines for Using the IUCN Red List Categories and Criteria. Version 8.1. Prepared by the Standards and Petitions Subcommittee in *March Science*, 78: 1255-1263. 2010.
- Kagir i, J. (2003). Human-Wildlife Conflict in Kenya: A Conflict Resolution Concept. In: *Human-Wildlife Conflict; Identifying the Problem and Possible Solution*. Hill, C.; Osborn, F. and Plumpter, A. J. (eds). Albertine Rift Technical Report Series Vol. I. Wildlife Conservation Society, Nairobi. PP. 32-39.
- Kaltenborn, B.P., Nyahongo, J.W. and Mayengo, M. (2003). People and wildlife Interactions around Serengeti National Park: Biodiveristy and the Human-wildlife Interface in Serengeti, Tanzania. NINA Project Report No. 22. Norwegian Institute for

NatureResearch,Lillehammer.<http://www.nina.no/archive/nina/>

[Publikasjoner/project%20report/PR2 2.pdf](#)(last accessed on Febreuary,18/2013)

- Kemf, E. (1993). In search of a home. People living in or near protected areas. In: *The Law of the Mother. Protecting Indigenous People in Protected Areas*. Kemf, E. Sierra Club Books, San Francisco. PP34-53.
- Kerr, J.T., 1997. Species richness, endemism and the choice of areas for conservation. *Conservation Biol.*, 11(5): 1094-1100.
- Kiss, A. (1990). *Living with Wildlife. Wildlife Resource Management with Local Participation in Africa*. Africa Technical Department series. World Bank Technical paper. 130. Washington D. C.
- Kiss, A., 1990. Living with wild life: *resource characteristics of lions (Panthera leo) at Addis Ababa zoo*. Biodiversity and Conservation, Technical Paper series. World Bank, USA, pp: 217.
- Kolahi M, Tetsuro S, Kazuyuki M, Mehra M (2011) Accountability and development of protected areas management. In: Proceeding the 4th environmental technology and management conference: Present and future challenges in environmental sustainability'', Indonesia
- Kull, C.A. (2000). *Isle of fire: The political ecology of grassland and woodland burning in highland Madagascar*. Ph.D. thesis. University of California, Berkley
- Lakew Birhanu (2001). *The Distribution of Ethiopian Endemic Bird Species in Protected Areas*. A dissertation submitted in partial fulfillment for the Degree of Master of Science (M.Sc.).University of Kent at, Canterbury, UK.
- Langrand, O. and Goodman, S.M. (1995). Monitoring Madagascar's Ecosystem :A Look at the Past, Present and the Future of its Wetlands. In *Ecosystem Monitoring and Protected Areas* (eds. Herman,T.B., Bon- Drup-Nielsen, S.,Willison, J.H.M. and Munro, N.W.P.), pp. 204-14. Sciences and Management of Protected Areas Association,Wolfvill
- Lewis, C. (1993). Nature in the cross fire. In: *The Law of the Mother. Protecting Indigenous People in Protected Areas*. Kemf, E. (ed). Sierra Club Books, San Francisco. PP. 43-56.
- Leykun Abunie (2000). The Challenges of conserving Ethiopian wildlife: Overview. *Walia* 21: 56-61.

- Lockwood, M., Worboys, G. & Kothari, A. (2006) *Managing Protected Areas: A Global Guide. Earths can*, Cromwell Press Trowbridge, London.
- Louette, M., Meirte, D. and Jocque, R. (2004). La fauna terrestre de l'archipel des Comores. *Sciences Zoologiques*, No. 293. Musée Royal de l'Afrique Centrale, Tervuren
- Madhusudan, M. D. (2003). Living amidst wildlife: Livestock and crop depredation by large mammals in the interior villages of Bhadra Tiger Reserve, South India. *Environmental Management*. 31: 466-475.
- Madhusudan, M.D and Karanth, K.U (2002). Local hunting and the conservation of large mammals in India. *Ambio*, 31: 49-54.
- Maisels, F., Keming, E. Kemei, M. and Toh. C. 2001. The extirpation of large mammals and implications for Mountain forest conservation: the case of the Kilum-Ijim Forest, North-west Province, Cameroon. *Oryx* 35: -331
- Makin MJ, Kingham TJ, Waddams AE, Birchall CJ, Teferra T. 1975. Development Prospects in the Southern Rift Valley, Ethiopianland resource study 21. 2 volumes. London, United Kingdom: Land Resources Division, Ministry of Overseas Development.
- Malthus, (1986) *Integrating Ecology and Poverty Reduction: The Application of Ecology*.
- Martinet, C. and McNeely, J. (1992). Managing parks for the 21st century: a device from the parks congress. *Parks* 3: 13-21.
- McNeely, J.A., Harrison, J., and Dingwall, P. (eds. 1994). *Protecting Nature; Regional Reviews of Protected Areas*. IUCN – The World Conservation Union, Gland
- Messana, G. M. and Bereket Netsereab (1994). *The Senkele Swayne's Hartebeest Sanctuary Management Plan*. Ethiopian Wildlife Conservation Department, Addis Ababa.
- Messana, G. M. and Bereket Netsereab (1994). *The Senkele Swayne's Hartebeest Sanctuary Management Plan*. EWCO, Addis Ababa
- Messmer, T. A. (2000). The emergence of human-wildlife conflict management: turning challenges into opportunities, *Inter. Biodet. Biodegr.* 49: 97-102.
- Millennium Ecosystem Assessment 2005. *Ecosystems and human well-being: biodiversity synthesis*. World Resources Institute, Washington, DC.

