MANAGEMENT OPTIONS FOR HUMAN-WILDLIFE CONFLICTS IN KITENGELA GAME CONSERVATION AREA, KAJIADO DISTRICT.

BY

OIMBO STELLA MORAA

B.A HONS (GOVERNMENT AND PHILOSOPHY)

A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR THE DEGREE OF MASTER OF ARTS IN URBAN AND REGIONAL PLANNING, UNIVERSITY OF NAIROBI.

NAIROBI
AUGUST 2002

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

Signed _____

STELLA MORAA OIMBO
(Candidate)

This thesis has been submitted for examination with my (our) approval as university supervisor (s).

Signed _____

DR. ELIJAH N. NDEGWA
(Supervisor)

DEDICATION

I dedicate this entire work to my husband Ken, our two boys Millen and Seth, and all those who will put effort to conserve our wildlife. Keep it up!

ACKNOWLEDGEMENTS

I wish to thank all those individuals, groups and institutions who assisted in making this work be successful. I first of all thank the University of Nairobi through the Department of Urban and Regional Planning for the moral, academic and financial assistance offered to me for this research. I also acknowledge Professor Peter Ngau for his tireless efforts in the Research Methods class that enabled me refine this work.

I am grateful to my supervisor, Dr. Elijah Ndegwa, for his support and guidance during the entire research period and final presentation of this work.

Great thanks also go to the Kenya Wildlife Service and Nairobi National Park officials for their assistance with secondary data especially for the study area. I specifically thank Mrs. E. Leitoro, Mr. S. Ngene and others for their continuous support and interest in seeing that this work produces implementable work.

I will also not forget to sincerely thank my research assistants for their devotion during data collection in Kitengela area. Lastly, I wish to sincerely thank my husband Ken for his encouragement and motivation to complete this entire work.

To all of you,

Thanks.

ABSTRACT

The habitat required by Kenya's wildlife, one of its most famous and economically valuable resources is increasingly threatened by increasing levels of poverty and the country's soaring rate of population growth. Farmers are being forced onto land that is marginal or unsuitable for agriculture, and traditional habitats of wildlife and pastoral communities are also threatened. The parks and reserves that offer protection to wildlife are being isolated as the traditional dispersal areas surrounding the protected areas are converted to food production using methods hostile to wild animals. Reduced habitat undermines the long-term viability of Kenya's irreplaceable wild animal populations and the tourist industry they support. The search for ecologically appropriate solutions to the conflict between food production and wildlife habitat has reached crisis proportions in a number of areas. One such area is the Kitengela Game Conservation/dispersal area. Solutions to this challenge are urgently needed. This study is expected to make a contribution to that such.

The study sets out to achieve four objectives. First, to find out the origin, types and causes of the human-wildlife conflict in Kitengela Game Conservation Area. Secondly, to find out the effects of this conflict to both humans and wildlife. Thirdly, to assess the coping mechanisms that are being used by the people who have moved into this area and the wildlife department that is charged with the responsibility of managing and protecting wildlife; and fourthly, to determine possible ways of reducing or managing this human-wildlife conflict to ensure the sustenance of the essential Nairobi National Park.

Data for the research was obtained both from primary and secondary sources. Primary data consisted of data from the field through the use of questionnaires, oral interviews, focus group discussions and observations. This information covers aspects such as the peoples' attitude to the wildlife and the general trend of

activities in the area as well as the general ways of reducing the conflict. Secondary sources included published and unpublished materials for the study area and the topic in general. This was obtained from books, journals, KWS and government publications, theses and maps. In total, 87 households, 6 ranch owners and 6 other stakeholders form the sample size for this study.

From the research, it was found out that, the conflict in the area has increased as settled population increases every year. The high rate of urbanization in the metropolitan city of Nairobi and other smaller urban centres of Ongata Rongai, Kiserian, Kitengela, Kajiado and Athi River have necessitated the movement of people even into the conservation area posing a great danger to wildlife especially the migratory species that pass through the study area. It was also found that land sub-division and land sales in uneconomical plot sizes due to the increasing poverty and changing lifestyles among the Maasai people is hindering long-term conservation efforts in the area. The study found that a non-participatory approach in wildlife management and conservation has contributed to the problems experienced in reconciling the needs of the people and wildlife. A general approach similar to 'CAMPFIRE' programme that was found to be working in Zimbabwe is recommended for the area as a tool in the management of the human-wildlife conflict for sustainable development in the area and country at large.

ACRONYMS

- **NNP**-Nairobi National Park
- **KWS**-Kenya Wildlife Service
- **ASALs**-Arid and Semi-Arid Lands
- **GoK**- Government of Kenya
- **FoNNaP**- Friends of Nairobi National Park
- **KGCA**-Kitengela Game Conservation Area
- **RSV** – Revised Standard Version
- **N. D.P** – National Development Plan
- **D.D.P** – District Development Plan
- **A.s.l** – Above sea level
- **CAMPFIRE**- Communal Areas Management Programme For Indigenous Resources

TABLE OF CONTENTS

PAGE

CHAPTER TWO: LITERATURE REVIEW

CHAPTER THREE: METHODOLOGY

CHAPTER FOUR: HUMAN-WILDLIFE CONFLICT IN KGCA

LIST OF MAPS

PAGE

LIST OF TABLES

PAGE

LIST OF FIGURES

PAGES

LIST OF PLATES

PAGES

CHAPTER ONE

INTRODUCTION

1.1 Background to the Problem

Wildlife is a major resource that can be exploited for economic, social, cultural and political development of any given nation. In the world over, governments of different countries have cherished wild animals for different purposes. In stressing the importance of wildlife in any country, the then president of Tanzania, Mwalimu Julius Nyerere, in the Arusha Manifesto of 1967 said that, "The survival of our wildlife is a matter of grave concern to all of us in Africa. These wild creatures and the wild places they inhabit are not only important as a source of wonder and inspiration but are an integral part of our natural resources and of our future livelihood and well-being." (Arvill, 1967:138).

According to the Christian beliefs, after the creation of the world, man was instructed by God "to have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth." (Genesis 1:26, RSV). Man was to be the steward of the entire world plus everything therein. From this, man thought that he would do whatever he wants with the animals of the world. Over the years, man (human beings) has not been a good steward of this world especially in regard to wild animals because he is the cause of wildlife's misery and difficulties given that he

has invaded their habitats. This has greatly resulted to conflicts between man and wild animals all over the world.

In other regions where Buddhism is the main religion, wildlife has not been spared either. This is because Buddhism makes no claim to divine revelation. It denies any 'higher reality' apart from daily life and finds all possibilities within the human being. What human beings seek most and what motivates them most is their own happiness. Hence, wildlife survives at the mercy of human beings.

Wildlife in Kenya is state-owned even though only 8% of the country is gazetted as wildlife protected areas. In Kenya, wildlife share much of the land with man but the rapid population growth, re-distribution of land from large scale extensive rangelands use to intensive agricultural use and damage to natural resources have all threatened the survival of wildlife populations. Important wildlife dispersal areas are threatened with land sub-division, agricultural expansion and unplanned development of tourist accommodation, thus increasing human-wildlife conflicts. (N.D.P. 1997-2001, pp87-88).

The Kenya government policy regarding National Parks and Game Reserves, and by extension wildlife, is stipulated in the Sessional Paper No. 3 of 1976 as well as in the various National Development Plans. This policy has however been changing over time in response to changing cultural, social, economic, ecological

and political aspects. For instance, early wildlife policies were aimed at merely preservation. Later, wildlife was to be preserved for tourist attraction. Much later it was conservation for education and benefits for future generations. Currently, situations dictate that wildlife must pay itself if it has to be conserved. (Mwanyule, 1985).

Lands surrounding protected National Parks and Reserves remain essential for the sustainability of wildlife. These lands cater for wildlife migrations, which are prompted by either scarcity of wildlife needs in the protected areas or presence and abundance of these needs in the dispersal areas. A significant proportion (70%) of the country's wildlife resource is found in private, communal or trust land. This category of land is outside the protected area system but in some ecosystems, it is critical for resident or migratory wildlife populations. For instance, the extent of the dispersal area for wildlife in Amboseli National Park is over 1,700 Km^2 and that of Nairobi National Park (NNP) slightly below 400 Km^2. In contrast, the areas of Amboseli National Park and NNP are 392 Km^2 and 117 Km^2 respectively. This is also echoed by Dr. D. Western, a former KWS director, when he said that, ''our parks, though our primary asset cannot survive in isolation. Their continued ecological vitality depends on animals moving beyond park boundary. These lands important to the integrity of parks are however occupied by hard pressed herders and farmers, people too poor to make space for wildlife unless they gain in some way.'' (KWS News, 1995). This implies that, these protected areas are not self-

sustaining and so there is need to develop and implement workable integrated management plans that consider the interests of land owners in the wildlife dispersal areas so as to mitigate conflicts between wildlife and people.

This land rich in wildlife is mainly found in arid and semi-arid lands. These areas have a high potential for tourism and other forms of wildlife utilisation. Therefore, from a national perspective, there are valid reasons for retaining wildlife conservation as a land use outside parks and reserves. However, for wildlife conservation to compete with other viable land uses, it has to be demonstrated that a land owner who has viable wildlife populations on his land can reap higher benefits by integrating wildlife utilisation with other compatible forms of land use such as wildlife conservation, a combination of wildlife conservation and livestock ranching, and pastoralism.

The Kitengela Game Conservation Area (KGCA) was reserved by the Government of Kenya when Nairobi National Park (NNP) was gazetted in 1949 (Muriuki, 1998). It was and is still an important migratory corridor for some animal species such as the Wildebeest, the Zebra and the Hartebeest that move from the NNP to their dispersal and breeding grounds that are past the Kitengela River. (Map 7). They sometimes migrate to the Amboseli National Park that is situated to the South East of the district. Others like the Giraffe and the Impala use it as a retreat zone from the park.

This conservation area was later on privatised and land-use practices such as crop production, urban settlements, road networks, private land and ranching started taking root. Large extensive group ranches began to be sub-divided among the individual members who later on sub-divided at their own pleasure. This meant that, wildlife that depended on this area were at the mercy of these individual owners whose main objective was to have maximum utilisation of their land. This was a crucial time when the Government would have put in place mechanisms of safeguarding wildlife while at the same time ensuring that people's needs are taken care of. This however was not done and hence the incapability of the government policy to act upon the situation. From this we learn that there is need for different actors to join hands if success is to be achieved in any conservation or protection effort.

Conflict in land-use is characteristic of areas that are favourable for more than one form of land use. Some areas of Kenya are faced with this same conflict of land use. In marginal areas like Kajiado District, the conflict is even more crucial. On the one hand, we have the cultivators and settlers occupying more land formerly owned (used) by pastoralists and on the other, there are government interests to develop tourism on the same land. (Kipury, 1977). Hence, this clash of interests between major wildlife stakeholders gives room for conflict if no proper planning principles are adopted to benefit both parties.

Human-wildlife conflict has escalated in recent years because of changes in land use especially expansion and intensification of arable farming and sedentarization of pastoralists in rangelands, inadequate wildlife control, the ban on hunting and capture of wildlife, and the natural increase of animal numbers. (Lawley, 1996:17). These changes have contributed immensely to the hardships of landowners, who tend to invest and lose more as they try to cope with the wildlife challenge in their land-use enterprises. To survive this challenge, the landowners have to seek for coping and adaptive mechanisms so as to minimize the losses they encounter from the wildlife. But the question remains to be, 'are these coping mechanisms enhancing or inhibiting wildlife survival in the area?'

1.2 Statement of the Research Problem

Due to the rapid and continuous population growth in Kenya, and limited job opportunities in the non-farming sector, there has been a considerable increase in the demand for land. This has led to changes in the land tenure system from Trust Land to range lands and individual freeholds, and a change of policy in a bid to contain this increasing population. This has especially affected areas that are mistakenly perceived as empty or open such as the Kitengela corridor or game conservation area, which is the area under study.

To have wildlife at all, creation and maintenance of suitable wildlife habitats is a priority. But the intensity of land use transformations along major corridors of

these wildlife habitats threatens the safety of wildlife. In so doing, the animals in their historical migration trends through the area get into contact with the people who have blocked their way and have no alternative but to defend themselves and this contributes to the human-wildlife conflicts that exist in the country. The purpose of this study therefore, is to suggest ways of reducing or managing the human-wildlife conflict along the Kitengela Game Conservation Area.

1.3 Justification of the Study

Many studies done so far on human-wildlife conflict in Kenya have covered wide geographical areas. For instance, the KWS report of the Five Person Review Group of December 1996 on Wildlife-Human conflict was for the whole of Kenya. It sought out to unveil the reality of human-wildlife conflicts in the country. It suggested a combination of prevention and reduction strategies that can be used to deal with the conflict. However, these suggestions were too broad to be generalised for every part of the country with conflict. This is because, the spatial location of a place and the practices of the surrounding communities determine the best method to be used for conflict resolution. The present study will therefore specifically investigate the situation in Kitengela Game Conservation Area and suggest possible management options for the human-wildlife conflict.

Other studies have been done on the same subject but in a different locality. For instance, a study done by Maina (1998), focused on human-wildlife conflict in

Laikipia District with special reference to area specific strategy recommendations. He proposed that, a migration corridor for wildlife should be created through Laikipia to Mt. Kenya reserve. This idea emerged from the fact that Mt. Kenya has been the breeding ground for elephants and that by natural instincts they have to move to this area at their appropriate time. Omondi (1994) carried out his research in the Maasai Mara region. He tried to come up with ways of integrating the needs of the local people and the wildlife so that they co-exist peacefully without doing damage to the environment. The present study looks at the same issue but in Kitengela.

There is also need to update studies that are done on a recurrent phenomenon like the present one since changes occur now and again even in the same locality. For example, changes in population in a certain locality may lead to changes in patterns of human settlements and land use. In this connection, there has been a tremendous population change in Kitengela due to the urbanization process in Nairobi city and other neighbouring towns such as Kitengela, Athi River, Ongata Rongai and Kiserian. In addition, changes in land use technology such as the use of modern farming methods in previously non-agricultural areas and the scale of operation in a given field greatly affect the reaction of the same people to the same issue over a period of time. Hence, there is need to keep to date these land use changes and their effects on the environment so as to address critical issues adequately.

The current study can also be justified given that, the study area chosen is as important to the Kenyan economy as the Nairobi National Park because the two form an important interdependent ecosystem. Any threat to the Kitengela Game Conservation Area is therefore a threat to the existence of the crucial NNP both locally and internationally.

1.4 Significance of the Study

The study is socially significant in that, the Nairobi National Park (NNP) and the Animal Orphanage (AO) within it, offers a great number of people with tourism opportunities. For instance, between 1995 and 2001, the number of visitors to the NNP and the Animal Orphanage was as shown in the table that follows: (Figures are in thousands). The purpose of these visits was mainly game viewing, educational and recreational.

Table 1: Visitors to NNP and animal orphanage

Year	1995	1996	1997	1998	1999	2000	2001
NNP	113.5	158.3	149.6	122.3	139.2	130.3	114.4
AO	212.1	210.6	193.7	164.8	255.1	266.1	-

Source: Statistical abstract, 2001.

Economically, the study is important since wildlife is a major source of income to the country and its wellbeing has therefore to be a priority to the country. For instance, between July 2000 and May 2001, revenue from NNP through gate fee only amounted to Kshs.53, 082,328. (KWS Files, 2002). The relevant authorities

will hence use the study findings such as the views of the people concerning the conflict, to determine the best possible strategy to employ in that specific area to mitigate the conflict.

The study will also add to the existing knowledge on the emerging issues of land-use conflicts in the Kitengela corridor that can be used for comparison purposes especially with the studies done in other parts of the country like in Laikipia District. This is necessary so that the critical areas are addressed first to arrest the situation and that similar situations can be tackled in similar earlier ways.

1.5 Research Questions

1. What are the main causes of the human-wildlife conflict in Kitengela Game Conservation area?
2. What are the consequences of this human-wildlife conflict to the people and the wildlife of Kitengela area?
3. What have the people in the Kitengela area done to cope with this conflicting situation?
4. What has the wildlife department (KWS) done to protect the animals from succumbing to the human-wildlife conflict along the Kitengela area?
5. How do we reduce the negative effects of this human-wildlife conflict on both the people and the wildlife along the Kitengela area?

1.6 Research Objectives

The study is aimed at achieving the following objectives:

1. To find out the origin, types and causes of the human-wildlife conflict in the Kitengela Game Conservation Area.
2. To find out the effects of the human-wildlife conflict in the Kitengela Game Conservation Area.
3. To investigate the mechanisms used by the communities in the area and the wildlife department to cope with the human-wildlife conflict in Kitengela Game Conservation Area.
4. To determine ways of reducing the human-wildlife conflict in Kitengela Game Conservation Area.

1.7 Hypothesis

Ho - People's attitudes to wildlife do not significantly affect their co-existence with wildlife.

1.8 Assumptions

The study is based under the following assumptions:

- There exists a human-wildlife conflict in Kitengela game conservation area.
- The negative effects of the human-wildlife conflict in Kitengela need to be reduced.
- There is need to protect Kitengela as an important dispersal area for the NNP.

1.9 Operational Concepts

- **Kitengela Corridor** -is a stretch of land that borders the South of Nairobi National Park and Maasailand, which was and is still used by migratory wild animals to and from the park.

- **Habitat** -the general environment in which an organism lives, its natural home.

- **Wildlife** -refers to animals and plants that are not tamed by man. But in the study it will be used to refer to wild animals.

- **Wildlife management** -deliberate management of wild animals for human benefit.

- **Conservation** -refers to the rational use of the earth's resources to achieve the highest quality of living for mankind.

- **Human-wildlife conflict** -any and all disagreements or contentions relating to destruction, loss of life or property, and interference with rights of individuals or groups that are attributable directly or indirectly to wild animals.

CHAPTER TWO

LITERATURE REVIEW

This section reviews existing literature on the subjects of conservation, human-wildlife conflicts and conflict management globally, regionally, nationally and further down into the study area, which is Kitengela Game Conservation Area (KGCA).

2.1 Conservation

The term 'conservation' as put forward by UNESCO and FAO, is 'the rational use of the earth's resources to achieve the highest quality of living for mankind.' (Dasmann, 1973:17). It is the wise use of the earth and its resources for the lasting good of men. It is the foresighted utilization, preservation and/or renewal of forests, waters, lands and minerals for the greater good of the greatest number for the longest time. (Burton and Kates, 1965). In this connection, it is the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generation. Thus, conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration and enhancement of the natural environment (IUCN, 1990:19).

Conservation can also be defined as the creation, protection and maintenance of the quality of our natural environment; the air, water, land resources and the

related flora and fauna. (Travis and Hamblin, 1981:71). The concern in conservation is also with the protection of the built environment i.e. the heritage of archaeological, architectural, historical and cultural sites and monuments as well as historic towns and settlements. The maintenance of the integrity of such resources is critical to man's survival, to his education, his health and to his wellbeing in general. Hence, their survival in good quality depends on man's activities on land.

According to Muthoka, et al, (1998), the conservation process seeks to avoid undesired changes and losses of natural resources while advocating sustainable use and accountability on the part of all the users of available resources. It also recognises the interaction of the forces that have allowed for diversity and the distribution of the resources in all parts of the world. At the same time, it calls for responsible and positive attitudes towards the resources through avoidance of resource misuse, overuse and wastage, and challenges mankind to work with nature in resource utilisation.

For conservation to be efficient, it needs to be integrated with development. However, Maina (1998) observes that, current trends show that the conservation movements have been spearheaded by naturalists and biologists whose fundamental contributions do not address political, economic, social or traditional interests of groups involved especially in areas of multiple land uses. Hence, their

unidirectional solutions that have so far been proposed do not solve the human-wildlife conflict in this areas making it a recurrent phenomenon in most places of multiple land uses. A wholesome package whereby political, economic, social, ideological and cultural aspects are taken into account therefore remains the essential ingredient for any tangible solutions to this problem.

In Africa, perception of wildlife as a resource may be summed up in the phrase `Profit, Protein, Pride and Prestige', (Huxley, 1961:23) with enjoyment and scientific interest thrown in. It can yield profit from tourist revenue, sales of meat and trophies, and protein from game-cropping schemes; It can be a source of local pride and of international prestige, while its importance as a source of scientific knowledge is very great. Hence, the future of African wildlife is bound up with that of the conservation of natural resources by all people of the world because of the fact that Africa's wildlife belongs not merely to the local inhabitants but to the world, not only to the present but to the whole future of mankind. But should the locals incur all the costs of maintaining wildlife in their lands for the whole world without benefiting from it? The local communities' views and needs should therefore be listened to and adhered to if conservation of wildlife is to be a success.

The accelerated destruction of wild animals in Africa over the last 100 years and especially in the last 50 years impressed on first the colonial administrators and

then the independent African governments the urgency of measures designed to conserve wildlife. Hunters' reports in the 19th century suggested that wild animal resources were practically limitless and referred to great herds of game 'stretching as far as the horizon'. (Pollock, 1974:89). In his Kenya Diary (1957), Meinertzhagen records seeing in 1903 a procession of some 700 elephants marching across what is now the township of Nyeri. Since then, the development of urban centres and other infrastructure like roads throughout the country has constrained the free access of these wild animals. Most of them are now found in protected areas only and due to the existing human-wildlife conflicts, many have been killed and so their numbers have reduced dramatically. Hence, it is only where active African support and enthusiasm can be roused that conservation of wildlife will succeed.

Over the years, these large numbers of wildlife have had a declining trend all over the world. In Africa, the decline of wildlife came earliest and was most rapid in South Africa. Road building, the advancement of stock farming and the fencing of grazing lands completely did away with the large ungulates in South Africa. This is why in Africa, the concept of conservation first emerged in South Africa in 1898 when President Kruger designated Sabie Game Reserve which in 1926 became Kruger National Park, which is now the third largest and the richest in wildlife in the world.

