HUMAN WILDLIFE CONFLICT EFFECTS ON SOCIAL, ECONOMIC AND EDUCATION DEVELOPMENTS IN BARINGO NORTH SUB-COUNTY, KENYA

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DECLARATION

DECLARATION BY THE CANDIDATE

This thesis is my original work prepared with non-other than the individual sources and support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled: **"Human Wildlife Conflict Effects on social, economic and education developments in Baringo North Sub-County Kenya"**

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DEDICATION

This thesis is dedicated to my late Parents Jeremiah Cheptarus, Maria Salaa, Brother Samuel Kapterit, Sisters: Sarah Bowen, Leah Barmase and Salome Tergat.

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ABSTRACT

Previous years have seen an increase in resources channeled in an effort to manage conflicts in the wildlife sector. Kenya Wildlife Service has invested heavily in implementation of strategies as a concerted effort by the government to curb Human Wildlife Conflict in Kenya. Despite this effort, cases of Human Wildlife Conflicts are still being reported. The various existing policies seems not to offer solutions to the prevailing Human Wildlife Conflict. It's on this foundation that the study sort to assess how human wildlife conflict affect the social, economic and education development in Baringo North Sub-County, Kenya. The specific objectives are: To identify the causes of human wildlife conflict in Baringo North Sub county, to examine the nature and extent of wildlife Conflicts in Baringo North Sub-County, Kenya; evaluate the impacts of human wildlife conflict on socio-economic and education development in Baringo North Sub-County, Kenya; and analyze the effectiveness of emergency response strategies in the management of human wildlife conflict for social, economic and education developments in Baringo North Sub-County, Kenya. The study is significant since its outcome could be used to review the current and existing wildlife conservation policies in order to enhance its effectiveness and to formulate new policies. The study was guided by Stern Theory of Value Belief Norm; Kenneth's and Kilmann's Conflict Styles theory and Dollard's Frustration Aggression Displacement theory. A descriptive survey research design was used. The study population was; Government field officers, Civil society leaders**,** Kenya Wildlife Service official, Opinion leaders, Teachers, Community based organizations**,** Leaders of Farmers Corporations, Village elders and victims of human wildlife conflicts, totaling to 329 respondents. Sampling techniques used were simple random sampling, purposive sampling and snowball sampling technique. Data was collected using questionnaires, interview schedules, observation checklist and Focus Group Discussions. Pilot study was done in Rimoi game reserve to determine reliability. Descriptive analysis using quantitative and qualitative techniques were used in the study. While quantitative data was presented in form of frequencies and percentage, in tables, charts and graphs, qualitative data was presented thematically through narratives reports and verbatim quotations. Findings indicated that shared water sources was the main cause of the conflict. That most of the attacks occurred at work/in farms. Crop damage /loss was a major impact of the conflict. The study found that medical treatment, psychotherapy and Compensation were a coping strategies among the victims of conflict. Basing on the study findings, Human Wildlife Conflict negatively impacts on social, economic and education development in Baringo North Sub County. That human encroachment into the reserve has led to loss of biodiversity and therefore, affected economic opportunities that could raise earnings for the community. Study recommends that there is need to address Human Wildlife Conflict to pave way for a realistic social-economic development. Government should resolve Human Wildlife Conflict by generating, lasting solutions like fencing off the reserve to keep off roaming wildlife. Compensation policy should also be simplified for prompt payments. The initial owners of the land in which the reserve covers should also be compensated well to deal with the problem of people encroaching back into the reserved land. The emergencies response strategies need to be looked at afresh; there is need for government Agencies to be proactive in handling and forestalling issues arising from the Human Wildlife Conflict.

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LIST OF ABBREVIATIONS AND ACRONYMS

AC: Awareness of Consequences

AC: Adverse Consequences

ARS: Ascription of Responsibility to Self

AWF: African Wildlife Foundation

BC: Before Christ

CBNRMS: Community based natural resource management schemes

FADT: Frustration Aggression Displacement Theory

FAO: Food and Agriculture Organization

FGD: Focus Group Discussion

GDP: Gross Domestic Product

GoK: Government of Kenya

HWC: Human Wildlife Conflict

ICUN: International Union for Conservation of Nature

IEBC: Independent Electoral and Boundaries Commission

IUCN: International Union for the Conservation of Nature

KWS: Kenya Wildlife Service

MAG: Movement Activated Guard

NEP: New Ecological Paradigm

NGO: Non-Governmental Organization

PAs: Protected Areas

QENP: Queen Elizabeth National Park

SEV: Self-Enhancement value

SPSS: Statistical Package for Social Sciences

SRCP: Serengeti Regional Conservation Project

ST: Self-Transcendent

TWNP: Tsavo West National Park

U.S: United States

VBN: Value - Belief - Norm theory

WCU: World Conservation Union

OPERATIONALIZATION OF KEY CONCEPTS

Game reserve: In this study, a big tract of land where wild animals can live safely or that is hunted for sport in a responsible manner.

Human Wildlife Conflict: Human-wildlife conflict (abbreviated as HWC) occurs when human needs and those of wildlife cross, resulting in negative outcomes for both human communities and wildlife populations. This has been defined in the study as the negative coexistence between animals of the wild and people, whereby, humans threaten wildlife through poaching, causing injuries to wild animals, land encroachment and the use of chemicals/pollutants towards animals; while on the other hand, wild life threatens people through crop destruction, attacks on livestock, violent attacks on locals, and destruction of property. The human-wildlife conflict then results in negative effects which affects the social economic and Educational development status of the area which this happens.

Livelihood: For the purpose of the study, it includes the skills, assets (both material and social), and activities necessary for subsistence by the community under consideration.

Resilience: Ability to deal with a stressful situation rationally and emotionally, and recover swiftly to a state of well-being similar to that which existed before the crisis. Individuals that are resilient are able to counteract the potentially harmful impacts of stress through the proactive promotion of personal assets and the adoption of protective habits.

Socio-Economic Development: Abbreviated as SED refers to the aspects of livelihood within a community, which is because of activities people do on a daily basis such as trade, governance and traditional activities.

In the study, social, economic and educational developments were used as the dependent variable, which were measured through profitability from tourism, level of infrastructure development, availability of social amenities and quality of farming.

CHAPTER ONE

INTRODUCTION

This chapter provides the study's introduction, problem statement, objectives, research questions, justification for the investigation, study scope, and chapter summary.

1.1 Background to the Study

Numerous incidents relayed by media in the recent times show the seriousness of human-wildlife conflict (HWC), which is quickly becoming a severe threat to the survival of many internationally endangered species. Human wildlife conflict occurs when the needs of wildlife and human populations collide, as stated by the World Conservation Union (WCU) (2002). This is especially true in areas with a high concentration of both human and wildlife, such as cities, rural areas, and protected areas, from which animals frequently wander into neighboring farmland or grazing pastures. The results of HWC can be seen in three different ways. There are three ways in which humans and wildlife can be harmed during an armed conflict: first, humans can injure or kill wildlife; second, wildlife can injure or kill humans, crops, cattle, and property; and third, both humans and wildlife can be harmed or killed during an armed conflict (World Conservation Union (WCU), 2002).

The long-term effects of human activity on wildlife are the root cause of the rising risk of extinction for many animal species. Musiani, et al. (2003) cite human-caused injuries and deaths as a major factor in species decline. These might be the result of carelessness, such as when animals are hit by cars or trains or fall into snares meant for other species or farm wells, or they can be the result of malice, such as when people shoot back or poison those who have shot at them.

Human-wildlife conflict is an issue that emerges when people and animals interact in ways that are harmful to either party. This is especially a problem in Africa, Asia, and Latin America (Elsne, 2008). Social, economic, and cultural repercussions are all possible. Human-wildlife conflicts (HWCs) occur most frequently near protected areas, when human and wildlife populations share the same territory (Hoare, 2001).

FAO (2007) and Okello et al. (2001) note that human-wildlife conflicts have intensified in recent years due to human population growth and the encroachment on wildlife habitats. People and wildlife are increasingly at odds with one another as a result of shifts in land use that are typically associated with activities that are counterproductive to conservation efforts. Due to the expenses associated with wildlife conflicts, such as property damage, livestock depredation, and disease transmission, many people view wildlife as a liability. These costs can include damage to crops, human deaths and injuries, the loss of legitimate and traditional rights, and the destruction or theft of personal property and livestock (Okello *et al*., 2001).

A number of studies in Africa have revealed that there are conflicts between humans and wildlife in all ecosystems, including those in west and central Africa as well as eastern and southern Africa (Treves & Karanth, 2003). The issue is particularly pressing in arid agricultural regions and in water-scarce pastoralist territories. There has been an increase in human-wildlife conflicts in these regions mostly because humans have expanded their activities onto territory that were once populated by wild animals. Although conflicts are most severe and widespread around protected areas,

they are growing in other places as well, threatening conservation efforts due to factors like land clearance for agriculture and poaching. Therefore, various management approaches are needed in various locations and at various times (Treves & Karanth, 2003).

Elsne (2008) claims that the presence of human-wildlife conflicts is influenced by both the types and densities of human activities and wild animal species present in a given location. The future of conservation in protected areas relies heavily on the cooperation of local inhabitants, and in particular their willingness to share land with wildlife, because many protected areas are unable to support the existing wildlife populations. However, if the current severity of the conflict continues or intensifies, this may not occur. Hence the need for requisite measures to be put in place to control a full blown catastrophe of HWC.

In Kenya, human-animal conflicts can be traced back to the development of parks, reserves, and other wildlife protected areas in close proximity to human settlements. Whether by force or treaty, local communities were displaced to make way for the creation of parks and other protected places. Communities subsequently had their land rights taken away from them. For instance, the Maasai people who traditionally grazed in the Amboseli habitat were never paid for the land and water they no longer had access to after the park was established. Tsavo and Nairobi national parks, as well as Maasai Mara national reserve, all had the same problems when they were first established (Onyango, 2015). Since losing so much land, the people in those areas have become increasingly unsupportive of conservation efforts. Human-animal conflicts have become more problematic due to the rise of human activities, such as

agriculture, in areas bordering parks and other protected areas that are mistakenly thought to be wildlife areas. Some residents have given up their usual routines because of frequent wildlife incursions, and people's tolerance for wildlife is decreasing as shown by the prevalence of poisoning and poaching of wild animals for bush meat, hide, and even trophies (Woodroffe *et al.*, 2005; Patterson *et al*., 1999).

In addition to the aforementioned, some have contended that citizens believe the government places a higher priority on wildlife preservation than on protecting human lives and the livelihoods of its citizens (Okello, Wishitemi & Mwinzi, 2001). Losses incurred as a result of wildlife damage, with the exception of human injury and death, are not compensated for due to a combination of factors, including government bureaucracy in compensation procedures and inadequate reimbursement below market value.

Jones (2012) asserts that the local populations that live close to and around national parks, including Nairobi National Park and game reserves, are those who bear the brunt of the costs associated with wildlife. Property damage and human fatalities or injuries caused by wildlife are the root causes of human-wildlife conflicts in Kenya's protected areas. In the large game reserves and national parks of Kenya, this is especially true. Little-known Lake Kamnarok National Reserve may be found in the breathtakingly gorgeous Kerio Valley, which furrows the North Rift. The African Jacana, grebe, hamerkop, heron, egret, ibis, tree duck, and Egyptian geese are just few of the avian species that may be found in the Reserve. Elephants can be spotted throughout the day under the dense cover of the bush in great numbers; at one point, the elephant population in this reserve totaled over 500. (Andrew, 2021). Very little

prior study has considered community participation in resource usage when examining resource conflicts in Kamnarok National Reserve and the surrounding villages (Dickman, 2010).

Togoch *et al.* (2018) found that expanding human populations and economic constraints are increasing local communities' dependence on wildlife protected areas in marginal rangelands. HWC in areas near to Kamnarok National Reserve was a consequence of unsustainable resource extraction by neighboring family activities, diminishing food resources for wildlife, and ineffective conservation governance by those in charge. The Kamnarok National Reserve has had both positive and negative effects on the lives and livelihoods of neighboring villages, including agricultural damage, cattle predation, property destruction, and even death. The nearby communities' portfolios are diversified for a variety of reasons, including risk reversion linked with wildlife conflicts, higher income, food security, and supporting the needs of people.

Despite the existence of the human-wildlife idea for a number of years, disputes in the wildlife sector have endured. Communities that formerly coexisted with nature are now armed against the same creatures they once admired. There is a need to study how the intensifying conflict might be minimized so that humans and wildlife can once again coexist, particularly in light of the emerging reality that both human and wildlife populations are growing, while the environmental ecosystem can no longer support both ends of existence due to climate change.

Denzin and Lincoln (2005) observed that Successful conflict management necessitates cordial relationships amongst the many agencies that may be engaged in

order to negotiate the maze of rules and regulations and overlapping responsibilities. In addition to regulatory authority issues, several elements influence conflict resolution. State and federal authorities are hampered in their ability to respond by significant budgetary and human resource constraints. These constraints have led some state authorities to work with local governments on conflict resolution and policymaking. There are various partnership models, such as citizen action, citizen-agency partnership, and community vote (Denzin & Lincoln, 2005).

1.2 Statement of the Problem

Wildlife related conflicts continue to increase each day despite the enormous effort and resources used to mitigate and resolve these conflicts. The nature of conflicts and how they are resolved becomes complex each day (Woodroffe *et al*., 2005). In some instances, conflicts about wildlife have degenerated into security issues. The human population increase that is estimated to reach 60 million people by 2030 may complicate the dynamics of wildlife related conflicts thus the survival of the tourism sector would be highly threatened (Wang *et al.,* 2006). The country continues and may continue to lose citizens and animals through these conflicts. The goodwill of the communities that cherished their coexistence with wild animals would be lost. The survival of the wildlife heritage would then be highly threatened. Therefore, each year elaborate planning efforts should be continued (Wanjau, 2002) towards a sustainable coexistence between humans and wildlife. These efforts ought to be supplemented by private individuals and by the nongovernmental organizations as well.

There has been a progressive development of HWC at Lake Kamnarok game reserve. The Ministry of Lands gazette the adjudication of the land in 1981 and the national reserve is 1983. However, after gazettement, the government did not fence off the national reserve and people with time encroached into the national reserve. This has

heightened the conflict between the communities surrounding the national reserve and the wildlife

Despite all the multi-sectorial approach, there has been a continuous lose human beings and animals life. The retaliations towards wildlife killings affect our tourism, which is a main contributor to GDP and consequently the national human development index. This impacts then to our national security and jeopardizes our national interests. It would consequently affect the national vision 2030 delivery unless the situation is addressed now. There is therefore need to have a workable solution to human wildlife conflicts in Lake Kamnarok national reserve. There is need to look at conflict management strategies that are been applied in relation to the concept of human wildlife conflict. If the wrong concept is in use the most likely is that the wrong strategies are employed and the conflict will persist. There is need to have a paradigm shift in the management of HWC in the country to prevent the losing of national treasure.

1.3 Objectives of the Study

The general objective was to assess the effects of human wildlife conflict on social, economic and education developments in Baringo North Sub-County, Kenya. The specific objectives are:

i. Identify the causes of Human Wildlife conflict in Baringo North Sub County, Kenya.

ii. Examine the nature and extent of Human Wildlife Conflicts on Socio-economic development and Educational development in Baringo North Sub-County, Kenya.

iii. Analyze the effects of Human wildlife conflicts on Socio Economic and Education Development in Baringo North Sub-County, Kenya.

iv. Evaluate the effectiveness of emergency response strategies in the management of Human Wildlife Conflict in Baringo North Sub County, Kenya.

1.4 Research Questions

1. What are the causes of Human wildlife conflict in Baringo North Sub County, Kenya?
2. What is the nature and extent of Human Wildlife Conflicts on Socio-economic development and Educational development in Baringo North Sub-County, Kenya?
3. What are the effects of Human wildlife conflicts on Socio Economic and Education Development in Baringo North Sub-County, Kenya?
4. How effective is emergency response strategies in the management of Human Wildlife Conflict in Baringo North Sub County, Kenya?

1.5 Justification of the Study

The study would be of significance to future researchers in academics and policy makers within the study area, county, and national government.

1.5.1 Academic Justification

Orina (2009) studied conflict resolution on wildlife and various communities around Nairobi national park. His study didn't not look at the larger ecosystem in Kenya. Mukeka (2018) did a study on human wildlife conflict and how its correlates in Narok county and observed that the conflicts were mainly seasonal with annual fluctuations.

Most studies on HWC have been done in most game reserves in Kenya (Ogutu *et al*, 2008, Ogutu *et al* 2018, Koech,2018, Mukeka, 2019).

There's is dearth of information about the HWC and its effects on socio-economic aspects on communities living near Lake Kamnarok National game reserve. The findings of this study will form part of reference materials in library and other research works thus providing adequate information to other researchers in the related field of the study. The findings would also act as a source of reference material in the University libraries and other research websites where this work would be published.

1.5.2 Policy Justification

While Baringo North Sub-County is located close to Kamnarok National Reserve, it is currently experiencing a growth in human settlement, making it a victim of human wildlife conflict. In the absence of preventative steps, this conflict is likely to escalate to a dangerous level very soon. Therefore, the study's findings might be utilized to assess the efficacy of existing animal conservation measures and to develop new regulations. The SDG agenda and its implementation strategy must incorporate the HWC. While it is impossible to totally eliminate HWC, there are methods that, with the full cooperation of local communities, can help diminish it and lead to cohabitation between humans and wildlife. Similarly, the study's recommendations could improve conditions at our nation's national parks. The findings are particularly significant because they give decision and policy makers a deeper understanding of the issues typically connected with wildlife protection.