- Mishra, C.; Allen, P.; McCarthy, T.; Madhusadan, M.; Bayarjargal, A. and Prins, H. (2003). The role of incentive programs in conserving the snow leopard. *Conservation Biology* 17: 512-520.
- Murphree, M. W. (1991). Communities as institutions for resource management. In: *National Conference on Environment and Development*. Lewis, D. and Carter, N. (eds). World Wildlife Fund, Maputo. PP. 21-24.
- Murray, M., 2003. Overkill and Sustainable Use. *Science* 299:1851-1853.
- Naughton-Treves, L. (1996). Uneasy neighbors: Wildlife and Farmers Around Kibale National Park, Uganda. Ph. D. Thesis, University of Florida, Florida.
- Naughton-Treves, L., Buck Holland, M. and Brandon, K (2003). The role of protected areas in conserving biodiversity and sustaining local livelihoods. *Annual Review of Environment and Resources* 30: 219-252.
- NBSAP (National Biodiversity Strategy and Action Plan) (2005) The first National Report for the Convention on Biological Diversity. Report of the NBSAP Addis Ababa, Ethiopia.
- Neumann, R.P. 2000. *Imposing Wilderness: Struggles over Livelihood and Nature Preservation in Africa.*: University of California Press. Berkeley.
- Neumann, R.P. and Hirsch, E. 2000. Commercialisation of non-timber forest products: review and analysis of research. CIFOR, Bogor
- Newby, J. and Wilson, A. (1993). People in blue: the Tuareg of Niger. In: *The Law of the Mother. Protecting Indigenous Peoples in Protected Areas*. Kempf, E. (ed). Sierra Club Books, San Francisco. PP. 33-39.
- Newmark, W. D.; Manyanza, D. N.; Gamassa, D. M. and Sariko, H. I. (1994). The conflict between wildlife and local people living adjacent to 103 protected areas in Tanzania: human density as a predictor. *Conservation Biology* 8: 249-255.
- Newmark, W.D., D.N. Manyanza, D.G. Gamassa, and H.I. Sariko. 1994. The conflict between wildlife and local people living adjacent to protected areas in Tanzania: Human density as a predictor. *Conservation Biology* 8, 249–255.
- Nishizaki, N. (2004). Resisting imposed wildlife conservation: Arsi Oromo and the Senkele Swayne's hartebeest Sanctuary. *African Study Monogr.* 25: 61-67.
- Ntiemoa-Baidu, Y, 1997. Wildlife and food security in Africa. FAO Conservation Guide 33. Food and Agriculture Organization of the United Nations, Rome.

- O'Brien, T.G. and Kinnaird, M.F. 2000. Differential Vulnerability of Large Birds and Mammals to Hunting in North Sulawesi, Indonesia and the Outlook for the Future. *In* J.G. Ogada, M.; Woodroffe, R.; Ouge, N. and Frank, G. (2003). Limiting depredation by African carnivores: the role of livestock husbandry. *Biological Conservation* 119: 507-516.
- Oil, M. K.; Taylor, I. R. and Rogers, M. E. (1994). Snow leopard *Panthera Uncial* predation of livestock: an assessment of local perceptions in the Annapurna conservation area, Nepal. *Biological Conservation* 68: 63- 68.
- Olsen CS, Larsen HO (2003). Alpine medicinal plant trade and mountain livelihood strategies, *Geography. J.* 169(3): 243-254.
- Omiti and Nsirengo, A. (2005). Policy dimension in human-wildlife conflicts in Kenya: Evidence from Laikipia and Nyandarva districts. *Institute of Policy Analysis and Research* 11: 1-4.
- Perveen, A. and M.I. Hussain. 2007. Plant Biodiversity and phytosociological attributes of Gorakh Hill (Khirthar Range). *Pak. J. Bot.*, 39: 691-698.
- Perveen, A., G.R. Sarwar and I. Hussain. 2008. Plant Biodiversity and phytosociological attributes of Dureji (Khirthar Range). *Pak. J. Bot.*, 40: 17-24.
- Proulx, M. and A. Mazumder. 1998. Reversal of grazing impact on plant species richness in nutrient-poor vs. nutrient rich ecosystems. *Ecology*, 79: 2581-2592.
- Rabinowitz, A. R. (1986). Jaguar predation on domestic livestock in Brazil. *Wildl. Soc. Bull.* 14: 170-174.
- Republic of Seychelles (2004). National Assessment of the Barbados Plan of Action +10 Review [http://www.sidsnet.org/docshare/other/20040113105721\\_Seychelles\\_NAR\\_2003.pdf](http://www.sidsnet.org/docshare/other/20040113105721_Seychelles_NAR_2003.pdf)(last accessed on February, 23/2013)
- Ribot .JC., (2002) Democratic decentralization of natural resources. World Resources Institute, Washington DC
- Robertson, D.P. and Hull, R.B. (2001). Beyond biology: toward a more public ecology for conservation. *Conservation Biology*. 15, 970-9
- Robinson and E.L. Bennett, eds. *Hunting for Sustainability in Tropical Forests*, pp. 199-213.: Columbia University Press. New York.
- Robinson, J. G. (1994). Limits to caring sustainable living and the loss of biodiversity. *Conservation Biology* 7: 20-28. .

- Robinson, J.G. and Bennett, E.L. (2002). Will alleviating poverty solve the bush meat crisis? *Oryx*. 36, 332
- Robinson, J.G. and Bennett, E.L. (2004). Having your wildlife and eating it too: an analysis of hunting sustainability across tropical ecosystems. *Animal Conservation*. 7, 397-408
- Robinson, J.G. and Bennett, E.L. (eds. 2000). *Hunting for Sustainability in Tropical Forests*. Columbia University Press, New York
- S.N., Effa, E.N., Starkey, M.P., Telfer, P., Thibault, M., Tutin, C.E., White, L.J. and Wilkie, D.S. (2004). Catastrophic ape decline in western equatorial Africa. *Nature*. 422(6932), 611-4
- Sala, O.E., Chapin, F.S., Armesto, J.J., Berlow, E., Bloomfield, J., Dirzo, R., Huber-Sanwald, E., Huenneke, L.F., Jackson, R.B., Kinzig, A., Leemans, R., Lodge, D.M., Mooney, H.A., Oesterheld, M., Poff, N.L., Sykes, M.T., Walker, B.H., Walker, M. and Wall, D.H. (2000). Global biodiversity scenarios for the year 2100. *Science*. 287, 1770-4
- Salehi A (2009) Livelihood dependency and management on semiarid Oak Forests: the case of Southern Zagros, Iran. Doctoral Thesis, Swedish University of Agricultural Sciences
- Saunders DA, Hobbs RJ, Margules CR. 1991. Biological consequences of ecosystem fragmentation review.
- Schloeder, C. A. (1996). A report on the occurrence of three new mammal species in Ethiopia. *Afr. J. Ecol.* 34:401-403.
- Scholes, R.J. and Biggs, R. (2005). A biodiversity intactness index. *Nature*. 434, 45-750.aspx
- Scholes, R.J. and Biggs, R. (eds. 2004). *Ecosystem Services in Southern Africa: a regional assessment*. Council for Scientific and Industrial Research, Pretoria
- Sher H, Hussain F (2009). Ethnobotanical evaluation of some plant resources in Northern part of Pakistan. *Afr. J. Biotechnol.*, 8(17): 4066-4076.
- Shibru Tedela (1995). Protected areas management crises in Ethiopia. *Walia* 16: 17-30.
- Shibru, Tedla. (1994). Protected Areas Management Crisis in Ethiopia. *Walia*, 16(2):17
- Shivik, J. A.; Treves, A. and Callahan, P. (2003). Non-lethal techniques for managing predation: primary and secondary repellents. *Conservation Biology* 17: 531-537.
- Siex, K. S. and Struhsaker, T. T. (1999). Colobus monkeys and coconuts: a study of perceived human-wildlife conflict. *J. Appl. Ecol.* 36: 109-120.