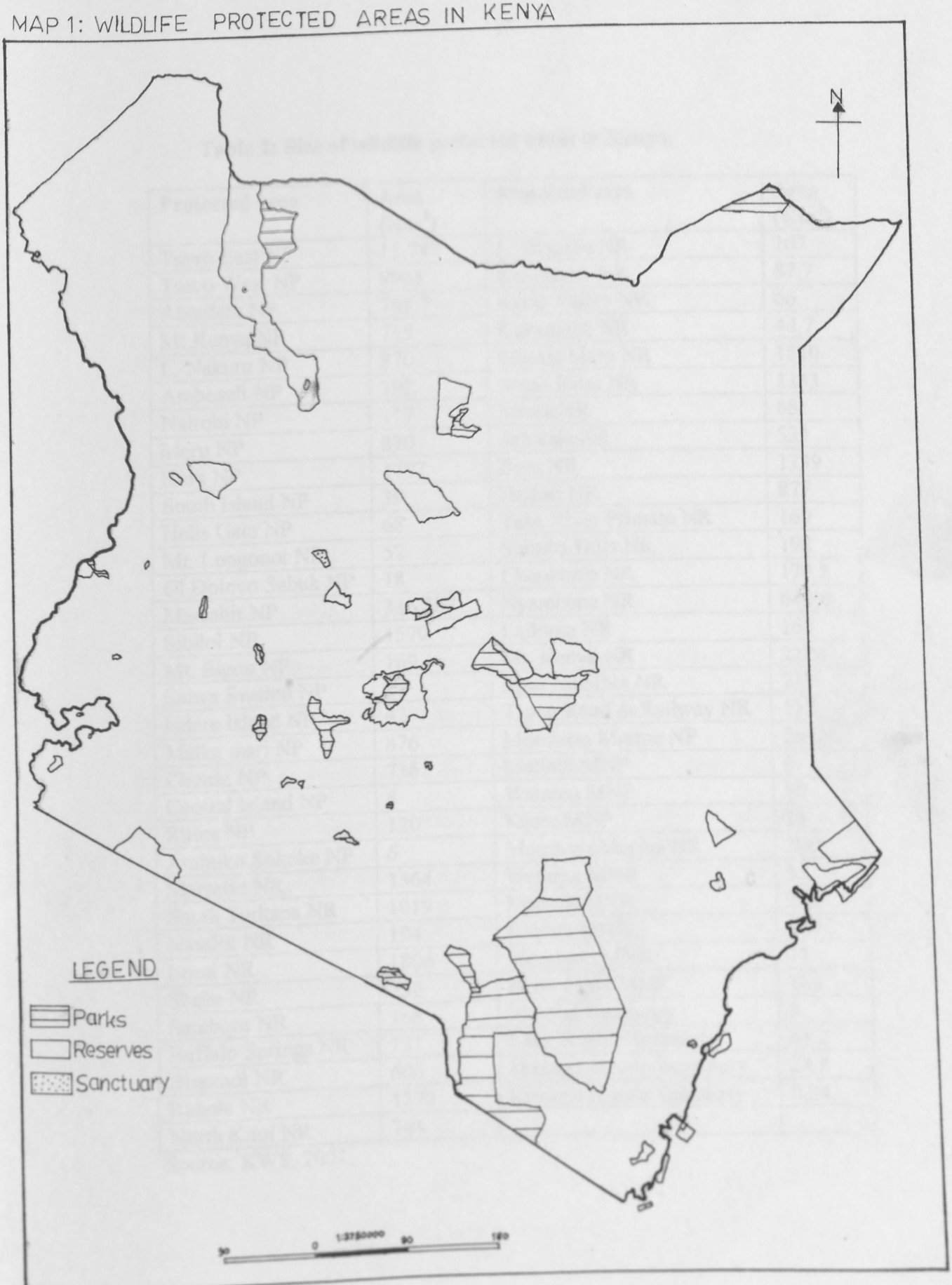
In East Africa, the wildlife and their natural habitats are a major natural resource but unfortunately a diminishing one. Its wildlife, unique in abundance and variety is the wonder and envy of the rest of the world. Its natural habitats and wild lands cover more than half of its immense area and of enormous potential importance if properly used. But they too have been reduced in extent, their value has been sadly reduced by improper use and they are threatened with drastic misdevelopment in the immediate future. There is therefore need to have lasting solutions to restore the former glory that was enjoyed.

During the construction of the Kenya-Uganda railway, the area now called Tsavo National park was full of wild game of all kinds. It is said that at the construction camp, giraffes ate the washing from the lines while the monkeys and baboons swung on the guy ropes of the tents. This was because most pastoral tribes like the Maasai had their cows, sheep and goats to feed on as meat and only killed wild animals when they interfered with their livestock. Those who hunted however did so in limited numbers. In addition, the white adventurers who had camped in Nairobi regarded the wild animals as just one of many unavoidable hazards of the unpredictable dark continent, providing a boundless larder there for the taking. Capt. Ritchie continued to say that, instead of sending an order to the butcher for tomorrow's dinner, a man would simply take up his gun and pick off the nearest antelope without even having to move from the entrance of his tent. Imagine how abundant they were and compare with today's number!

Wildlife conservation in Kenya is implemented through an elaborate system of 23 National Parks (NP), 28 National Reserves (NR), 4 Marine National Parks (MNP), 6 Marine National Reserves (MNR) and 4 National sanctuaries. This makes a total of 65 wildlife-protected areas in Kenya. (Map 1). However, the most common problem confronting this conservation today is the growing competition from other forms of land use. The expanding population has come into conflict with wildlife as men move out of the traditional areas of settlement in search of new land for cultivation and grazing. This movement has brought human settlement into areas that have long been occupied exclusively by wild animals. This competition threatens the future survival of Kenya's spectacular resources.

Most of these parks and reserves are however very small and do not encompass complete ecosystems. For instance, the two Tsavo National Parks alone account for 48% of all protected wildlife conservation areas while the other 52% comprise the remaining network of parks and reserves. Consequently, wildlife conservation in Kenya is critically dependent upon areas neighbouring parks and reserves for the seasonal migration of most of the wild animal populations and for fodder and water particularly during the dry season. The Kitengela Game Conservation area and the entire Athi-Kapiti ecosystem is such an important dispersal area of the Nairobi National Park and as such needs to be managed well. This ecosystem has the second largest migration of Wildebeests and Zebras in the country after Maasai Mara-Serengeti migration. (NNP Files, 2002.)

MAP 1: WILDLIFE PROTECTED AREAS IN KENYA



Source: KWS, 2001.

Table 2: Size of wildlife protected areas in Kenya.

Protected area	Area (Km^2)	Protected area	Area (Km^2)
Tsavo East NP	11,747	L. Bogoria NR	107
Tsavo West NP	9065	Kamnarok NR	87.7
Aberdare NP	765.7	Kerio Valley NR	66
Mt.Kenya NP	715	Kakamega NR	44.7
L. Nakuru NP	870	Maasai Mara NR	1510
Amboseli NP	392	South Kitui NR	1133
Nairobi NP	117	Mwea NR	68
Meru NP	870	Arawale NR	533
Kora NP	1787	Boni NR	1339
South Island NP	39	Dodori NR	877
Hells Gate NP	68	Tana River Primate NR	169
Mt. Longonot NP	52	Shimba Hills NR	192
Ol Doinyo Sabuk NP	18	Chepkitale NR	178.2
Marsabit NP	316.587	Nyambene NR	640.6
Sibilol NP	1570	Laikipia NR	165
Mt. Elgon NP	169	Mt. Kenya NR	2124
Saiwa Swamp NP	2	Ngai Ndeithia NR	212
Ndere Island NP	42	Tsavo Road & Railway NR	112
Malka mari NP	876	Mombasa Marine NP	26.093
Chyulu NP	736	Malindi MNP	6
Central Island NP	5	Watamu MNP	10
Ruma NP	120	Kisite MNP	28
Arabuko Sokoke NP	6	Mombasa Marine NR	200
Marsabit NR	1564	Watamu MNR	32
South Turkana NR	1019	Malindi MNR	213
Nasalot NR	194	Kiunga MNR	250
Losai NR	1806	Mpunguti MNR	11
Shaba NR	239	Diani chale MNR	165
Samburu NR	165	Maralal Sanctuary	5
Buffalo Springs NR	131	Lake Simbi Sanctuary	41.2
Bisanadi NR	606	Ondago swamp Sanctuary	24.8
Rahole NR	1270	Kisumu Impala Sanctuary	0.34
North Kitui NR	745		

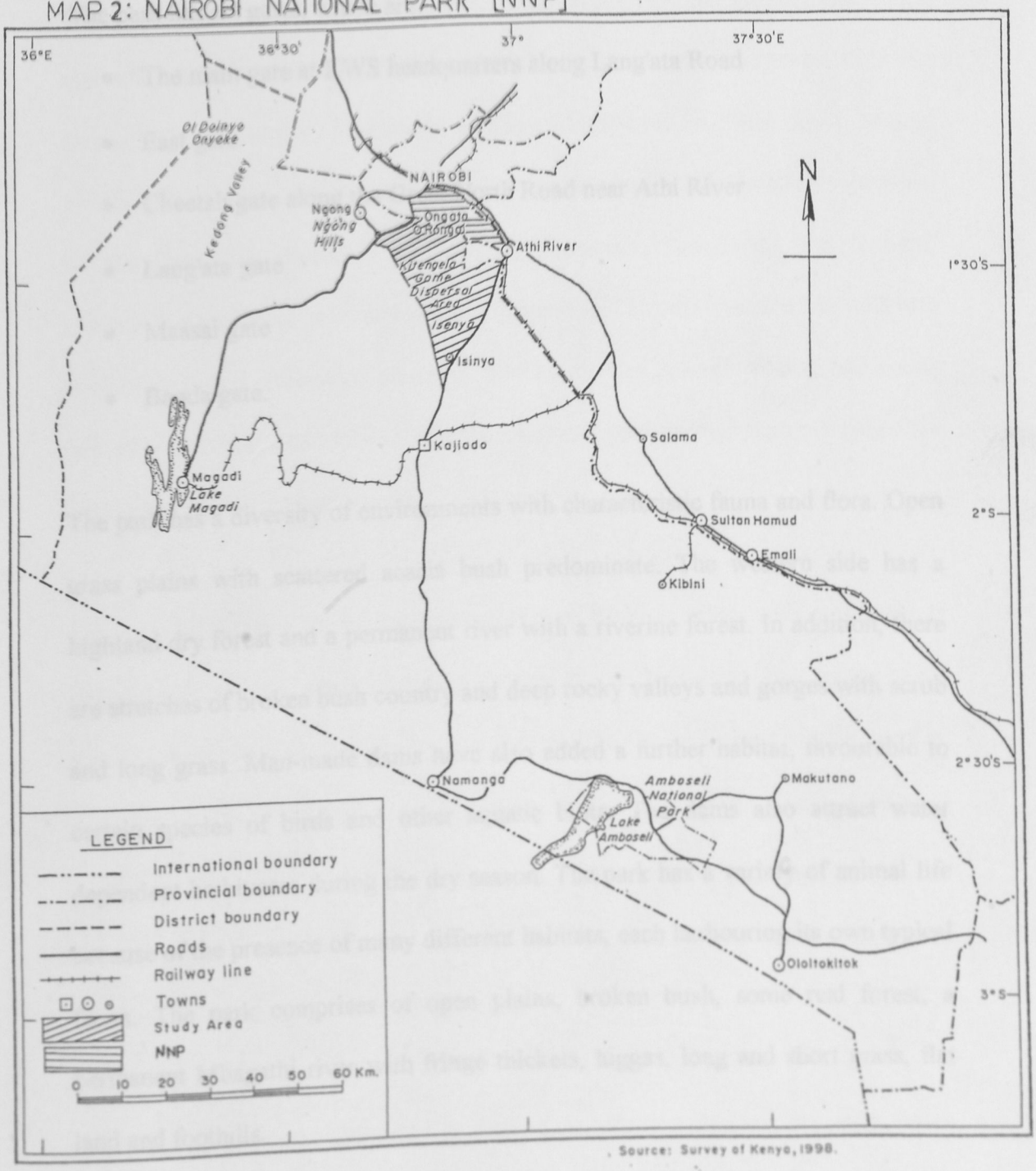
Source: KWS, 2001.

It has been widely recognised by conservationists that the future wellbeing of the park depends on the continued availability of this rangeland. It serves as a wet-season dispersal area for many of the park's large harbivores. The wild animals use the NNP during the dry season for water and move outside to the Athi-kapiti plains during the wet season. They have also noted that if the park was ring-fenced and isolated from this adjoining dispersal area, 50% of the large mammal species currently found in the park would die out. Hence, the necessity to preserve the Kitengela area for the benefit of NNP and the Kenyan economy at large.

2.2 The Nairobi National Park

This is the first National Park to be created in Kenya in 1945 and gazetted in 1949. It covers an area of 117 Km^2 and is situated at the doorstep of the city of Nairobi only 4 miles from the city centre. It is located at about 2°18' South and 36°50'East. (Map 2). It is one of the most remarkable parks of its size anywhere in the world in that, over two dozen big game species which occupy this area are separated from the city of Nairobi only by a fence. The southern part is however open to the Athi Kapiti plains and allows considerable movement of large ungulate species between the two areas. The Kitengela Conservation area, which is located to the immediate south of the park together with the rest of the Athi Kapiti plains form a dispersal area which covers about 2500 km^2 for many ungulate species.

MAP 2: NAIROBI NATIONAL PARK [NNP]



Source: Survey of Kenya, 1998.

The park has six gates, which are:

- The main gate at KWS headquarters along Lang'ata Road
- East gate
- Cheetah gate along the Great North Road near Athi River
- Lang'ata gate
- Maasai gate
- Banda gate.

The park has a diversity of environments with characteristic fauna and flora. Open grass plains with scattered acacia bush predominate. The western side has a highland dry forest and a permanent river with a riverine forest. In addition, there are stretches of broken bush country and deep rocky valleys and gorges with scrub and long grass. Man-made dams have also added a further habitat, favourable to certain species of birds and other aquatic biota. The dams also attract water dependent herbivores during the dry season. The park has a variety of animal life because of the presence of many different habitats, each harbouring its own typical fauna. The park comprises of open plains, broken bush, some real forest, a permanent Mbagathi river with fringe thickets, luggas, long and short grass, flat land and foothills.

NNP is unique by being the only protected area in the world with a variety of animals and birds close to a major city. It is therefore a principal attraction for

visitors to Nairobi and local inhabitants living in the city and its environs. Large mammals are the park's main attraction. Of the most popular species only the elephant is an absentee. Herbivores include: black rhino, buffalo, eland, Maasai giraffe, plains zebra, wildebeest, coke's hartebeest, grant's and Thomson's gazelles, impala, waterbuck, bushbuck and warthog. Carnivores include the lion, leopard, cheetah, hyena, jackal civet and genet. The park also has diverse bird life with 400 species recorded. However, all these species are not always present and much depends on season. For instance northern migrants pass through the park primarily during late March through April.

The park is also one of the most successful of Kenya's rhino sanctuaries that is already generating a stock for reintroduction in the species former range. More recently more than 50 rhino have been moved into the park from remote parts of the country where poaching was rife. Due to this success, it is one of the few parks where a visitor can be certain of seeing a black rhino in its natural habitat. All these add to the economic benefits that can be obtained from the tourism industry and from the NNP in particular.

In stressing the importance of the Park, Capt. Archie Ritchie, the first Game Warden of Kenya said that, "NNP is indeed unique and must be nurtured at all costs, not just for its obvious tourist appeal, and the revenues it brings into the country, but for important therapeutic reasons. The human soul needs access to

nature to heal its psyche, for humans are an integral part of nature and need the tranquillity wilderness offers to offset the negative impacts of stress. More importantly still, the park serves the vital role of being the very lungs of Nairobi city. Its natural vegetation and remnant forests renewing the oxygen levels and cleansing the air of pollution spewed forth from a sprawling city now harbouring close to 3 million people." Others have echoed the Park's importance in different words. For instance, Hellen Gichohi, a wildlife biologist, refering to the NNP said that, " ... the most remarkable park of its size anywhere in the world...". (FoNNaP Newsletter,2001). David Western, a former Director of KWS had these to say of the same park, "... truly unique and the envy of the world's capitals." (FoNNaP, Newsletter, 2001). The question however is this, does every person, especially those communities adjacent to the park, view the park as such or as a waste of very fertile land for farming and grazing livestock? Hence, consensus for the importance of conservation for its sake has not been reached and cultivated in people's minds.

The variety of species it shelters is unique indeed for such a small area and in its capacity as the lungs of Nairobi, it is, of course crucial. Yet the future of this park is not certain. With human settlements right up to the boundaries and the park electrically fenced on three sides, it is now more vulnerable than ever. Beset by the commercial meat trade, the migrant species return to the park in fewer numbers every year, and dangerously, the dispersal area reservoir which seemed infinite

hundred years ago, is now beginning to run dry, likened to 'an egg timer with a hole at the bottom'. (Daphne, 2000). Hence, to restore the wholesome uniqueness of this park, the existing human-wildlife conflict in KGCA has to be managed in a better way now than before. Otherwise, the loss of the park will have diverse repercussions both locally and internationally.

2.3 Human-Wildlife Conflicts

Wildlife is a key global resource and basic to the health of ecosystems everywhere. Yet, all over the world, there is increasing human-wildlife conflicts. Human-wildlife conflicts are a problem of resource utilization in conservation areas. (Sindiga, 1999). As the pressures of modern society increase and at the same time as our globe shrinks, increasing numbers of people seek ways to slow down that pressure. They desire peace and quiet, a place they can retreat to in order to relax, unwind and restore their spirits. Yet this desire to reconnect with nature has ramifications that many people do not consider. With numbers of residents and visitors to marginal areas increasing, wildlife populations already under stress from reduced habitat and increased encounters with humans face additional strain. This escalation is the result of many causes that are conditions for escalation of human-wildlife conflicts. These causes are:

- Degradation and fragmentation of ecosystems. This leads to fewer resources remaining making competition for these resources the only means of securing them.

- Growing human populations. This leads to stress on habitat capacity due to migrations to marginal areas, blockage of migratory routes through fencing of individual plots and the increase in land sales to satisfy other social and economic needs.

- Inadequate scientific understanding of the issue. This inability makes the problem recurrent because the real root cause is never addressed but instead different symptoms are dealt with separately.

- Political indifference. The politics of the day and the policies prevailing in that particular area will greatly influence the implementation of government policy regarding for example ownership and transfer of land.

- Meager financial resources. This hinders adequate resolution mechanisms to be put in place since solving of human-wildlife conflicts requires large sums of money, which are not there especially in developing countries.

- Poor communication among researchers, resource managers and policy makers. This means that there is no proper linkage among different actors who are involved in addressing the same problem. When this is the case, there is wastage of the few resources available due to either duplication of projects or inadequate possession of relevant knowledge.

The international community and the Kenyans in particular, must therefore recognise that human-wildlife conflict is one of the greatest threats to the survival of wildlife over the long term and must be resolved as a matter of absolute urgency. Members of the 1998 delegation of the Environmental Leaders Forum addressed the international community to draw their attention to the critical problem of the loss of biological diversity through unresolved human-wildlife conflicts. They therefore suggested that international organisations must promote economic development paradigms that reduce economic disparities among nations, foster ecologically responsible policies and so lessen human-wildlife conflicts.

All the above measures will yield the expected results if done accordingly. But who will be the custodian of ensuring that all the individuals take responsibility for their actions? Whether policies and institutions are put in place to ensure this, history proves that individual self-interests sometimes take priority in safeguarding important natural resources.

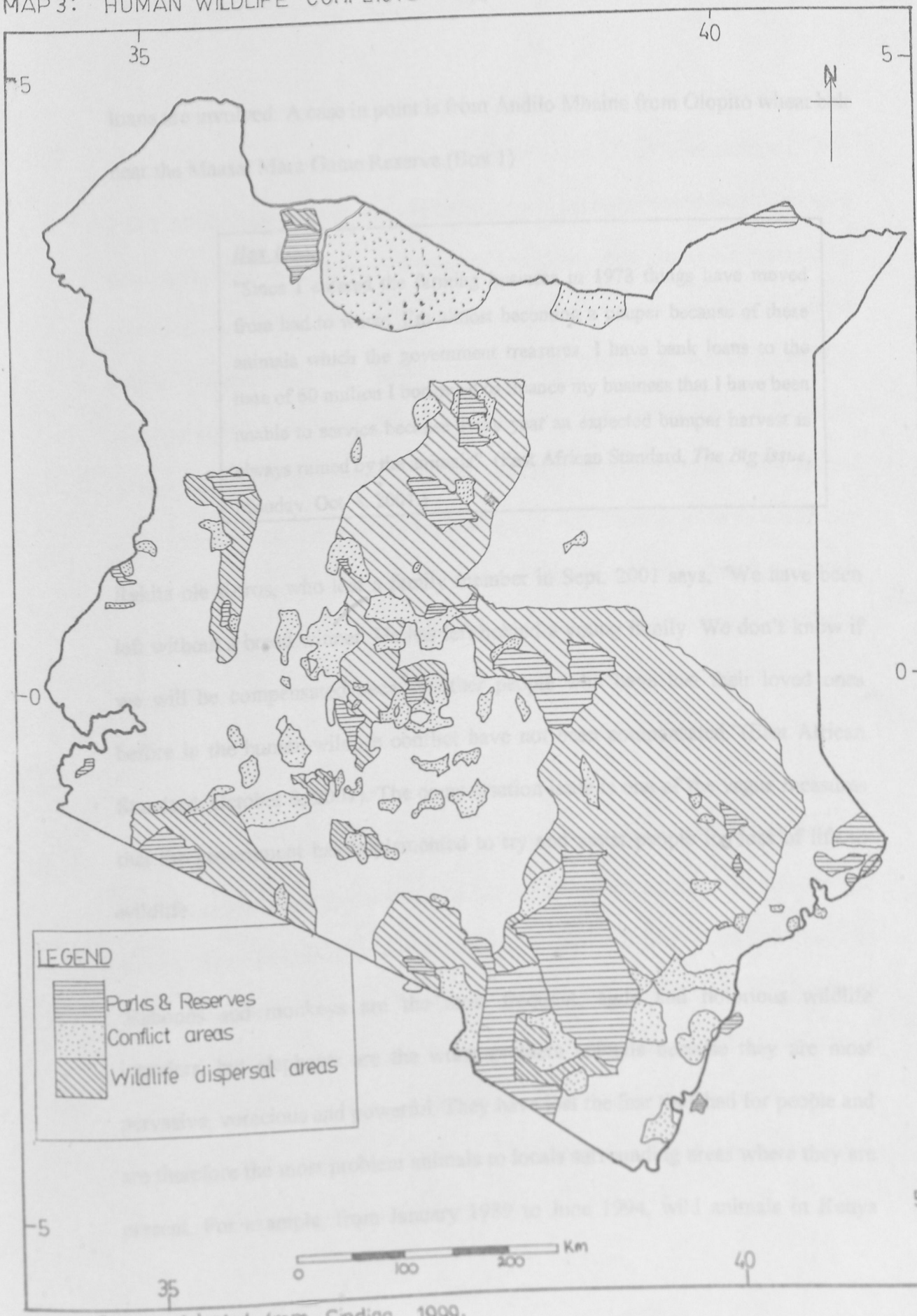
In Kenya, human-wildlife conflict has been a major concern for the Government of Kenya and researchers as well. It is an emerging issue which needs to be sought out if we are to foster a peaceful ecosystem for both animals and humans. Many researches done so far have concentrated on the importance of preserving the wildlife habitats by human beings. Little has been however done on the human beings side of trying to ensure peaceful living of the people without animal

intrusion to their areas. This perception has accelerated the human-wildlife conflict that exists today.