1.6 Scope of the Study

The research studied the effects of human-wildlife conflict on Baringo North Sub County's social, economic, and educational growth. Based on the objectives of the

study, it studied and explored the elements that drive human-wildlife conflict and their impact on the social, cultural, economic, and educational status of the community under investigation. The target population consisted of the communities residing close to the reserve and in the Sub County, as well as Kenya Wildlife Service personnel and other stakeholders in the Sub County. The scope of the study specifically analyzed conflicts between local residents and wildlife, comparing 2010-2018 data with current information. This time frame was chosen based on 29,647 previously collected instances of human-wildlife conflict patterns. Thus, the research produced coping mechanisms for the management of human-wildlife conflicts in the region and offered interventions for implementation in the region's new policy framework.

CHAPTER TWO

LITERATURE REVIEW

This chapter discusses the various literature related to the study. The literature was reviewed according to the research objective. The literature reviewed dealt with the causes of Human wildlife conflict, the nature and extent of the human wildlife conflict, the effect of HWC on the social, economic and education development and lastly the effectiveness of the emergency response strategies on the management of HWC.

2.1 Causes of Human Wildlife Conflict in Kenya

Socioeconomic and political exclusion, poor land tenure regulations, insecurity, cattle rustling, the proliferation of small arms and light weapons, decreased traditional governance in pastoral areas, and competition with wildlife are all factors that contribute to violence involving pastoralists (Musiani & Sindiga, 2003). As a result of their constant battle for existence, the Maasai have resorted to farming in previously unusable marsh areas. High rates of illiteracy in places inhabited by pastoralists make it difficult, if not impossible, to adapt to new circumstances without a great deal of creative thinking. Underdevelopment is the most pressing social and economic concern affecting Kenya's wildlife. Poverty, hunger, and malnutrition are all on the rise in these regions because of the lack of development. The presence of global warming further complicates this scenario. Conflicts emerge as a result of intense rivalry for scarce resources. The future of Kenya's wildlife is tied to the country's ability to address issues of poverty and inequality in a way that does not compromise its ecological integrity (Sindiga, 2005).

One contributing issue is the park's lack of an electric fence, which would prevent both people and animals from escaping. Due of this, people can enter and leave the park without permission. Locals in the area collect firewood from the park for their own homes. Animals are also unlawfully trapped for their game meat, which is then sold to the general public. Without the resources necessary to survive, wild animals will leave national parks in search of new territory. Fighting breaks out as a result of this. People aren't being taught or made aware of how crucial it is to preserve our planet's ecosystems. Tourists are seen as the sole patrons of the park by the locals. If sustainability is to be achieved, the communities involved must be educated on the topic of conservation and invited to take part (Sindiga, 2005).

One of the factors that contributes to war is economic inequality. Residents of many low-income neighborhoods in and surrounding parks rely heavily on park services and amenities. They get firewood from parks and use it to cook illicit meals and brew alcohol, which they then sell. Disputes between people and animals have increased as a result of the drought. There was a severe dearth of rain for an extended length of time in 2009 in Kenya, leading to a food shortage for both animals and humans. When hungry, the animals often venture out of the parks and onto nearby farms and residences. As a result, the inhabitants rely on hunting wild animals for food.

Conflict is also exacerbated by poaching. Hunting is an integral part of life for several societies, especially pastoralists. You'll be hailed as a hero if you take down a lion. This promotes more killing sprees, which is bad news for endangered species. In some areas, people also try to find medicinal herbs that grow wild. Because of the irreversible loss of these trees, as well as the loss of habitat for some species, this practice is harmful to the environment and its aesthetic value. With more and more

people turning to alternative medicine, this problem has recently exploded. Poaching is often cited as a contributing factor to violent conflict. Elephants and rhinos, which are valuable for tourism and other industries, are the primary targets of poachers. Poachers can make a lot of money off of the horns (Harriet, 2015).

Increases in human population, changes in land use, the loss, degradation, and fragmentation of species' habitats, the popularity of ecotourism and the spread of access to nature reserves, the proliferation of livestock and the resulting competitive exclusion of wild herbivores, the abundance and distribution of wild prey, the success of conservation efforts, the cyclical nature of food webs, weather patterns, and random chance all play a role in the rise of HWC (Messer, 2002).

2.1.1 Human Factors

As human populations grow and urbanize, more people will come into touch with wildlife. As the world's population rises, people begin to live not only in the cities and suburbs, but also in and near protected areas. Human population increase in Africa has resulted in the destruction of wildlife habitats, the compression of many species into small, fragmented areas of land, and direct conflict between local communities and the wildlife that they once relied on for subsistence (Kahumbu, 2015).

Conflicts in British Columbia, Canada, are not confined to the state's natural reserves or rural areas, but can also arise in the state's major cities. Human population growth is proportionate to the amount of interactions and significant events with cougars (Puma concolor), black bears (Ursusmaritimus), and grizzly bears (Ursus Arctos) over

the past few decades (Ministry of water, land and air protection, British Colombia, 2003; cited in Madhusudan, 2003).

2.1.2 The Requirements of Human Development

Rising human populations and the need for more land and fewer natural resources are the primary drivers of human-wildlife conflict around the world. There has been a drastic decline in wildlife populations as a result of the conversion of forested and savannah areas to farmland and urban centers to meet rising demands for food, energy, and building materials (Messmer, 2000).

As the human population nearly tripled in Africa in the four decades beginning in 1960, settled agriculture expanded into more marginal rangelands, encroaching onto wildlife habitats. Since these conditions have persisted, human-wildlife conflicts have necessarily worsened (Muruthi, 2005). The war between humans and elephants is a great example of this. Around 80% of elephant range is thought to be outside of protected areas. One of the most serious human-wildlife conflicts is occurring as a direct result of the fast destruction and fragmentation of this habitat brought on by increased agriculture.

The opening of additional lands and villages in areas that were formerly private wildlife refuges has also resulted in the formation of new bush pathways between these settlements. As a result, there will be more people walking around, which raises the possibility of encounters with dangerous animals. Daily activities like gathering wild fruit, berries, and fuel wood, fishing, and poaching are organized around the new communities and further expose the humans to encounters with wildlife (Messmer, 2000).

Equally crucial to human survival is the availability of clean water. Permanent communities are established near a water supply, but this cuts off the animals' access to the water. Many activities, such as collecting water for household use, washing clothing and utensils, and taking a bath, rely on people having access to these water sources. Since more people mean more people needing to utilize the water, and since crocodiles call many of these bodies of water home, "the scenario is set for rising human-crocodile conflict" (Molewa, 2010).

2.1.3 Migration of Peoples for Reasons of Security or Food Safety

Famines occur when the regular processes of producing and distributing food are interrupted by things like drought, flooding, civil upheaval, natural disasters, or conflict. The annual number of food emergencies in Africa has roughly tripled during the 1980s, indicating the spread of this problem. There is widespread malnutrition in sub-Saharan Africa, with one-third of the population suffering from it (McGregor, 2005).

As a result, rural residents continue to move to places frequented by wildlife since they are close to locations from which they may harvest food and other supplies. After humans move into an area inhabited by wild animals, tensions are bound to arise. As refugees from war and turmoil flock to wilderness areas, they put a strain on the ecosystem and compete with native species for limited supplies. In Mozambique, for instance, an estimated 120.000 individuals who fled the civil strife have sought refuge in designated wilderness areas. Disputes between humans and animals may be affected indirectly by political unrest. The current crisis in Zimbabwe has severely depleted funding for the Campfire organization, which serves as a guardian for

animals in communal areas. Communities in rural areas often have to resort to radical measures. When confronted with a problem, they resort to illegally hunting the species in question, often using weapons of the wrong caliber, which leads to many animal injuries. The lion and leopard populations, along with those of baboons, are kept in check by agricultural pesticides (Mishra, et al., 2003).

Over the past 30 years, Ghana's human population has boomed close to the Kakum Conservation Area. In the 1970s, farmers flocked to the forest's edge from all over the country to take advantage of the perfect circumstances for cultivating cocoa there. This is a primary reason for the rise in human-elephant conflicts (Molewa, 2010).

Growth of waterside towns in Africa has averaged 3% per year in recent years, due in part to the emigration of people fleeing drought and political unrest (McGregor, 2005). Zimbabwe's land reforms and economic collapse displaced large numbers of people, leading to a doubling of the population in fishing camps around Lake Kariba's shore in the early 1990s. With an uptick in the amount of individuals catching fish for subsistence or profit on the side or getting their drinking water straight from the lake, crocodile attacks have become more common.

Extreme droughts and the resulting degradation of the land have prompted a massive population shift southward from the north. As a result of choosing to make their homes near the last remaining sources of food and water inside of protected zones, these people are at a heightened risk of encounters between humans and wild animals. Areas with dense human populations and a large variety of animal species tend to be

the most tense hotspots for conflict (Musiani, et al., 2003). An excellent illustration of this is the roughly 20,000 km^2 buffer zone around Kenya's Tsavo National Park, which is home to about 250,000 people (Molewa, 2010).

2.1.4 Attitudes and Perceptions

People in rural Africa tend to lack compassion for wildlife and instead view them primarily via a meat value lens. As an example, the word nyama, which is commonly used to refer to wild animals, can also mean "meat" in numerous Bantu idioms. It is widely held in rural areas that wildlife, and especially large creatures, pose serious risks to human lives and the availability of food. Near protected areas, where wildlife populations impose daily costs on local communities, this negative view is especially powerful and can erode local support and tolerance. This might lead to a shift in public opinion about reserves and animals, which can exacerbate tensions and hinder conservation efforts (Maliasili & Well, 2015).

From elephants to birds like the Quelea sp., those who use the land and those who manage wildlife occasionally take it upon themselves to kill the species they perceive to be a danger. with the goal of lowering the population of, or eradicating, such species from the area. Losses (such as human life, property, crops, and even agricultural land set aside for conservation purposes) incurred by animals are a major contributor to the persistent negative attitude of communities towards wildlife. Because of how deeply wildlife has been ingrained in locals' perceptions, even beneficial species can be held responsible for destruction. Molewa (2010) discovered that red colobus monkeys in Zanzibar, which locals in agricultural districts bordering the Jozani Forest Reserve blamed for major losses of coconut harvests, actually enhanced final tree yields. They accounted for a 3% improvement in prospective yield

by removing young, immature coconuts during pruning. As a bonus, primates can bring in cash from curious sightseers.

The rural populace's animosity of elephants seems crystallized. Reports from the field show that elephants are widely disliked in Africa, more so than any other species. In the jungles of central Africa, locals "fear and detest" elephants (Barnes, et al., 2003). When it comes to animals, farmers in Zimbabwe have a "ingrained antipathy" for elephants. Except in areas where they have been exterminated, rural Ugandans have serious complaints about elephants (Hoare, 2001).

Most people living in rural areas of Africa view lions as a nuisance that should be eradicated. When asked what they thought should be done about stray lions wandering into villages, 37% of 156 respondents in a study conducted near Uganda's Queen Elizabeth National Park (QENP) said to kill them, 35% said a fence should be built around the protected area, and 28% said people should be taught how to avoid lions. About half of the 236 herders surveyed in 10 villages near Cameroon's Waza National Park saw lions in a negative light (Bauer, 2003b). Of the 154 people polled in 87 villages on the outskirts of the Trans-boundary Park in Niger between the years of 2000 and 2006, 81.5% held a negative view of predators, and 14% said they would kill predators if they had to (Hamissou & DeSilvestre, 2008).

Large carnivore extinctions have been blamed on sport hunting and on deliberate, mass culling by government agents (Treves & Karanth, 2003). In a well-known case, professional hunters regularly shoot wild dogs because they consider them to be overly brutal and efficient predators. In order to safeguard livestock growth, national veterinary services and herders will poison lions and hyenas. The threshold for

accepting human-wildlife conflict shifts from species to species and from location to location. Crocodiles, for instance, are viewed negatively across the board in Africa (McGregor, 2005). Unlike the beliefs retained by previous generations on the roles of many terrestrial wildlife species, it appears that essentially little indigenous knowledge remains about the significance of crocodiles in the natural ecosystem (Hoare, 2001).

As a result, crocodiles are universally viewed as dangerous and a nuisance because of the havoc they produce by preying on cattle and competing for seafood. There are, however, a few notable exceptions that have to do with honoring ancestors and totems. Lakes Bazoulé and Sabou, in Burkina Faso and elsewhere in French-speaking West Africa, are home to sacred crocodiles. Killing or injuring a human being at the hands of a crocodile is more acceptable in these regions than at the hands of an elephant or lion. In the first scenario, humans are blamed for encroaching on crocodile territory, but in the second scenario, it is the animal that has invaded human territory.

2.1.5 Local Beliefs have an Impact on the Occurrence of Some Conflicts

It has been noted that the belief that witchcraft is to blame for crocodile attacks on humans is widespread (Hoare, 2001). The seeming lack of worry demonstrated by communities when exposed to crocodiles on a daily basis may be partially explained by the fatalism connected with witchcraft. It's puzzling that people can be so reckless despite being aware of the dangers they pose and having the opportunity to avoid them.

It is unusual for people in Kenya to have a positive opinion of animals. Rural Cameroonian residents around Waza National Park understand the importance of

preserving the park's trees and the wildlife that calls them home for future generations. Their enjoyment of natural resources including waterholes, fishing, and the restricted extraction of non-timber forest products has given them a conservationist outlook. Despite 92 lion attacks on humans in the region of Rufiji in the United Republic of Tanzania since 1990, numerous locals have expressed a high tolerance for lions on the grounds that they help keep the bush pig population in check (Parker, et al., 2007).

2.1.6 Climatic Factors

Climate change is a major contributor to HWC, however this fact is rarely discussed. This may be because it is beyond human control. Predation rates in Kenya are directly proportional to the yearly variations in rainfall. Musiani, et al., (2003) found a statistically significant positive correlation between monthly rainfall and assaults in Tsavo National Parks, indicating that lions are more prone to prey on cattle in this location during the rainy season. When water is scarce, ungulates congregate near a few watering holes, making them easy prey for lions; when seasonal pools are replenished by rain, the lions spread into the area, altering their diet to focus on the newly available, less difficult to track herbivores (Patterson, et al., 2004). Similarly, in Zimbabwe, close to the Sengwa Wildlife Research Area, there is a robust relationship between seasonal fluctuations and the level of cattle depredation. In contrast to the situation in Kenya Tsavo, however, wild predators are more likely to draw attention and attack domestic animals during the dry season months, when the lack of vegetation makes it difficult for the surprise-based hunting techniques of lions and leopards (Butler, 2000).

2.1.7 Habitat Factors

Conflict between humans and wildlife has increased as habitats have been destroyed. Humans and animals are increasingly coming into contact with and conflicting with one another as wildlife range becomes fragmented and wildlife is constrained into smaller pockets of appropriate habitat. Half of the forest habitat for elephants in Ghana's Kakum Conservation Area has been lost since the 1970s. This explains why there are more elephants in the area (about 0.6/km2), leading to more crop raiding than in other West African forests (Barnes, et al., 2003).

The last remaining natural areas tend to be located within reserves today. The thriving animal population causes conflicts when it wanders from the reserve into the neighboring farmland or grazing land. Men are disproportionately affected when large beasts kill humans, and most of these killings occur after dark. One-third of the fatalities in Kenya can be attributed to alcohol; those who died were typically drunk and on their way home following a night out. Others were killed defending their fields, tending to their cattle, traveling at night between settlements, or falling victim to big cats. According to the Ugandan Game Department's records (1923-1994), agro pastoralists frequently attempted to scavenge from leopard and lion deaths during the twentieth century (Treves & Karanth, 2003). This dangerous activity resulted in numerous human deaths.

In the United Republic of Tanzania, men over the age of ten have a far higher probability of being attacked by a lion than women do. The reason for this is that men are disproportionately involved in activities such as tending livestock, foraging for bush meat, and making late-night journeys on foot. Attacks on men occur when they

try to defend themselves from man-eating lions, using only nets and spears. While men are more likely to be victims of violent crime than women are, both sexes are nearly as vulnerable while working in agricultural settings or in close proximity to their homes (Parker, et al., 2007). However, attacks against men were typically less fatal than those on women and children. Crocodile attacks are more common on women and children due to the gender roles common in traditional African civilization and the fact that children and adolescents do many household responsibilities. Women and children are more likely to be killed in an attack than men of adult age (Parker, et al., 2007).

AWF's research of human-wildlife conflict in the Chobe-Caprivi corridor between Botswana and Namibia found that the experience of conflict varied by gender, with the difference being tied to who owned the resources involved. The lion is the most feared predator for men since they are more likely to own livestock, which is an easy meal for the predator. Livestock losses result in some of the highest compensation amounts in Botswana. However, women, who often tend farms, view elephants as the most harmful animal due to their destructive crop-raiding habits. Over 85% of female-headed households report crop damage from wildlife conflict, and 95% report livestock attacks. Because most of these families are low-income, they cannot afford to take preventative steps like erecting high fences and securing their animals (Muruthi, 2005).

Farms in Kenya that have been fenced to keep out wild animals have effectively built physical barriers in the way of the migration of certain species. Migratory species, such as zebras and wildebeest, can cause conflicts as they try to restore their

traditional pathways from dispersal areas to the parks by destroying fences and farms. State and trust ranches that are subdivided into smaller parcels and farmed for commercial horticulture crops exacerbate tensions (Mehta & Kellert, 1998).