- Swardona RC, Faust BB (2006) Introduction: international policy in the biosphere reserves of Mexico's Yucatan peninsula. *Landscape and Urban Planning* 74:160–192.
- Studsrod, J. E. and Wegge, P. (1995). Park-People relationship: the case of damage caused by park animals around the Royal Bardia National Park, Nepal. *Environmental Conservation* 22: 133-142.
- Tchamba, M. N. (1996). History and present status of the human-elephant conflict in the Waza Logona Region, Cameroon. *Biological Conservation* 75: 35-41.
- Tedla, S., 1995. Protected areas management crises in Ethiopia. *Journal of the Ethiopian Wildlife and Natural History Society*, 16(1): 20-25.
- Tesfaye Hundessa, (1997).Major causes for the loss of wildlife resources, *Walia* 18(1):4
- Timberlake, L., 1985. Africa in Crisis: the causes and the cures of environmental bankruptcy. Tinker J. (ed.) *Earthscan London*, UK. pp: 232.
- Treves, A. and Karanth, K. U. (2003). Human-carnivore conflict and perspective on carnivore management worldwide. *Conservation Biology* 17: 491-499.
- UNEP (1990). People, Parks and Wildlife Guidelines for Public Participation in Wildlife Conservation-Case Studies in Kenya.
- UNEP (United Nations Environment Programme) (2004) Decisions adopted by the conference of the parties to CBD at its seventh meeting in decision VII/30. Available from <http://www.cbd.int/2010-target/goals-targets.shtml> (last accessed on febreury,20/2013)
- UNEP and NESDA, (2004). *Rapport sur l'Etat de l'Environnement en Afrique de l'Ouest*. United Nations Environment Programme and Network for Environment and Sustainable Development in Africa Nairobi
- UNESCO (2006a). Biosphere Reserves.Africa. United Nations Educational, Scientific and Cultural Organization. <http://www.unesco.org/mab/BRs/AFRBRs.shtml> (accessed at February, 22/ 2013)
- United Nations Environment Programme (UNEP), 2004. Global biodiversity. Nairobi, Kenya
- Van de Koppel, J.M. Rietkerk, F. Van Langevelde, L. Kumar, C.A. Klausmeier, J.M. Fryxell, J.W. Hearne, J. Van Andel, N. De Ridder, A. Skidmore, L. Stroosnijder and H.H.T. Prins. 2002. Spatial heterogeneity and irreversible vegetation change in semi arid grazing systems. *Am. Nat.*, 159: 209-218.

- Wagner, 2001 Restoration of coral reefs and mangrove ecosystems at Kunduchi and Mbweni, Dar
- Walsh, P.D., Abernethy, K.A., Bermejo, M., Beyers, R., De Wachter, P., Akou, M.E., Huijbregts, B., Mambounga, D.I., Toham, A.K., Kilbourn, A.M., Lahm, S.A., Latour, S., Maisels, F., Mbina, C., Mihindou, Y., Obiang, S.N., Effa, E.N., Starkey, M.P., Telfer, P., Thibault, M., Tutin, C.E., White, L.J. and Wilkie, D.S. (2004). Catastrophic ape decline in western equatorial Africa. *Nature*. 422(6932), 611-4
- Wells, M. and McShane, T. O. (2004). Integrating protected area management with local needs and aspirations. *Ambio*, vol. 33, n° 8, p. 513-519.
- Western, D., R.M. Wright, and S.C. Strum, eds. 1997. *Natural Connections: Perspectives in Community-based Conservation*: Island Press, Washington D.C
- Woolf, A. (1961). Population dynamics of a captive whitetail deer herd with emphasis on reproduction and mortality *Wildlife Monographs* 67:1-53.
- World Conservation Monitoring Centre (WCMC) (1991) *Global Biodiversity: Status of the Earth's Living Resources*, Chapman and Hall, London.
- Yalden, D. and M. Lagen, 1992. Endemic Mammals of Ethiopia. *Mammal Review*, 22(3-4): 115-150.
- Yeager, R. and Miller, N.N. (1986). *Wildlife, Wild Death: Land-use and Survival in Eastern Africa*. State University of New York Press, Albany.