To carry out its wildlife management activities both in protected and unprotected areas, the GOK works through the KWS, a government agency established after the amendment of the Wildlife (Conservation and Management) Act, Cap 376 of the Laws of Kenya. Under the Act, KWS is charged with, among others, the responsibility of formulating policies regarding conservation, management and utilization of all types of fauna (not being domestic animals) and flora; render services to the farming and ranching communities in Kenya necessary for the protection of agriculture and animal husbandry against destruction by wildlife.

According to the Report of the Five-person Review Group to the KWS on human-wildlife conflicts in Kenya (1996), the human-wildlife conflict is actually real in practically all districts of Kenya. (Map 3). Conflict is however most intense where agriculture is involved particularly where cropland borders forested national parks (i.e. Imenti, Nyeri, Transmara and Kwale) and in pockets of agriculture surrounded by rangeland. The enormous losses, costs and fear wildlife causes by destroying property and killing humans are the primary sources of conflict. Loss of income from death and injury usually is devastating to families, and material losses often cause unbearable financial suffering, particularly when agricultural

MAP 3: HUMAN WILDLIFE CONFLICTS IN KENYA



Source: Adopted from Sindiga, 1999.

loans are involved. A case in point is from Andilo Mbaine from Olopito wheat belt near the Maasai Mara Game Reserve.(Box 1)

Box 1

"Since I entered the farming business in 1978 things have moved from bad to worse. I'm almost becoming a pauper because of these animals which the government treasures. I have bank loans to the tune of 60 million I borrowed to finance my business that I have been unable to service because every year an expected bumper harvest is always ruined by the animals". (East African Standard, *The Big Issue*, Mondav. Oct. 8. 2001.)

Rakita ole Koros, who lost a family member in Sept. 2001 says, "We have been left without a bread winner. He has left behind a young family. We don't know if we will be compensated because other people who have lost their loved ones before in the human-wildlife conflict have not been compensated."(East African Standard, October 8, 2001). The compensation issue is one of the vague measures that the government has implemented to try and assist people for loss of life to wildlife.

Baboons and monkeys are the most frequent, agile and notorious wildlife intruders, but elephants are the worst problem animals because they are most pervasive, voracious and powerful. They have lost the fear they had for people and are therefore the most problem animals to locals surrounding areas where they are present. For example, from January 1989 to June 1994, wild animals in Kenya

killed a total of 230 people and injured 218, for an average of 42 deaths and 40 injuries per year. Elephants alone were responsible for 173 of these attacks. (KWS, 1996). In some area like Laikipia district, farmers have abandoned crop farming in good agricultural soils because of the huge losses they incur from crop damages by these animals and particularly elephants. And if that is not enough, the government which is supposed to take care of the farmers' well-being incase of wildlife menaces stopped compensation for crop damages. The strange issue in Kitengela is that, there are no elephants in the Nairobi National Park, so what animal problem is the main cause of the existing human-wildlife conflict in the area? This will be addressed in the current study. This absence also offers a greater opportunity for lasting solutions in the management of the current conflict in Kitengela, as elephants are the most difficult and expensive to control.

2.3.1 Types of Human-Wildlife Conflicts

(a) Real human-wildlife conflicts: These are true human-wildlife conflicts and clashes of interest. They are caused by direct interaction between animals and people. They include effects of a personal nature such as injuries and deaths as well as economic and psychological losses people suffer when wild animals destroy human life and property. Differences and losses are traceable to policy and management i.e. delays in compensation are also included. Factors like ignorance and the attitudes of officials or claimants can play a significant role in determining the magnitude and seriousness of a problem.

(b) Interpersonal conflicts: These are conflicts between stakeholders with polarized group of self-interests. These derive from competition between groups for resources and dislike of new policies that may affect the power balance or direct benefits away from or toward certain groups.

Misconceptions about certain factual matters also contribute to the intensity of conflict. For example, matters pertaining security and KWS's role and also the issue of compensation whereby people do not know who is responsible for paying compensation. Many are for instance unaware that the government has stopped paying compensation for crop losses.

2.3.2 Causes of Human-Wildlife Conflicts

In Kenya, human-wildlife conflicts are because of the following broad categories of causes:

(a) Human population growth and demand for resources:

Population growth and density are central and frequently mentioned causes of the human-wildlife conflict in Kenya as in many parts of the world and especially developing countries. Kenya's resource base is fast shrinking due to the rapid increase in its human population. Many trust lands have been subdivided into group and individual ranches and some older ranches have been broken up into individual holdings. The result has been land fragmentation due to the transition

from semi-nomadism to sedentary semi-agricultural settlements and the development of intensive small-scale farming.

In many areas, wildlife offers people no realistic economic options since meaningful quantities of wildlife have ceased to exist. More often, the incursions of wild animals threaten human inhabitants with economic ruin. This population growth generates a demand for land in areas traditionally reserved for game. As cultivation extends into ecologically marginal zones and new farms encroach on game areas, human and animals clash. Demographic pressure forces landless peasants from high potential agricultural areas which have already been overpopulated and land for farming has become very scarce, and whose only chance for survival lies in subsistence agriculture to occupy protected areas 'illegally'.

(b) Attitudes to and perceptions of wildlife:

Yeager and Miller in (Omondi, 1994) point out that, rural dwellers are determined to defend their farming and grazing areas and to protect themselves, crops and their livestock from wildlife. They continue to argue that; "Poachers and other wildlife exploiters treat game animals as an obvious and easily accessible source of profit.... Little agreement is ever reached between those who contend with wildlife on a day-to-day basis and those who wish to protect them for other purposes". (Omondi, 1994:48). Peoples' perception is that the government loves

from semi-nomadism to sedentary semi-agricultural settlements and the development of intensive small-scale farming.

In many areas, wildlife offers people no realistic economic options since meaningful quantities of wildlife have ceased to exist. More often, the incursions of wild animals threaten human inhabitants with economic ruin. This population growth generates a demand for land in areas traditionally reserved for game. As cultivation extends into ecologically marginal zones and new farms encroach on game areas, human and animals clash. Demographic pressure forces landless peasants from high potential agricultural areas which have already been overpopulated and land for farming has become very scarce, and whose only chance for survival lies in subsistence agriculture to occupy protected areas 'illegally'.

(b) Attitudes to and perceptions of wildlife:

Yeager and Miller in (Omondi, 1994) point out that, rural dwellers are determined to defend their farming and grazing areas and to protect themselves, crops and their livestock from wildlife. They continue to argue that; "Poachers and other wildlife exploiters treat game animals as an obvious and easily accessible source of profit.... Little agreement is ever reached between those who contend with wildlife on a day-to-day basis and those who wish to protect them for other purposes". (Omondi, 1994:48). Peoples' perception is that the government loves

animals more than people. For instance, in Taita District, from 1989-1993, elephants killed or injured 36 people, animal control patrols killed 23 elephants, and the local compensation committee met three times and no one received any compensation (KWS, 1996). Hence, recent studies show that the majority of local people around protected areas have negative feelings about state policies and conservation programmes. (Akama, et al. 1995).

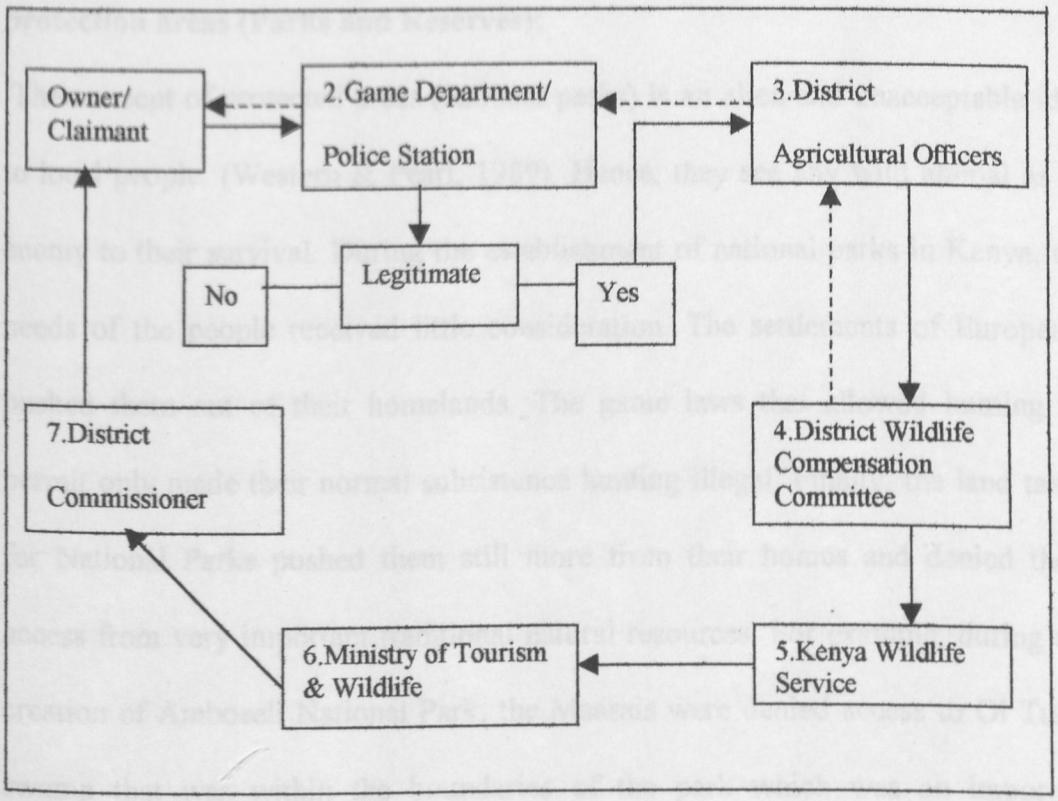
Matampash (1993) also notes that, the competition for land between wildlife and pasture for Maasai livestock surfaced when the Maasai came to realize that wildlife could be harvested for economic gain through tourism income. They noticed further that the Government paid more attention to the wildlife industry than to their livestock. Things became worse when the Maasai's best grazing lands were lost to the government for promotion of the wildlife in their group ranches without compensation for the land, grass and human lives destroyed. This happened especially during the establishment of NNP and Amboseli NP in 1945 and 1974 respectively. (Nyeki, 1994). All these necessitated the human-wildlife conflict that exists even today and continues to accelerate due to increase in human population that eventually migrates to these areas.

Peoples' perceptions of benefits and costs deepen the human wildlife conflict in Kenya. Some people observe that the government needs wildlife because of the revenue it gets from tourism. This revenue however never trickles down to the

landowners who take the risk of protecting the wild animals in their farms. The authorities ignore citizens' wildlife-related losses, at the same time denying them their true values and their need and right to use wildlife resources to supplement farm incomes and food supplies. The chronic frustration engendered by cumbersome and ineffectual government procedures required for claiming compensation when people are killed by wildlife compounds the conflict. This can be illustrated by the compensation procedure explained below.

The claimant reports the damage immediately to the Game Department (KWS) or to the nearby police station. The Game Warden concerned inspects and determines whether the claim is legitimate. If yes, him and the claimant fill a compensation form. Then officers from the District Agricultural Office visit the scene and determine the damage in monetary terms based on local values and productivity levels. They also fill another form. The two forms are then sent to the District Wildlife Compensation Committee (gazetted in 1978), which discusses the claim, and either defers it for re-assessment at the local level or approves it with a recommended amount of compensation. If the claim is approved it is sent to KWS which makes a recommendation on the required compensation and forwards it to the Ministry of Tourism and Wildlife for payment. The Ministry reduces the recommended amount to fit within the overall available budget. Payment is then made to the District Commissioner who eventually pays the claimant. (This is illustrated below).

Illustration 1: Compensation procedure



From the above long procedure, which does not necessarily guarantee adequate compensation in the end and coupled with the stoppage of compensating crop damages by wildlife, makes the victims bitter when they see wildlife. This creates a negative attitude towards wildlife and in so doing their survival is threatened especially in private lands. This attitude therefore needs to be changed if wildlife has to survive when they are in private lands that are essential wildlife habitats especially during times of shortages of fodder in protected areas.

(c) Loss of land and displacement of settled communities to create wildlife protection areas (Parks and Reserves):

The concept of protected areas (national parks) is an alien and unacceptable idea to local people. (Western & Pearl, 1989). Hence, they see any wild animal as an enemy to their survival. During the establishment of national parks in Kenya, the needs of the people received little consideration. The settlements of Europeans pushed them out of their homelands. The game laws that allowed hunting by permit only made their normal subsistence hunting illegal. Finally, the land taken for National Parks pushed them still more from their homes and denied them access from very important traditional natural resources. For example, during the creation of Amboseli National Park, the Maasais were denied access to Ol Tukai swamp that was within the boundaries of the park which was an important watering point for their livestock. This angered the Maasais and they killed a lot of rhinos in the park. Evidence for this was that these dead rhinos were found with their horns, meaning that they were killed not by poachers but by revenging people. (Sindiga, 1999). The rhino population therefore reduced from about 150 in the late 1950s to fewer than 30 in 1973 and only 8 in 1977. (Western, 1982b). Hence, for the African, the National Parks have been the mechanism that forced his home and confrontation with the game laws has sent many of the males into prison. All these experiences have solidified the negative attitudes toward wildlife and its conservation and so need to be addressed if wildlife have to be conserved.

(d) Other factors include inadequate wildlife conservation education, public participation and inappropriate wildlife policies and laws. The colonial legacy affects local people's attitudes and participation. They believe wildlife conservation was forced on them and maintained for the white man and the educated elite. After independence, the Government continued essentially with the same policies and in fact made game laws even stricter. Hunting is now totally banned in Kenya, a law that again ignores the needs of the people for subsistence hunting. As a result, the National Parks are surrounded by a hostile population that has little sympathy for the park system or for conservation. These people therefore need the essential conservation education using means that will not worsen their attitudes to wildlife.

Talbot, a long-time researcher on African wildlife summarised the causes as follows: "The burgeoning human population, the increasing rate of development activities, and the even more rapidly increasing needs for effective development combined with what is perceived as a preservationists' approach to conservation, have created increasing conflicts between those concerned with conservation and those with development". (Omondi, 1994:47.) This implies that the conflict is with the different priority concerns of different groups. Thus, the wildlife debate remains to be between preservationists and conservationists.

2.3.3 Effects of Human-Wildlife Conflicts

There have been largely negative effects on both wildlife and people living in conflict zones. These effects if quantified amount to billions and billions of money that would have been less if appropriate mechanisms were put in place to curb the occurrence of the conflict in the first place.

Many species have become extinct due to either poaching or habitat degradation. This is supported by the fact that "the decline of Africa's wildlife has as much to do with the competition for space between humans and the animals, as it has with poaching and the international trade in hides, ivory and rhino horn. Africa's human population doubles every 20 years and the range land of elephants... and of other wild animals is shrinking as pressures on arable land increases." (Omondi, 1994:49)

2.3.3.1 Effects on wildlife

1. Habitat loss or modification as a result of encroachment into wildlife areas in the form of cultivation, pastoral development and permanent settlements, forestry operations and plantations, fire and pollution.

2. Extinction of species due to over-exploitation of natural resources like forests and land to meet commercial or subsistence demands.

3. Blockage of migratory routes as a result of permanent human settlements in dispersal areas and their subsequent fencing of individual farms for protection from the menace brought about by wild animals. For example in Laikipia and Meru districts, elephants used to migrate from the Aberdare mountains to Mt. Kenya and down the savannah woodlands of Samburu, Isiolo and to the present-day Meru National Park area. But because their traditional routes have been blocked by human settlements, these animals are increasingly straying to settled areas causing damage to human life, farm crops and the wild animals populations themselves. (Robinson, 2000:201).

4. Stress on protected area through encroachment and the strain on the carrying capacity of parks and reserves.

2.3.3.2 Effects on humans

1. Relocation: people are physically moved to another location without their consent. For example the Ik of Uganda were moved when Kidepo National park was created.

2. Restriction of access to resource use: people are barred from access to resources i.e. firewood or grazing and water areas, ritual sites, by nature of zoning or total exclusion from the protected area. For example, the creation of Amboseli national Park denied the Maasai access to the use of Ol Tukai

swamp for watering their livestock. This led to the Maasai killing many rhinos in the park as a sign of discontent.

3. Damage to property such as crops, livestock, human deaths or bodily injuries. For example, in October 5, 2000, marauding elephants killed a man and destroyed massive property after invading Naikarra area in Osupuko division of Narok District. In addition, in May 2002 straying lions from the Nairobi National Park killed 26 Ostriches in the 'Ostrich Farm' that is situated within Kitengela Dispersal area.

4. Spread of diseases to domestic stock. Wildlife carries many diseases which are dangerous to livestock. For example the Malignant Catarrh Fever, a viral disease that kills livestock is associated with the wildebeest. Other diseases include Foot and Mouth, East Coast Fever and Rinderpest. Many wildlife species have the capacity to live with these diseases without serious impact to them but the moment they are spread to livestock, they become deadly causing great losses to livestock farmers.

5. Increased financial and administrative costs for managing wildlife such as electric fencing costs, hiring guards or maintaining dogs to scare wildlife. For example, the electric fencing project in Mt. Kenya reserve by KWS costs a lot of money which strains its other operations.

2.4 Human-wildlife Conflict Management

According to Coser (1967), conflict is defined as "a struggle over values and claims to scarce status, power and resources". Omondi, (1994) adds that, conflict occurs when there is incompatibility in interest, behaviour, goals, values, needs, expectations and/or ideologies between parties. Kelso (1962) on the other hand comments that, land use conflict occurs because land resources are limited, wants are limitless.

Parties in a conflict do not form homogeneous groups but are composed of individuals and coalitions of individuals within the larger social systems of institutions and society as a whole (Mitchell, 1980). However, heterogeneous groups with the same interests may not necessarily be in conflict since they will pursue almost similar courses of action in achieving their needs.

Deutsch (1971) points out that, conflict is potentially of personal and social value. Conflict is a pervasive and inevitable aspect of life. Its pervasiveness suggests that, conflict is not necessarily destructive or lacking in pleasure. Conflict has many positive functions, which include the following:

- it prevents stagnation,
- it stimulates interest and curiosity,
- it is the medium through which problems can be aired and solutions arrived at and it is the root of personal and social change.

Moreover, conflict is often part of the process of testing and assessing oneself and as such, it may be highly enjoyable as one experiences the pleasures of the full and active use of one's capacities. To Deutsch therefore, the problem is not how to eliminate the conflict but how to make it productive or minimally how to prevent it being destructive. There is need for management options that do not strive to eliminate the existence of any of the parties involved in the conflict but rather for both to co-exist peacefully to each other's benefit.

Conflict management strategies can be divided into four broad groups:

(a) Avoidance

This involves inaction and attempts to avoid responsibility in addressing the actual cause of the conflict. In the past, this strategy was greatly used by the wildlife authorities by strictly protecting the wildlife and so neglecting the communities that lived with these animals. The use of this strategy can be said to have contributed to the negative attitudes developed by communities surrounding national Parks and Reserves whereby they viewed the government as preferring the protection of the animals than the people's lives and property.

(b) Prevention

This is usually possible and it is realistic. Many wildlife damage problems can be solved by applying preventive measures such as habitat modification, barrier control or repellents. This has been used especially in agricultural areas whereby

fences and moats have been used to keep the animals away from the people's property. For example, the electric fencing around the Mt. Kenya reserve by KWS to prevent direct contact with people and elephants.

(c) Reduction

This strategy involves assumptions that conflicts are inevitable and that conflict-resolution mechanisms should be established in advance to minimise the impact of wildlife-related losses. Human-wildlife conflict reduction strategies include game control, compensation for loss and wildlife conservation education and extension.

(i) Game control: This means the shielding of man from the depredation of game animals. It indicates the steps that the government as the owner of wildlife takes to reduce or resolve the conflict. The responsibility for controlling game by the government is stated in the Sessional Paper of 1959 and later in 1975 as follows:

> *"The government accepts a general responsibility to assist with control of behaviour of wildlife, which is diverse to other activities or to human life, within the limits of available finance, manpower, and techniques and subject to co-operation by the relevant landowners and other members of public."* The limitations in the above statement have made this strategy not to succeed in controlling for example rogue elephants in affected areas.

(ii) Compensation for loss: This scheme was established late 1975 and is under section 62 of the Wildlife (Conservation and Management) Act. It meant that, people who suffered property damage, human death or injury from wildlife were to receive monetary compensation from the government. However, there was to be no compensation in the course of illegal activities like poaching of wild animals. Compensation for loss of life is Kshs. 30,000, destruction of property is payable as per the value of the property. In 1989 however, compensation for crop damage was suspended because the system became unworkable. Widespread cheating on claims, high administration costs and lack of disbursal funds were cited as the main reasons for failure. (East African Standard, October 8, 2001).

(iii) Wildlife conservation education and extension services: The main purpose of this programme is to create an atmosphere of concern and support for wildlife conservation, and to offer all visitors to Kenya's wildlife areas information about wildlife while enhancing their commitment to its conservation. Communities adjacent to wildlife protected areas also need to be educated on the importance of wildlife conservation in and out of protected areas. This is essentially meant to create a co-existence atmosphere whereby human beings view wildlife as part of their daily living.

This reduction strategy is possible to be applied in Kitengela game conservation area because from the field study, the local people really said that if they could be

compensated for the losses they incur from wildlife, they are willing to let the wildlife move across their land. In addition, the game control method used by KWS to control problem animals in the area will combine well with community education on conservation matters to solve the human-wildlife conflicts in Kitengela. This will also take advantage of the high literacy levels of the local people.