Human-animal conflict has worsened in many locations with abundant wildlife, including Samburu, Trans-Mara, Taita, and Kwale in Kenya, due to land-use fragmentation brought about by the rise of small-scale farming. Similarly, the San people of the Na Jaqna conservancy in Namibia have voiced their disapproval of the government's present small-scale agricultural scheme (Conservation, 2015).

There are now vast new grazing pastures available for cattle herders in places that were previously only inhabited by wildlife thanks to the elimination of the tsetse fly (Glossina sp.) and the development of anti trypanosomiasis medicines. Farmers have been able to go into previously uncultivated areas because to the simultaneous eradication of Simulium sp., the vector of Onchocerca volvulus, the bacterium responsible for onchocerciasis (river-blindness). Livestock and wild ungulates often graze together due to the expansion of human activities, notably husbandry, into new areas. The potential for the spread of disease is plain to see. At the interface of respective ranges, i.e. when mixing has occurred on common rangeland or where other resources like water are shared, direct or indirect (vector) contact between diseased wild hosts or populations and vulnerable domestic animals is likely the single most important factor contributing to the epidemic of wildlife-associated diseases (Blaum, et al., 2009).

Due to their eradication from areas of South Africa and Zimbabwe where they harmed commercial agriculture, baboons are now primarily found in forested areas and other

places where humans don't grow crops or raise animals. Instead, baboons are congregating in places where subsistence agriculture is common so they can feast on the crops of poor farmers (Cornell, 2015).

Most African seas support both subsistence and commercial fishing. Fishing used to be done mostly in areas with rich fish populations and few crocodiles because the animals generally avoid human settlements. Therefore, crocodiles preferred to live in less-fished locations, where they would be less likely to be bothered by fishermen. However, due to the rising demand for fish, these areas are now being fished as well. This has raised the potential for human-crocodile encounters and conflict. Wild crocodile populations in the rivers were probably helped by the increase in dam construction that occurred between the years of 1940 and 1980. When a river is dammed, it creates a much larger stretch of shoreline in which the water is shallow (and thus warmer), eutrophic, and stable in depth. If dams are built, the resulting wetlands are perfect for the development and maintenance of crocodile populations, especially among the younger generations. In addition to attracting human occupants, dam development increases the likelihood of conflict between humans and wildlife (Brockington & Scholfield, 2010).

Reversing the decline of once-threatened or endangered species through wildlife management and protection from poaching and overexploitation has led to the emergence of new conflicts in recent years. Kakum National Park in Ghana, for instance, has expanded the forest elephant population by providing effective protection and habitat management, leading to numerous elephants wandering out of the reserve and into surrounding villages. Similarly, in Zimbabwe, elephant violence

has mostly been caused by an elephant overpopulation that has completely overrun the state wildlife land allotted for them. Most of the reported elephant damage occurs in this area because elephants are vying for water and taking advantage of the abundant food sources. Crocodiles that were little when hunting pressures peaked in the 1950s and 1960s are now enormous breeding animals that prey on livestock, humans, and other large mammals (Conover, 2002).

2.1.8 Natural Characteristics of Wildlife

Human-wildlife conflict can be affected by factors such as wildlife's food preferences, migration patterns, wariness, and predatory tendencies. Wild animals can be drawn to certain foods from great distances. Some crops fall into this category. Elephants are drawn to the corn and cassava fields outside Ghana's Kakum National Park. In the region around the Djona hunting zone in northern Benin, maize is also the crop most commonly targeted in raids. It is targeted more often than cotton, groundnuts, and millet combined (Barnes *et al.,* 2003).

Mature wild fruits, like shea nuts (Vitellaria paradoxa) and Parkia biglobosa pods, were found to lure elephants to crop areas in Benin, where they were previously seen destroying maize and groundnuts. Furthermore, in central Burkina Faso, elephants are drawn to the wild fruits that coexist with cultivated fruits like mangoes (Mangifera sp.) and guavas (Psidium sp.) (E. Compaoré, personal communication). Possibilities for conflict between humans and wildlife may be affected by factors such as the species involved and the abundance of natural prey. Lion attacks on humans were highly correlated with the availability of bush pigs and medium-sized prey (such as zebras, hartebeest, dik dik, or impala) in a given area. It was in regions where typical

prey was rare but bush pigs were plentiful that lion attacks were most common (Parker *et al.,* 2007).

Annual migrants, like elephants, are known to stick along well-established routes. Plantations set up along these pathways are more likely to be attacked. In Mali and Togo, for example, it was found that settlements situated along the elephants' regular routes sustained the most damage (Butler, 2000).

Some fields are more likely to be raided than others because wild animals are more cautious in those areas. It's common for baboons and monkeys, for instance, to ravage little fields that are flanked by thick forests or rocky outcrops. They may easily make their way to safety from these lookouts, and it will be tough for the guards to pursue them. Wild animals can become a conflict risk when they stop being afraid of humans. Many protected areas have seen a rise in elephant populations. Some locals have lost their natural dread of humans after having friendly interactions with tourists and are now targeting innocent residents and damaging their property.

Naturally cautious of humans, especially in areas where they are regularly hunted, crocodiles can be taught that humans do not pose a threat. Because of the powerful association between food and learning, it is not impossible for animals to develop a taste for human flesh. There's no doubt that "surplus killing," a behavior shown by lions, contributes to human animosity and conflict. When a lion escapes its prison, it faces the same temptations as other large field species: killing more and occasionally many more domestic animals than it can eat (Muruthi, 2005). Not only that, but some lions develop a niche as chronic livestock killers (Frank, 2006).

The Nile crocodile is an opportunistic ambush predator that has adapted a wide range of morphological features to maximize its chances of survival in this position. Adult crocodiles will eat anything from tiny fish to large mammals, even hippopotamuses, if they can get their snouts on it. Humans are easy targets since they are weaker and move more slowly in the water than any comparable wild species. A wildlife species' usual behavior may be disrupted by its physiological (such as rutting) or health (such as injuries, infections, and parasitism) status, leading to conflict with humans (Musiani, *et al*., 2003).

Population growth and land use change are linked to the eradication, degradation, and fragmentation of wildlife habitats. The conversion of forestland in Sumatra, for instance, into agricultural and grazing land has reduced the tiger's habitat there to a few remnant forest patches. About 500 people call the island home at the present time (Muruthi, 2005)

2.1.9 Rise in Human Population

Musyoki (2007) suggests that until around 10,000 years ago, the vast majority of human cultures subsisted on a diet of wild game and gathered foods. There were no tensions in human and animal coexistence because of a lack of quality or quantity in the available natural resources. Growing crops and domesticating animals gave humans a year-round source of food resources, but they also introduced additional risks in the form of crop damage from wild animals. Since the beginning of agriculture, humans have been forced to endure the heartbreak of crop and cattle failures (Treves & Karanth, 2003).

As the human population has grown, so has the need for more settled and economically productive places, pushing human development right up to the frontiers of once undeveloped wildlife refuges and the fringes of once-vast animal migration corridors. Human wildlife conflicts are exacerbated by concerns like poverty and overcrowding, both of which contribute to the already high levels of demand that fuel them. When demand plays a role in human-wildlife conflict, he continued, addressing economic development issues can be a useful conflict management method (Musyoki, 2007). The need to better people's lives, coupled with rising human populations, has led to a perpetuation of issues in protected areas.

Mateo (2012) contends that land requirements for development and poverty alleviation activities contribute to environmental pressure, therefore tying human population growth, poverty, and efforts to better people's livelihoods together. The expansion of human settlements near wilderness areas, he adds, exacerbates the problem. This research went even deeper into the connections between rising human populations, poverty, and human-wildlife conflicts in Kamnarok National Reserve.

2.2 The Nature and Extent of Human Wildlife Conflict

The term "human-wildlife conflict" has been in common usage all throughout the world for quite some time. Human-wildlife conflict arises when wildlife needs collide with those of human populations, resulting in negative outcomes for humans and non-humans alike, as stated by the International Union for the Conservation of Nature (IUCN) and World Parks Congress in 2003. (IUCN). As long as there have been humans and wildlife, there will be conflicts between the two groups over territory and resources. Not only in Africa do people and animals come into confrontation with one

another. Human-animal conflicts occur nowadays in various forms all across the globe. For example, human-crocodile conflict has been documented in 33 tropical and subtropical nations, while it is likely present in many more. Human-wildlife conflict affects every region of the world, both developed and developing. While wealthy people in industrialized countries may be more vulnerable than those living in poverty, agro pastoralists in undeveloped countries are in a different position (Mwagiru, 2000).

Human-wildlife conflict is a major problem across Africa, especially in countries with greater per capita incomes. People are still killed by crocodiles in the Lake Nasser region of Egypt and in cities in Mozambique; leopards kill sheep within 100 kilometers of Cape Town, South Africa; and lions slaughter cattle on the outskirts of Nairobi, Kenya, as was recently seen in Kitengera (Okello & Washitemi, 2006).

Human wildlife conflicts take many forms including crop damage, damage to property, livestock predation and even attack to man. Studies have shown that local population and especially those living near Protected Areas (PAs) takes the greater burden to shoulder the costs incurred. This is more so because they are in dispersal areas of the protected areas. The increase in human population has continued to increase demand for natural resources including land. The wildlife corridors have been converted into either settlement or in areas of swamps like Kimana and Namelok in Amboseli converted into agriculture. This has witnessed increase in wildlife related conflicts. It’s clear that lack of land policies for a long time in Kenya has contributed to the current dilemma. This seriously undermines support for conservation. The cost of this is both direct and indirect through opportunity costs incurred through the conflict mitigation process (Orina, 2009).

Animals and people come into conflict when people's interests and behaviors interfere with the needs of wildlife, or when animals' needs collide with people's interests. The Kenya wildlife contributes enormously to the national GDP through tourism. The connection of this contribution to the life of the local residents has not been well articulated at the rural areas and more-so pastoral parts of the country. This is one reason why the perception on animals is changing in these communities in Kamnarok area, the communities don't have direct benefits as in most parts of the country. Stakeholders who are informed and engaged are more likely to make sound decisions and plans, which in turn reduces the likelihood of conflicts (Messer, 2009).

Policy formulation in Kenya has had no much involvement of the local populations and stakeholders. The land policy has for a long time been limited in solving the clash between humans and wildlife. The pastoral areas like Kamnarok have had farmer's migration changing the land use in pastoral areas. The in-compactable land use in these areas has witnessed increase in wildlife related conflicts. Lack of national land policy that should have made sure the wildlife corridors are left intact for the national good and world heritage has greatly contributed to this scenario (Wang *et al.*, 2006).

Wildlife conservation initiatives in Kenya address complicated and frequently chronic social and ecological concerns, such as land usage, conflicts between local people and wildlife, local people's suspicion and antagonism toward state wildlife conservation policy, and the rapid degradation of wildlife habitats (Sindiga, 2005).

Kenyans on the savanna and along wildlife corridors face a number of social and economic challenges due to their proximity to protected areas. Due to the severity of the accumulating issues, they cannot afford to give top attention to wildlife preservation efforts. The social and economic challenges have altered the scenario even in places where conservation aims were stated. Recent research has indicated that the majority of locals living near conservation areas have a negative attitude toward governmental policies and conservation initiatives (Musiani, et al., 2003). Kenya's enormous wildlife reservoir is under increasing pressure, and as a result, the country risks losing the economic, social, and employment benefits it provides. Consequently, the management of this country's government affects the incidence of disputes with animals. The fact that the sector's problems stem from a wide variety of shortcomings across so many areas makes wildlife management that much more difficult.

The adage that nothing operates in a vacuum applies particularly well to the management of human-wildlife conflicts. The places we call home and the places we go to work have been shaped by political, cultural, and social influences. Therefore, the ability of decision makers and wildlife managers to understand, embrace, and include different stakeholder's values, attitudes, and beliefs in crafting policies will be crucial to the success of programs aimed to settle human-wildlife conflicts in this ever-changing context. Values, perspectives, attitudes, and beliefs held by stakeholders have evolved over time. So, there must be long-term shifts in conflict policy and administration. When it comes to resolving conflicts in the wildlife industry, a number of moving parts just add further complexity. Human-wildlife conflict (HWC) has significantly impacted the tourism business in the Kamnarok

National Reserve area, hence this study set out to identify the approaches taken by stakeholders to reduce HWC incidents (Vijayan & Pati, 2002).

2.3 Impacts of Human Wildlife Conflict on Social, Economic and Educational Developments

Human–wildlife conflicts have been studied extensively in the Samburu and other AWF Heartlands (Musiani *et al*., 2003)

2.3.1 Wildlife Contribution to Human-wildlife Conflict

Farmers in some places have cited agricultural damage by wildlife as a major issue, one that threatens to derail development and conservation efforts. Both people and animals may suffer as a result of a dispute between the two. Muruthi (2005) discovered that at least 15 elephants in Kilimanjaro Heartland had been killed in conflict situations with local people in 1996 and 1997, accounting for three-quarters of the indigenous population's mortality. Humans were responsible for 141 out of 437 elephant deaths (33%) in the Amboseli environment between 1974 and 1990. Damage to crops, competition for water and grazing, livestock deaths and the spread of illness, and even human deaths are all major issues in the Kilimanjaro Heartland. High levels of conflict between livestock owners and wild carnivores owing to predation can occur in semi-arid environments in general, where livestock production comprises a key part of local economies.

Mountain gorillas and other forest creatures like elephants and buffalo are increasingly coming into touch with people, causing to conflicts, in Virunga Heartland as a result of habitat deterioration and human population development. The local population, many of whom are subsistence farmers, may suffer economic losses due to the loss of crops, as well as psychological distress from living in constant

anxiety and facing real threats to their physical safety. Stress, the spread of human infections, physical attacks, disabilities such limb loss from snares, and even death can arise from mountain gorillas interacting with local people: (Woodford, et al., 2005).

Almost every wild animal has the capacity to cause harm, but large potentially dangerous species, those that congregate in large groups, and those with the widest ranges are more likely to actually do so. Musiani et al. (2003) recorded the animal species involved for livestock deaths in the Samburu Heartland, finding that lions were responsible for 35% of reported deaths, leopards for 35%, hyenas for 18%, baboons for 4%, elephants for 3%, buffalo for 2%, wild dogs for 2%, and cheetahs for 1%. Consistent data on the monetary costs of human-wildlife clashes in the AWF Heartlands is hard to come by (Musiani *et al.*, 2003).

2.3.2 Crop Destruction

One of the most common causes of conflict between humans and wildlife in Africa is damage to crops. Many factors contribute to how often and how often crops are raided, including the abundance, variety, and type of food sources nearby, the amount of human activity on a farm, and the relative immaturity of various crops (Vijayan & Pati, 2002).

The farming activities in Africa are in confrontation with a wide range of vertebrate species. Birds, rodents, primates, antelopes, buffalo, hippos, bush pigs, and elephants all fall under this category. Despite the fact that elephants are rarely the primary cause of damage to African farmers' subsistence crops, they are often singled out as the most dangerous animal in the region (Parker *et al*., 2007). When elephants make a

nighttime raid, they can completely level a farm. Most poor farmers lack the resources to cope with elephant damage on their own, and governments rarely provide compensation for the problem.

The adult male elephants are the ones who typically engage in crop-raiding, whereas the female herds would rather stay away from human settlements. It is important to remember that elephants can also break into storage bins and steal food during the dry seasons. And when they do, it has much more devastating effects for food security. When foraging at night, hippos may do a lot of damage to farms. Rice, vegetables, and other crops grown on river banks during a dip in water level, as well as crops grown directly in the water, such as bourgou (Echinochloa stagnina), are at risk in the Niger River (Sindiga, 2005).

Primate bark-raiding causes extensive damage to exotic tree plantations. Food crops can also be successfully raided by baboons and vervet monkeys. Like humans, they will chew on sugar cane to extract the juice and then spit out the fiber. This includes chewing on immature tobacco or wheat stems. This research aims to learn more about the impact of crop devastation by animals in Baringo North Sub-County, as well as the locals' experiences with attacks from the Reserve's wild animals (Harriet, 2015).

2.3.3 Attacks on Livestock

Domestic animals being preyed upon and killed by wild animals is another negative consequence of human-wildlife conflict. Each species, season, and abundance of natural prey affects the number and kind of domestic animals killed by wildlife. Pastoralism is still practiced by many people as their primary means of subsistence in the savannah and grasslands, and as a result, assaults on cattle are a problem there.

The losses are negligible on a national scale, but can have a devastating effect on an individual stockholder. Losses due to animals can be the difference between financial stability and abject poverty for a small-scale herder. Over a four-year period, Butler (2000) examined 312 attacks on two adjacent arid-land ranches bordering Kenya's Tsavo East National Park, resulting in the loss of 433 heads of livestock. Eighty-six percent of the attacks were carried out by lions, while the rest were executed by hyenas and cheetahs. Cattle were the most common target of lion and hyena attacks, especially at night, while cheetahs targeted the smaller sheep and goats. In addition to large predators, several of the lesser carnivores are to blame for the loss of cattle. The civet is the most damaging predator in Cameroon's Bénoué National Park, reducing livestock earnings by an estimated 18 percent. But there's more than just mammalian carnivores to this story.