## Appendix

### Appendix 1: Large and medium size mammal Check list of Maze National Park

| No. | Scientific Name                      | English Name            | Amharic Name | Local Name | Number | Remark |
|-----|--------------------------------------|-------------------------|--------------|------------|--------|--------|
| 1   | <i>Alcelaphus buselaphus swaynei</i> | Swayne's hartebeest     | ቆርኬ          | ቆርኬ        | 522    |        |
| 2   | <i>Ourebia ourebi</i>                | Oribi                   | ፌቆ           | ጤጎ         | 1120   |        |
| 3   | <i>Tragelaphus Strepsiceros</i>      | Greater kudu            | አጋዘን         | ጌሳ         | 77     |        |
| 4   | <i>Tragelaphus imberbis</i>          | Leaser kudu             | አምበራይሌ       | ገዜ ገላ      | 10     |        |
| 5   | <i>Kobus ellipsiprymnus</i>          | Water buck              | ድፈርሣ         | ጮፎሾ        | 416    |        |
| 6   | <i>Tragelaphus scriptus</i>          | Bush buck               | ዱኩላ          | ጋራ         | 26     |        |
| 7   | <i>Redunca redunca</i>               | Reed buck, Bohor        | ቦሆር          | ሃታ ባቻ      | 19     |        |
| 8   | <i>Sylvicapra grimmia</i>            | Duiker                  | ሚዳቋ          | ጌኒኤ        | 3      |        |
| 9   | <i>Phacochoerus aethiopicus</i>      | Warthog                 | ከርከሮ         | ባቻ         | 171    |        |
| 10  | <i>Potamochoerus porcus</i>          | Bush, pig               | አሳማ          | ጋሾ         | 13     |        |
| 11  | <i>Panthera leo</i>                  | Lion                    | አንበሳ         | ጎዳንታ       | 6      |        |
| 12  | <i>Panthera pardus</i>               | Leopard                 | ነብር          | ጋሞ         | 2      |        |
| 13  | <i>Acinonyx jubatus</i>              | Cheetah                 | አቦሽማኔ        | ጠኒቃ ማሄ     |        |        |
| 14  | <i>Felis serval</i>                  | Serval cat              | አነር          | ማሄ         | 1      |        |
| 15  | <i>Canis mesomelas</i>               | Jackal(black buck)      | ቀበሮ          | ማሄ ማሻ      |        |        |
| 16  | <i>Hystrix cristata</i>              | Porcupine               | ጃርት          | ወረካና       |        |        |
| 17  | <i>Hyaena hyaena</i>                 | Stripped hyena          | ጠቃጠቆ ጅብ      | ጎዴሬ        |        |        |
| 18  | <i>Crocota crocuta</i>               | Spotted hyena           | ተራው ጅብ       | ውልዘ ጎዴሬ    |        |        |
| 19  | <i>Lycaon pictus</i>                 | African wild dog        | ተኩላ          | ሱይቴ/ሱርማ    |        |        |
| 20  | <i>Papio Anubis</i>                  | anubis baboon           | ዝንጀሮ         | ገለሾ        | 151    |        |
| 21  | <i>Cercopithecus aethiops</i>        | Vervet monkey           | ጦጣ           | ቃራ         | 16     |        |
| 22  | <i>Colobus guereza/abyssinicus</i>   | Colobus monkey          | ጎሬዛ          | ወኖ         | 8      |        |
| 23  | <i>Felis caraca</i>                  | Caracal                 | ደልጋ አንበሳ     | ጋሞፌሌ       |        |        |
| 24  |                                      | Striped ground squirrel | አደሴ ቁኒ       | ፕርሾሌ       |        |        |
| 25  | <i>Orycteropus afer</i>              | Aard vark               | አዋልዲ ጌሣ      | ባባንታ       | 2      |        |
| 26  | <i>Oryctolagus cuniculus</i>         | Hare/Rabbit             | ጥንቸል         | ጋልሜኖ       | 2      |        |
| 27  | <i>Synceros caffer</i>               | Buffalo                 | ጎሽ           | ሜንታ        | 3      | ኩቴ     |
| 28  | <i>Ichneumia albicauda</i>           | White-tailed Mongoose   | ግራተ ነጭ ፋሮ    | ፋሮ         |        |        |
| 29  | <i>Herpestes sanguineus</i>          | Slender                 | ቀጭኑ ፋሮ       | ፋሮ         |        |        |

|    |                              |              |            |       |  |
|----|------------------------------|--------------|------------|-------|--|
|    |                              | Mongoose     |            |       |  |
| 30 | <i>Felis lybica</i>          | Wild cat     | የዱር<br>ድመት | ማሻ    |  |
| 31 |                              | Hyrax        | ሽኮኮ        | ጉፓሌ   |  |
| 32 | <i>Civettictis civetta</i>   | Civet        | ጥርኝ        | ሼናጉንዳ |  |
| 33 | <i>Oreotragus oreotragus</i> | Klipspringer | ሰሰ         | ባቻ    |  |

Appendix 2: **Birds Check List of Maze National Park**

| No  | Scientific Name                  | Vernacular Name                 | Remark |
|-----|----------------------------------|---------------------------------|--------|
| 1.  | <i>Scopus umbrata</i>            | Hamerkop                        |        |
| 2.  | <i>Ciconia ciconia</i>           | White Stork                     |        |
| 3.  | <i>Leptotilos crumeniferus</i>   | Marabou Stork                   |        |
| 4.  | <i>Bostrychia corunculata</i>    | Hadada Ibis                     |        |
| 5.  | <i>Bosrtychia corunculata</i>    | Wattled Ibis                    |        |
| 6.  | <i>Plegaris falcinellus</i>      | Glossy ibis                     |        |
| 7.  | <i>Alopochen aegyptiaca</i>      | Egyptian Goose                  |        |
| 8.  | <i>Avecoda cuculoides</i>        | African Cuckoo Hawk             |        |
| 9.  | <i>Elanus caeruleus</i>          | Black-Shouldered Kite           |        |
| 10. | <i>Milvus migrans</i>            | Yellow-billed/Black Kite        |        |
| 11. | <i>Necrosyrtes monachus</i>      | Hooded Vulture                  |        |
| 12. | <i>Gyps africanus</i>            | White-backed Vulture            |        |
| 13. | <i>Gyps ruppellii</i>            | Ruppell's Vulture               |        |
| 14. | <i>Circaetus gallicus</i>        | Short-toed Eagle                |        |
| 15. | <i>Terathopius ecaudatus</i>     | Bateleur                        |        |
| 16. | <i>Circus macrourus</i>          | Pallid Harrier                  |        |
| 17. | <i>Meleirax metabates</i>        | Dark Chanting Goshawk           |        |
| 18. | <i>Meleirax gabar</i>            | Gabar Goshawk                   |        |
| 19. | <i>Buteo rufofuscus</i>          | Augur Buzzard                   |        |
| 20. | <i>Aquila rapax</i>              | Tawny Eagle                     |        |
| 21. | <i>Falco tinnunculus</i>         | Common Kestrel                  |        |
| 22. | <i>Francolinus sephaena</i>      | Crested Francolin               |        |
| 23. | <i>Francolinus clapperion</i>    | Clapperton's Francolin          |        |
| 24. | <i>Eupodotis melanogaster</i>    | Black-bellied Bustard           |        |
| 25. | <i>Vanellus senegallus</i>       | African wattled lapwing(Plover) |        |
| 26. | <i>Vanellus Coronatus</i>        | Crowned plover                  |        |
| 27. | <i>Tringa ochropus</i>           | Green Sandpiper                 |        |
| 28. | <i>Pterocles quadricinctus</i>   | Four-banded Sandgrouse          |        |
| 29. | <i>Pterocles decorates</i>       | Black- faced Sandgrouse         |        |
| 30. | <i>Streptopelia senegalensis</i> | Laughing Dove                   |        |
| 31. | <i>Streptopelia vinacea</i>      | Vinaceous Dove (?)              | Doubt  |
| 32. | <i>Streptopelia capicola</i>     | Ring-necked Dove                |        |
| 33. | <i>Streptopelia semitorquata</i> | Red-eyed Dove                   |        |