(d) Elimination

This means total removal of conflict which is possible but cannot be accomplished without killing or controlling all animals. This is a very expensive exercise both financially, socially and politically. It implies either the total removal of people from that conflict area to a different location where there is no conflict or the evacuation of wild animals to other areas where they will be far from contact with the people. Many factors have to be looked into before this strategy is undertaken. The new areas where relocation is to be done have to be assessed for environmentally friendly means, social factors, financial availability and politically agreeable backings if it has to be successful. All these will take a lot of time and money and may in most cases render the practice unsustainable in the longrun.

The choice of conflict management strategy will depend upon the value placed on conflict. More fundamental is the actual recognition by the involved parties that

conflicts exist. Stern (1976) contributed to this by saying that, the major factor influencing the choice of an appropriate conflict management technique is the degree of perceived interdependence between other parties. But the question remains, who chooses the best option to be taken since more than one party is usually involved in a conflict situation? Hence, consultations need to be done with the aim of ensuring that each party involved is not sidelined but that their views are taken into account so that the strategy that will be chosen will not be hindered by any of the stakeholders in question.

Deutsch however suggests that, conflict is more likely to be resolved by a competitive process when each of the parties in conflict are internally homogeneous but distinctly different from one another in a variety of characteristics than when each is internally heterogeneous and they have overlapping characteristics.

Before any particular strategy is adopted for use in a particular area, three important parameters need to be considered. These are as follows:

- **Ecologically possible**. The strategy must be in equilibrium with the environment and should recognise and protect the resources and identify reasons for which a natural resource conservation strategy was established. This will ensure that the environment from which human and wildlife resources are obtained is not destroyed or degraded. If this is done, the

competition for the scarce resources will be minimised and so keeping conflict levels to the minimum.

- **Culturally adoptable.** The required strategy must be compatible with local cultural values and behavioural patterns of the local population. The culture and perceptions of the local people towards wildlife will greatly determine the adoption of any strategy that will be established to solve the human-wildlife conflict. Cultural values if well integrated into the strategy will ensure the sustainability of the strategy.

- **Economically gainful.** The strategy must have some degree of productive efficiency that should result in real benefits to the local population. For the strategy to be seen to be of benefit to the local people and so for them to accept it, direct tangible benefits that accrue from the established project or programme should be given to the people.

2.4 Conceptual Framework

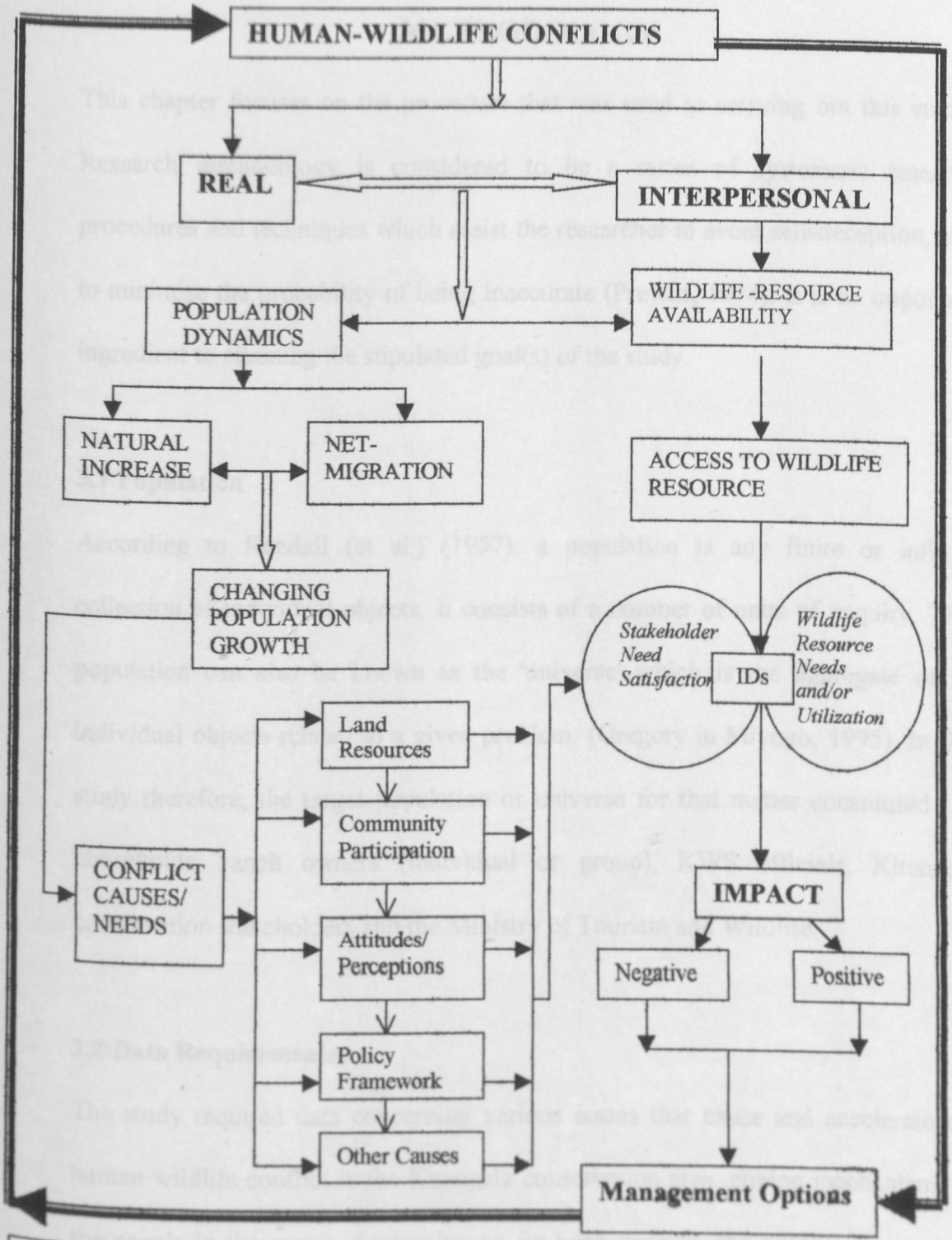
Human-wildlife conflicts are prevalent especially in areas that are suitable for multiple land uses. These conflicts can either be real or interpersonal. Real conflicts occur when there is a direct contact or conflict between humans and wild animals. These are true problems between wildlife and people. These problems include effects of a personal nature such as injuries and death, as well as economic

and psychological losses people suffer when wild animals destroy human life and property. Interpersonal conflicts are clashes of interest between different people over wildlife. These include disputes related to competition and group interests centred on resources and the power to control wildlife benefits. They may also stem from dislike of new policies that will affect the balance of power or benefit certain groups and not others. It can be termed as a kind of indirect human-wildlife conflict.

Due to increasing human populations in marginal areas, competition for land and water as the main natural resources intensifies. The peaceful interaction that existed between humans and wildlife some time back when the population in these areas was scarce is jeopardized. Access to wildlife resources is denied to the local people and at the same time, access to land resources in private lands by the wild animals is also denied. As this access is denied, community participation totally lacks in wildlife issues and this creates a negative attitude among the people concerning wildlife. They see wildlife as not part of them. Coupled with a weak policy framework and inadequate conservation education among the communities involved, the inevitable conflict eventually comes into play. Other factors such as socio-economic forces and political influences in the area determine the extent to which the conflict goes and contributes greatly in the management of the conflict as well as the capability of the community to tolerate wildlife menaces.

To manage human-wildlife conflicts, community participation and a revision of the wildlife policy are primarily important. The local people's attitudes and perceptions are a part of the causes of the conflict and must therefore be a part of the solution if the conflict is to be managed successfully. Transparency and community empowerment from the government side is required so that the people are aware of all the proceedings involved in wildlife management. In so doing, the private sector needs to co-ordinate with the public sector so that the human-wildlife conflict is wholesomely tackled if the region involved is interested in sustainable conflict management options.

Fig. 1: Conceptual Framework on Management Options for Human-Wildlife Conflicts



CHAPTER THREE

METHODOLOGY

This chapter focuses on the procedure that was used in carrying out this study. Research methodology is considered to be a series of systematic research procedures and techniques which assist the researcher to avoid self-deception, and to minimise the probability of being inaccurate (Prewitt, 1974). It is an important ingredient to attaining the stipulated goal(s) of the study.

3.1 Population

According to Kendall (et al.) (1957), a population is any finite or infinite collection of individual objects. It consists of a number of units of enquiry. This population can also be known as the 'universe' which is the aggregate of all individual objects related to a given problem. (Gregory in Miyogo, 1995). In this study therefore, the target population or universe for that matter constituted all households, ranch owners (individual or group), KWS officials, Kitengela conservation stakeholders and the Ministry of Tourism and Wildlife.

3.2 Data Requirements

The study required data concerning various issues that cause and accelerate the human-wildlife conflict in the Kitengela conservation area, coping mechanisms of the people in the area and what has so far been done by the wildlife department

and other stakeholders to solve this conflict. These requirements can be summarised as follows:

- History of the Maasai Community and their migration patterns
- Migration trends to the area
- Problem animals
- Causes of these problems
- The community's coping mechanisms
- The community's view of the conflict and the future of the NNP

3.3 Sampling Procedure

A. Households

(a) Stratified sampling: The household population was first divided into rural and urban. The urban population was technically sampled out due to its location on the fringes of the study area and its greater influence and association to the city of Nairobi rather than with the wildlife from the Nairobi National Park. These urbanites also stood a lesser chance of having the required information concerning the human-wildlife conflict. In addition, their involvement in solving the problem is minimal if not non-existent.

(b) Cluster sampling: The rural population was then divided into 3 clusters. Two of these were selected next to the park while the third one was located far south of the study area. The triangular shape of the study area and the distribution of the

population within the study area necessitated this choice. It was also for comparison purposes of the intensity of the effects of the conflict among the three areas.

(c) Random sampling: Households in each cluster were selected randomly depending on their distribution. In areas where they were sparsely located, convenience sampling was applied. This is a method of sampling in which the researcher selects those respondents who are close at hand. Hence, each homestead on sight was selected and interviewed. In total, 86 households in Kitengela location were interviewed using questionnaires. Many of these households reside near urban centers, which were sampled out for the study. Hence, this number is representative enough taking into account that the location has a population density of 44 persons per square kilometer (1999 Kenya population census) and the fact that the distance between them is so large.

B. Ranchers

There are no group ranches within the study area but only individual ranches, most of which are not officially registered. This makes it difficult to keep up to date the number of existing ranches especially on sub-location level. Group ranches are enterprises in which a group of people jointly have a freehold title to land and aim to collectively maintain agreed stocking levels, to herd collectively but to maintain individual stock ownership.(Kajiado Atlas,1996).

The group ranching concept was first started in Kajiado district with the aim of increasing the productivity of pastoral lands through higher offtakes resulting in an improved earning capacity, pre-empting the emergence of landlessness among the pastoralists and attempting to stem environmental degradation resulting from overgrazing due to overstocking. These objectives were to be achieved between 1968 and 1982 during the Kenya Livestock Development Programme. The failure of this programme due to lack of individual benefits to its members, continued registration of new members and envy of the success by individual ranches necessitated the sub-division of the group ranches into individual ones. It is after these sub-divisions that land fragmentation and land sales continued at a very high rate.

In the whole district there were 52 group ranches in the year 2000. Most of these however have plans of being sub-divided into individual ranches. In this study, a total of 6 individual ranchers who were identified with the help of a research assistant from the area were administered with questionnaires. The major limitation to accessing them was the long distances between any two ranches. In addition to the random sampling that was done previously, snowballing method was employed to determine the location of the next ranch from the previous one.

C. Stakeholders

Apart from the Maasai community who are a major stakeholder in wildlife management and conservation, a list of other wildlife management stakeholders was got from the internet. This had a total of 19 stakeholders. Apart from the individual landowners and the ranchers, a total of 5 other stakeholders were interviewed. These were: Kenya Wildlife Service (KWS), Nairobi National Park, Youth for Conservation, Wildlife Clubs of Kenya and Fund for Endangered Wildlife. Within the KWS, an oral interview was conducted with the Community Wildlife Officer in charge of Southern Nairobi, which includes the area of study. Questionnaires were administered to an assistant Warden of the NNP, a board member of the 'Friends of Nairobi National Park' (FoNNaP), the Director of 'Youth for Conservation', Director of 'Wildlife Clubs of Kenya' and the Education Officer of the 'African Fund for Endangered Wildlife' at Giraffe Centre situated in Karen estate in Nairobi. All these gave important information on wildlife in the NNP and their relationship with the community they interact with as well as the need to conserve the KGCA for the animals.

3.4 Data Collection

A. Primary data: This is raw data or data that was directly collected from the area of study by the researcher and her assistants. This was obtained through the use of:

(a) Questionnaires: These were the major instruments that were used in data collection. They were administered to households, ranch owners and stakeholders of different organizations and places. A total of 86 questionnaires were administered to households from the three clusters chosen in the area. These consisted of both open-ended and closed-ended questions. The interviewer either posed the questions to the respondent, who answered them as the interviewer filled the questionnaire or the respondent chose to fill in the questionnaire for him/her self asking for clarifications here and there. Six ranchers were also served with questionnaires which they filled as discussions went on concerning the questions and their general view of the state of the human-wildlife conflict in their area. Questionnaires were also used to gather information from 5 other stakeholders who included KWS, Friends of NNP (FoNNaP), Wildlife Clubs of Kenya, Giraffe Centre and Youth for Conservation. Hence, a total of 97 questionnaires were used to collect the data.

(b) Observation Reports: Notes were taken down on the general outlook of the three sampled areas by the researcher and her assistants. These are summarized as follows:

- Maasai Lodge/ Kir-kau area: This is the area that borders the Mbagathi river along the National park frontage. There are congested permanent human settlements since the general plot size ranges from ¼ acre to 20 acres per person. There are well fenced homesteads most of which are either of barbed

wire or concrete. There is also the development of all-weather roads in this area which necessitate the movement of more people to this area because of ease accessibility. The sale of plots is on the increase from the number of signposts that are seen along the roads.

- Kitengela area: This is the area next to Kitengela township and its is also growing fast due to the spillover effect from the growing Nairobi city. More permanent buildings are coming up in this area either for residential houses or individuals who have secured themselves plots in the area. The buildings are not very much scattered and not so congested as in an urban area. The expansion of Kitengela town and the good means of communication in the area has opened up the area for human settlement.

- Isinya-Kisaju area: This is found at the tip of the Conservation area. There are scattered but permanent human settlements. Plots sizes in this area range from 20 acres and above. Cattle rearing is the major land use here. Large herds of cattle are reared in the expansive open lands and wild animals are often seen grazing in these expanse areas.

(c) Photographs: Some information was captured in form of photographs. These included pictures of wild animals, buildings being constructed, different fencing

around homesteads, squatter settlements, road constructions, signposts of plots for sale, agriculture and the general terrain of the area.

(d) Focus Group Discussions: This was done in the Chief's office in Kitengela town and included the researcher, her 2 research assistants, the sub-chief of the area and four other people from the area of study. The main aim of this discussion was to gather the general trend of things in the location from an administrator's point of view. From this discussion, it was noted that, there was need for KWS to interact more with the locals in dealing with the human-wildlife conflict issue because these two are the main or legal stakeholders in solving the conflict.

B. Secondary data: This is information that already exists in written documents, either published or unpublished. The relevant data for this research was obtained from the following secondary sources:

- Books (literature review) from libraries within and without the University of Nairobi.
- Publications i.e. from KWS offices, Newspapers and journals.
- Government policy papers i.e. the Wildlife Act,
- The Internet
- Dissertations and theses
- Maps.

3.5 Data Processing, Analysis and Presentation

To process, analyse and present this data that was collected from the field of study, various statistical tools have been used. Sorting of the questionnaires and perusing through them was necessary for easy analysis. Data coding and entry was carefully done so as to enable specific analyses of the data to be done. This was done using the Statistical Package for Social Scientists (SPSS) computer package. In addition, tables, charts, figures, maps and graphs were used for illustration and presentation purposes. These tools make it easier for specific summary statistics to be obtained and presented easily.

3.6 Limitations of data collection

- **Time and money:** There were no enough funds to carry out a more intensive and extensive research, as would have been the case. In addition, the research was done amidst a tight schedule of classwork. Most of the household heads that were intended for interviews also went out to livestock businesses during the day when the study was being undertaken.

- **Poor terrain**: The rugged landscape hindered faster movement in the area hindering the achievement of the daily interview targets.

- **Language barrier**: A good number of old people who were necessary for their experienced information were not able to speak in English or Kiswahili.

3.7 Solutions to data collection limitations

- The researcher employed two research assistants to enable a wide coverage of the study area. This saved on the time that the researcher would have taken alone.

- The number of days for fieldwork was also extended so that the expected sample would be covered as planned.

- Knowledge about market days was also sought for so that other days apart from market days were utilised for household surveys.

- The researcher incorporated a Form Four-leaver Maasai student into the research team to cater for the language problem and to familiarize the researchers to the respondents. This solved the language problem.

CHAPTER 4

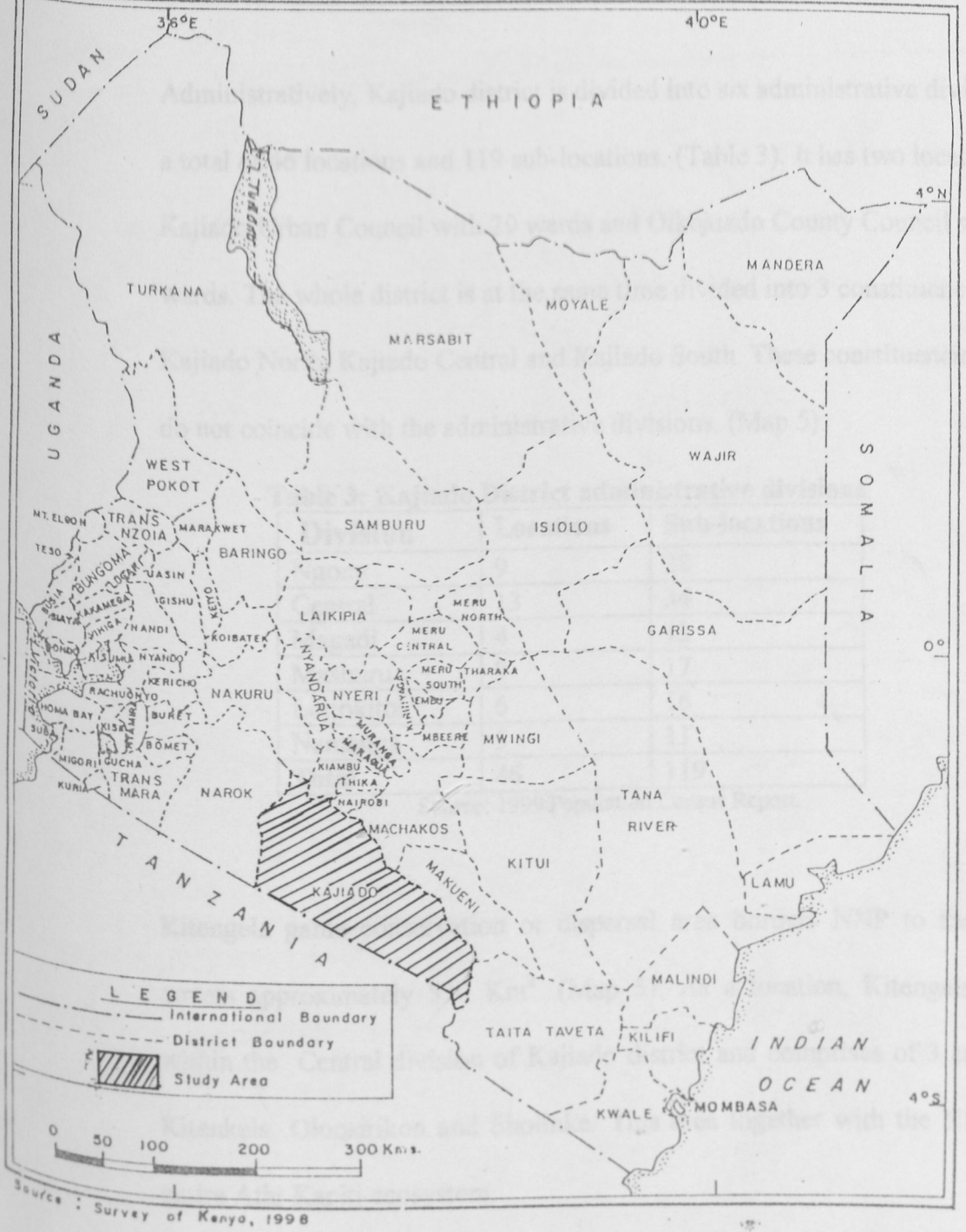
HUMAN-WILDLIFE CONFLICTS IN KITENGELA GAME CONSERVATION AREA

This chapter presents the background information of Kajiado district in general and Kitengela Game Conservation Area in particular. This information relates to the physical, socio-economic and demographic characteristics of the area and its people as they influence the conservation of wildlife and the human-wildlife conflict that is prevalent especially in the study area. The human-wildlife conflict situation in the area and the supporting evidence from the field study will also be presented in this chapter.

4.1 Location and size

Kajiado district is one of the 17 districts in the Rift Valley province of Kenya. It is located in the South-western part of the province and covers an approximate area of 21,902 Km^2. It is bordered by the Republic of Tanzania to the South-West, Taita Taveta district to the South-East, Kiambu district to the North, Machakos and Makueni districts to the East, Nairobi city to the North-East and Narok district to the West. (Map 4). It is specifically situated between longitudes $36^0 5'$ and $37^0 5'$ East, and latitudes $1^0 0'$ and $3^0 0'$ South.

MAP 4: KAJIADO DISTRICT IN KENYA



Source : Survey of Kenya, 1998

Administratively, Kajiado district is divided into six administrative divisions with a total of 46 locations and 119 sub-locations. (Table 3). It has two local authorities: Kajiado Urban Council with 29 wards and Olkejuado County Council which has 6 wards. The whole district is at the same time divided into 3 constituencies i.e. Kajiado North, Kajiado Central and Kajiado South. These constituencies however do not coincide with the administrative divisions. (Map 5).