Baboons, lions, and leopards accounted for 52, 34, and 12 percent of the 241 livestock slaughtered between January 1993 and June 1996 on the Gokwe communal land adjacent to the Sengwa Wildlife Research Area in Zimbabwe. Each predator has its own method of hunting, with baboons preferring to feed on smaller animals during the day and killing them, while lions and leopards preferring to hunt at night, killing larger animals like cattle and donkeys (Butler, 2000). The Nile crocodile is the most widespread and destructive of the three crocodilian species found in sub-Saharan Africa. Prey species in both the water and on land provide sustenance for this massive animal. As an example, crocodiles killed 53 cows and injured 41 others in Tanzania's Jukumu Wildlife Management Area last year (Baldus, 2005).

2.3.4 Violent Attacks on Humans and Destruction of Property

Wild animals can cause problems when they attack humans or when they invade a farm. The problem that has human and animal victims should be addressed by the federal government. Efforts have been made in some regions to make up for the losses incurred as a result of animals. Kenya was the birthplace of this, but there were many obstacles along the way. Valuing losses, corruption, sustainability, openness, and finding a reliable source of funding all contribute to the complex nature of economic loss compensation around the world. As a result, the International Union for the Conservation of Nature (ICUN) has long opposed financial compensation for environmental damage, arguing that it accomplishes little to fix the underlying problem. The problems that arise when wild animals and people interact need to be addressed at their roots (Mishra *et al*., 2003).

The crocodile's ancestry may be traced back to the Mesozoic Era, and the animal has maintained its basic biology for much longer than humans have existed. Crocodiles have probably attacked and eaten early humans and their ancestors in Africa several times over the past four million years. Crocodiles in the Nile delta in Egypt preyed on cattle and occasionally humans who strayed too close to their native environment, while hippopotamus in the Nile delta dined on cultivated crops that had encroached on their natural habitat around 2000 BC (Hilborn *et al*., 2006).

Wildlife regulations and pertinent property rights in wildlife conservation include private property where wildlife is located on private grounds, common property where wildlife is located on communal or group-owned property, and government ownership where the government owns wildlife and wildlife protection zones. Wild animals can

often be found in open access settings where no one owns the land they are on and no common property support structures exist. Since wildlife is a fugitive resource that cannot be connected with a single user as the owner in its situ condition, it might provide unique challenges and dispute over ownership. Furthermore, wildlife does not respect private property lines, therefore national parks and reserves cannot be used to confine their mobility. Since ecosystem limits are not the same as property lines, wildlife will always take advantage of the extra room and resources provided by private and communal land. It's not uncommon for species to congregate around the edges of different plots of land, some of which may technically belong to no one, and corridors between plots of land are essential for seasonal migration (Musiani *et al.*, 2003).

2.3.5 Transmission of Diseases to Livestock and/or Humans

Wildlife is known to transmit serious diseases to domestic livestock and possibly to humans (an example is rabies). Predators and scavengers like spotted hyenas, jackals, lions, and vultures can spread disease by tearing into and eating infected carcasses. Predators can contract anthrax via eating contaminated carcass tissue, which subsequently spreads throughout the animal's body and, most notably, its face (Imam *et al.*, 2002).

The African buffalo's crucial significance as a maintenance host for foot-and-mouth disease was first recognized in the late 1960s. Further evidence of wildebeest's significance in the transmission and seasonal shedding of alcelaphine herpesvirus-1 has been uncovered (Blaum *et al*., 2009).

It's now generally acknowledged that Theileriaparvaparva is a variety of Theileriaparvalawrenci seen in buffalo, and that this variant has adapted to live off of the immune systems of cattle. Although it rarely causes symptoms in buffalo, this bacterium has been linked to significant cattle fatality rates after infection. Risky as it may be to raise cattle in areas where buffalo and an appropriate vector are present. Two hundred and twenty-eight cows, including seventy-six purebred Brahmans, perished from theileriosis in Mozambique's Gaza Province. The cows had contracted the disease from buffalo (Blaum, et al., 2009).

In the mild winters of Africa's lowlands, where the zebra population thrives, African horse illness is endemic. Over thirty-three species of carnivores and twenty-three species of herbivores have been identified as having sylvatic rabies. Certain species of yellow mongoose, bat-eared fox, and jackal, all of which live in communal burrows, have been found to have endemic rabies. Many free-ranging environments have been found to harbor hippopotamuses and waterbuck that have been infected with Brucellaabortus biotype 1, the causative agent of brucellosis (Blaum *et al*., 2009).

2.3.6 The Impact of Wildlife Species on Human Livelihoods

Numerous studies on human-animal conflicts have shown that every type of wildlife actively threatens human well-being. The authors Conover (2000) and Musyoki (2007) stated that large, possibly dangerous, and group-forming wildlife species are more prone to cause conflicts when they move far than smaller animals whose ranges are constrained.

These studies have taken one of two approaches: either focusing on wildlife conservation or analyzing how the conflicts have impacted local communities (Musyoki, 2007). In their studies of crop piracy, social scientists are more inclined to consider the farmers' point of view. Wildlife scientists, who study the species at stake, care more about the conservation implications of crop raiding. Few social science research have looked into human-wildlife conflicts from the perspective of farmers. In order to gain insight into the human-wildlife conflict situation, they focus on the needs and aspirations of local populations. These studies provide an estimate of the extent to which farmers have suffered losses, but, as Musyoki (2007) points out, they rarely go into what such losses actually mean to farmers.

Treves and Karanth (2003) found that residents of towns surrounding Uganda's Kibale National Park viewed agricultural damage as a symptom of a more systemic issue: the loss of control over their country's wildlife resources to the government. He speculated that while everyone seems worried about wildlife's effect on farming, very few individuals actually suffer serious crop damage. This research will draw on previous observations made in Uganda to better understand locals' viewpoints and reveal how they truly feel about human-wildlife interactions.

Other research has shown that disagreements between individuals or between states can also lead to human-wildlife conflicts (Musyoki, 2007). This is typically the result of local communities feeling alienated or disenfranchised during park establishment as a result of state-controlled wildlife conservation. Musyoki (2007) claims that populations around wildlife areas gain in some way, whether legitimately or not. As compensation for their hardships, some people get help from government and non-

government organizations that is of a developmental character. Despite these gains, individuals hold a negative view of animals because of their preoccupation with the costs.

Furthermore, Musyoki (2007) contends that local communities would continue to detest wildlife as long as they continue to plunder people's crops. This research is based on the idea that the best way to permanently resolve human-wildlife conflicts is to prevent them from occurring in the first place. To this end, it seeks to identify the best strategies that can be used to both mitigate the severity of losses and keep problem animal species within their natural habitats.

Wildlife was seen as more of a liability by farmers in the area of Oldoyo Sabuk National Park. Only one-quarter of residents believe the park is a vital resource for the area. When asked the same question but with "Hill" substituted for "Park," 90% of farmers named the hill's springs as a crucial water supply. This demonstrated that the locals disliked the idea of the national park and considered the hill to be more advantageous to their lives. That the hill is located within a national park is ironic (Harriet *et al.*, 2015).

Human-animal conflicts, a lack of access to water pasture, wildlife diseases, and other factors all pose threats to the livelihoods of communities living on the park's periphery. They believed that addressing these livelihood challenges was crucial to the park's long-term protection. Their survey found that 85% of respondents were in

favor of keeping the park open. People who had lived near the park for at least a decade and had seen its benefits would fall into this category.

There is a need to dig deeper into the research conducted by Kenana and Owino (2008) to determine whether or not there are other factors at play in the shifting attitudes of locals than increased literacy. In order to find ways to reduce human-wildlife conflict, this topic will be explored in greater depth.

2.3.7 Locals' Contributions to Human-Wildlife Conflict

This section discusses literature on poaching, accidents, land encroachment and use of chemicals or pollution by humans in human wildlife conflict.

2.3.7.1 Poaching

The presence of humans creates a danger to wildlife in many protected areas, leading to poaching for both economic and subsistence reasons. Droughts in Namibia throughout the 1980s caused a precipitous drop in the country's animal population. Poaching occurred as a result of these droughts, with participation from both locals and state authorities (Maliasili & Well, 2015).

In six out of the eight regions studied, elephants were found to be a highly influential animal on the local communities. Because of this, most people in the area see elephants very negatively. As a result of their far-reaching consequences and the threats posed by poaching in this agro-ecosystem (Conservation, 2015).

It's possible that illegal hunters in Africa are using logic while deciding whether or not to engage in hunting. Their socioeconomic standing and the options they have for

making a living could play a role in their choices. It is well accepted that extreme poverty is one of the main reasons why locals of protected regions resort to poaching to support their families (Dickman, 2014).

Poaching is a social interaction that can improve the financial standing of a family at the expense of local animal populations and the tourism industry that relies on them. Although it may help family finances in the short run, poaching can have devastating effects on ecological groups (Sinclair, et al., 2007). The illegal trade in wildlife can have devastating effects on ecosystems and wildlife populations (Hilborn *et al*., 2006).

2.3.7.2 Accidents

Fast automobiles and motorcycles on new and old roads that run through fragile national parks are a global problem. Short-term damage from accidents involving multiple species is significant, and long-term losses from extinction could be quite expensive. Tragic train accidents involving elephants, tigers, leopards, and other kinds of wildlife that inhabit their territory are on the rise (Cleverdon, 2002).

Animals have been killed by speeding trucks, and there was a significant death toll of wildlife due to accidents, pollution, and human-wildlife confrontations during the construction of the infrastructure, especially among bigger mammals (Hilborn, et al., 2006).

The short-term and long-term effects of accidents involving multiple species are devastating for local fauna, while also being expensive for shippers and potentially

dangerous for tourists. There are rising terrible accidents involving railway and wildlife such as elephants, tigers, leopards and other species on their territory (Cleverdon, 2002). (Cleverdon, 2002).

2.3.7.3 Land Encroachment

Conservationists, environmentalists, and ecologists have enacted rules to limit human impact on national park ecosystems for political, social, and economic reasons. To protect them from the destructive effects of humans, national parks and reserves are often located in remote areas of many countries (Bartlett, 2001). In spite of governments sorting out land rights, only a small number of indigenous tribes have continued to live in and near these parks, where they continue to care for the land and go about their everyday lives. In other nations, national parks have been negatively impacted by land invasion and the establishment of human habitation or infrastructure, leading to increasing pollution and the death or extinction of significant numbers of animals. The construction of roads and railroads causes habitat fragmentation because it divides once expansive habitat areas into several smaller, less connected sections that can only support a small number of species. As a result, these vulnerable, shrinking populations are losing genetic diversity and could soon go extinct (Onyango, 2015).

Musyoki (2007) suggests that until around 10,000 years ago, the vast majority of human cultures subsisted on a diet of wild game and gathered foods. There were no tensions in human and animal coexistence because of a lack of quality or quantity in the available natural resources. Reliable food resource base was gained over time as people began cultivating land for agricultural purposes and tamed animals, while new hazards of crop destruction by wild animals emerged over time. Since the beginning

of agriculture, humans have been forced to endure the agony of crop and cattle losses (Treves & Karanth, 2003).

2.3.7.4 Use of Chemicals/Pollutants

Land and marine animals have been harassed because they frequently mistake plastic trash for edible items. Since animals can't digest them, eating them causes them to have less room in their stomachs. As a result, the animal's eating habits suffer, and it ultimately dies. Several species of wildlife, including birds, were found to have plastics and cigarettes in their stomachs after their deaths, according to the study. The animal's essential organs could be punctured or injured if some of the items are toxic or include sharp objects. Needles, knives, and shards of glass are just a few of the items commonly found in park litters that can seriously injure or kill park animals. Smoke from cigarettes thrown into the woods can spread quickly, destroying homes and property and even killing people caught in the blaze (Dickman, 2014).

Roads can cause noise and vibration, which impede the ability of amphibians, reptiles, birds, and mammals to communicate, locate prey, and evade predators. Additionally, they contribute to the proliferation of invasive species, encourage erosion, block the passage of fish, and introduce chemicals used to treat roads into water supplies. The animals in the area also suffer from the effects of the illumination along the highway (Jones, 2012).

According to research by Okello *et al*. (2001), trash promotes the proliferation of invasive species and infectious diseases. Animals that forage in the trash are at risk of

contracting and spreading several diseases. Trash that gathers water can provide a breeding ground for mosquitoes, which are responsible for transmitting malaria in tropical areas. Water systems may become contaminated with toxic chemicals and disease-causing microbes in waste, leading to the spread of water-borne diseases that can harm animals and humans if they drink filthy or untreated water. Throwing trash about has a negative impact on nature. Toxic elements and chemicals in litter can be blown or washed into rivers, forest lands, oceans, lakes, streams, and other waterways, land, forest areas, soils, or aquatic ecosystems, regardless of whether it is dropped on the side of the road, on the street, or next to a litter bin. That cigarette ash contains poisonous elements including arsenic, which can contaminate soil and water. Another case in point is the Great Pacific Garbage Patch, which has been linked to plastic waste in the ocean. Air quality can be harmed by litter because garbage releases odors and harmful or chemical fumes.

2.3.7.5 Human Wildlife Conflict on Education Development

The cost of elephant damage to farmers is not just the money they lose when their crops are destroyed, but also the time their children spend away from school guarding the crops or changing their routines to avoid elephants, as well as the mental anguish they endure from worrying about elephants at night (Gadd, 2005). Men leaving for the cities in search of work have led to a decline in crop guarding, while the number of youngsters working in the fields has fallen as more of them enroll in school. Local citizens' complaints about crop-raiding are gaining the attention of politicians, raising the issue's profile and raising the stakes of the battle (Wang *et al*., 2006).

Children, parents, and educators are all affected by a climate of fear caused by repeated acts of violence in the school environment. To prevent such attacks, schools would have to close, and finding qualified replacement instructors may be challenging in the affected districts. Long-term, these results have ramifications for the availability and quality of schools serving children in high-crime neighborhoods (O'Malley, 2010).

In Kenya, the families of those who are killed or injured by lions can receive compensation of around $400 USD, and there is also a compensation plan for livestock that is killed (Wanjau, 2002). This won't even pay for a burial or medical care (Obunde, Omiti & Sirengo, 2005). The system also doesn't account for how these tragedies affect children who rely on their parents financially but who often have to drop out of school as a result. In light of the current restriction on lion hunting in Botswana, the government has announced its willingness to compensate farmers whose livestock is destroyed by lions. There is no data to show how effective the scheme actually was.

Children's access to schooling is also hampered by the human-elephant farming conflict (Hill 2015). Unfortunately, these fields often require the protection of children. Children's ability to go to school is hampered by this obligation to the family. Sixty percent of families said they had children under 18 helping to protect their crops (Mackenzie & Ahabyona 2012). Some children guarded fields three to seven days a week during the peak-raiding season, although the vast majority worked only two days a week (probably on non-school days).

Sixty percent of students in Tanzania claimed they had missed classes to help protect crops (Mackenzie & Ahabyona 2012). Children's academic performance suffers when they miss school frequently. Kids in areas where elephants frequently raided crops had lower average test scores compared to students in areas where animals had less of an impact on education. Children's future employment prospects and educational chances may be hampered by their academic achievement (Sitati & Ipara 2012).

Many children are late or miss school altogether because they had an encounter with a wild animal on the way there. Students who regularly arrive late or miss school altogether are not only subject to disciplinary action on the part of their instructors, but also face scholastic consequences in the form of repeated work. Because of this, local authorities have cut the school day short in an effort to decrease the number of interactions between pupils and elephants. Classes are shorter for students living in HWC areas compared to other communities. This has a long-term detrimental effect on the community's educational standard and the students' ability to compete in further education and the job market (Mackenzie & Ahabyona, 2012).

Children may be forced to forego an education if their families cannot afford the required tuition. Children risk expulsion if they are unable to pay school fees. Furthermore, young people may be excused from class in order to help with the fields' security. When children have limited educational and employment alternatives, they may grow up to have little choice than to till the land (Sitati & Ipara 2012).

2.4 Emergency response strategies in the management of human wildlife conflict

Human wildlife conflict response management strategies including collaboration, compromise, land encroachment, and avoidance.

2.4.1 Collaboration

Conflicts due to elephants need to be prioritized in trying to ameliorate Human-wildlife conflicts. However, this should not undermine the cost of Human-wildlife conflicts in the irrigated zones of Kitobo and Mboghoni, which are the grain basket. Strategies for managing conflicts occasioned by the different types of species need to be designed and implemented. This should however benefit from incorporating local communities in strategy design. Community involvement will most likely increase the chances of uptake of strategies agreed upon despite their negative attitudes towards conflict caused by wildlife species. Community wildlife education through seminars, study tours and workshops will be necessary to increase their knowledge about wildlife (Mateo, 2012).

However, authorities and policymakers have been concentrating on stopping poachers rather than purchasers and middlemen. These middlemen coordinate and orchestrate the trafficking of illegal wildlife and other resources from the wild to the marketplace. They have access to global trade networks and tend to be well-connected (Brockington & Scholfield, 2010).

Some researchers have begun investigating the economic, political, and systemic issues that contribute to environmental and animal crimes. In their opinion, the most important thing is to give people in the entire community a voice. By addressing poverty and inequality at its root, this has the potential to reduce wildlife crime as well as other forms of criminal activity. Experiences in Namibia, where former poachers have turned wildlife guardians, corroborate this (Blaum *et al.*, 2009).