|     |                                  |                                |       |
|-----|----------------------------------|--------------------------------|-------|
| 34. | <i>Turtur chalcospilos</i>       | Emerald-Spotted Wood Dove      |       |
| 35. | <i>Turtur abyssinicus</i>        | Black-billed Wood Dove         |       |
| 36. | <i>Turtur afer</i>               | Blue-spotted Wood Dove         |       |
| 37. | <i>Oena capensis</i>             | Namaqua Dove                   |       |
| 38. | <i>Treron waalia</i>             | Bruce's Green pigeon           |       |
| 39. | <i>Poicephalus rufiventris</i>   | Orange-bellied parrot          |       |
| 40. | <i>Tauraco leucotis</i>          | White-cheeked Touraco          |       |
| 41. | <i>Crinifer zonurus</i>          | Eastern Grey plantain-eater    |       |
| 42. | <i>Centropus monachus</i>        | Blue-headed Coucal             |       |
| 43. | <i>Centropus superciliosus</i>   | Burchell's/White-browed Coucal |       |
| 44. | <i>Bubo africanus</i>            | Spotted Eagle Owl              |       |
| 45. | <i>Macrodipteryx longipennis</i> | Standard-winged Nightjar       |       |
| 46. | <i>Cypsiurus Parvus</i>          | African palm Swift             |       |
| 47. | <i>Apus apus</i>                 | European Swift                 |       |
| 48. | <i>Clius striatus</i>            | Spneckled Mouse Bird           |       |
| 49. | <i>Halcyon senegalensis</i>      | Specgal/Woodland Kingfisher    |       |
| 50. | <i>Halcyon chelicuti</i>         | Striped Kingfisher             |       |
| 51. | <i>Merops percicus</i>           | Little Bee-eater               |       |
| 52. | <i>Merops percicus</i>           | Blue-Cheeked Bee-eater         |       |
| 53. | <i>Merops apiaster</i>           | European Bee-eater             |       |
| 54. | <i>Coracia abyssinica</i>        | Abyssinian Roller              |       |
| 55. | <i>Upupa epops</i>               | African Hoopoe                 |       |
| 56. | <i>Phoerichulus purpureus</i>    | Red-billed/Green Wood Hoopoe   |       |
| 57. | <i>Phoerichlus aterrimus</i>     | Black Wood Hoopoe              |       |
| 58. | <i>Tockus nasutus</i>            | African Grey Hornbill          |       |
| 59. | <i>Bycanistes brevis</i>         | Silvery-cheeked Hornbill       |       |
| 60. | <i>Bucorvus abyssinicus</i>      | Abyssinian Ground Hornbill     |       |
| 61. | <i>Pogoniulus chrysoconus</i>    | Yellow-fronted Tinkerbird      |       |
| 62. | <i>Tricholaem diademata</i>      | Red-fronted Barbet             |       |
| 63. | <i>Lybius guifsobalito</i>       | Black-billed Barbet            |       |
| 64. | <i>Lybius bidentatus</i>         | Double-toothed Barbet          |       |
| 65. | <i>Indicator indicator</i>       | Greater Honey guide            |       |
| 66. | <i>Jynx torquilla</i>            | European Wryneck               |       |
| 67. | <i>Campethera nubica</i>         | Nubian Woodpecker              |       |
| 68. | <i>Thripias namaquus</i>         | Bearded Woodpecker             |       |
| 69. | <i>Mirafra cantillans</i>        | Singing Bush Lark (?)          | Doubt |
| 70. | <i>Mirafraa rufocinnamonea</i>   | Flapper Lark                   |       |
| 71. | <i>Psalidoprocne prestoplera</i> | Black Saw-wing                 |       |
| 72. | <i>Riparia paludicola</i>        | African Sand Swallow           |       |
| 73. | <i>Hirundo abyssinica</i>        | Lesser Striped Swallow         |       |
| 74. | <i>Hirundo daurica</i>           | Red-rumped Swallow             |       |
| 75. | <i>Hirundo smithii</i>           | Wire-tailed Swallow            |       |
| 76. | <i>Hirundo rustica</i>           | European Swallow               |       |
| 77. | <i>Motacilla flava</i>           | Yellow Wagtail                 |       |
| 78. | <i>Anthus trivialis</i>          | Tree Pipit                     |       |