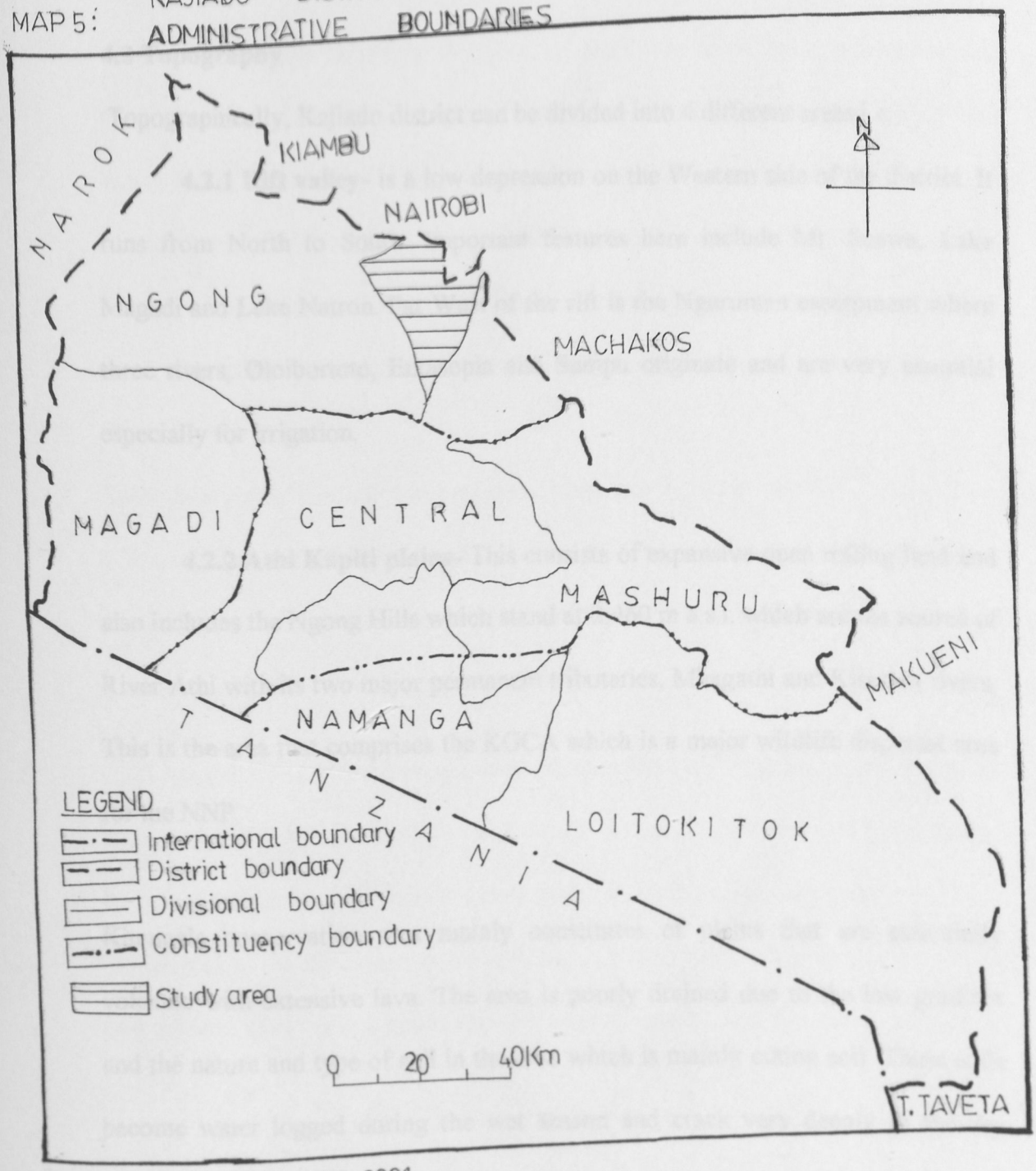
Table 3: Kajiado District administrative divisions

Division	Locations	Sub-locations
Ngong	9	28
Central	13	34
Magadi	4	13
Mashuru	9	17
Loitokitok	6	16
Namanga	5	11
Total	**46**	**119**

Source: 1999 Population Census Report.

Kitengela game conservation or dispersal area borders NNP to the South and covers approximately 530 Km^2. (Map 5). As a location, Kitengela is situated within the Central division of Kajiado district and comprises of 3 sub-locations: Kitenkela, Oloosirikon and Sholinke. This area together with the NNP form the entire Athi Kapiti ecosystem.

MAP 5: KAJIADO DISTRICT ADMINISTRATIVE BOUNDARIES



Source: D.D.P 1997–2001

4.2 Topography

Topographically, Kajiado district can be divided into 4 different areas i.e.

4.2.1 Rift valley- is a low depression on the Western side of the district. It runs from North to South. Important features here include Mt. Suswa, Lake Magadi and Lake Natron. Far West of the rift is the Nguruman escarpment where three rivers, Oloibortoto, Entasopia and Sampu originate and are very essential especially for irrigation.

4.2.2 Athi Kapiti plains- This consists of expansive open rolling land and also includes the Ngong Hills which stand at 2,460 m a.s.l. which are the source of River Athi with its two major permanent tributaries, Mbagathi and Kiserian rivers. This is the area that comprises the KGCA which is a major wildlife dispersal area for the NNP.

Kitengela conservation area mainly constitutes of plains that are essentially volcanic with extensive lava. The area is poorly drained due to the low gradient and the nature and type of soil in the area which is mainly cotton soil. These soils become water logged during the wet season and crack very deeply in the dry season.

The drainage pattern is low with small and discontinuous channels. The area is made up of tributaries and sub-tributaries to the Athi river. The Mbagathi river to

the North forms the boundary along the southern part of the NNP. The Kitengela river drains the central and northern parts of the area. The rivers cross the escarpments and erode back their edges to form deep rocky gorges that often contain perennial pools of water for wildlife and livestock in the adjacent areas. These however dry up during the dry season forcing people to migrate to other areas where they can get water for their livestock.

There is a gently undulating open grass plain sloping from the West to the East. The south and east of this plain give way to different rock and soil types with some low hills supporting a closed acacia and cammiphore bush vegetation.

4.2.3 Central broken ground- It comprises a 20-70 Km wide stretch of land from the North-Eastern boarder across the district to the South-West. Permanent water sources drain the area while at the same time many dry river beds are sources of the sand used in the building and construction industry in the city of Nairobi and other urban centers in the larger Nairobi and the entire district of Kajiado.

4.2.4 Amboseli plains- These are gently undulating plains with deep reddish brown clay loams and flat sedimentary plains with poorly drained cotton soils.

Generally speaking therefore, the topography of Kajiado district is characterized by plains and occasional volcanic hills and valleys. Altitude ranges from about 500 m above sea level on the floor of the Rift Valley near Lake Magadi to 2,500 m above sea level on the foot slopes of Mt. Kilimanjaro. It has an elevation of 1500m a.s.l.

4.3 Climate

Omoke (1998), notes that, the climate of any region is a function of an interplay of factors such as altitude, latitude, character of the prevailing winds, proximity to the sea or any sizeable water body and topography. The vegetation cover and pressure belts are equally significant. Kajiado district generally experiences a tropical highland climate. There are hardly any pronounced climatical variations within the district although minor variations are bound to occur at local or micro-levels.

4.3.1 Rainfall

Rainfall in the entire district can be generally described as bimodal. The long rains fall between March and May while the short rains fall between October and December. Three distinct types of seasonal rainfall patterns exist in Kajiado District:

(i) The first one is centered around Ngong hills and has the heaviest rainfalls in April and May. This type of rainfall is typical of the whole Southern Aberdare ranges.

(ii) The second type is the one occurring around Chyulu hills and has the heaviest rainfalls in November and December. This is characteristic of the whole North-Western part of the Tsavo ecosystem.

(iii) The third type is found throughout the rangeland areas of Kajiado. This has a small peak in December and a single large peak in April.

Four seasons are distinguished in each type of the patterns above:

- 'Short rains' in November and December
- An intermediate period in January to march
- 'Long rains' in April and May
- Dry season between June and October.

Annual rainfall in the district is strongly influenced by altitude. The area with the highest rainfall is Loitokitok (about 1250 mm per annum) which equally has the highest elevation while Magadi (about 500mm per annum) has the lowest rainfall and corresponds with the lowest relief. Heavy rains occur around Ngong hills, Chyulu hills, Nguruman Escarpment and the slopes of Mt. Kilimanjaro in Loitokitok. In KGCA, rainfall is low and irregular in time and distribution. The average annual rainfall for the area ranges between 500-600 mm.

4.3.2 Temperature

Temperatures in the district also vary with the altitude and the rainfall seasons. These range from a mean maximum of 30°c around Lake Magadi to a mean minimum of 16°c on the slopes of Mt. Kilimanjaro and Ngong hills. The coldest months are July and August while the hottest months are between November to April throughout the district.

4.4 Soils

Three broad soil categories are distinguished in the entire district:

4.4.1 Quaternary volcanic soils: These are found in the Rift Valley floor around Loitokitok and Sultan Hamud. These are rich soils and are found in areas where there is adequate rainfall and so are suitable for a variety of agricultural crops. Food crops such as beans, maize, irish potatoes and cash crops like coffee, wheat and cotton as well as horticultural crops are abundant in these areas.

4.4.2 Basement rocks: These cover the greater part of Kajiado district. They arise from different cycles of erosion and vary from dark red to reddish brown sandy clay soils. Alluvial soils are also found along the river valleys and some parts of the plains. Generally these soils are of low fertility. Their high limestone content makes them very poor in water retention and storage of moisture. This type is provides the essential salt licks especially to both wildlife and domestic animals. Hence, areas with this type of soil are not easily parted with

by local people and are major points of resource competition. The Amboseli region is dominant with this type of soil.

4.4.3 Pleistocene soils. These comprise of pleistocene sediments which are found in the inland drainage lakes around Lake Magadi, lake Natron and Lake Amboseli. They are developed from sediments washed down from the mountain slopes of Mt. Kilimanjaro, Chyulu hills and the Eastern slopes of the Rift Valley escarpment. This type is found in Loitokitok and Amboseli areas, Northern part of Kajiado and Ngong hills, and the Athi Kapiti plains.

4.5 Vegetation

Altitude, soil type and extent of human occupation and utilization of the land mainly determine the vegetation of Kajiado district. The main vegetation types are wooded grassland, open grassland, semi-desert bush land and scrub. In lower altitudes, vegetation is scarce but increases with altitude. Ground cover throughout the district varies seasonally with rainfall and grazing intensity. Hence, during the rainy season, most of the district has enough grazing areas but during the dry season, higher areas remain with forage. This differentials necessitate the seasonal migration of animals to the lower open grassland areas. A large portion of the district consists of semi-desert type. Dominant plant species are Acacia trees especially the Acacia Drepanolobium and Themeda Triandra grass species. The Rift Valley floor is covered by stunted thorn bushes and small patches of grass.

4.6 Population

The population of Kajiado district has been increasing over time. It has hence experienced high growth rates especially between census years. For instance, the total human population rose from 85,903 persons in 1969 to 149,005 persons in 1979. This was a tremendous 76% increase with an intercensal growth rate of 5.66%. This high growth rate can be attributed to in-migration and a slight increase in fertility levels. During the 1989 and 1999 population censuses, the population of Kajiado district had risen to 258,659 and 406,054 persons respectively. In addition, the composition of this population has greatly changed from being majorly Maasai to including other tribes that have migrated to this area. This has some impact on the human-wildlife conflict in the district and specifically in the study area.

Table 4: Kajiado district population composition.

Tribe/Year	1969	1979	1989
Maasai	68.6%	62.8%	56.6%
Kikuyu	18.9%	22.6%	23.8%
Kamba	5.0%	5.9%	8.02%
Luo	1.9%	2.1%	3.13%
Luhya	1.4%	1.5%	2.09%
Others	4.2%	5.1%	6.45%

Source: Kajiado district atlas, 1990

The distribution of this population is influenced by the availability of water as settlements are concentrated along water points. Others are located near urban and rural trading centres as well as along roads. The average population density in the entire district is estimated at 19 persons per square kilometer. (1999 Population

Census report). This depends mainly on the land potential and climate in these areas. The highest densities are found in Ngong division (Table 5), with places like Ngong town, Kitengela, Bulbul, Ongata Rongai and Kiserian town having high concentrations due to their proximity to Nairobi and availability of economic opportunities in Kitengela due to location of EPZ industries. The lowest densities are in Magadi division mainly because of the dry weather and shortage of water.

The pastoral Maasai were the initial inhabitants of the Kitengela area for quite a long time until there was need for more land for the ever-growing Kenyan population. Hence, emigrants from neighbouring areas began to settle in the area during the last twenty years. In 1969, the whole of the Athi-Kaputei ecosystem had a population of approximately 23,490 people with a population density of 26 persons per square kilometer. In 1988, this population had increased to approximately 60,000 people with a population density of 33 persons per square kilometer. This trend has continued in this area which is currently characterized by different communities with diverse cultural backgrounds intermingling in search for land to stay and farm. This population change has had an impact on the wildlife in this area.

Table 5: Kajiado district population distribution

Division	Area (Km^2)	Male	Female	Total	Density (PP/km^2)
Ngong	3698.1	76779	72992	149,771	41
Magadi	2640.3	10326	9786	20,112	8
Mashuru	2994.2	17882	17784	35,666	12
Central	3976.0	35813	33589	69,402	17
Namanga	2238.0	17806	17867	35,673	16
Loitokitok	6356.3	47747	47683	95,430	15
Total	**21,902.9**	**206353**	**199701**	**406,054**	**Av. 19**

Source: Population census report, 1999.

4.7 Land use

Three major land use categories can be identified in the district. These are extensive pastoralism, crop cultivation and wildlife conservation/tourism. These can be further elaborated as follows:

4.7.1 Extensive pastoralism

About 92% of the district (19,428) is rangelands which support the entire wildlife population, 95% of the district's livestock and 81% of the human population in the district. Pastoralism is therefore the most dominant occupation of the Maasai communities who dwell in the district with livestock keeping as their main activity for subsistence living. In the past, livestock production was centred on trans-humance pastoralism whereby forage resource utilization was dependent on water availability. This dictated the need for both wet and dry season grazing areas.

4.7.2 Crop cultivation

Rainfed arable farming is only possible in about 8% of the district and is practiced around the slopes of Ngong hills, upper parts of the Mt. Kilimanjaro footslopes, Chyulu hills, Sultan Hamud and Namanga area where rainfall is substantial. Crop cultivation is a recent phenomenon in most parts of the district given the fact that rainfall in most parts is unreliable and very limited. However due to the recent migrations to the area by communities that are basically agriculturalists, irrigated farming is done near homesteads and along river valleys. This has a significant impact on the human-wildlife conflict in the district in general.

4.7.3 Wildlife conservation

The ecology of Kajiado district favours game habitation and the sparse human settlement allows wildlife movements with little restrictions. Hence, wildlife is to be found almost all over the district. Dispersal zones for the wildlife in the district are dictated by the climate, and this is divided into three zones:

a) Dry seasonal grazing zones which are smaller and are inhabited in the dry season. These coincide with the protected areas.

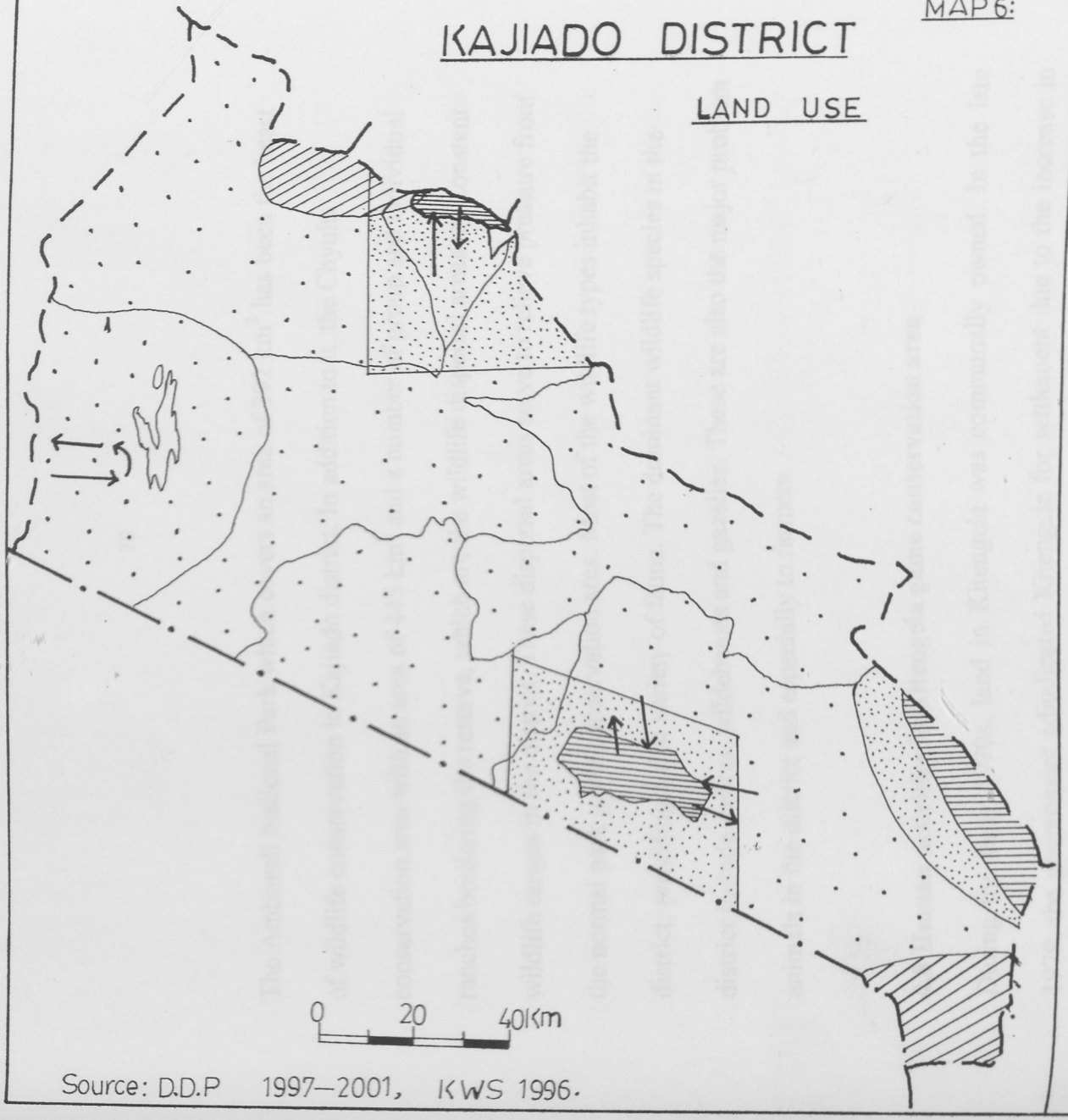
b) Wet season grazing which is very extensive in the district. These are the grassland plains that cover most parts of the district.

c) Arable potential areas that have been encroached by cultivation provided the reliable high forage resources. These are areas of reliable rainfall where crop cultivation is possible.

MAP 6:

KAJIADO DISTRICT

LAND USE



Source: D.D.P 1997–2001, KWS 1996.

LEGEND

- Wildlife conservation
- Crop cultivation
- Intense conflict areas
- Extensive pastoralism
- Wildlife movement

N

The Amboseli National Park which covers an area of 392 km^2 has been the heart of wildlife conservation in Kajiado district. In addition to it, the Chyulu conservation area with an area of 445 km^2 and a number of group and individual ranches bordering the reserve, which are the wildlife dispersal areas are constant wildlife ranges in the district. These dispersal areas serve to relieve pressure from the normal park game conservation area. Most of the wildlife types inhabit the district, providing a rich variety of fauna. The dominant wildlife species in the district include Zebras, wildebeests and gazelles. These are also the major problem animals in the district and especially to farmers.

4.8 Human activities in Kitengela game conservation area

During the early 1970s, land in Kitengela was communally owned. In the late 1979, the government adjudicated Kitengela for settlement due to the increase in population in Nairobi area. As a result there has been tremendous increase in human settlement driven by changes in lifestyle of the local Maasai, growing industrialization of the Athi river town and Kitengela township and increased demand for land for settlement in both Ongata Rongai to the North-West and Kitengela.

The Export Processing Zone (EPZ), in the South-East has also created tremendous growth in the town resulting in a huge influx of people looking for employment and business prospects. It has also brought great socio-economic changes in the

region and created speculation on land, driving its value up. The EPZ programme in Kenya was established in 1990 through the enactment of the EPZ Act (Cap 517, Laws of Kenya). The Act provided for the establishment of a parastatal body, the EPZ Authority, which oversees the running of EPZs in Kenya. An EPZ is an industrial area within a country set aside by the government in which investors can locate their manufacturing plants and enjoy a package of benefits. (Malii,1998:21). These benefits or incentives have defined the features of an EPZ. They EPZ is an industrial area within a country set aside by the government in which investors can locate their manufacturing plants and enjoy a package of benefits.(Malii,1998:21). include:

- Exports and imports are free of tariffs and other trade restraints.
- Provision of manufacturing infrastructure
- Offer of a fiscal and financial package like tax holidays, exemption from VAT and lower corporate taxes, and
- Simplification of government red tape and bureaucratic bottlenecks in regulation and administrative procedures entailled in the process of establishing and operating EPZ enterprises.

The main objective of the EPZs is the promotion and the expansion of exports in what can be described as ''growth by export expansion.''

In order to provide material for the building industry, stone quarrying and sand harvesting (Plates 1 and 2) along dry river valleys in Kitengela has become a lucrative business and landowners with suitable sites are either selling them or leasing them out. The construction of an all-weather road to the North-West has facilitated this activity and opened up the area to further development.

Today, human activities that were once unheard of in the area are a common phenomenon. These include: individual ranches, shambas, irrigated vegetable plots, quarrying, livestock keeping, trading, selling of foliage, hay and manure.

Livestock keeping has been and remains to be the main land use in the area. There is a change in the nomadic pastoralism system to more sedentary paddock grazing which necessitates fencing. There is also an increase in livestock density in the area because other developments are displacing the livestock grazing area thereby concentrating livestock in a small piece of land than before.

Crop growing as a form of land use in Kitengela is a recent phenomenon and is restricted to areas around homesteads of Maasai people and more so homes of emigrants. With the likelihood that cultivation will increase due to increase of emigrants, more fencing will also be seen in the area.