With more say, ownership, and benefits, local communities might step up to protect animals and conservation areas. The communal conservancies in Namibia provide interesting insights into the process of rewarding communities, notwithstanding their imperfections. Evidently, we need to build sustainable, joyful societies that get the benefits of and coexist peacefully with ecosystems (Messer, 2009).

2.4.2 Compromising

Historically, income-based poverty matrices have been used by programs to reduce regional poverty and incentivise local inhabitants to cease poaching operations, with the goal of protecting vulnerable animal species. Due to the scarcity of such data sets, it has been difficult to evaluate hypotheses regarding the significance and extent of poverty in driving poaching (Orina, 2009).

The Serengeti Regional Conservation Project (SRCP) implemented strategies in the 1990s, such as game-cropping and provisioning, to improve the economic standing of rural households outside of Serengeti National Park in northern Tanzania. As part of the project's management strategy, bush meat that had been legally harvested was made available for purchase by the local populace. It was hoped that if people could get their hands on bush meat more cheaply, it would lessen the demand for poachers. Research showed that buying legal bush meat was still more expensive than poaching, so it was recommended that the experiment be scrapped. Poachers may not have been deterred from unlawfully harvesting bush meat because of SRCP because it provided an extra source of income. Even with the SRCP in place, poachers may be able to increase their protein intake and/or income if they persist in their illegal activity. Incentives like the SRCP may have failed in part because not all impoverished households engage in poaching (Cleverdon, 2002).

An insurance plan is a novel compensation strategy in which farmers pay a premium in exchange for protection against a specific risk, such as livestock predation. The fee can be set at the prevailing rate or subsidized by environmental groups. Since it operates on a smaller scale, reports can be more easily confirmed, but a precise assessment of the cause of crop damage, livestock depredation, human injury, or death is still necessary. The insurance program may need specific measures to be performed by participating farms in order to reduce the likelihood of human-wildlife conflict, but the strategy as a whole shows promise (Treves & Karanth, 2003).

2.4.3 Accommodation

Who gets what out of conservation efforts, protected areas, and the income from the responsible use of natural resources is a clear indicator of this structural inequality. People have had to give up their homes, land, hunting privileges, grazing rights, and cultural places so that Disney-like safari parks and private reserves may move in and protect their exotic animals (Vijayan & Pati, 2002).

Those at the top of the economic ladder, including the state, hunters, farmers, tour operators, and others, have profited from conservation efforts. Community members have mostly benefited from low-paying occupations as trackers, rangers, and cooks, as well as the occasional contribution of game or elephant flesh. Top-down, without consultation with impacted populations, attempts have either not been made at all or have been made only partially to recoup property, cultural, and hunting rights (Cleverdon, 2002).

That some people who are already having trouble making ends meet would turn to poaching is probably not so shocking. The street value of rhino horn exceeds that of gold and platinum combined. Poaching and selling a single rhino horn can provide rural dwellers with more income in a year than they would normally receive from all other sources combined. Poachers are recruited by criminal organizations from the areas surrounding major reserves, putting locals at risk (Imam, Yahya & Malik, 2002). Illegal wildlife trafficking networks are the true villains, along with corrupt government officials and people working in the wildlife and conservation businesses (World Conservation Union, 2002).

2.4.4 Avoiding and Prevention

The argument that providing poachers with jobs can reduce poaching is based on the premise that doing so increases a poacher's income and keeps them from engaging in illegal activities. Contrary to this, other studies have found that families where at least one member works full or part time are more likely to engage in poaching (Nuno et al., 2014). The majority of poachers in this study used money from illegal activities as a secondary source of income, rather than as their primary source of support. This demonstrates that boosting employment in and around protected areas is not a failsafe method of lowering poaching rates. This study confirmed what was already known: respondents with greater levels of education had a better chance of gaining revenue from legitimate work. However, increasing education is not likely to help in the short-term because it is related to employment, and employment does not necessarily prevent poaching (World Conservation Union, 2002).

Species sanctuaries that are surrounded by fences offer people the chance to benefit from the area while remaining physically separated from the wildlife therein, which is especially useful for pastoral and agricultural applications. Fences also assist limit the transmission of certain endemic infectious diseases such as foot-and-mouth disease, African swine fever and theileriosis. The best results have usually come from separating wild animals from domestic livestock by setting up control areas, game-proof fences, sanitary cordons, and movement management. Traditionally, this strategy has been implemented in nations with sophisticated land-use policies in which nomad pastoralism is not common. Vaccination and vector management may be necessary to limit transmission of endemic arthropod-borne illnesses such trypanosomiasis, epizootic hemorrhagic disease, African horse sickness, and Rift Valley fever. Even while fencing is an effective tool for reducing human-wildlife conflict, it is not without cost to the ecosystem and economic repercussions, and it is never completely effective. All around Africa, people put up fences for a variety of reasons (Treves. & Karanth, 2003).

The community vouched extremely strongly for compensation when it came to the wild-life related conflicts. Direct compensation through the payment in the event of loss is usually confined to a single category of loss, such as human mortality or cattle slaughtered by predators or elephants. These programs are typically supported by a conservation group, although government funding is also available. All are intended to raise people's pain thresholds so they don't take drastic measures on their own, like hunting down and murdering elephants, lions, or whatever else is at fault (Messer, 2002).

There are compensation programs in sub-Saharan Africa for those who have suffered animal-related losses. Most African nations don't compensate victims of wildlife attacks because they believe such programs are ineffective in reducing conflicts between humans and wildlife and that they need to be updated to be less bureaucratic, more responsive, and more open (Kahumbu, 2015). Vigilance is an important component of crop or livestock protection and human-wildlife conflict management. Normally, animals will refrain from misbehaving because they are afraid of humans. Elephants in Uganda's Kibale National Park waited at the forest's boundary until the farmers had left the fields before venturing inside, indicating a fear of humans. Elephants near Ghana's Kakum Conservation Area seem to avoid farms where humans are present. Guarding herds and taking steps to actively defend them are fundamental characteristics of animal husbandry. Predation on livestock is typically lower in areas where herdsmen are stationed than in areas where animals are allowed to roam freely. Human herders in East Africa are known for their bravery and ability to protect their livestock from predators, and it is said that they have been able to drive away lions, hyenas, and cheetahs with nothing more than spears, knives, and guns (Cleverdon, 2002).

2.5 Theoretical Framework

The conceptual framework is a "blueprint" or guide for study that incorporates multiple theories (Camp, 2001). It is a framework based on an existing theory in a field of research that relates to and/or reflects the study's hypothesis. It is a blueprint that researchers frequently "steal" to construct their own house or study inquiry. It serves as the basis around which a research project is built.

2.5.1 Value - Belief - Norm (VBN) Theory

This study is based on Paul Stern's Value - Belief - Norm Theory (VBN), in which he provides a theoretical foundation for understanding the types of values that obligate individuals to engage in environmentally responsive behavior in order to solve social and environmental problems (Stern *et al*., 1999). The theory's comprehension is divided into three sections: moral norm activation, personal values, and the new ecological paradigm. Dietz *et al*. (1999) provided a theory regarding the foundations of social movement support. They found that three categories of support – citizenship acts, policy support and acceptance, and personal sphere behaviors that align with movement values – are empirically distinct from one another and constitute committed activism. In addition, they believed that the hypothesis provides the best possible explanation for support for the environmental movement.

2.5.1.1 Moral Norm Activation

The norm-activation theory of altruism developed by Schwartz (1977) has been successfully applied to environmental behavior. Those who believe that their current environmental conditions pose threats to other people, other species, or the biosphere (awareness of consequences, or AC) and that the actions they initiate could avert those consequences are more likely to take pro-environmental actions, according to this theory (ascription of responsibility to self, or ARS). Scholarly investigations of a wide range of eco-friendly practices provide backing. Citizenship deeds, policy acceptance, and individual behaviors consistent with movement values were all examples of altruism examined in this research (Stern P, Dietz T,Troy A., Guagnano. & G.A Kaloflinda,, 1999). Two important value categories are also analyzed in this study. Effects on environmentalism have been found elsewhere, and Schwatz (1977)

has suggested conservation (traditional) values and openness to change as possible explanations.

2.5.1.2 Personal Values

Researchers have used the value measures created in cross-national research, or modified versions of them, for environmental research because they follow the reasoning already described that ties pro-environmental behavior to certain basic types of values (Stern *et al.,* 1999). At its core, this strategy takes into account three distinct "value orientations" or types of values: self-interest, altruism towards other humans, and altruism towards other species and the biosphere. Environmental philosophy and the literature of the environmental movement recognize these three unique motivations for caring about the environment, but actual research has yet to show a difference between human altruism and altruism towards other species and the biosphere. However, in more environmentally conscious populations, such college students in the United States or the general public in some other nations, the contrast may be more salient.

This research delves at the selfless and selfish motivations behind environmental protection, or the Self-Transcendent (ST) and Self-Enhancement Value (SEV) value clusters, respectively. Schwartz identifies two key value categories, conservation (traditional) values and openness to change, and this study investigates both in search of evidence of their effects on environmentalism.

2.5.1.3 New Ecological Paradigm

A new ecological paradigm (NEP) or worldview, holding that human actions have significant harmful impacts on a fragile biosphere, has been connected to the growth of the environmental movement. This team also created the NEP scale, which is

currently the most popular social psychological measure of environmental concern. The NEP created a rating scale that largely gauges people's overarching, "folk ecological theory" of the biosphere and the effects of human action on it; from this, people's opinions on the negative effects (AC) of ecological change can be inferred (Stern, et al., 1999). The 15-item NEP ecological paradigm scale has a complex, multi-faceted structure that includes an ecological worldview of internalized primitive beliefs, the balance of nature, the belief that human activities impact the balance of nature, ecocrisis, the belief that human are causing detrimental harm to the physical environment, anti-exemptionalism, the belief that human beings are not exempt from the constraints of nature, and limit of tolerance (Amburgey J.W & Thomas D.B. 2011). The NEP scale measures one's ability to foresee negative outcomes, while one's propensity to feel bad about doing anything harmful to the environment can reveal one's own environmental norms. Human actions have consequences for the natural world, and when those consequences include the annihilation of wildlife habitats, locals may feel guilty about having to destroy them in order to make a living. Therefore, it is necessary to find methods of living together with wildlife.

The NEP can be seen of as a gauge of how much people are aware of the broad negative effects of environmental circumstances like the decline of biodiversity. Poaching, conflicts that result in the loss of human and cattle life, and the spread of infectious diseases are all cited as human activities that contribute to biodiversity loss in this study. Whereas, the majority of research based on the Schwartz norm-activation model employs measurements of problem-specific outcomes. As a worldview, the NEP makes one more likely to subscribe to the more limited AC worldview. Moral obligations or personal norms imbued with a certain value orientation are what drive Stern, et al. (1999)'s pro-environmental behavior. They feel

obligated because it's the norm for them to assume that valuable objects are under danger and that their actions can assist restore those values.

The hypothesis demonstrates a causal relationship between people's value systems and beliefs that the threat posed by the threats is larger than they feel obligated to solve environmental problems. The VBN - model is based on the topology of value theory proposed by Schwartz and Howard (1981), which assumes that a value of altruism will lead to an awareness of negative effects on others and, as a result, will prompt individuals to take action to solve the problem.

The paradigm categorizes values as either egocentric, biocentric, or altruistic. Through his survey results, Stem *et al*. (1999) concludes that VBN theory provides the best accessible description of support for the social and environmental concerns of communities, compared to other prominent theories.

Behaviours in the public sphere (such as accommodating animals), the private sphere (such as land policy and compensation policy), and the individual sphere (such as public involvement, collaboration, and awareness-raising) can all show support for the environment and its inhabitants. Theorists claim that self-concept and collectivism provide a solid basis for community-based management of shared resources and interpersonal ties.

Wildlife in Kenya is legally protected by the government, which does so through the Kenya Wildlife Service. In spite of this, the vast majority of wildlife exists outside

such reserves. There has been some tension between the two animal owners throughout the years. The landowners claim that because they incur greater expenses as a result of wildlife, they should be considered the de facto proprietors of such animals. To safeguard the long-term viability of the area's animal resources and to improve the area's ecological, economic, and social conditions, a rational framework for wildlife and human coexistence is required (Onyango, 2015).

Value-Belief-Norm theory has a broad perspective on environmental issues, which is why it is inadequate for use in this research. To give one example, the Moral Norm Activation defines pro-environmental conduct as the conviction that one's own activities might mitigate the negative effects of environmental conditions on other humans, other species, and the biosphere. Despite the prevalence of human-wildlife conflict, little is said about the psychological strain that residents of these areas must bear. Frustration Aggression Displacement Theory (FADT) is necessary since this method does not account for the fact that human presence in close proximity to wildlife might drive the latter to react in ways that harm humans (Displacement, 2009).

In contrast, the New Ecological Paradigm sees human actions as having considerable harmful effects on a fragile biosphere, and that awareness of extremely general adverse repercussions of environmental conditions is necessar; whereas the Personal Values approach states that conservation can be identified through traditional values and openness to change due to considerations of self-interest, altruism towards other people, and altruism towards other species and the biosphere. Less progress was made on managing human-wildlife conflicts effectively. It's not a comprehensive strategy

because it ignores important players like international organizations and locals who are directly impacted by the conflict. To address this void, the Conflict Styles Theory was developed. It follows that the VBN is insufficient as a research framework, and that new theories must be introduced to fill the voids left by the VBN (Messer, 2009).

2.5.2 Frustration Aggression Displacement Theory

Dollard et al. (1939) introduced the Frustration Aggression Displacement Theory, which was later refined by Miller (1941) and Berkowitz (1969). Aggressiveness, according to the notion, is caused when someone or something prevents a person or group from achieving their goal(s); hence, frustration is the cause of aggression. Aggression is an inevitable consequence of dissatisfaction since it motivates violent actions.

According to this view, aggression is defined as an act whose goal-response is injury to an organism, creature, or human, while frustration occurs when a goal-response experiences interference. According to this view, aggressiveness stems from frustration but is directed elsewhere when the source of that frustration cannot be addressed directly. Riots and revolutions are often attributed to the underprivileged, who feel they have nowhere else to vent their frustrations and rage, and so resort to violence (Berkowitz, 1969).

Dissatisfaction with the study stems from unfulfilled anticipation. The feeling of being ignored contributes to this discontent. The frustration-aggression theory explains how this leads to angry reactions. Anger and hostility can quickly escalate

from here. Some disagreements don't become obvious until a certain event has place. High levels of competition for land usage are a major cause of human-wildlife conflicts. The concentration of human activity in places with abundant animals has had a negative impact on the region's ability to provide enough food to sustain its inhabitants. There is still a long way to go until we meet the bare necessities of human existence. Since animals are naturally aggressive, the lack of intelligence when it comes to interacting with humans makes them increasingly frustrated, especially at the first instance of experiencing threat, which compounds the already delicate interaction between wildlife and humans and complicates social-economic activities within areas which are rich in wildlife. However, when human objectives like grain production, animal raring, and security are threatened by wild animals, people get dissatisfied and hostile, which in turn leads to human-wildlife conflict (Berkowitz, 1969).

According to the frustration-aggression-displacement theory, communities that previously coexisted with wildlife resort to their heritage killing of the animals when their basic needs are not supplied. For example, in semiarid places all over the world, residents experience frustration due to a shortage of food in wildlife reserves, a lack of water in both the population and the reserves, and a climate that produces draught. Because of this, conflicts between humans and other forms of wildlife have only increased (Orina, 2009).

2.5.3 Conflict Styles Theory

The Conflict Styles Theory was developed by Kenneth Thomas and Ralph Kilmann in the 1970s. Different levels of cooperation and assertiveness characterize the five primary conflict resolution strategies defined by the theory. In their theory, Thomas

and Kilmann claimed that everyone has a natural tendency toward one particular method of settling disputes. Thomas' conflict theory identifies five strategies for dealing with disagreements: competition, cooperation, accommodation, compromise, and avoidance.

Those who are competitive are those who have strong opinions and goals. In most cases, they are able to exert influence because of their status, level of education, field of expertise, or the ability to persuade others. Collaborative approaches are employed when multiple perspectives must be considered in order to arrive at the optimal answer, when tensions already exist within the group, or when the stakes are too high for a simple compromise. To compromise is to favor seeking out solutions that will, at the very least, leave some people happy.

When both sides have roughly the same amount of power, when progress is at a standstill, and when time is running out, compromise is the best option. By definition, an accommodating personality will sacrifice their own wants and needs in order to make everyone else happy. The accommodating person typically has a good sense of when to give in, but can be convinced to back down from a stance even when it isn't merited. When the other party's interests outweigh your own, when keeping the peace is more important than winning, or if you want to be in a position to collect on this "courtesy" you've given, accommodation is the acceptable response. However, favors may not be returned, and this strategy is not likely to produce optimal results. Finally, avoidant members are those that want to stay out of the conflict altogether. Characteristics of this approach include passing off responsibility for difficult choices, being content with the status quo, and avoiding confrontation out of concern for

others' feelings. There are times when it's the right move, such as when you know you can't win, the stakes are too low, or someone else is in a better position to handle the situation. This is a poor strategy to employ in many cases, however (Hamissou & DeSilvestre, 2008).