|      |                                  |                                    |  |
|------|----------------------------------|------------------------------------|--|
| 79.  | <i>Anthus cervinus</i>           | Red-throated pipit                 |  |
| 80.  | <i>Campephaga phoenicea</i>      | Red-shouldered Cuckoo-shrike       |  |
| 81.  | <i>Campephaga flava</i>          | Black Cuckoo-shrike                |  |
| 82.  | <i>Phyllastrephus strepitans</i> | Northern Brownbul                  |  |
| 83.  | <i>Pycnonotus barbatus</i>       | Common Bulbul                      |  |
| 84.  | <i>Monticola rufocinereus</i>    | Little Rock Thrush                 |  |
| 85.  | <i>Turdus philomelos</i>         | Song Thrush                        |  |
| 86.  | <i>Turdus pelios</i>             | West African Thrush                |  |
| 87.  | <i>Cossypha heuglini</i>         | Heuglin's Robin/White-browed Robin |  |
| 88.  | <i>Saxicola rubetra</i>          | Stonechat                          |  |
| 89.  | <i>Oenanthe oenanthe</i>         | Northern Wheatear                  |  |
| 90.  | <i>Oenanthe pleschanka</i>       | Pied Wheatear                      |  |
| 91.  | <i>Phylloscopus trochilus</i>    | Willow Warbler                     |  |
| 92.  | <i>Phylloscopus collybita</i>    | Chiffchaff                         |  |
| 93.  | <i>Sylvia atricapilla</i>        | Blackcap                           |  |
| 94.  | <i>Sylvia nisoria</i>            | European Barred Warbler            |  |
| 95.  | <i>Cisticola chiniana</i>        | Ashy Cisticola                     |  |
| 96.  | <i>Cisticola chiniana</i>        | Rattling Cisticola                 |  |
| 97.  | <i>Prinia subflava</i>           | Tawny-flanked prinia               |  |
| 98.  | <i>Camerptera brachyuran</i>     | Bleating Bush warbler              |  |
| 99.  | <i>Bradornis pallidus</i>        | Pallid Flycatcher                  |  |
| 100. | <i>Melaenornis edolichus</i>     | Western Black flycatcher           |  |
| 101. | <i>Batis minor</i>               | Grey-headed Batis                  |  |
| 102. | <i>Batis minor</i>               | Black-headed Batis                 |  |
| 103. | <i>Platysteira cyanea</i>        | Scarlet-spectacled Wattle-eye      |  |
| 104. | <i>Terpsihone viridis</i>        | Paradise Flycatcher                |  |
| 105. | <i>Turdoides tenebrosus</i>      | Dusky Babbler                      |  |
| 106. | <i>Turdoides rubiginosus</i>     | Rufous Chatter                     |  |
| 107. | <i>Parus leucomelas</i>          | White-winged Black Tit             |  |
| 108. | <i>Nectarinia venusta</i>        | Yellow-bellied Sunbird             |  |
| 109. | <i>Oriolus larvatus</i>          | African Golden Oriole              |  |
| 110. | <i>Oriolus larvatus</i>          | (Eastern) Black-headed Oriole      |  |
| 111. | <i>Lanius excubitoroides</i>     | Grey-backed Fiscal                 |  |
| 112. | <i>Lanius collaris</i>           | Fiscal Shrike                      |  |
| 113. | <i>Eurocephalus ruppelli</i>     | Northern White-crowned Shrike      |  |
| 114. | <i>Dryoscopus gambensis</i>      | Northern puff back                 |  |
| 115. | <i>Tchagra senegala</i>          | Black-crowned Tchagra              |  |
| 116. | <i>Laniarius aethiopicus</i>     | Tropical Boubou                    |  |
| 117. | <i>Malaconotus sulfureopetus</i> | Sulfur-beaded Bush Shrike          |  |
| 118. | <i>Malaconotus blanchoti</i>     | Grey-headed Bush Shrike            |  |
| 119. | <i>Prionops plumatus</i>         | White Helmet Shrike                |  |
| 120. | <i>Dicrurus adsimilis</i>        | Fork-tailed Drongo                 |  |
| 121. | <i>Corvus rhipidurus</i>         | Fan-tailed Raven                   |  |
| 122. | <i>Corvus crassirostris</i>      | Thick-billed Raven                 |  |

|      |                                  |                                |  |
|------|----------------------------------|--------------------------------|--|
| 123. | <i>Lamprotornis chaylbaeus</i>   | Greater Blue-eared Starling    |  |
| 124. | <i>Lamprornis chloropterus</i>   | Lesser Blue-eared Starling     |  |
| 125. | <i>Lamprotornis purpuroterus</i> | Rupprll's Long-tailed Starling |  |
| 126. | <i>Cinnuricinlus leucogaster</i> | Violet-backed Starling         |  |
| 127. | <i>Bupagus erythrorhynchus</i>   | Red-billed Ox-pecker           |  |
| 128. | <i>Passer griseus</i>            | Grey-headed Sparrow            |  |
| 129. | <i>Malimbus rubricollis</i>      | Red-headed Malimbe             |  |
| 130. | <i>Quelea quelea</i>             | Red-billed Quelea              |  |
| 131. | <i>Euplectes macrourus</i>       | Yellow-shouldered Whydah       |  |
| 132. | <i>Lagonosticta senegala</i>     | Red-cheeked Cordon-bleu        |  |
| 133. | <i>Estrilda astrild</i>          | Common Waxbill                 |  |
| 134. | <i>Uraeginthus bengalus</i>      | Red-cheeked Cordon-bleu        |  |
| 135. | <i>Lonchura cucullata</i>        | Bronze Manikin                 |  |
| 136. | <i>Sernus leucopygius</i>        | White-rumped Serin             |  |
| 137. | <i>Coturnix delegorguei</i>      | Harlequin quail                |  |
| 138. |                                  |                                |  |