PLATE 1: STONE QUARRYING

PLATE 2: SAND HARVESTING

In addition, urban development has influenced land users in the area. The growth of Nairobi metropolitan city has forced people to establish residential premises in the Kitengela area. The development and growth in size of the Athi River town, Kajiado and Isinya centers also explain the change of land use in Kitengela and the surrounding areas. Many of the Maasai have sold pieces of land along the river valleys near or fringing the park which has isolated NNP from its dispersal area.

The net result of the above activities is that the space available for wildlife use is quickly diminishing. The encroachment of human settlement along the Mbagathi river frontage, parts of which constitute the exit and entry points for the wildlife migrants coupled with increased fencing and crop agriculture threaten to totally disrupt the migrations and migratory routes of wildlife species.

PLATE 3: ROAD DEVELOPMENT

PLATE 4: HUMAN SETTLEMENT ENCROACHMENT

PLATE 5: LAND SALES

4.9 Wildlife migratory routes

Initially, there were three main wildlife migratory routes from and into the NNP through KGCA. These are:

(a) **Athi-Kapiti migratory route corridor:** This area stretched from the South-East Kapiti plains, skirting to the South and entering the park roughly where the oil pipeline crosses the Athi river. (Omondi, 1989). This route has however been cut off due to the industrial development in the Athi River town. Migratory species of the wildlife, the Zebras and Wildebeests, were forced to retreat back and use the Sosian migratory route because it was nearer to the first one which they had been used to. Before they could however use this option, they wandered into homesteads and destroyed property as they tried to cross over to their dispersal area across the Kitengela river. At the same time they did not escape the hand of angry villagers who killed some of them and so their numbers decreased.

(b) **Sosian migratory route:** This is closely linked to the first one and is on the southern portion of the place called the Leopard cliff. This is an observation point on the boundary of the park and it derived its name from a place which was frequented by Leopards basking in the sun. The cliff provided a good point where Leopards could view their prey as they crossed over to the dispersal area and from this behaviour of Leopards, it got this name.

(c) **Maasai lodge migratory route:** It is South-West upstream from the Maasai lodge. Land here is however privately owned but wildlife is still present. It is adjacent to the Southern boundary of the NNP and it forms the main dispersal area for wildlife. Unfortunately, human settlements are appearing in this landscape since it is privately owned and the rapidly changing land use patterns emerging are conflicting with wildlife conservation. These changes include subsistence agriculture, quarrying, flower farming and fencing of individual plots. With this trend continuing, there is fear that this important wildlife migratory route will cease to exist.

4.10 The 'Sheep and Goat' Farm

Although land in Kitengela is privately owned, there are 2,912 acres of Government land which is commonly referred to as the 'Sheep and Goat' farm. The Ministry of Agriculture and Livestock owns the title to this land. This area was given to the government by the Maasai community for a 'sheep and goat' project. The land was to be returned back to the community after the completion of the project. Most of this area is still open and forms a dispersal area for wildlife movement to and from the NNP but it is currently under threat of alienation whereby at the moment 543 acres have been alienated for private ownership. This is divided as follows:

-250 acres was taken by Masai Impex Co. and 82 acres were sold to Mission Sacco which has further subdivided this land and advertised for sale into 1/4 acre plots. Imagine the implication this has on wildlife!

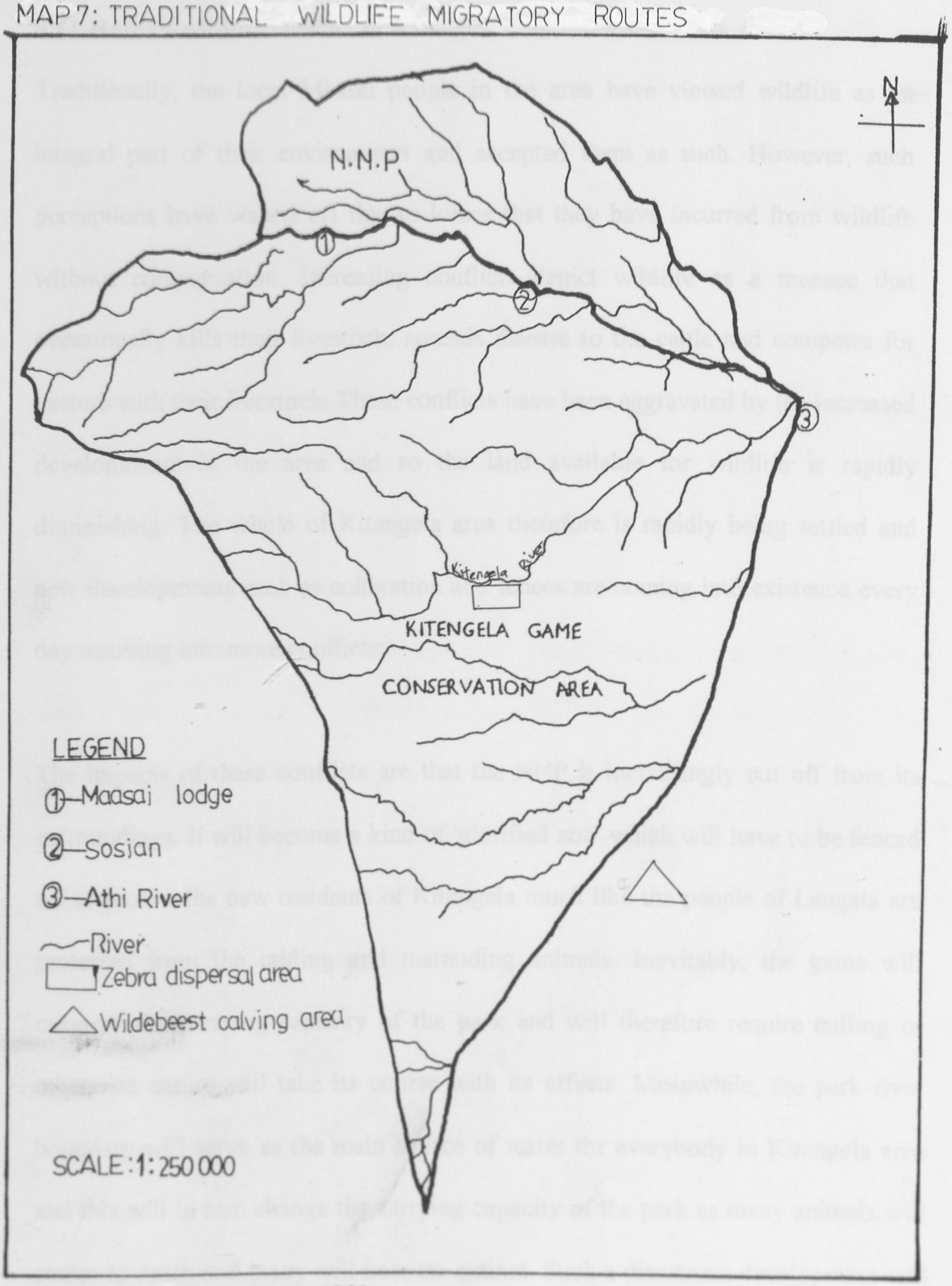
-In 1991-92, 125 acres was sold off to an individual who now engages in horticultural activities

-Some 168 acres was also hived off and given to about 100 Ministry of Agriculture officials.

-Other activities taking place here also include cutting down of trees and clearing of vegetation, squatter settlement encroachment and cattle grazing takes place unimpeded.

In total 543 acres of this government land has been alienated and so the remaining 2369 acres is also under the same threat if the present trend of alienation continues. Currently, a conflict has arisen over ownership of this land between the Maasai community and an alleged group that claims to have bought it. The question that remains unanswered is this, 'If the government cannot spearhead the conservation of wildlife migratory routes, is it possible to convince landowners in this areas to do the same?' As this seems impossible, our wildlife is prone to a great danger of extinction in the long run.

MAP 7: TRADITIONAL WILDLIFE MIGRATORY ROUTES



Source: Survey of Kenya, 1998.

4.11 Human-wildlife conflict in Kitengela Game Conservation Area

Traditionally, the local Maasai people in the area have viewed wildlife as an integral part of their environment and accepted them as such. However, such perceptions have waned off due to losses that they have incurred from wildlife without compensation. Increasing conflicts depict wildlife as a menace that occasionally kills their livestock, spreads disease to the cattle and competes for pasture with their livestock. These conflicts have been aggravated by the increased developments in the area and so the land available for wildlife is rapidly diminishing. The whole of Kitengela area therefore is rapidly being settled and new developments such as cultivation and fences are coming into existence every day resulting into more conflicts.

The impacts of these conflicts are that the NNP is increasingly cut off from its surroundings. It will become a kind of 'glorified zoo' which will have to be fenced off to protect the new residents of Kitengela much like the people of Langata are protected from the raiding and marauding animals. Inevitably, the game will outgrow the carrying capacity of the park and will therefore require culling or otherwise nature will take its course with its effects. Meanwhile, the park river boundary will serve as the main source of water for everybody in Kitengela area and this will in turn change the carrying capacity of the park as many animals will starve to death and many will become extinct. Such a disastrous development will

mean the loss of one of Kenya's most renown and spectacular wildlife assets, the NNP.

4.12 Data analysis

A combination of socio-economic and demographic factors of the local people, directly or indirectly influences the peoples' attitudes and perception towards human-wildlife conflict. These factors include ethnicity, age, education or literacy levels, occupation and land ownership systems.

64% of the respondents were men while 36% were female. Some women feared responding in the absence of their husbands. This shows that culture influences the way a person reacts to a certain phenomenon. 54% of these respondents cited Kajiado District as their district of birth while the rest, 46% were migrants. Some of the famous districts of origin for these migrants and their representations were as follows:

Table 6: Respondents' district of birth

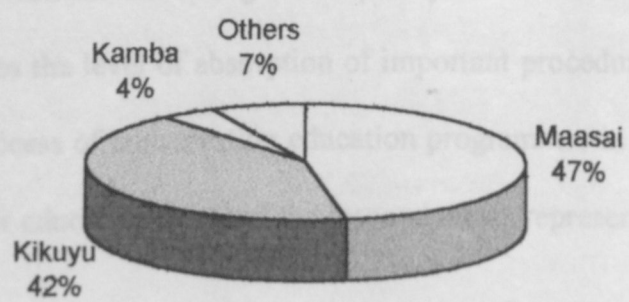
District	**%**
Kajiado	54
Kiambu	18
Makueni	4
Nyeri	4
Nyandarua	4
Others	16
Total	**100**

Source: Field survey, 2002

Majority of the respondents were Maasai (56%) and 44% were non-Maasai. Comparing this non-maasai percentage with that of the 1989 non-Maasai population census report of 43.3%, there is a remarkable increase. This indicates a possible increase of immigrants into the area. Majority of these immigrants have an agricultural background and move out of pressurelised areas for more spacious areas for cultivation. Over the last 20 years, people from different parts of the country have moved and settled in Kitengela.

Tribe composition of the respondents is shown in the figure below. From it, the Maasai population which is mainly pastoral is being replaced by other tribes which are mainly agriculturalists. This has a significant influence on peoples' attitudes to wildlife in this area.

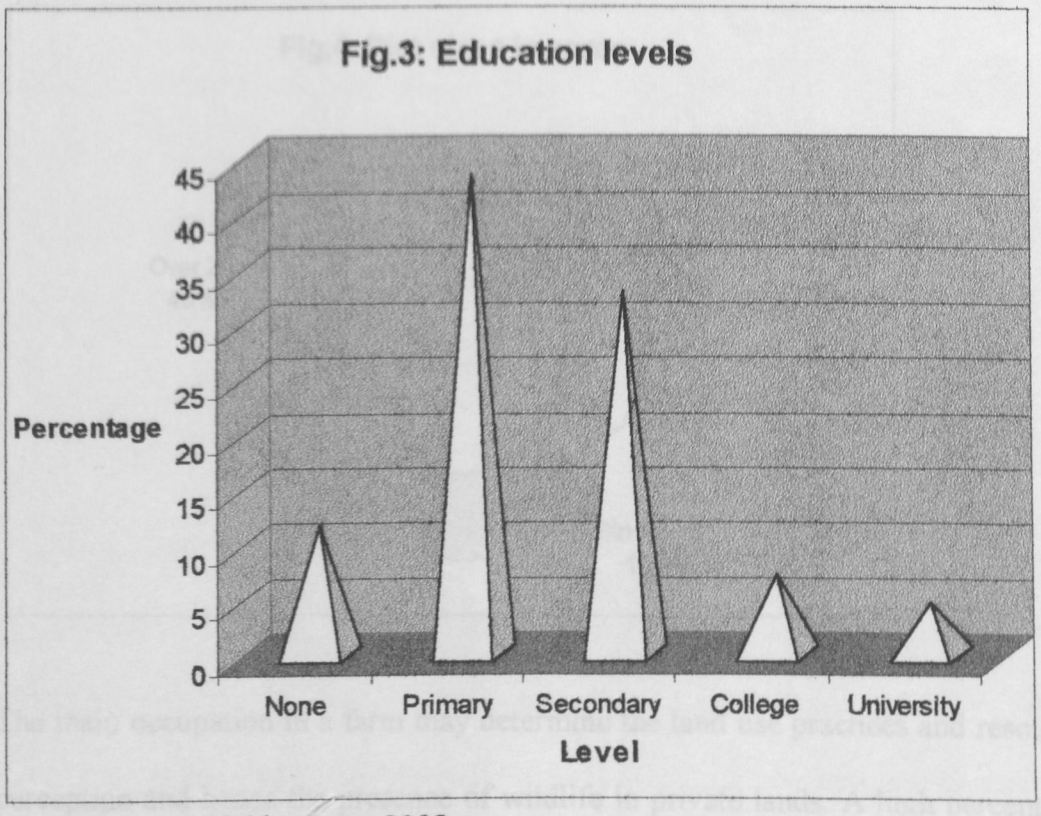
Fig.2: Tribe composition



Source: Field survey, 2002.

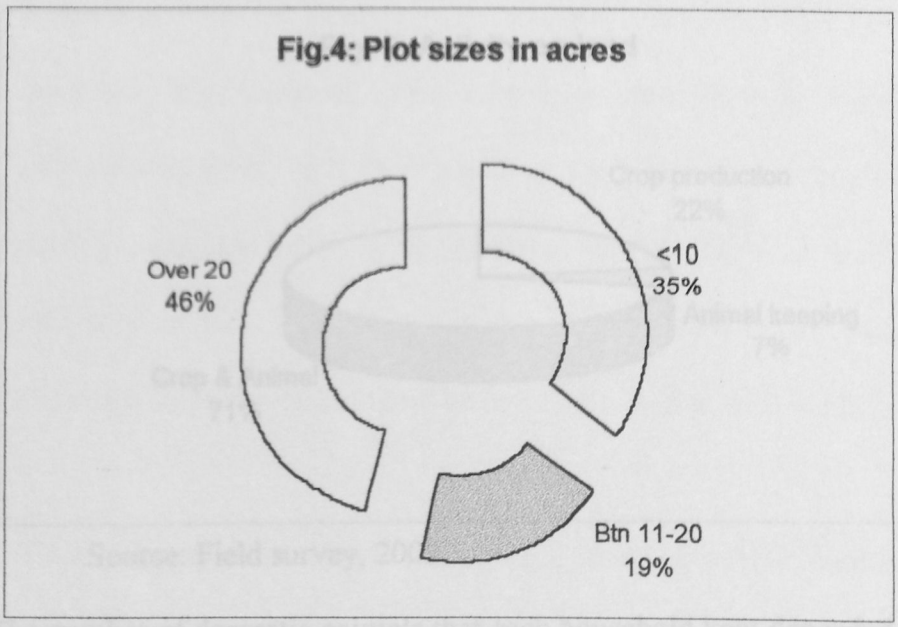
When these people migrate, they do so along with their cultural and economic backgrounds. Majority of these migrants are agriculturalists whose values do not tolerate wildlife. This influences greatly the perceptions to and responses to human-wildlife relations. For instance, 82.4% of the migrants said that their main reason for migration to KGCA was to acquire land for both settlement and farming. This is however different from the Maasai way of living for many years now. Maasai's have been pastoralists who keep on migrating with their livestock depending on the seasonal climatic changes with their environment. Hence, these two diverse cultures are incompatible and the influence of the migrants to Kajiado district and KGCA in particular has affected the Maasai culture whereby most Maasai have today become semi-sedentary and practice some farming.

The level of education of the respondents also has some bearing on the success of solving the conflict in the area. The educational background of an individual may influence his/her knowledge and perception of issues and resources. It also determines the level of absorption of important procedures to be followed as well as the success of conservation education programmes in an area. In Kitengela, the literacy or education levels of the respondents is represented as below:

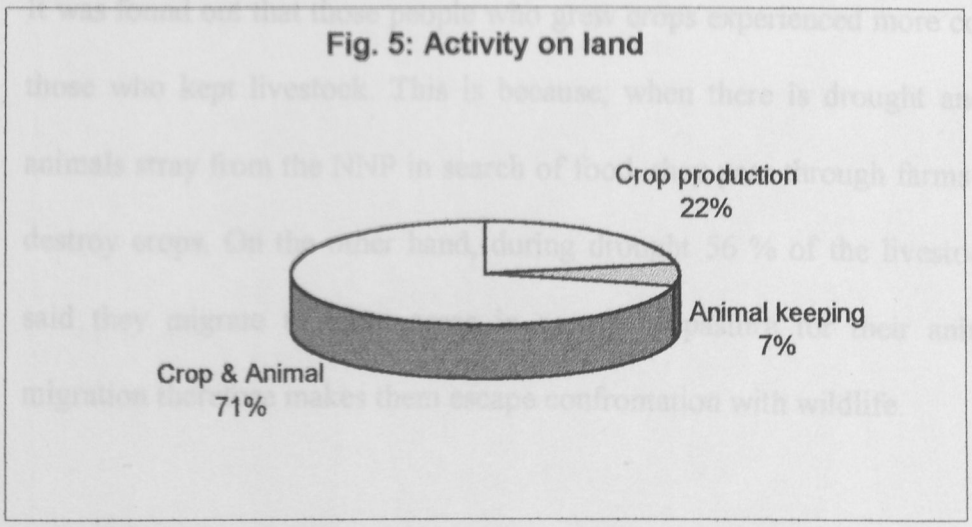


Source: Field survey, 2002.

98% of the respondents had title deeds for the land they owned. This means that they are permanent residents in the area and so have a right to their land. 52% of these however said they had bought their land from the Maasai. This can be seen also from the size of the land they own as shown in the figure below. A great majority (35.3%) own less than 10 acres of land per household due to the sub-divisions of land that are going on in the entire district.



The main occupation in a farm may determine the land use practices and resource perception and hence the presence of wildlife in private lands. A high percentage of households practice agriculture on their land. This involves rearing of livestock or growing of crops or both. 7% said they rear only animals while 22% grew only crops. A greater majority of 71 % however kept livestock and at the same time grew crops.



Source: Field survey, 2002.

The number of domestic animals that each household kept depended on the size of the land it owned. These animals included cattle, sheep, goats, chicken and dogs. Cattle were the most owned followed by goats and sheep respectively. Dogs were equally important as they were used to scare away the wild animals at night and more so raised alarm at the sight of these wild animals. In the study area, 22.9% of the respondents had no livestock but grew crops while the rest 77.1% kept livestock. The distribution of the number of livestock and the percentage of the respondents who kept them is shown in the table below:

Table 7: Number of livestock kept

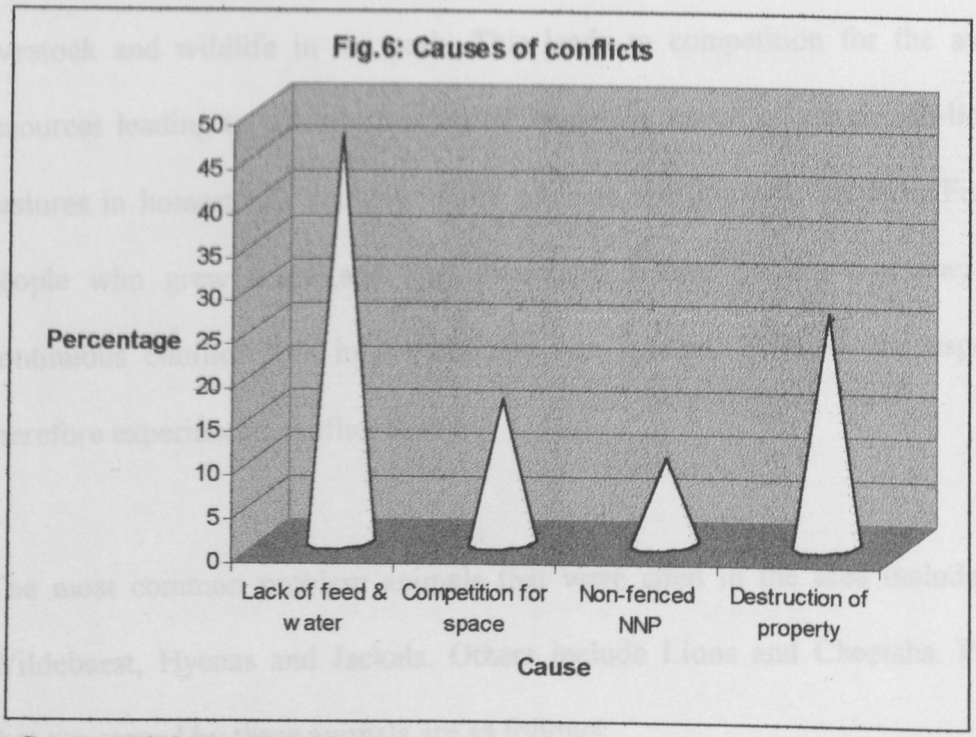
No. of animals	**Percentage(%)**
None	22.9
1-100	63.9
101-200	6
201-300	2.4
301-400	2.4
Over 400	2.4
Total	**100**

Source: Field survey, 2002.

It was found out that those people who grew crops experienced more conflict than those who kept livestock. This is because, when there is drought and the wild animals stray from the NNP in search of food, they pass through farms and hence destroy crops. On the other hand, during drought 56 % of the livestock keepers said they migrate to other areas in search of pasture for their animals. This migration therefore makes them escape confrontation with wildlife.

Almost all respondents have had a chance of seeing wild animals in this area. Only one said he hadn't. When asked whether there exists a human-wildlife conflict in the area, 96.6% respondent positively. The following causes with their distribution in the graph that follows, were said to be contributing to the existence of the human-wildlife conflict in the area.