The Conflict Styles Theory is applicable to this study because it proposes strategies for resolving human-wildlife conflicts in the Baringo North Sub-County. For instance, policies that allow for a range of perspectives to be expressed, leaders that take contrasting stances on resolutions, and those who advocate for cooperative democracy. The study concludes that so long as people and wildlife in the Baringo North Sub-county coexist, conflict will inevitably arise, and that there are both immediate and long-term options for resolving the many forms of conflict that have been documented. When fighting breaks out, it forces people to rethink their relationships with one another and whether or not they can live together in a way that is both peaceful and productive for the economy and society of the Baringo North sub-county. Therefore, since conflicts are driven by unmet demands, managing them well should eliminate the negative and damaging impacts, turning them into a net positive. The existing degree of human-wildlife conflicts can be reduced if the Baringo North Sub-county implements one or more parts of Conflict system theory, including competitiveness, collaboration, compromising, accommodation, and avoidance.

The researchers in this study triangulated three theories: the value belief norm theory, the frustration aggression displacement theory, and the conflict styles theory. All of these theories and their relevance to the study as well as their role in facilitating the study's overarching goal have been examined at length above.

2.6 Conceptual Framework Model

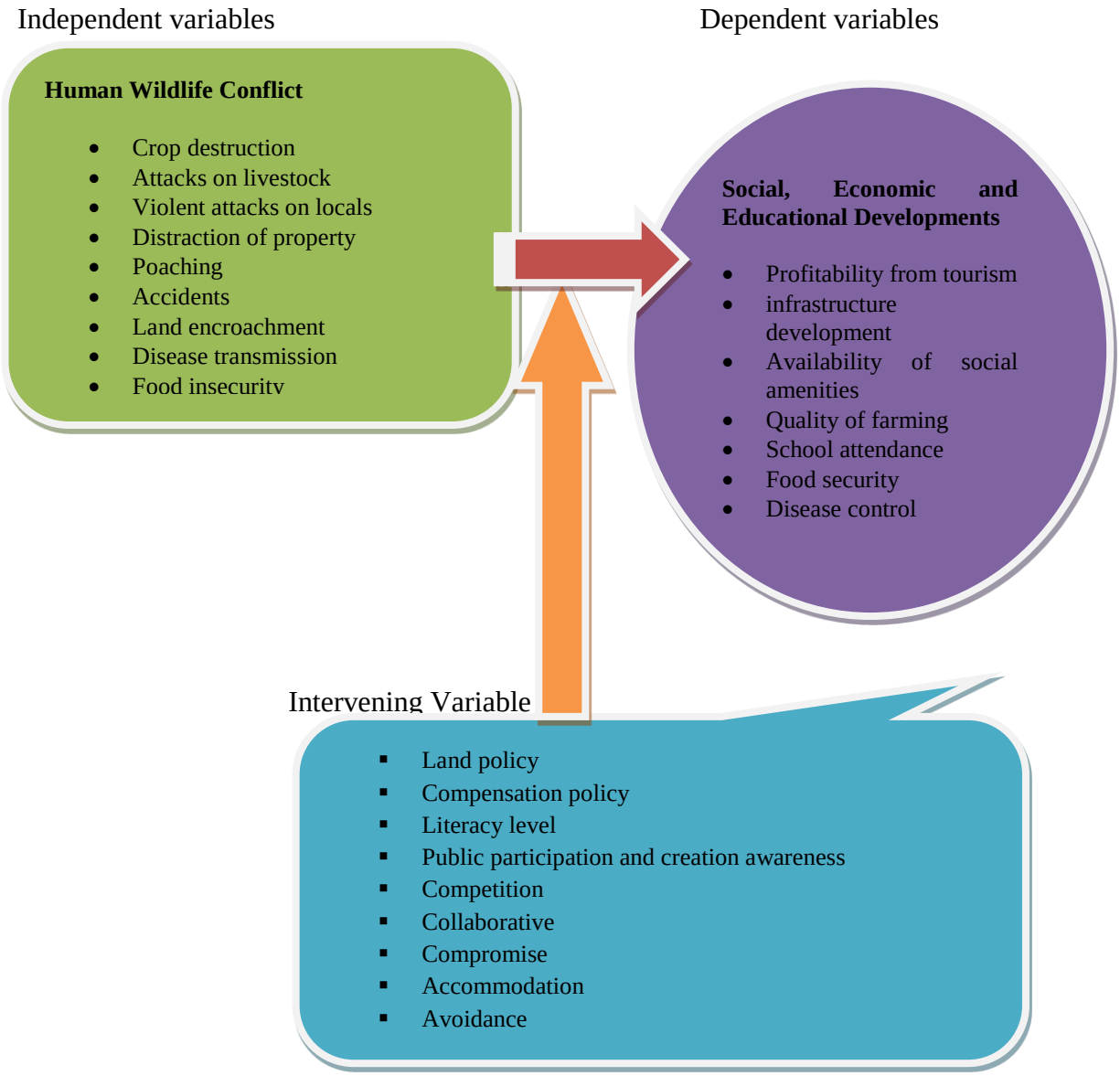

Figure 2. 1: Conceptual Framework Model

Source (Researcher's, 2021)

2.7 Summary of Gaps

Orina (2009) conducted research on the Nairobi National Park and its surrounding Kitengela and Athi Kapiti plains, covering the resolution of human-wildlife conflict and various strategies the local community had implemented to do so. However, he did not examine the larger ecology of Nairobi in relation to other regions of Kenya,

such as Baringo North Sub-County (Slotow, 2008). Togoch (2018) conducted research at Kamnarok National Reserve, but his focus was on how the HWC has influenced the diversification of the residents' means of subsistence in the park's vicinity. According to Wang and Macdonald (2006), there have only been a few models that have been effectively implemented, while others have began with a very limited grasp of the fundamental reasons of the risks to the protected areas that require conservation.

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CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the technique and procedures used to conduct the research. The aims of this chapter are to describe the research area, population under study, sample size and sampling methods, data collection instruments, information gathering protocols, data processing and presentation, and ethical considerations.

3.1 Research Design

Creswell and Miller (2000) define a study design as "a description of techniques that researchers employ to gather, analyze, interpret, and present their research results." Researchers follow the rationale established by their study design when conducting their investigations and analyzing their data (Flick, 2002). This study used a descriptive survey method to identify factors that either increase or decrease the likelihood of human-wildlife conflict in the Baringo North Sub-County. The study's methodology was judged adequate since it uncovered factors like population growth, shifts in land use, and the biased application of policies that contribute to human-wildlife conflict. As an added bonus, this method allows the researcher to survey a sample of the population to gain insight into how its members think, feel, and act, as well as what they know. Since the conflicts in the area span the entirety of Baringo North Sub-County, it was necessary to adopt a cross-sectional study design to provide an accurate picture of the community at large.

3.2 Study Area

The research was conducted in the Baringo North Sub-County of Kenya, which lies roughly 270 kilometers north-west of Nairobi and is part of the country's former Rift Valley Province. It has a total area of 1,703.50 square kilometers. To the east are

Samburu and Laikipia, to the north and north-east are Turkana, to the south is Nakuru, to the west is Elgeyo Marakwet, to the north-west are West Pokot and Uasin Gishu, and to the south-west are Kericho and Uasin Gishu (IEBC, 2017).

The southern half of the Sub- County experiences milder weather, with temperatures averaging 25°C in June and July and 30°C in the hottest months of January and February, while the northern parts have warmer weather, with temperatures averaging 30°C to 35°C throughout the year. Every year, the county's hills get between 1,000 and 1,500 millimeters (mm) of precipitation, while the lowlands only get 300 millimeters (mm) of rain. March through June (long rains) and November (short rains) are the two rainy seasons that Baringo North Sub-County experiences (Kenya Metrological Department, 2018).

The county's topography mostly consists of river valleys and plains, the Tugen Hills, the floor of the Rift Valley, and a northern plateau. The Kerio valley is notable as one of the major river valleys in the area. Located in the western part of the county, this plain is quite level. The height above sea level varies from 1000m to 2600m (Kenya Metrological Department, 2018).

The research focussed on the reserves in the Baringo North Sub-County, one of which being the Rimoi National Reserve, a sanctuary for endangered animals. The Kenya Wildlife Service guards the 66-square-kilometer reserve. It is a component of a conservation area that is five times greater than its size and is located next to the dried-up Lake Kamnarock. In addition to the world's rare white crocodiles, which

may be seen at the campsite along the Kerio River, the reserve is home to a variety of reptiles such as Agama, lizards, tortoises, and snakes. Based on the efforts of the Kenya Wildlife Service (KWS) to include local communities in the management of wildlife resources in these locations, this study uses Rimoi National Reserve as a proxy for the other reserves. Which has helped local communities maintain its natural resources, but has had unintended negative consequences and has not improved their standard of living, hence the study's urgency (Woodroffe et al., 2005). Therefore, KWS is eager to support and cooperate with people in Baringo North Sub-County, Rimoi being one of the reserves, to identify and implement optimal land uses that have high conservation and livelihood values (WWF, 2006).

3.2.1 Economic Activities

Dairy production and the cultivation of cereal crops, legumes, and coffee are among the most common agricultural pursuits. Besides urban areas, goats, sheep, cattle, camels, and bee keeping make up the majority of livestock activity in the remaining sub- County's rangelands. In the south, the average annual high temperature can reach into the low 300s. Northern regions typically get temperatures of over 300, with occasional spikes to over 350. January, February, and March are typically the warmest months of the year. In the Tugen Hills, the average yearly low can be as low as 100 degrees Fahrenheit, with a range of 160 to 180 degrees Celsius. The height is a major contributor to the temperature differences. Tugen Hills' high height (2600m) means substantially cooler temperatures than the lowlands (762-1,050m) of Marigat, Kerio Valley, and Nginyang (Kenya Metrological Department, 2018).

3.2.2 Agriculture

Irrigation Scheme in Ketiptergek Farmers The economy of the Baringo sub- County relies heavily on livestock raising and crop farming. With over 2 million livestock,

there is a strong focus on this industry as a means to economic independence. Since much of the county is semiarid, the local administration has focused heavily on irrigation systems in place of relying on natural rainfall for food production. Over 13 irrigation schemes have been set up, allowing farmers to cultivate grains, fruits, and vegetables on more over 3000 acres of irrigated land. Maize, millet, green grams, cotton, and pawpaw are the most often cultivated crops in Baringo North Sub County, which is mostly irrigated by the Barwesa, Marigat, and Pergera systems (Ministry of Agriculture, 2019).

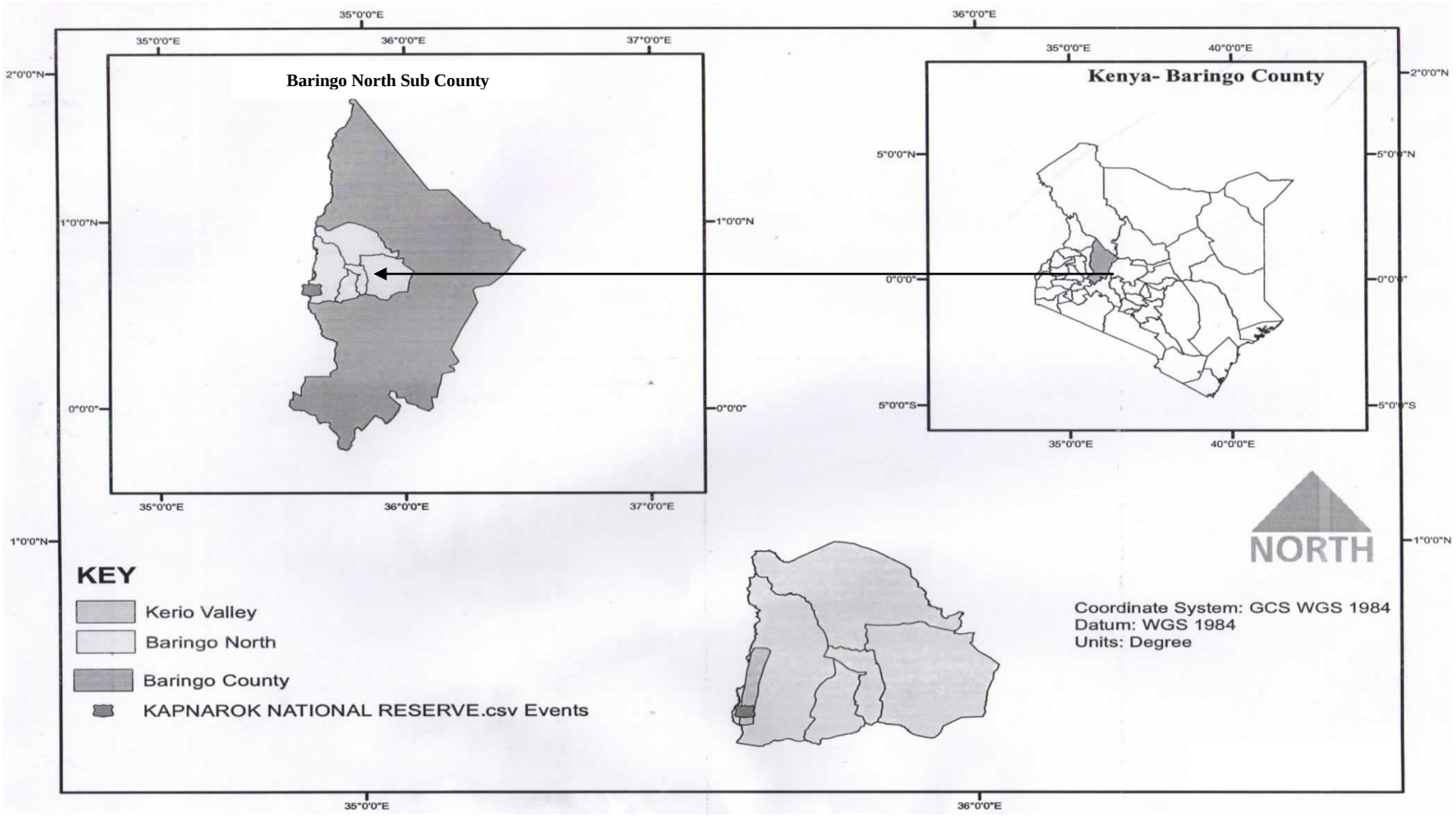


Figure 3. 1 Baringo North Sub County

Source: Researcher's (2021)

3.3 Study Population

A population is the total number of people, cases, or things that share some observable characteristics (Mugenda & Mugenda, 1999). Those people who are the focus of a study are known as the "target population." The study population included 20 government officials, 10 civil societies leaders, 25 KWS officials, 30 opinion leaders, 58 head teachers, 655 farmers and conservancy groups, 28 village elders and 650 victims of HWC. A total of 1476 participants were sought for the study.

3.4 Sampling Procedure and Sampling Size

A sample is a representative selection from a larger population whose features were extrapolated to represent the entire population. Sampling is a method for generalizing from a small number of examples. Orodho (2009). The number of observations that make up a statistical sample is referred to as the sample size. The study's sample participants were selected using a purposive sampling strategy and simple random sampling. Purposive sampling was used to select samples for government field officers, civil society leaders, farmer’s groups and conservancy groups. Simple random sampling was used to select samples of KWS officials, opinion leaders, teachers and village elders. Snowball technique was used to identify victims of human wildlife conflicts. According to Krejcie and Morgan's Table 1970 "Appendix Viii," Conroy's (2018) suggestion that a sample of 30% of the subjects can be sufficient, and Creswell's (2018) statement that 10% of the sample is sufficient, especially for phenomenological research, were used to determine the size of the sample population.

Table 3. 1 Sample Size

Category of Study Population	**Target population**	**Sampling strategy**	**Sample Population**	**Method of Data Collection**
Government field officers	20	30%	6	KII
Civil Society Leaders	10	30%	3	KII
KWS officials	25	10%	3	KII
Opinion leaders	30	10%	3	KII
Head Teachers	58	10%	6	KII
Farmers Groups and Conservancy Groups along Kerio Valley	655 participants (Stewart, & Shamdasani, (2014)	Recommended FGDs 10-12 per FGD	2 FGDs of 10 Participants each (total of 20 participants)	FGD
Village elders	28	10%	3	KII
Victims of human wildlife conflicts	650	Krejcie and Morgan Table 1970	242	Questionnaires
Total	**1476**		**286**	

Source: Researcher's (2021)

The total sample size was therefore 286 respondents. The sample included 6 government field officers which were purposively sampled, 3 civil society leaders, 3 KWS officials, 3 opinion leaders, 6 Head teachers, 20 community based organization leaders and farmers, 3 village elders and 242 victims of human wildlife conflicts.

Sample technique refers to the procedures for selecting smaller subsets of a population for the purposes of study (Mugenda & Mugenda, 2003). This study employed both purposive and simple random sampling methods. The selection of government field personnel and the identification of key informants utilized purposeful sampling, whereas the selection of victims of human-wildlife interactions utilized simple random sampling.

3.5 Data Collection Method

Mugenda & Mugenda (1999) define data collecting procedures as the employment of selected data collection instruments to acquire information from the targeted population. The questionnaire and interview guidelines were used to collect data for the study.

3.5.1 Questionnaire

This is a collection of questions to which a written response is expected. Respondents were provided with the designed questions or things. This method collects a large amount of data in a short amount of time. The method was deemed appropriate because the necessary information could be simply represented in writing and time was restricted (Flick, 2002). In this study, respondents were given sufficient time to complete the questionnaires before sending them back. The questionnaire contains open ended questions. This enabled people to express their own opinions. The questionnaire has two sections as well. The first section concentrated on the respondent's basic background, whereas the second section centered on the research aims. It contained questions with likert scales format. The surveys were used to collect information from government field officers, Head Teachers, KWS representatives, and HWC survivors.