Appendix 3: **plants Check List of Maze National Park**

| <b>No</b> | <b>Vernacular Name</b> | <b>Scientific Name</b>         | <b>Family</b> |
|-----------|------------------------|--------------------------------|---------------|
| 1.        | Ambe                   | <i>Terminalia schimperiana</i> | Combretaceae  |
| 2.        | Anka                   | <i>Croton machrostachys</i>    | Euphorbiaceae |
| 3.        | Annisa                 | <i>Commiphora Africana</i>     | Burseraceae   |
| 4.        | Aste/unkoy/mulawo      | <i>Xymenia americana</i>       | Olacaceae     |
| 5.        | Bortiboboro            | <i>Erihrina abyssinica</i>     | Fabaceae      |
| 6.        | Burche                 | <i>Lannea fruticosa</i>        | Anacardiaceae |
| 7.        | Caca                   | <i>Acacia brevispica</i>       | Fabeceae      |
| 8.        | Chalga                 | <i>Acacia nilotica</i>         | Fabeceae      |
| 9.        | Chenga                 | <i>Asparagus flageralis</i>    | Asparagaceae  |
| 10.       | Chiraro                | <i>Steganotaenia araliacea</i> | Araliceae     |
| 11.       | Daleme                 | <i>Acacia polycantha</i>       | Fabeceae      |
| 12.       | Digiso                 | <i>Combretum collinum</i>      | Combretaceae  |
| 13.       | Diimo                  | <i>Trichilia emetic</i>        | Meliaceae     |
| 14.       | Domaye                 | <i>Balanites aegytiaca</i>     | Balaniteceae  |
| 15.       | Dorqa/gargaro          | <i>Dichrostachys cinerea</i>   | Fabeceae      |
| 16.       | Dull'o                 | <i>Vitex donina</i>            | Lamiaceae     |
| 17.       | El'a                   | <i>Ficus sur</i>               | Moracea       |
| 18.       | Etta                   | <i>Ficus sycomorus</i>         | Moracea       |
| 19.       | Gallo                  | <i>Teclea nobilis</i>          | Rutaceae      |
| 20.       | Gelell'o               | <i>Terminalia brownie</i>      | Combretaceae  |
| 21.       | Gammo gade             | <i>Ziziphus abyssinica</i>     | Rhamnaceae    |
| 22.       | Gara                   | <i>Vernonia amygdalina</i>     | Asteraceae    |
| 23.       | Garicho                | <i>Bridelia scleroneura</i>    | Euphorbiaceae |
| 24.       | Gembelle               | <i>Gardenia ternifolia</i>     | Rubiaceae     |

|     |            |                                    |              |
|-----|------------|------------------------------------|--------------|
| 25. | Gore       | <i>Pterocarpus lucens</i>          | Fabaceae     |
| 26. | Guganta    | <i>Acacia dolchicephala</i>        | Fabaceae     |
| 27. | Gurmase    | <i>Vangueria apiculata</i>         | Rubiaceae    |
| 28. | Hagile     | <i>Oncoba spinosa</i>              | Flcourtaceae |
| 29. | Haso       | <i>Lucaniodiscus fraxinifolius</i> | Sapindaceae  |
| 30. | Isrigaliba | <i>Lepisanthes senegalensis</i>    | Sapindaceae  |
| 31. | Itriwanje  | <i>Ehretia abyssinica</i>          | Boraginaceae |

Appendix 4:

|   | Worda's name | Kebele' name   | populatio n | Domestic animal | Households | Direction on the park |
|---|--------------|----------------|-------------|-----------------|------------|-----------------------|
| 1 | Qucha        | Masha Morka    | 4397        | 3021            | 1264       | East                  |
|   |              | Masha chaba    | 5592        | 4992            | 2010       | North east            |
|   |              | Daho           | 4268        | 13960           | 1720       | North                 |
|   |              | Kodo wono      | 3668        | 2957            | 1450       | North                 |
|   |              | Kodo ladie     | 5916        | 4179            | 1621       | West                  |
| 2 | Daramalo     | Menena abaya   | 6964        | NA              | 2432       | East                  |
|   |              | Domma'a        | 2712        | NA              | 978        | South east            |
|   |              | Dachume/telale | 2828        | NA              | 765        | South east            |
|   |              | Shella deda    | 4927        | NA              | 1210       | South                 |
| 3 | Kamba        | Hanika passa   | 2480        | NA              | 718        | South                 |
| 4 | Zalla        | Mela gaylie    | 2024        | NA              | 841        | West                  |
|   |              | Wagesho        | 1342        | NA              | 752        | South west            |
|   |              | Ambe gaylie    | 2186        | NA              | 732        | South west            |
|   |              | Sello bola     | 1235        | NA              | 654        | South west            |
|   |              | Shelie         | 2259        | NA              | 636        | South west            |
|   |              | Endegera       | 2514        | NA              | 762        | South west            |
|   |              | Gayssa         | 5122        | NA              | 1256       | South                 |

## Appendix 5: Questionnaire

### **The study on challenges of protecting protected areas in Ethiopia: The case of Maze National park.**

**To be conducted by the researcher assisted by enumerator**

#### **Objectives of the survey**

The basic objectives of this survey is to explore the challenges of Maze National park by way of analyzing the participation of local community in using park resource and identifies how the various socio-economic, cultural and institutional factors hinders protected area management and household livelihood.

#### **Dear Respondents**

This questionnaire has the research purpose. The outcome of this research will help to identify the challenges of protected area by investigating the participation of local community in Maze National park. It is believed that the study will gather useful information for the community, the government and non-government organizations in designing mechanisms to ensure effective management of protected area. There for, I kindly request the cooperation of respondents in filling out the questionnaires. I confirm you that all data will be treated confidentially.

#### **i. Demographic and Household Profile**

1. Code of respondent \_\_\_\_\_ Age \_\_\_\_\_ Sex \_\_\_\_\_ peasant  
.association \_\_\_\_\_,
- 2 Family size Male \_\_\_\_\_ Female-----total-----occupation \_\_\_\_\_.
3. Educational status A. illiterate B. Read and write only C. Elementary  
d. junior secondary school and above.
4. Land holding size (ha) A. < 0.2 h B. 0.3 - 0.4 ha C. 0.5 – 0.8 ha D. > 0.8 ha
5. Marital status----- 1. Marred 2. Unmarred 3. Divorced 4. Separated 5. Widowed.
6. Number of livestock-----
  1. Cattle-----
  2. Sheep -----
  3. Goats -----
  4. Donkeys----
  5. Others----

7. What activities other than farming do you do? 1. Petty trade. 2. Collecting and selling fire wood. 3. Pottery. 4. Wavering. 5. Others.

8. What are your major sources of income? A / Selling cereal croup, such as maze, Sorghum Teff etc. B /sell of honey. C /sell of fruit and vegetables. D/ sell of fuel wood.

**ii. Challenges and problems of park management**

9. Is there any resources that you have been prevented from the Park?

Yes/No. If yes, what type of the recourse? And mention and describe the reasons.