- Lack of enough feed and water (46.8%)
- Competition for space (16.5%)
- Destruction of property (26.7%)
- Non-fenced NNP (10%)



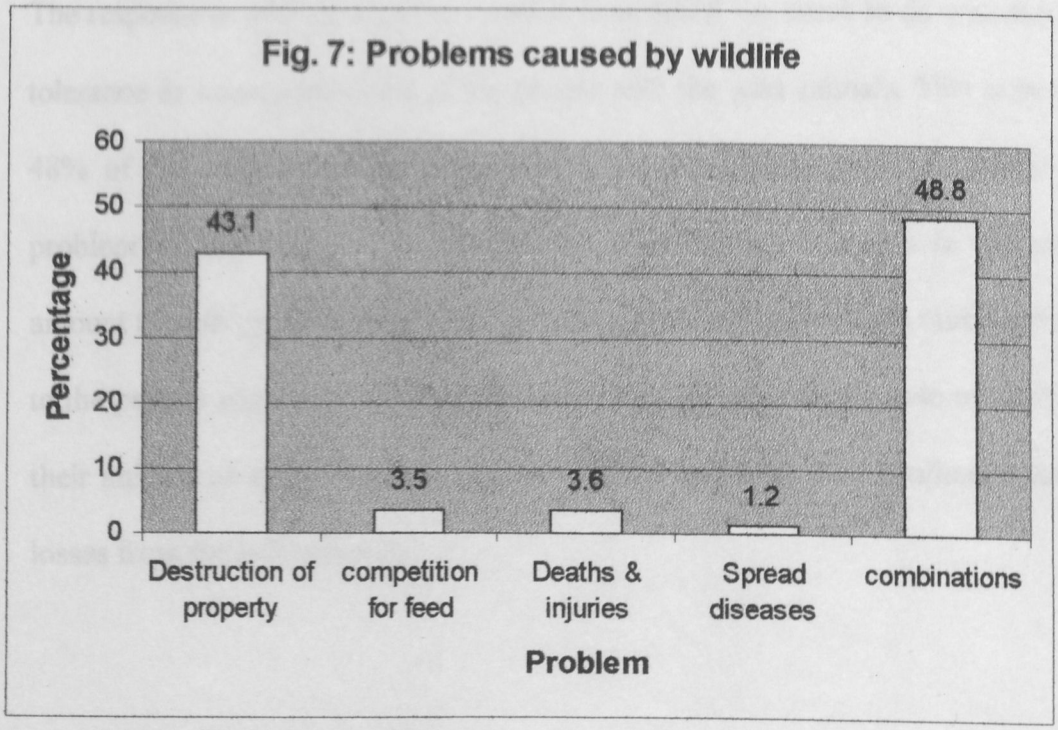
Source: Field survey, 2002.

Seasonal variations in the district also determine the season for migratory animals such as Wildebeests and Zebra. Long rains occur from March to May while short rains are from November to December. It is at this time when the herbivores move out of the park and at the same time when there are crops in the farms. In addition as the herbivores move out of the park, predators such as lion, hyena and leopard are left with little prey in the park. This motivates them to follow these ungulates to the dispersal area and in the process predate on livestock and cause injury to the people. In this connection, 10.8% of the respondents cited the rainy season as the time when conflict occurs. On the other hand, 41% cited the dry season which occurs between June and October as when they experience conflict with the

wildlife. This is the time when there is scarcity of food and water for both livestock and wildlife in the park. This leads to competition for the available resources leading to wildlife destroying fences in search of water, salt-licks and pastures in homesteads and eventually prey on the domestic animals. For those people who grew crops and kept livestock, it was evident that they had a continuous conflict both in the dry and wet seasons. 36% of the respondents therefore experienced conflict always.

The most common problem animals that were cited in the area include Zebra, Wildebeest, Hyenas and Jackals. Others include Lions and Cheetahs. Problems that are caused by these animals are as follows:

- Destruction of property i.e. crops, fences, water pipes etc
- Deaths and injuries
- Competition for pasture and water
- Spread of diseases to livestock



Source: Field survey, 2002.

The destruction of property and especially of crops was the main damage that was caused by these animals to the people. These were attributed to Zebras and Wildebeests. It was found out that, these problems were mostly common during the dry seasons (47%) and this occurred during the months of June-October and January-February. Deaths and injuries that are caused to the livestock especially by the predators like the lions however occur during the rain season. This is because, at this time is when there are bushes where the predators hide to catch their preys. This therefore practically means that the conflict exists throughout the year only that different problems are experienced at different times of the year.

The response to dealing with this conflict from KWS has much to do with the non-tolerance or non-co-existence of the people with the wild animals. This is because 48% of the respondents lamented that KWS did nothing when informed of a problem by the locals. A mere 24% said they do patrols which in themselves amount to nothing since their aim is to rescue the wild animals and take them back to the park to ensure their safety. The people's perception of the role of KWS and their attitude to wildlife is growing from bad to worse as they continue incurring losses from the wild animals.

CHAPTER FIVE

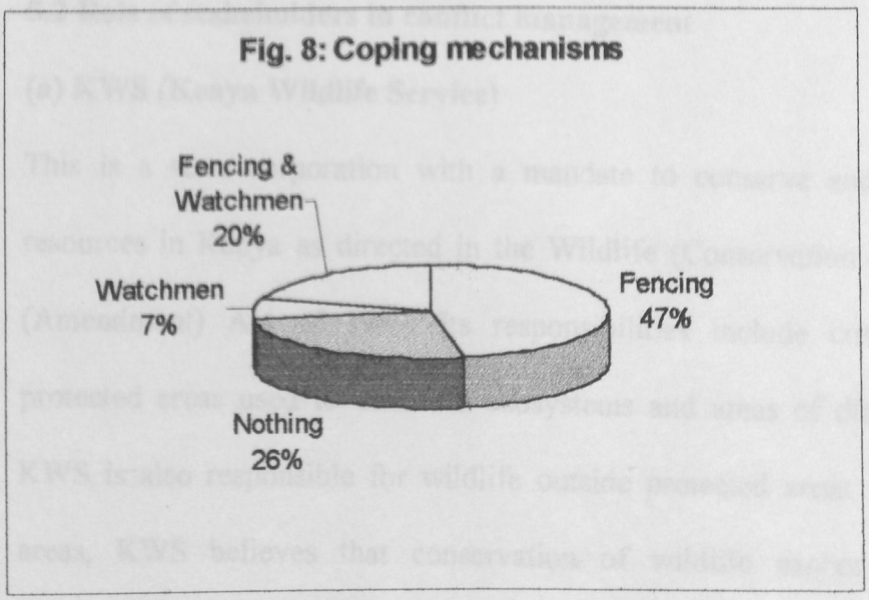
HUMAN-WILDLIFE CONFLICT MANAGEMENT IN KGCA

5.1 Conflict management

Human-wildlife conflict management is an exercise that involves more than merely those affected directly by the effects of conflict. This is because, the effects of the conflict are far reaching and affect many more people who are not in direct conflict or contact with the wildlife. In places that experience human-wildlife conflicts, many different ways and means have been used to try and minimise wildlife menaces and effects to people.

In Kitengela Game Conservation Area, the respondents use different mechanisms to minimise wildlife menaces or cope with the human-wildlife conflict. These coping mechanisms are represented figure 8 below.

Other actions that individuals and households took when their person or domestic animal was killed or injured, crops or property were destroyed included reporting to KWS or the chief, repairing the fences, chasing the wild animals away and sometimes killing them.



Source: Field survey, 2002.

As part of ways of solving the human-wildlife conflict in Kitengela Game Conservation Area, the respondents suggested different roles that the community groups, the local authorities, the Government and other NGOs should be engaged in. This is summarised in the table below:

Table 8: Suggested roles for different actors

Actor	Roles
Community Groups	• Combine efforts to chase the wild animals away • Help individuals in claiming benefits and compensations • Participate in policy making sessions and community education programmes
Local authority	• Forward people's claims to the government • Use wildlife benefits for community development • Provide social services
Government	• Compensation of victims • Provide enabling environment for co-existence of people and wildlife • Fence the NNP and return animals into the park
Private sector (NGOs, churches e.t.c)	• Fund community projects • Educate the people on conservation and legal matters • Community mobilization

5.2 Role of stakeholders in conflict management

(a) KWS (Kenya Wildlife Service)

This is a state corporation with a mandate to conserve and manage wildlife resources in Kenya as directed in the Wildlife (Conservation and Management) (Amendment) Act of 1989. Its responsibilities include custody of Kenya's protected areas used to conserve ecosystems and areas of distinct biodiversity. KWS is also responsible for wildlife outside protected areas. Outside protected areas, KWS believes that conservation of wildlife cannot be achieved by protecting animals and avoiding issues of peoples' needs and rights and their conflicts with wildlife.

In Kitengela conservation area, KWS has undertaken various projects to address the conflict. For instance, the Lion proof boma project done by KWS and Empakasi-Kitengela community as a strategy for reducing predators and in particular the lions from killing or injuring livestock. The goal of the project is to improve relationships between the local people and wildlife on their land and make the community to appreciate wildlife. The lion proof bomas are constructed in such a way as to prevent lions as the major predators to livestock from preying on the livestock especially at night.

According to the assistant warden of the NNP, other roles that KWS is involved in for responding to the conflict situation include:

- Constant patrols to control animal problems in the area by evacuating dangerous animals and returning them back to the back. This role had also supporting evidence from 24.1% of the household respondents who said that KWS only does patrols in their area when informed of conflict effects.

- Creating awareness through community based educational services on conservation. To effect this, KWS started the Community Wildlife Service (CWS) Department to run the Community Wildlife Programme. Its main objective is to ensure proper utilisation of wildlife outside protected areas for the benefit of the communities which tolerate the impact of the wildlife in their farms. The people are therefore educated and adviced on the best mechanisms that they can use to protect themselves from the damage that wild animals may cause. Other components of this programme include revenue sharing, wildlife utilisation, enterprise development and the problem animal management unit.

- Law enforcement. Being the custodian of Kenya wildlife, the Kenya Wildlife Service is mandated under the Wildlife (Conservation and Management) (Ammendment) Act of 1989 to "sue and be sued in its corporate name...." It ensures that the wildlife policy is not violated by any member and if so, it has the powers to prosecute the victims.

Major constraints that the service has faced in carrying out its duties in this area include, lack of conservation knowledge by the local people, financial constraints, communication barriers and few personnel. For instance, according to the former KWS director Mr. Nehemiah Rotich, KWS doesn't have the desired capacity to cope with the human-animal conflict and until the year 2000, KWS had not recruited any wardens in the country and were short of 500 wardens countrywide.(East African Standard, October 8, 2001).

(b) FoNNaP (Friends of Nairobi National Park)

FoNNap in collaboration with NNP started a land lease programme in April 2000 aimed at securing the Empakasi-Kitengela wildlife dispersal and migratory corridor. In this programme, landowners in this area are paid 300/= per acre per year in exchange for agreeing to a number of pro-wildlife measures. These measures include not fencing their rangeland, not planting crops and not developing the land in any way, although they are free to continue grazing their livestock as before. Payments are made in three annual installments which are timed to coincide with the need to pay school fees. At the time of this study (January 2002), 6,500 acres of land had been acquired through this programme.

From the field study done in the area, it was found out that the major hindrance to this programme is that, those migrants who have settled in this area with less that 10 acres of land will not economically benefit from this programme due to low

economies of scale and so will not agree to the terms of the contract. For example, most people with ¼ acre plots in the area automatically will not fit in the programme in the first place. This will therefore need extra money and land to evacuate this people to a different locality if at all they are willing.

In April 2001, FoNNaP again initiated a consolation scheme which was aimed at minimising tension between land owners and predators. A land owner is paid 2,500/= for loss of sheep or goat, 5,000/= and 15,000/= for loss of a donkey and cow respectively, so that he doesn't kill the predator. Up to the time when the research was done (January 2002) 500,000/= had been paid out. The major problem in this scheme is where a domestic animal is totally consumed by the wild animal and there is no evidence that the farmer can give as proof for compensation. In such a case, a genuine farmer who gets no compensation for his loss of domestic animal develops enmity with wildlife and will kill it the next time he sees it before he loses another animal. Other people may conspire to get compensation by uniting to cheat in witnessing for killing by a wild animal. This therefore poses problems to the scheme which are hard to solve.

These two projects seem to be very successful in this area but still some constraints are hindering its total success. These include, lack of awareness by the community on the importance of wildlife conservation, lack of a proper

management plan for the Kitengela area and a lot of duplication of researches whose recommendations are not implemented.

According to these two major stakeholders in the management of the human-wildlife conflict in Kitengela, land use trends in the area pose major challenges in the success of their programmes. These challenges include urbanization and industrialization especially in Athi River and Kitengela, quarrying activities in the area, land sub-divisions and permanent human settlements which result to fencing of plot and practising of crop farming.

Other possible ways of managing the existing conflict in Kitengela include community education and involvement in conservation, sharing of wildlife benefits with the community.

(c) African Fund for Endangered Wildlife (Giraffe Centre)

This is an organization whose main function in wildlife management is education and public information on conservation and environmental awareness. It sponsors local schools to carry out free ecology trips to appreciate wildlife and help in its conservation. In Kitengela, the organization funds conservation organizations that operate there. According to the Education Officer in the organization, the main causes of the human-wildlife conflict in Kitengela are competition for diminishing resources between people and wildlife, and the increasing human settlements

along wildlife corridors. Most people from the city are moving out to Kitengela and due to poverty, local landowners are selling land and in due course wildlife migratory corridors are blocked by human settlements. In so doing people come into contact with wildlife and conflict ensures.

In carrying out their effort of educating the public and sponsoring conservation groups in Kitengela, this organization faces a challenge from groups who have vested interests in the area opposing conservation measures. There is therefore need for change of attitude by these people if conservation is to succeed and the conflict minimised in the area.

Concerning the future of the NNP, the officer lamented of no future for it. Migratory animals return to the park in low numbers than they went out due to the killings that the local people do to them. Preserving the Kitengela dispersal area and ensuring the safety of the migratory animals through it is therefore ecologically very important because the park cannot exist as an island. This can only be achieved first by making the government policy very clear concerning wildlife in private areas and ensuring that the people involved in safeguarding these wild animals benefit from their efforts and tolerance to the wildlife menaces.

Other possible ways of reducing the conflict in this area include community involvement in conservation, direct financial benefits to the community and

improving the economy generally. NGOs and other stakeholders can get involved in activities such as purchasing land from owners for conservation practices, compensating local communities for losses incurred from wildlife and educating them the need to conserve wildlife and the environment in general. However, if the current trend continues in the area, the education officer said that there will be no single animal in the NNP in 20 years time and this has its own negative effect.

(d) Wildlife Clubs of Kenya (WCK)

This is a charitable, non-profit making organization, which was established in 1966. Its funding is in form of aid from individuals, the government and non-governmental institutions. Its major objectives are:

i) To create interest in and knowledge of wildlife, the environment and natural resources among the young people through conservation education.

ii) To sensitize the youth and the public at large about the value of natural resources.

iii) To develop a better understanding of wildlife conservation.

In Kitengela, the club has been able to impart knowledge about wildlife issues to the school-going youths. The youths are provided with the necessary education on the need to co-exist with the wildlife by highlighting the importance of wildlife socially and economically. According to the Education Officer of the club, wildlife

loaming into people's farms and killing or injuring both livestock and human beings is the major cause of the existing human-wildlife conflict in the area. Hence, if the people are educated on the best ways of minimising the effects of the conflict on them and on the importance of wildlife both to them and the country at large, then the conflict will be reduced to manageable levels.

(e) Youth for Conservation

This is an organisation that is mainly composed of youths who are interested in conserving the environment and wildlife in particular. The main function of this organisation is safeguarding the welfare of the wildlife. According to the Director, land development on areas that were initially migratory routes for wildlife and in this case Kitengela dispersal area, is the major cause of the human-wildlife conflicts in the area. In trying to safeguard the welfare of wildlife in NNP and its adjacent areas, Youth for Conservation is involved in community education services and desnaring of wildlife within the park. From a survey that was done by this organisation in 2001 in the Nairobi National Park, it was found out that an average of 26 wild animals are killed daily throughout the country through the setting of traps by poachers. This number will however be higher given that this was only for the animals that were found trapped in the parks and reserves.

Coupled with the deaths that occur to the wild animals during their migration and dispersal periods in private lands, the director said that the NNP has to be fenced

on its fourth boundary to secure the remaining animals in it. If this is not done, the possibility of the park having wild animals in the future is very minimal. Other possible ways that can be used to reduce or manage the human-wildlife conflict in Kitengela include the following:

- Conservation education to schools and the community at large,
- Promotion of sustainable alternatives for income generation to the community such as bee keeping, and
- Sharing some of the income generated in the park and the tour industry with the community in the form of development projects.

CHAPTER SIX

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The present study was set out to determine suitable ways of reducing the existing human-wildlife conflict in Kitengela Game Conservation Area. This was necessary so that the responsible policy makers and stakeholders in the area concerned will arrive at meaningful and sustainable management options of the conflict in the area. In so doing the safety of the crucial Nairobi National Park and the wildlife that it hosts will be granted for the benefit of the country and its people. This chapter will therefore outline a summary of the relevant research findings, conclusions and the necessary recommendations for the reduction of the human-wildlife conflict in the area under study. All these will be in regard with the objectives that the study set to achieve and the accompanying hypothesis.

The objectives of the study were as follows:

1. To find out the origin, types and causes of the human-wildlife conflict in Kitengela Game Conservation Area.
2. To find out the effects of the human-wildlife conflict in Kitengela Game Conservation Area.
3. To investigate the mechanisms used by the communities in the area and the wildlife department to cope with the human-wildlife conflict in Kitengela Game Conservation Area.

4. To suggest ways of reducing or managing the human-wildlife conflict in Kitengela Game Conservation Area.

The accompanying hypothesis for these objectives was:

Ho – Peoples' attitudes to wildlife does not significantly affect their co-existence with wildlife.

Hi – Alternative

6.2 Research Findings

(A) Origin, types and causes of human wildlife conflict.

a. Origin

The pace and frequency of the human-wildlife conflict in Kitengela Game Conservation Area has escalated over time. The cause of this conflict was first by the creation of the Nairobi National Park in 1945 which denied the Maasai people access to the resources within the park boundaries. As urbanization trends in the city of Nairobi continued to increase, small urban centres adjacent to the conservation area began to spring up. The indigenous Maasai residents in these areas began selling their land to the immigrants leading to subdivisions, which are not conducive for wildlife migrations that take place across the study area. Major findings here include:

(i) The Maasai population has continued to decrease over time while the population of other migrant tribes has had an increasing trend as shown below:

Table 9: Population composition in Kajiado district

	1969	1979	1989	2001
Maasai	68.6%	62.8%	56.6%	47%
Non-maasai	31.4%	37.2%	43.4%	53%

Source: Population census reports and field survey

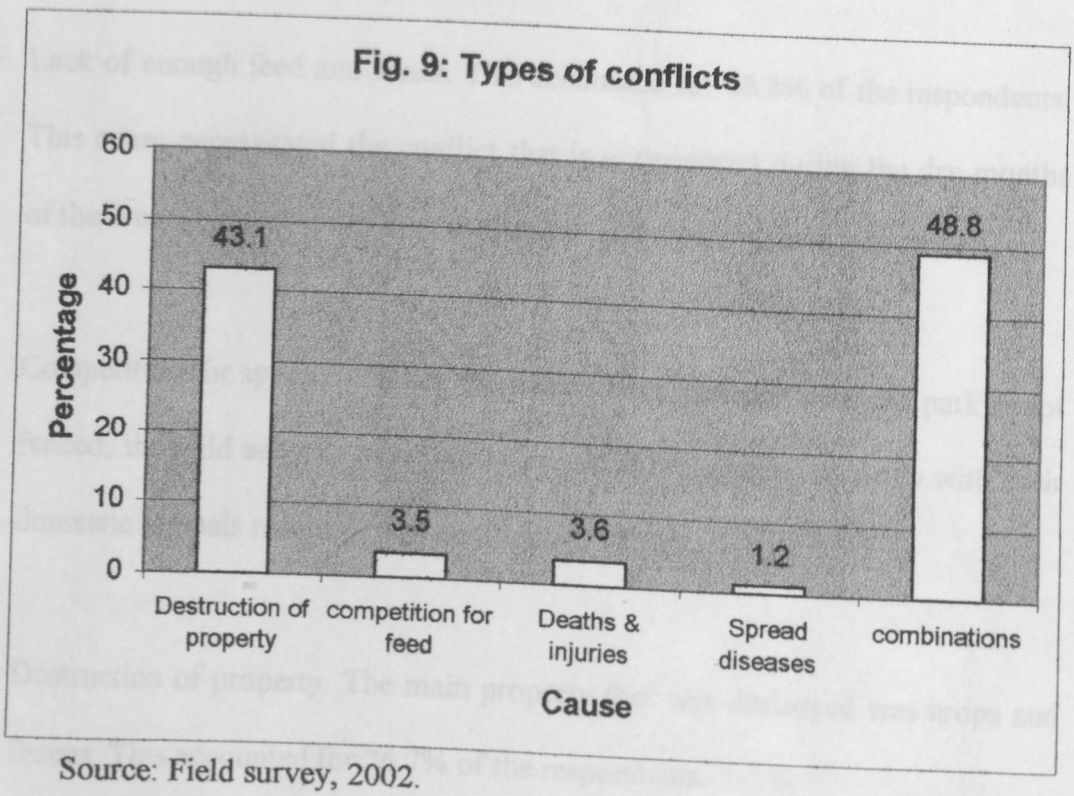
(ii) Kiambu district in Central Province was the main source of the immigrants into the area accounting for 17.6% of the respondents. Others were Nyeri (3.5%), Makueni (3.5%) and Murang'a (3.5%). A greater majority of the migrants however moved from one part of the district to the study area. A few others also came from other parts of the country.

(iii) In terms of ethnic composition, the Kikuyu constitute 42.2% of the total respondent population in Kitengela Conservation area.

(iii) The need to acquire land was the major pull factor for the immigrants into the area as this accounted for 60.8% of the reasons for migration into the area. Other reasons included, to settle and farm and to be near the work place.

b. Types of conflicts

The types of the human-wildlife conflict in Kitengela are the problems that the wild animals cause to the people. These are summarized in the graph below:



Source: Field survey, 2002.