3.5.2 Interview Schedule

The study also included interviews as a data collection technique. This strategy was employed primarily to collect information from Ministry of Forestry and Wildlife staff. For this activity, structured and semi-structured interview questions were developed (Orodho, 2009). The use of interviews was justified by the fact that they are simple to deliver because the questions are prepared beforehand. In addition, they enable the collection of vast amounts of data in a short period of time. In addition, interviews avoid numerous sources of bias common to other instruments, such as observations. A schedule of interviews was employed to obtain information from neighborhood group leaders, opinion leaders, and government and national office holders. The schedule had three sections. The first section provided background information for the respondents. Section two provided information on the HWC in Baringo North Sub County while the third section provided information on the mitigating measures. The information was collected and classified according to the emerging themes and reported.

3.5.3 Focus Group Discussion (FGD)

For a scheduled focus group discussion, the researcher requested that a community leader provide a room large enough to accommodate 10 to 11 community members. The researcher ensured that all members engaged according to their preferences while still achieving the clearly defined academic purpose of eliciting and discussing the members' perspectives, evaluations, and reasonable uses of textual evidence and other substantive support (Krueger, 1994). The researcher polled locals with questions about their experiences with human-wildlife conflict and took thorough notes on their responses. The questions for the FGD were divided into four sections. The first

section provided background information of the respondents, the second section provided information on the human population and settlement patterns, the third section provided information on the animal species found in the game reserve while the fourth section provide information on the mitigating measures.

3.5.4 Observation Checklist

As a secondary method of information gathering, the researcher used an observation checklist. Researchers can gain a great deal of insight from using observational techniques. Researchers can use them to see if participants are showing their emotions nonverbally, identify who is speaking to whom, understand the dynamics of group communication, and monitor how much time is spent on specific tasks (Schmuck, 1997). Researchers can use participant observation to verify the meaning of terms used by participants in interviews, gain insight into events that informants might be reluctant to discuss because of the potential for offending others, and verify the veracity of situations described by informants in interviews.

According to Schmuck (1997), "the goal for design of research employing participant observation as a method is to establish a holistic picture of the phenomena under study that is as objective and accurate as feasible given the limitations of the method." They propose that this be done in order to boost the validity of the study, since observations may assist the researcher have a better grasp of the environment and the phenomenon being studied.

3.6 Pilot Study

Pilot study involved conducting a preliminary test of data collection tools and procedures to identify and eliminate problems and hurdles, allowing programs to

make corrective changes or adjustments before actually collecting data from the target population (Mohamed, 2014). Pilot test is an activity that assists in determining if there are flaws, limitations, or other weaknesses within the interview design and allows any amendments necessary to be made (Kvale, 2007). A pilot study was carried out in Rimoi game reserve in Elgeyo marakwet county, a county neighbouring the study area, to test the reliability and validity of the research. The rule of thumb is that 1% of the sample should constitute the pilot test (Cooper & Schilder, 2011). The pilot test was conducted within this framework. The pilot study was conducted using the same instruments that was administered to the respondents prior to the main study.

Finally, the pilot survey drew responses from the interviewees on the design and content of the instrument and suggestions for more efficient and practical ways of administering it. The pilot testing was re-run until the researcher was satisfied with the data collection instruments. The value of the alpha coefficient ranges from 0-1 and was used to describe the reliability of factors extracted at 0.5 significance level from dichotomous to multi-point formatted questionnaires or scales. A higher value showed a more reliable generated scale. Cooper & Schindler (2008) indicated 0.7 as an acceptable reliability coefficient. Internal consistency as measured by Cronbach's alpha formula with results of 0.7 or higher demonstrates the instrument's reliability. The pilot study gave a reliability of 0.7 and it was deemed to be reliable enough.

3.7 Validity and Reliability of Instruments

The researcher ensured the validity and reliability of data gathering instruments. This was accomplished by conducting a pilot study. Pilot research was conducted in the Rimoi game reserve on the border of Elgeyo Marakwet County, while the primary research was conducted in the Kamnarok national game reserve on the border of

Baringo County. The pilot study was conducted to assess the precision of the research data collection tools.

3.7.1 Validity

An instrument is valid if it measures what it is intended to measure and performs its intended purpose accurately. Validity is a question of degree, and discussion should center on a test's degree of validity rather than its validity per se (Creswell & Miller, 2000).

According to Creswell and Miller (2000), there is no totally valid test instrument. The researcher must have certainty that the instrument employed yielded accurate results. Validity refers to the appropriateness, significance, and utility of inferences drawn by the researcher from the acquired data. Validity is frequently associated with a value judgment.

According to Creswell and Miller (2000), content validity is established by evaluations of the content's appropriateness. This study depended on the guidance of my supervisors to establish whether or not the items were a representative sample of the abilities and characteristics that comprised the regions to be measured. The terminology employed in the data collection instruments was straightforward and easy for respondents to comprehend. The researcher was able to improve the form and content of the instruments based on the advise of the expert.

3.7.2 Reliability

The research instrument's reliability refers to the degree of consistency it displays. Reliability is the consistency of the obtained scores. That is how consistent an individual's results are from one administration of an instrument to the next and from

one question to the next. Coefficients measure the strength of connection between variables and are used to express the reliability of standardized tests. By placing all odd numbers in one subset and all even numbers in another subset and calculating the coefficient of internal consistency, reliability was determined (Kothari, 2010).

The study utilized the Statistical Package for the Social Sciences to achieve a statistical reliability measure. The research tools underwent a Cronbach alpha Coefficient examination.

According to Kothari (2010), the Cronbach alpha Coefficient test measures the degree to which a research instrument produces consistent results or data after multiple trials, hence establishing its accuracy or precision. Internal consistency as measured by Cronbach's alpha formula with results of 0.7 or higher demonstrates the instrument's reliability. Table 3.2 provides examples of expected results regarding the reliability of research tools.

Table 3. 2 Cronbach Alpha Scale

Cronbach Alpha	Internal Consistency
α >0.9	Excellent
0.9 > α > 0.8	Good
0.8 > α > 0.7	Acceptable
0.7 > α > 0.6	Questionable
0.6 > α > 0.5	Poor
0.5 > α	Unacceptable

Source: Kothari (2010).

3.8 Data Analysis and Presentation

Analyzing data entails establishing some kind of hierarchy or framework for the gathered data in order to draw conclusions from it. The data analysis and visualizations employed a wide range of approaches. A mixture of quantitative and qualitative methods were used. Statistical software for social sciences (SPSS, version

21.0), together with proportions, percentages, and averages, were used in the studies, all of which are indicative of the quantitative method and were used to paint a broad picture from which conclusions could be drawn. The qualitative information gathered through surveys and in-depth interviews was subjected to a theme analysis. But statistical tables, bar graphs, charts, and even maps were all derived using qualitative methods (Espinosa & Yamashita, 2015).

3.9 Limitations and Delimitation of the Study

Due to the unique physical and environmental conditions of the study site, the results may not be generalizable to other reserves in Kenya. The research was done in the Baringo North Sub-County. Human-animal conflicts in this reserve may have different root reasons than those in other protected areas. Due to the sample size limitations, the results may only be applicable to the people in the Baringo North Sub-County. Still, the study's conclusions were broad, revolving around issues like human resources and funding.

When surveying local residents, the researcher ran upon another stumbling block: the wide range of perceptions reflected in the respondents' homes. Research assistants familiar with the geographical dynamics of the locations were recruited from the local community to help with data collecting, and a sampling approach was employed to choose a representative sample of the target population. The Research assistants were trained on the objectives of the study and on using the various tools of data collection. They were involved during the piloting of the study which was done in Rimoi game reserve and during the actual study. Due to illiteracy, some participants from the target communities seemed to stray from the study's constructs, especially during

interviews. The study team took extra care to avoid collecting unnecessary data while yet showing deference to the interviewees and putting in the necessary time and effort to guarantee that only useful material was gathered.

3.10 Ethical Considerations

Kothari (2010) proposes five ethical considerations that must be taken into account when doing research. Participation must be entirely voluntary, and no harm must come to responders. Anonymity and confidentiality must be maintained at all times. Ethical considerations were addressed one by one in this study, with detailed discussions of each guideline. The researcher ensured that taking part was entirely optional first. However, there may be situations when the necessity for a high response rate conflicts with the desire for voluntary involvement. Response bias can be caused by low return rates. Participants in this study gave their informed consent and were not coerced in any way. The protection of respondents was emphasized as an ethical principle. In this study, we made sure to avoid asking any questions that would make participants feel awkward or embarrassed.

3.11 Summary of the Chapter

This chapter discusses the research design, area of study, the sample and sampling procedure research instruments, validity and reliability of data collection instruments, data analysis techniques and ethical considerations in details. The next chapter focuses on data analysis, presentation and interpretation.

CHAPTER FOUR

THE CAUSES OF HUMAN-WILDLIFE CONFLICT IN BARINGO NORTH SUB-COUNTY, KENYA

This chapter gives a detailed description of the findings for objective one. The chapter covers areas ranging from demographic characteristics of participants to nature of humans and wildlife contribution towards social, economic and education developments in Baringo North Sub-County, Kenya. This section covers the nature of human wild life conflicts, causes and extent of human wild life conflicts in the study area. It also analyses the conflicts in relation to property destruction and human life risks.

4.1 Demographic characteristics of study Respondents

The researcher sought to understand the demographic characteristics of the stakeholders and survivors in relation to Human-wildlife conflict in Baringo North Sub County. The study found out that the mean age of the survivors was 47 years while the majority had an age of 60 years. The study considered various demographic characteristics including gender, education, children, and distance from School.

4.1.1 Gender of the Respondents

The study sought to establish the gender of stakeholders and survivors in relation to human-wildlife conflicts in Baring County. The findings revealed that out of the 286 stakeholders and survivors, 206 (72%) were male and female 80 (28.0%). The findings were as indicated in Figure 4.1.

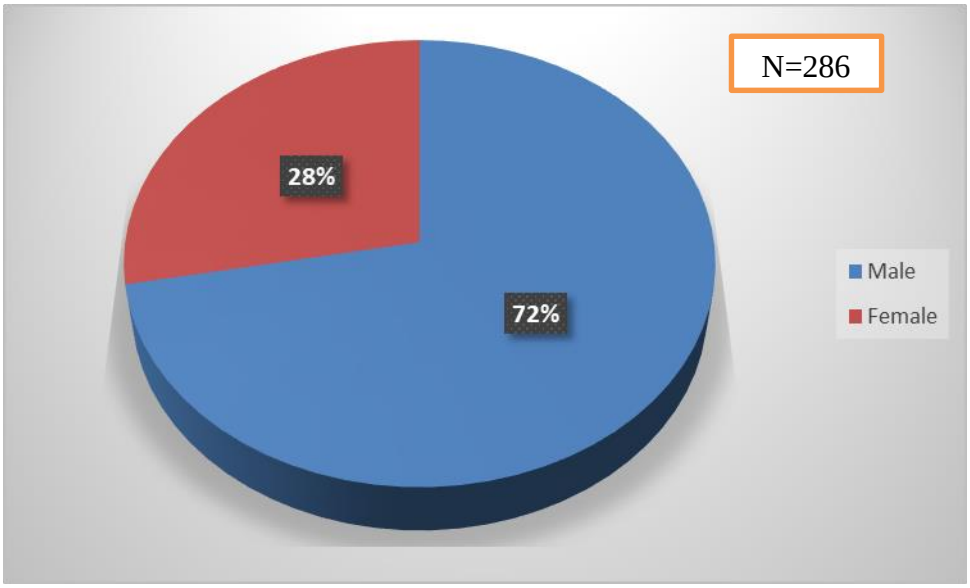


Figure 4. 1 Gender of the respondents

Source: Field Data, 2021

Gender attitudes towards human wildlife conflicts are key in understanding the problem and getting proper solutions. Gender was explored as part of the demographic information in order to bring into perspective the important role of gender in addressing HWC problems. Gore and Kahler (2012) found that men and women had similar risk perceptions and ideas about different kinds of HWC in their discussions in the "wildlife" domain. The potential utility of these shared perspectives as a basis for HWC interventions is demonstrated by the fact that they hold true across both populations and risks to wildlife and livelihoods. It's possible, for instance, that men and women can agree on the importance of using chile "bombs" or "fences" to defend crops from elephants. Women, however, were the only ones to recognize the threat posed by chili "bombs" and "fences" to wildlife. Elephants are said to be repelled by the scent of pepper (capsaicin), hence this ingredient is pushed in a number of elephant deterrents, including fences and ropes that serve as barriers surrounding crop fields. This is a significant discovery since, in many parts of the

world, including the case study location, women perform the bulk of the agricultural labor beyond land clearance and plowing. Unless risk perceptions are specifically addressed as part of the intervention, the application of a good approach may be hampered if women believe dangers to animals from interventions including chile to be high. In particular, treatments ought to deal with inflated fears of danger.

4.1.2 Marital Status of Survivors

The study sought the marital status of human-wildlife conflict survivors in Baring County. The findings of the study revealed that out of the 286 survivors who participated in the study 242 (84.5%) were married, 30 (10.6%) single, 11 (3.7%) widowed and 3 (1.2%) divorced. The results were as shown in Figure 4.2

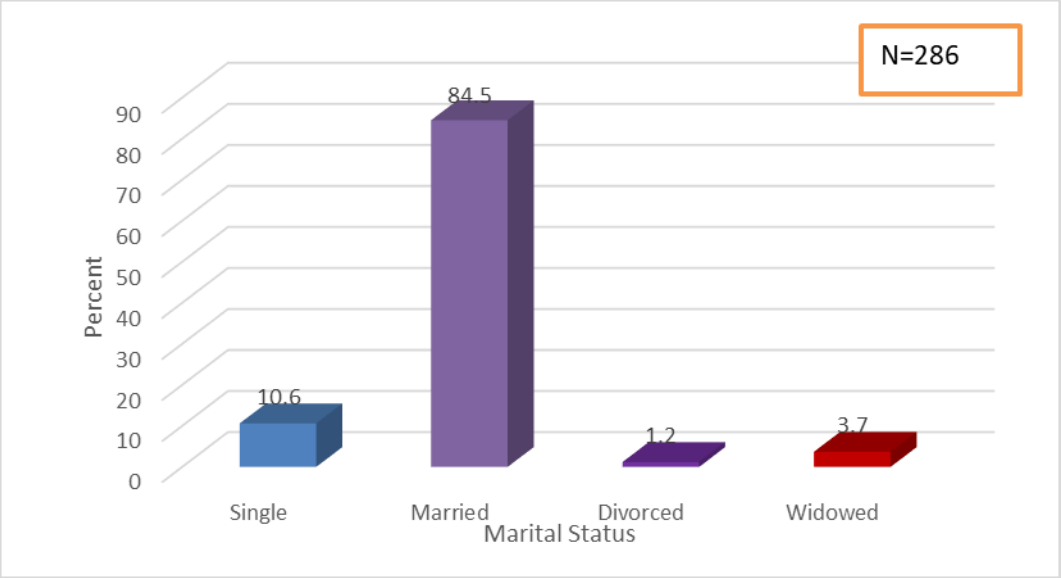


Figure 4. 2 Marital Status of the respondents

Source: Field Data, 2021

Most of the respondents were married, an indication that community's basic unit of family is of essence. Further an individual's status is important and finds fulfillment in marriage. Community development for economic growth could best be realized in family units.

4.1.3 Education Level of Respondents in the study

The study sought to establish education level of stakeholders and survivors. The results revealed that in relation to academic level of participants 32 (11.2%) had a tertiary level education, 167 (58.4%) had secondary level education while 87 (30.4%) had primary level education. The findings were as shown in Figure 4.3

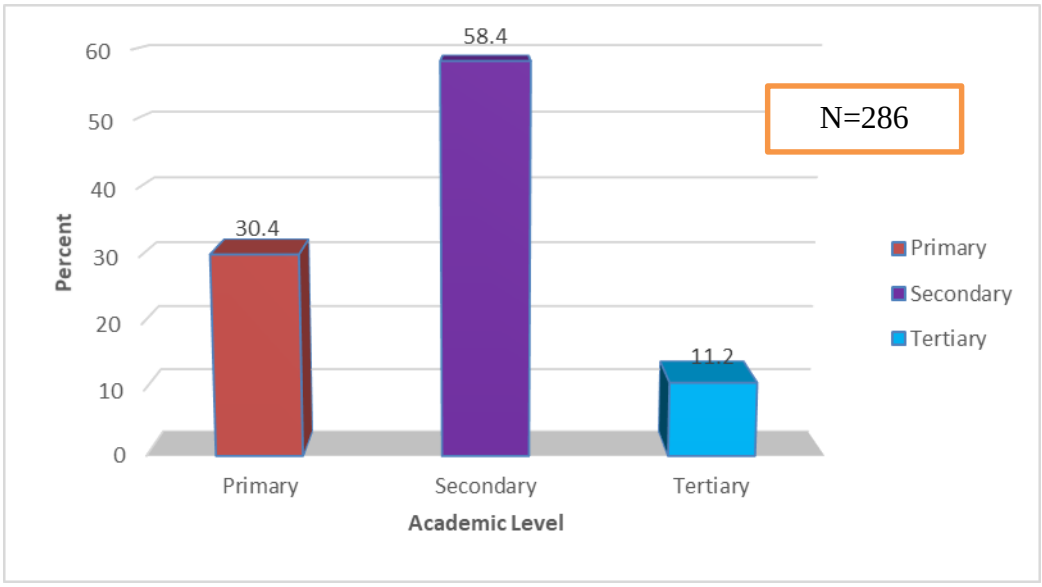


Figure 4. 3 Education Level of Survivors

Source: Field Data, 2021

According to Mir et al. (2015), formal education did not have a significant impact in determining attitudes toward animal conservation near Dachigam National Park. This finding is consistent with those of Gadd (2005) and Groom and Harris (2007). (2008). Newhouse (1990) has also claimed that views about the environment may be formed through life experiences as opposed to formal instruction. Education on animal conservation, however, can create a knowledge basis to support or justify views (Woodroffe et al. 2005), and it may be a key instrument for enhancing comprehension and inspiring local communities to collaborate on conservation and sustainable resource use efforts (Gadd) (2005). Therefore, educating the public about the

demands and advantages of wildlife conservation is essential for securing support for conservation efforts and public engagement in conservation activities.