10. Which do you think is the most serious problem with regarding to park protection?

| No | Item                  | tick | rank | by whom |
|----|-----------------------|------|------|---------|
| 1  | Human encroachment    |      |      |         |
| 2  | Expansion of farmland |      |      |         |
| 3  | Livestock grazing     |      |      |         |
| 4  | Settlements           |      |      |         |
| 5  | Fire                  |      |      |         |
| 6  | Hunting wild animals  |      |      |         |
| 7  | Cutting living trees  |      |      |         |
| 8  | Construction roads    |      |      |         |
| 9  | others                |      |      |         |

11. Does park management need external support

-strongly need

-need

-fairly need

-do not need

For the question above the answer strongly need, what type of support?

12. Do you participate on hunting wild Animals? Yes/No. If No

Which community? And what type of Animal they hunt?

**iii. Case of conflicts between local community and park**

13. Are there conflicts concerning use of park resources? A/ Yes B/Sometimes C/N If yes. What conflicts?

14. Do you and your family use park resource for their livelihood

1. Totally. 2. Partially. 3. Not at all

If the answer in the above question 1 or 2, does this dependence on the park hinder the park?

A/ strongly B/ slightly C/ Not at all

15 Do you have rangeland? Yes/No. If No, how do you feed your livestock?

16. Is there any conflict between you (local people) with the park management? Yes/No

If yes why? Especially when?

17. Do you expect any benefit from the park?

1. Yes 2. No

If the answer is yes indicate the benefit gained from the park use the following.

| Indicators     | Rating    |             |                   |             |                     |
|----------------|-----------|-------------|-------------------|-------------|---------------------|
|                | highly(1) | increase(2) | to some extent(3) | decrease(4) | Highly decrease (5) |
| grazing        |           |             |                   |             |                     |
| firewood       |           |             |                   |             |                     |
| building       |           |             |                   |             |                     |
| fodder         |           |             |                   |             |                     |
| bush meat      |           |             |                   |             |                     |
| farmland       |           |             |                   |             |                     |
| forest product |           |             |                   |             |                     |

**iv. Perceptions and practices of local communities**

18. Do you know why the park was formed? A. conservation B. tourism C doesn't know D. Other

19. Do you think that the presence of the Park benefited the community? Yes/No If yes in what way? 14. Do you believe wildlife is a useful resource to be conserved? Yes / no

20. Do you want to involve yourself in managing the protected area? Yes /No If no, why?

21. For what purpose do you use grass from the park? a. grazing b. House construction c. Harvest and sell to generate income

22. New huts are built in and around the park, do you support this condition? Yes/ No If yes why? If no. why?
23. How could you describe your relationship with conservationists? a. Smooth b. medium c. Not good
24. What are the main factors that contributed for the above relationship?
25. Is there any traditional hunter in your area?
26. Do you like the existence of the park nearby you Yes/ No If no, why?
27. Do you think the presence of people and livestock in the conservation area affects the park? Yes/No If yes in what way
28. What is your opinion on the size the park?  
a. Too big b. Two small c. right sizes
29. How do you prefer the area to be managed in the future?
30. Does the park was clearly remarketed? Yes/ No. If No does it create a problem? What problems

1/-----

2/-----

**Appendix 6: Focus group discussion**

- .What is the extent of community in resource use in the park?
- .How do you evaluate the current socioeconomic strength of the local people in times of income and education?
- .Does low-level of income and education limits on the use of park resource?
- .Do you think the presence of the park close to your area benefited the community?
- .In what way and what benefits have been realized up until now?
- .Do you think that local people and livestock affect wildlife?
- .What do you think are the factors that promote local people to use park resource?
- .What is the extent of tangible socio and economic benefit that the community member receives as individually and group?
- .To increases the local community benefits and at the same time securing the park, what should be done?

A. by the local community

B. by conservationists

In order to bring sustainable development for both the park and the local community, what do you suggest?

**Park dependants livelihood condition and perception.**

. What type of resource do you use from the park?

.What is the major benefit do you get from the park?

.Are you satisfied by gazing the area in to the park? What challenges do you get from demarcation of the area in to park? What solution do you propose?

Have traditional hunters in your community? What type of animal they hunt?

Do you practice your livestock grazing in the park? Why?

Do you believe accidental fir occurs in the park? When? by whom?

Is there a conflict with the local community people park resource? How conflicts often occur? How are conflicts resolved?

**Non –park resource users**

Who owns the area before the introduction of national park? And in what condition?

Which community groups and individuals are you think currently engaged to use park resource?

What do you think are the criteria used to guaranty to protecting the park?

Do you think that the park reserved needs to be managed properly?

For what purposes do you use the area before gaze ting the national park? How about know?

Do you any involvement in using resource in the park?

Don you understand illegal hunters kill wild animals in the park? For examples which animals?

Do you understand accidental fir occurs in the park? When?

Are you seen accidentally livestock graze in the park?

### **Appendix 7: Key informants**

What are the great challenges of the park?

Is there any kinds of park resource can you use?

What benefits do you get improved your lived hood?

What is your relationship between the parks?

Which communities actually participate in using park resource?

Has every, been conflict about using park resource? For example, grazing, hunting, timbering etc.

What are the factors to participate local community on the park resource?

Have you expected any improvement on the status of the park?

What do you think are the challenges of Maze National park?

### **For park management staff**

Who owns and uses the area before introduction to national park? And in what condition?

Do you think park management plan is being implemented effectively?

Are you comfortable by law of park management plan? Is there treating to the park from the surrounding community?

Which local community groups more depend on the park for their economic benefits?

Does the park face any challenges from outside? If yes, what are there?

How do you accommodate the interest of different group around the park? For example fuel wood seller, searching for grazing, farmland, and bush meet.

## **DECLARATION**

I declare that this thesis is prepared for the partial fulfillment of the requirements for the Degree of Master of Art in Geography And Environmental Studies Specialized by Biodiversity Conservation and Management entitled “challenges of protecting protected area in Ethiopia, the cause of Maze Nation Park of Gamo Gofa zone SNNPR state. It is prepared with my own effort and has not previously formed the basis for the award of any degree in any university. I have made it independently with the close advice and guidance of my research advisors.

Signature: \_\_\_\_\_

(Negese Nako Chubala)