From the above graph it is evident that destruction of property (Crops, fences, water pipes etc) is the single most common type of conflict in the area. This is because majorities of the respondents were small-scale owners of land who grew crops and fenced off their land for protection from wild animals.

c. Causes of conflicts

From the respondents' data, the main causes of the human-wildlife conflicts in Kitengela Game Conservation area can be summarized into four main causes as follows:

- Lack of enough feed and water. This accounted for 46.8% of the respondents. This cause necessitated the conflict that is experienced during the dry months of the area which are from June to October and from December to March.

- Competition for space. 16.5% of the respondents said that since the park is not fenced, the wild animals move to their land and compete for space with their domestic animals resulting into conflicts.

- Destruction of property. The main property that was destroyed was crops and fences. This accounted for 26.7% of the respondents.

- Human encroachment in the dispersal area. People who settle in the dispersal area hapharzadly destroy the ecological balance in the area and disturb wildlife migration habits. This accounted for 10% of the respondents.

(B) Effects of the human-wildlife conflicts

The effects of the human-wildlife conflict in this area have had adverse impacts to the people, the wildlife and the environment in general. These effects are also the

problems that the wildlife cause to people and what the people do to the wildlife to evade contact with them or avenge their anger on the losses inflicted by wildlife on them. These can be summarized as follows:

- Deaths and injuries, to both people and wildlife. Although the respondents interviewed did not fall victims of death from wildlife, they at least were aware of some deaths due to wildlife. Some of them were however once victims of wildlife injuries especially when they were guarding their property at night.

- Decrease in the number of wild animals in the NNP due to killings in the dispersal area. Two ranch owners specifically said that they used to see large heard of Zebras and Wildebeests some time back, which their children have not seen recently.

- Destruction of property. At least each respondent cited the destruction of property that has been caused by wildlife in one way or another.

- Spread of diseases to domestic animals. The respondents cited that the ticks that usually harbour on the Zebras transmit a deadly disease to their livestock and a number of them had lost cattle due to this infectious disease.

(C) Coping mechanisms

Fencing of plots and homesteads as well as employing watchmen were the two major ways that individual households and ranchers avoided wildlife menaces. This accounted for 47% of the respondents.

The wildlife department (KWS) on the other hand evacuated problem animals and returned them back to the park as a short term way of avoiding them being killed by the local people. They however return back to the dispersal area and continue causing problems to people. The cycle repeats itself again.

(D) Ways of reducing or managing the conflicts

Majority of the respondents (48.2%) said that, if the park were fenced on its fourth boundary and all wild animals in the dispersal area taken back to the park, then the human-wildlife conflict would be successfully managed.

Others said that, if the local people who bear the costs of the conflict will be compensated with tangible benefits, then they are willing to let the wild animals move freely in their land. Otherwise, the hostility will continue, wildlife populations will continue diminishing and finally the NNP will have no future.

6.3 Conclusions

It can be concluded that, migrations to KGCA over time have a significant effect on the use of this area as a dispersal area by wild animals from NNP. In addition, migration by communities who are agriculturalists has altered the initial 'animal-friendly attitude' of the Maasai thus creating an attitude whereby wild animals are seen as a danger to survival.

Land sales and sub-divisions in the area have resulted into many more people being accommodated in the dispersal area. Fencing of these individual plots and homesteads has completely blocked the once existing migratory routes for wild animals.

The coping mechanism adopted by individuals of fencing their land and employing watchmen to guard their property is not a sustainable way to conflict solution. This is because as long as the conditions for the movement of wild animals through this area are there, the conflict will as well continue.

6.4 Recommendations

After assessing the situation of the human-wildlife conflict in Kitengela Game Conservation Area and the ways which are used by the local community and the wildlife department to manage it, the following recommendations have been proposed as sustainable options for managing it.

(a) Concerning migrations of different cultural groups into the area, change of attitude to be animal-friendly should be cultivated in these immigrants. This can be achieved through education programmes to the people by the KWS and other stakeholders like 'Youth for Conservation' and FoNNaP. Taking advantage of the high literacy levels of the residents in this area, this programme will be successful.

(b) The review of policy, in particular, the Wildlife Act to make clear matters of compensation and ensure that the functions of the KWS are carried out accordingly. In addition, land sales and consequent land subdivisions within the dispersal area should be discouraged through:

- Setting up minimum plot sizes as a matter of policy. This will help reduce the fencing of small plots in this area, which are detrimental to wildlife dispersal within this area.

- ❖ Encouraging the FoNNaP compensation programme in the area and supporting it with more funds so that the Maasai people do not sell off or subdivide their land to the migrants.

(c) A land-use plan for Kitengela Game Conservation Area and by extension the Athi-Kapiti ecosystem should be established to regulate settlement and development in the area. The plan should be implemented adequately. This should be followed by an Environmental Impact Assessment on the capacity of KGCA to increasing human population, urbanisation effects and other developments in and adjacent to the area.

(d) The overall goal for this study was to determine ways of reducing and/or managing the human-wildlife conflict in Kitengela Game Conservation Area. Taking into account the parameters of gauging a sustainable conflict management strategy i.e. ecologically possible, culturally adoptable and economically gainful, the 'CAMPFIRE' programme is recommended for the Kitengela Game Conservation Area. (Appendix one). This programme has been applied in Zimbabwe and has been found to be very successful.

SELECTED REFERENCES

Awere-Gyekye, K. (1996), National land use patterns and trends, report prepared for KWS during a land use planning and co-ordination study.

Arvill, R. (1967), Man and Environment: Crisis and the Strategy of Choice, Penguine Books, England.

Berger, J. and J. Kirono (1977), Extension work in wildlife management: people's participation in conservation, a report of a workshop for extension workers with the wildlife management project in Kajiado District.

Burton, I. and R.W. Kates, (1965), Readings in resource management and conservation, University of Chicago Press, Chicago.

Campbell, D.J. (1978), Development or Decline: Resources, Land use and Population Growth in Kajiado District, IDS working paper, No. 352.

Capone, D.L. (1971), Wildlife, Man and Competition for Land in Kenya: A Geographical analysis, PhD thesis, Department of Geography, Michigan State University.

Chapman and Hall, (1992), Biodiversity and Conservation, Vol.1, No.3.

Curry, K. (1972), Conservation for Survival; An Ecological Strategy, William Morrow & Co. Inc., New York.

Daphne, Sheldrick M.B.E.: UNEP Global 500 Laureate, August 28, 2000. Nairobi National Park, (Internet).

Dasmann, R.F. (1973), Ecological principles for economic development, John Wiley & Sons Ltd, New York.

Empakasi-Kitengela Community and KWS-NNP, (Sept. 2001), Lion Proof Boma: A strategy of reducing human-wildlife conflict in Empakasi-Kitengela Conservation area.

FoNNaP, Nairobi National Park Migration Appeal, Newsletter, 2002.

Frank, G. and I. Waning (1985), Human life and wildlife: A study into competition for, and conflict over access to land in Laikipia District, Kenya Publishers Ltd, Nairobi, Kenya.

Gichohi, H.W., (1996,) The ecology of a truncated ecosystem, The Athi-kapiti plains, Unpublished PhD thesis, University of Leicester.

Huxley, J. (1961), The conservation of wildlife and natural habitats in Central and East Africa, UNESCO, France.

Kamugisha, J.R, (et al), Parks and People: Conservation and Livelihoods at the crossroads, Four case histories, Regional conservation unit, SIDA, Technical Report No.17.

Kenya, Republic of, Kajiado District Development Plan, 1997-2001, Government printer, Nairobi.

Kenya, Republic of, Kenya Population Census, 1969,Vol.1, Government printer, Nairobi.

Kenya, Republic of, Kenya Population Census, 1979 Vol. 1, Government printer, Nairobi.

Kenya, Republic of, Kenya Population Census, 1989 Vol. 1, Government printer, Nairobi.

Kenya, Republic of, 1999 Population and Housing Census, Vol. 1, Government printer, Nairobi.

Kenya, Republic of, National Development Plan, 1997-2001, Government printer, Nairobi.

Kenya, Republic of, Statistical Abstract, 2001, Government printer, Nairobi.

Kenya, Republic of, The Wildlife (Conservation and Management) (Ammendment) Act, 1989, Government printer, Nairobi.

Kipury, N. A. (1977), Land-use conflict in Maasai Amboseli National Park, Unpublished B.A dissertation, Department of Geography, University of Nairobi.

KWS, (16th October, 2000), Report for co-ordinating conservation initiatives within Kitengela.

KWS News, (1995), Human-Wildlife conflict: Which way Kenya? Issue No.2, July-September.

Lawley, L. (ed.) (1996), Wildlife-Human conflicts in Kenya, Report of the Five Person review Group of 19th Dec. 1994.

Lusigi, W. J. (1992), Managing protected areas in Africa, UNESCO, World Heritage Fund.

Maina, M.J. (1998), Human-wildlife conflict in Laikipia District: Area specific strategy recommendations, Unpublished M.A. Thesis, University of Nairobi.

Malii, K. (1998), Structure and locational characteristics of Export Processing Zones: A case study of the Atho-River Export Processing Zone, Unpublished Bsc Dissertation, university of Nairobi.

Mellanby, K. (1983), Farming and Wildlife, William Collins Sons Ltd, London.

Minnery, J.R. (1985), Conflict management in urban planning, Gower, Hampshire, England.

Muriuki, G. (2001), Total Ground Wet Season Game Count of Kajiado Ranches, KWS Research and Planning Department, Nairobi.

Muriuki, N.J. (1988), A community-based participatory-action research on wildlife management in Kitengela game conservation area, Unpublished BSc dissertation, University of Nairobi.

Muthoka, M. et al., (1998), Environmental Education: Essential Knowledge for sustainable development, Longhorn, Nairobi.

Mwanyule, M. (1985), The role of tourism in the growth of Malindi and its environs, Unpublished MA thesis, University of Nairobi.

Nairobi National Park Files, 2000-2002.

Norton-Griffiths, M. (1977), Aspects of climate of Kajiado District, Project Working Document, N0.3, August.

Nyeki, D.M. (1993), Wildlife conservation and tourism in Kenya, Jacaranda Designs Ltd, Nairobi, Kenya.

Ogoro, K. O. (No date), The concept of local participation and its application to wildlife conservation in Kenya, Moi University.

Omare, C.N. (1981), Effects of population change on land use in Kisii District, Kenya, unpublished M.A thesis, University of Nairobi.

Omoke, K. J. (1998), The impact of population dynamics on forest cover change in West Laikipia, Laikipia District, unpublished M.A. Thesis, Department of Geography, University of Nairobi.

Omondi, P. (1984), The impact on Nairobi National Park of changes in land use in adjacent areas, Unpublished M.A. Thesis, University of Nairobi.

_____ (1994), Human-wildlife conflict in Kenya: Integrating wildlife conservation with human needs in the Maasai Mara Region, Unpublished PhD thesis, McGill University, Montreal.

Owen, O.S. (1971), Natural Resource Conservation: an ecological approach, Macmillan, New York, 2nd edition.

Oyaya, C.O. (1998), Population growth and sustainable land use systems: A critical analysis of population and land use planning priorities in arid and semi-arid Kajiado District, UAPS Study Report No. 32, Nairobi.

Pollock, N.C. (1974), Animals, environment and man in Africa, Saxon house, USA.

Robinson, M. (ed.) (2000), Environmental Management and Pathways to Sustainable Tourism, Business education Publishers Ltd, Great Britain.

The East African Standard, (2001), Human-wildlife conflict in Kenya, *The East African Standard*, October 8, pp.1-8.

The Holy Bible, (1972), Revised Standard Version, Cambridge University Press.

Travis, A.S. and J. Humblin, (1981), Denmark, A case study in Tourism Development and Environmental Conservation, Research memorandum, 89.

Trefethen, J.B. (1964), Wildlife Management and Conservation, D.C. Heath & Co., Boston.

UNESCO, A Review of the Natural Resources of the African Continent.

Van Tonningen, L.R. (1993), Wildlife conservation and sustainable development in sub-saharan Africa, University of Alberia.

Wamithi, M. (2001), The way ahead in wildlife management, in Daily Nation, Nov. 15.

Western, D. and M. Pearl, (1989), Conservation for the Twenty-first Century, Oxford University Press, New York.

Williams, G.M. (1982), NSA seminars: An introduction to Buddhism, World Tribune Press, California.

World Bank (1994), Land use and land tenure systems in the arid and semi-arid lands of Kenya, issues and options, WB/ASAL Team, Working Paper, No. 10.

Yahya, S.S. (1969), The changing pattern of land use and land values in suburban Nairobi, Department of Land Development, University College Nairobi.

Internet sources: http://www.cseindia.org/html/dte20010831/dte-life.htm
http://www.mspca.org/about/whoweare.htm
http://www.campfire-zimbabwe.org/.
http://www.safariweb.com/kwild/conflict.htm

APPENDIX 1

CAMPFIRE PROGRAMME

The primary goal of CAMPFIRE is to provide a means of harmonizing the needs of rural people with those of ecosystems. CAMPFIRE works through villages and district wildlife committees to provide communities with principles and programs to make land-use plans that incorporate the conservation and sustained use of wild species. CAMPFIRE was designed to address both the potential benefits and weaknesses of communal ownership of natural resources. CAMPFIRE asks why people should be motivated to conserve the environment. Who benefits from the conservation? Who pays the cost? Who manages the resources? It argues strongly that authority, management, production and benefit must be primarily situated with the producer community.

The objectives of CAMPFIRE are to:

- Initiate a programme for the long-term development, management, and sustainable utilization of natural resources in the communal areas;
- Achieve management of resources by placing custody and responsibility with the resident communities;
- Allow communities to benefit directly from the use of natural resources within communal areas; and
- Establish the administrative and institutional structures necessary to make the programme work.

This programme has been tried and found to be successful in 3 districts in Zimbabwe. These districts are Guruve, Nyaminyami and Beitbridge. In the existing CAMPFIRE models, some communities literally share the financial returns with each household. In the Beitbridge District, every household in the village receives a fixed amount of money and then votes whether or not to give part of the money back for broader community needs such as a truck or mill. When each household is personally affected this way, there is great individual support of CAMPFIRE goals.

The programme has resulted in reduced poaching of wildlife by giving local people an economic stake in sustaining those resources. This has resulted in greater numbers of wildlife on communal lands and a source of economic stability for the communities. Despite its foundation in public policy, CAMPFIRE relies on its practical appeal to local people.

Applicability of CAMPFIRE in Kitengela Game Conservation Area.

CAMPFIRE as a programme fits in Kitengela taking into account the same features that exist in Zimbabwe and especially in areas that it has been used successfully. These features include:

- Kitengela is a semi-arid area, which provides an extensive wildlife habitat with a low human population density as compared to other high potential areas.

- The presence of the Community Wildlife Programme and other local associations like the Kitengela Landowners Association provide the base for the use of the programme.

- Like in Zimbabwe, wildlife in Kenya is the property of the state and no one will invest in it. It is therefore the responsibility of the state through its policies to ensure that wildlife is protected in private lands. This has been found to be successful if there is co-operation between the local people and the state.

APPENDIX TWO

HOUSEHOLD QUESTIONNAIRE

Topic: Human-wildlife conflict in Kitengela Game Conservation Area

The information to be given below is meant for academic purposes only and will be treated confidentially. Your assistance will be highly appreciated. *(Tick where appropriate)*

A. PERSONAL DETAILS

1. Name of respondent (optional)----------
2. Age (in years) A. 15-25 B. 26-35 C. 36-45 D. 46-55 E. Over 55
3. Sex A. Male B. Female
4. Marital status A. Single B. Married C. Widowed D. Divorced
5. Educational background A. Primary B. Secondary C. College D. University E. None

B. LAND ISSUES

6. Is this the place where you were born? A. Yes B. No
7. If No, which is your place of birth?

   District----------Division----------
8. Which year did you move to this place? ----------
9. What made you move from your home area to this place?
10. Do you own this piece of land where you are staying? A. Yes B. No
11. If No, how did you acquire it?

    A. Bought B. Rented/hired C. Inherited D. Squatted
12. How big is your land? (In acres)

    A. <2 B. 3-9 C. 10-15 D. 16-20 E. Over 20

13. What activities do you practice on your land? (Please specify)

A. Crop production

Type of crop	Land acreage	Annual production

B. Animal keeping

Type of animal (Local /Exotic)	Number kept	Annual production

14. Are there times when there isn't enough feed for your livestock?

A. Yes B. No

15. If yes, which are those times?----------

16. What do you do to ensure that your livestock have enough feeds?

C. WILDLIFE ISSUES

17. Are there any wild animals in this place? A. Yes B. No

18. If yes, which ones have you seen or heard are in this area?

19. Which wild animals do you commonly see in your area?

20. Classify these wild animals into those that are harmful and those that are not harmful.

Wild animal	Harmful	Not harmful
Wild animal	Harmful	Not harmful

21. Which problems do these wild animals cause to people and their property?

22. Is it possible for people to co-exist with wild animals in this area?

A .Yes B. No

23. If No, please explain why.

24. What do you do as a family or community when:

    a. a person is killed or injured by a wild animal?

    b. a domestic animal is killed or injured by a wild animal?

    c. a crop is destroyed by a wild animal?

    d. property i.e. fence is destroyed by a wild animal?

25. Is the government involved in any way when such an event occurs?

    A. Yes B. No

26. If Yes, in what ways?

27. If No, why do you think the government does not take action?

28. If no action is taken, what do the affected individuals or community do?

29. Are you aware of the compensation package by the government when a wild animal injures or kills a person? A. Yes B. No

30. Do you know anybody who has been compensated following a death or injury by a wild animal? A. Yes B. No

31. Is this compensation package adequate? A. Yes B. No

32. If No, what changes do you want to be done to it?

D. HUMAN-WILDLIFE CONFLICT

33. Is there any human-wildlife conflict in this area? A. Yes B. No

34. If yes, when does this happen?

35. What do you think are the causes of this human wildlife conflict?

36. Since you are still staying here, what have you done to cope with this human-wildlife conflict?

37. Is the wildlife department (KWS) aware of this conflict?

    A. Yes B. No C. Don't know

38. If Yes, what has it done to address the conflict?

39. Is there a programme in this area in which the community is involved in wildlife management? A. Yes B. No
40. If yes, how does the programme work?
41. What benefits does the community receive from the programme?
42. How are the benefits (if any) shared between the stakeholders?
43. What role do you think the following can play in the management of the human-wildlife conflict in this area?

	Role
Individual households	
Community groups	
Local authority	
Government	
NGOs	
Others	

44. What are your comments on the future of the human-wildlife conflict in this area?

THANK YOU.

APPENDIX 3

QUESTIONNAIRE FOR RANCH OWNERS

Topic: Human wildlife conflict in Kitengela Game Conservation area

The information to be given below is meant for academic purposes only and will be treated confidentially. Your assistance will be highly appreciated. *(Tick where appropriate).*

1. (a) Name of your ranch----------

   (b) Location of your ranch----------

2. What is the size of your ranch? (In acres)

A. 1-10 B. 11-20 C. 21-30 D. 31-40 E. 41-50 E. Over 50

3. (a) When was it started?

   (b) Why did you start this ranch?

5. What types of animals do you rear in your ranch?

6. Are there any wild animals within your ranch? A. Yes B. No

7. If Yes, which ones?

8. Are there any benefits you get from wildlife? A. Yes B. No

9. If yes, which are these benefits?

10. Have you experienced any problems or losses as a result of wildlife in your ranch? A. yes B. No

11. If Yes, which are these problems of losses?

12. Were you compensated for the losses?

13. If Yes, by who and how much?

14. Would you like to continue co-existing with the wild animals in your ranch? A. Yes B. No

15. What mechanisms do you use to deal with wildlife problems in your ranch?

16. In your view, what do you think is the role of the following actors in the management of the human-wildlife conflict in this area?

Actor	**Role**
KWS (Kenya Wildlife Service)	
Local authority	
Community organisations	
Ranch owners	
Others (Specify)	

17. What other measures would you like actors like KWS to adopt in addressing the human-wildlife conflict in this area?

18. What are your comments on the future of the human-wildlife conflict in this area?

THANK YOU

APPENDIX 4

QUESTIONNAIRE FOR STAKEHOLDERS

Topic: Human-wildlife conflicts in Kitengela Game Conservation Area

The information to be given below is meant for academic purposes only and will be treated confidentially. Your assistance will be highly appreciated. *(Tick where appropriate).*

1. Name of organization----------
2. Office position of respondent----------
3. Years in service: From-------To----------
4. What is the main function of your department in wildlife management and conservation?
5. Are you aware of the human-wildlife conflict in Kitengela Game Conservation Area? A. Yes B. No
6. If Yes, who are the conflicting parties? A. Pastoralists B. Farmers C. Wildlife D. KWS E. Others (Specify)
7. According to you, what are the causes of the human-wildlife conflict in Kitengela Game Conservation Area?
8. In the conservation of wildlife, what has/is your department done/doing to address the human-wildlife conflict in Kitengela Game Conservation Area?
9. What achievements have you made?
10. What drawbacks have you experienced when administering your services in the area?
11. What trends in land use pose challenges to the management of the human-wildlife conflict in Kitengela Game Conservation Area?
12. If the trend of land use changes in the area continues, what future do you see for the Nairobi National Park and its wildlife?
13. What is the government's policy on the human-wildlife conflict in Kitengela Game Conservation Area?
14. How is the community involved in the conservation of wildlife in the area?

15. In case a person is killed or injured, or property is destroyed by a wild animal, is there a way of compensating him/her? A. Yes B. No C. Don't know
16. What is the procedure of compensation?
17. Are the communities involved aware of the compensation procedure? A. Yes B. No C. Don't know
18. Do the communities affected follow the compensation procedure? A. Yes B. No C. Don't know
19. What setbacks do you experience when dealing with the compensation issue?
20. What is the contribution of this compensation issue to the nature of the human-wildlife conflict in Kitengela area?
21. What other ways do you consider as possible means for the reduction of the human-wildlife conflict in Kitengela area?
22. What role do you consider major actors can play in order to achieve balanced or sustainable co-existence of wildlife and human activities in Kitengela area?

Actor	Role
KWS	
NGOs	
Local authority	
Community	
Others	

23. What do you think is the future of this human-wildlife conflict in this area?

THANK YOU