Most respondents had basic education knowledge and a few had established professional careers. This could explain reasons why HWC has persisted with little regards for wild life conservation due to tangible generated lack of benefits from conservation. this could also imply that the community's value for formal education is less taken seriously further it could also imply lack of opportunity or lost opportunity for pursuit of further education or carriers.

4.1.4 Source of Livelihoods of the respondents

The study sought to establish the source of livelihoods of the respondents in the study. The results of the study revealed that out of the 286 respondents, 222 (77.6%) farmers, 46 (16.2%) had formal employment, 11 (3.7%) were unemployed while 7 (2.5%) were students. The results were as shown in Figure 4.4

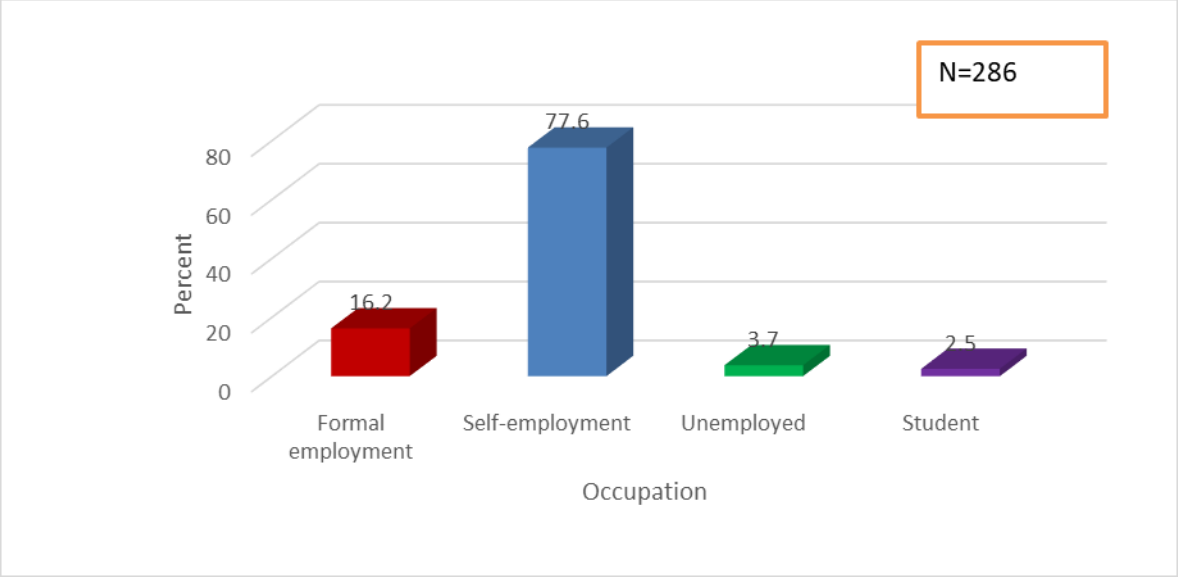


Figure 4. 4: Source of Livelihoods of the respondents

Source: Field Data, 2021

Some of the Community economic activities included: Livestock rearing; Small scale farming including small irrigation schemes; Bee keeping; Sand harvesting; Herbal medicine extraction for commercial undertakings; Extraction of mineral soils for quality livestock; Fishing in lake Kamnarok and its adjacent streams.

Most respondents were farmers, an occupation that is greatly affected by HWC and subsequently negatively influencing social- economic development of the community as in loss of crops, livestock, human life and damage to property. This also has a bearing on the community's poverty index. The small number of respondents in formal employment could translate reduced community earnings for economic growth. It could also mean majority of community members lack requisite skills for formal employment occasioned by low transition rate at tertiary level and beyond.

4.1.5 Children of survivors Attending Local Schools

The study sought to establish whether the survivors had school going children of which it was established that 241 (84.1%) attended local schools while 45 (15.9%) did not attend local schools. The results were as shown in Figure 4.5.

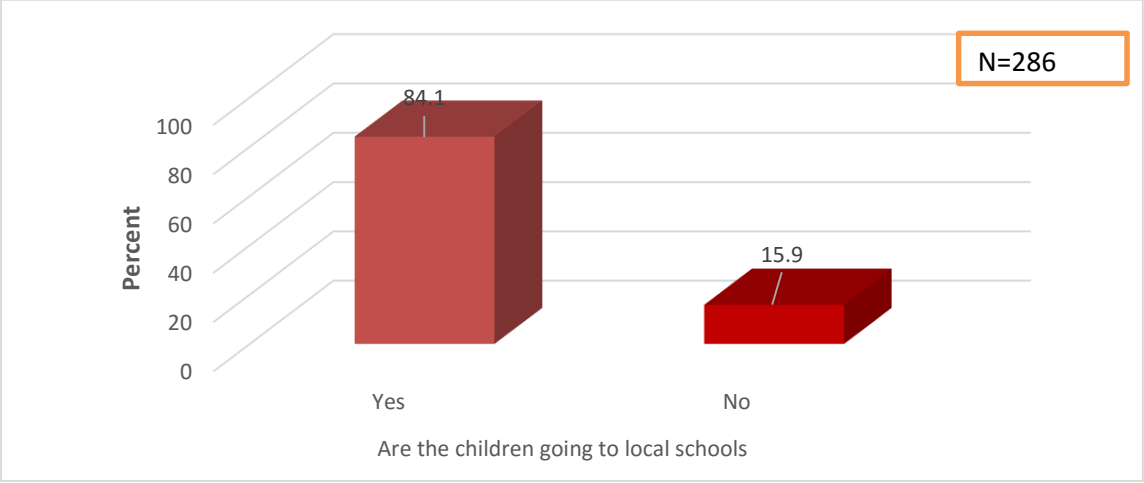


Figure 4. 5: Whether Children of survivors Attend Local Schools

Source: Field Data, 2021

Most survivors sent their children to local schools and most of whom trek to school covering long distances. This is most likely brought about by low economic status of households. Consequently, such learners are vulnerable to insecurity posed by roaming wild animals. Quality education is compromised given the time taken to and from the respective schools. They also experience lack of educational infrastructure which can provide conducive learning environments e.g good equipped schools and good roads/ communication networks. The above have a negative impact on quality education which could translate to low social- economic community development

4.1.6 Distance Covered by Children to School

The study further sought to establish the distance covered by the children attending local schools to get to their respective schools. Out of the 241 survivors whose children attend local schools, 151 (62.5%) cover a distance of 2KM, 51 (21.5%) cover 3 to 4 KMs, 14 (0.6%) covered a distance of 5-6 KM and 30 (12.4%) cover over 6 KMs to school. The results were as indicated in Figure 4.6

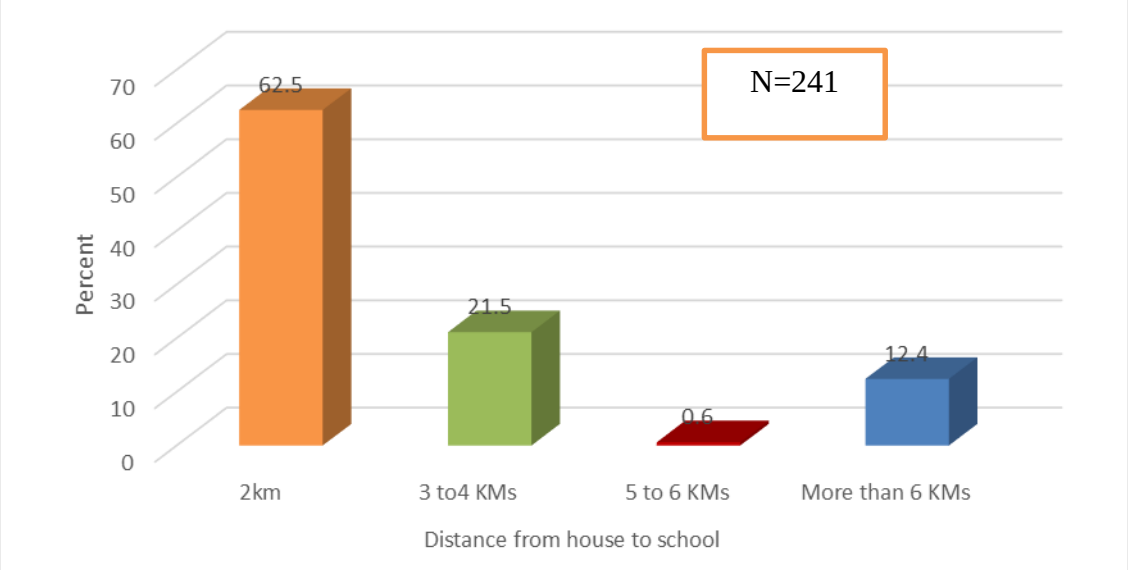


Figure 4. 6: Distance Covered by Children to Schools

Source: Field Data, 2021

4. 2 Causes of human wildlife conflicts in Baringo North Sub-County

The study sought to establish the causes of human-wildlife conflicts in Baringo North Sub-County. The findings indicate that, 148 (52%) of the participants agreed that shared water sources was a cause of human wildlife conflict, while 92 (32%) strongly agreed, however 23 (8%) were undecided and strongly disagreed respectively. Additionally, 137 (48%) of the participants strongly agreed sources of food for both humans and wild animals was another major cause of human-wild life conflicts while 103 (36.0%) agreed with the same. The study further Sought to establish whether Migration of people also caused human-wildlife conflicts, and it was established that 126 (44%) strongly agreed with this assertion while another 67 (24%) agreed. The study further sought to establish whether habitats destruction in the game reserve was a cause of human wild life conflicts, the findings revealed that 160 (56%) strongly agreed and another 80 (28%) agreed. The results on the causes of human wildlife conflicts are as shown in Table 4.1.

Table 4. 1: Causes of Human-Wild life conflict

Causes of Conflicts	**SA**		**A**		**UD**		**D**		**SD**	
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Shared Water Sources	32	92	52	148	8.0	23	0.0	0	8.	23
Sources of Food	48	137	36	103	8.0	23	0.0	0	8.	23
Migration of people	44	126	24	67	4.0	11	16.	46	12	34
Habitats destruction in the reserve	56	160	28	80	8.0	23	4.0	11	4.	11

Key: SA-strongly Agree, A- Agree, UD-Undecided, D-Disagreed and SD-Strongly Disagree

Source: Field Data, 2021

The findings from FGDs further revealed that there were several causes of HWC, among them included: People's invasion of the National Reserve; from the year 2000, people gradually started encroaching the conservation area. They started clearing parches of the natural habitat for settlement, farming, livestock keeping etc. Following population increase, there occurred pressure for more land for people to settle. As a result of expansion in human settlement, there occurred a systematic killing of the conserved wildlife starting with the big five animals; elephants, buffaloes, rhinos, lions and impalas. Additionally, environmental degradation and wildlife displacement, due of human activities in and outside the National Reserve, there has been a lot of destruction of vegetation covers leading to depletion of wildlife habitats/ ecological niches (Molewa, 2010). This subsequently forced the protected wild animals to move outside the national Reserve in search of food. Ultimately, they are into contact with humans hence conflict.

During an interview with Farmers group official, one official stated that;

> HWC was majorly caused by roaming wild game in search of food in the process they meet with people hence conflict; Scarce resource for both people and animals, they compete for them leading to conflict / clash; Failure by KWS to guard or confine the wildlife within the reserve – too few rangers to man the wide area.; Human activities in and outside the national reserve as a result of expanding human population; Lack of electric fence – wildlife move out and run over traditional farm fences – now outlawed by KWS – seen as destruction of vegetation; Disputed land boundary-Kamnarok National Game Reserve and the community land; Farmer group CBO had demanded for the National Reserve width of 1 ½ kms from Kerio River; Historical imposition of Kamnarok national Game Reserve by the National Government through Baringo County Council in 1982-1984 and In 1986, communities who were and are the true occupants of Kerio Valley objected to the demarcation by KWS. The government was asked to relocate the wildlife to the neighboring Elgeyo Marakwet County

Another participant revealed that Wildlife conservation at Kamnarok National reserve has its historical base. Kerio Valley basin has been left unsettled by the old generations specifically, the old age sets (Nyongi, Chumo and Sowe) found their forefathers co-existing with wildlife. People were living up the Tugen escarpment. Notably, a white settler reportedly kept naming the Tugen community "Kamasia" for the local word "Kamasin" which refers to Tugen Hills. This was because the white men tourists found the community living up the escarpment and the valley bed was whole wildlife zone. The younger generation has developed a dismissive attitude that young people should exploit extremely fertile alluvial deposits for farming and settlement. This has led to protracted conflict between the genuine clans who surround their land parcels to government. Closely linked to this to this is political interference, land being an emotive issue, political leaders play a neutral ground for, lack of political commitment to addressing it in North Baringo (Mishra *et al.,* 2003). Some incite the communities against the establishment of the National Reserve while others play "cords" to avid the issue for fear of losing votes during regular national elections.

It also emerged from the interviews that despite the government move to gazette Kamnarok national Reserve in the years 1982 – 1983 with subsequent fixing of boundary beacons, little has been done on such action plans. This laxity has caused delays in fencing off the national reserve as per its GPRS Maps. It is a loophole invader has exploited to encroach and subsequently conduct human activities inside the protected area (Messmer, 2000). Both County and National Government have also delayed the release of a task force finding report of the year 2015. To date, the affected community still awaits that report thus a heightened anxiety.

Some people from Baringo North who overtime suffered attacks triggered by cattle rustling came to discover an area unoccupied by people but set aside for wildlife conservation. They forced their settlement inside the National Reserve which it refers to as a “no-mans land”. This is the group which ruthlessly engage themselves in wanton destruction of vegetation for farming and charcoal burning. They also operate lawlessly since the areas have been referred as a hide-out for hooligans, criminal convict and drugs abs substance abuse zone free from government apprehension.

During an interview one of the assistant County Commissioners revealed that Conflict arising from crop damages both inside and outside the reserve. This was because people have encroached the restricted area and carry out farming. Crops are planted and when they are ripening, wild animals invade them. The farming activities affect the area eco-system. As a result, it triggers HWC outside the protected area. For example, Kimaa, Litein and Sessina areas suffer wildlife invasion because they have been pushed by human settlement at Chemoso area inside the reserve (Mateo, 2012). Habitats destruction forcing wildlife to move out, consequently destroying crops such as millet which do well along the Tugen escarpment.

Elephants have routinely attached farms with millet and sorghum along the escarpment. Other small wildlife species such as foxes, mongooses are known to flee from their habitats now destroyed through human activities and seek refuge under rocks near people’s homestead. They predate on goats and sheep. Snakes are both inside and outside the national reserve. Cases of snake attack are reported in the entire Baringo North. The government has subsequently stocked all health facilities in Baringo North with anti-venom drugs to arrest loss of human lives (Hilborn, 2006).

In interview another Assistant County Commissioners revealed Human settlement inside the game reserve triggered by Internally Displaced Persons from cattle rustling prone areas of Baringo North and East Pokot. Victims seek refuge in the perceived, "No man's land in Kamnarok National Game Reserve. They settle in areas such as Chemichonat, Kaptilomwo, Kaptomonger and Kapchimbi. Agricultural activities commonly by people residing in the rocky escarpment along Tugen hills. Due to low agricultural productivity there, they sneak into the reserves' fertile soils and embark on intensive farming where they receive no complaints or reprimands from any source. Inaction by the county government of Baringo. It has never taken charge of the gazette area why? Politics on HWC are emotive and politicians are compelled to avoid it for survival. Because the county government does not recognize the potentially of the industry as a key revenue generation for the county's improved economy. Consequently, it has failed to market as well as protect the reserve from degradation. Because of eh inaction by Baringo County Government, KWS consequently has developed cold feet and retreated. It is impractical for KWS to leave a huge area of the reserve (87square kilometers) under the patrol of 2 posted officers. The 2 reside outside their area of operation. This explains why the conflict is never brought under control. Notably roaming wildlife cannot be controlled by 20 officers. Lack of electric fence around the reserve, as a result there is free movement of people as well as wildlife inside and outside the conservancy. This causes intra and inter HWC.

The Assistant County Commissioners, the Political gains, civic county leaders shun any attempt to resolve HWC in order to preserve their votes as well as impress people (populism). For example, the sand and murram harvesting is inside the reserve is

licensed by the county government despite the fact that it is outlawed under the Ministry of Environment Natural Resources And Tourism. Error of commission by the Ministry of Education. The schools located inside the reserve were formally registered yet laws government establishment of public primary schools were clear a national and County government levels. This has exacerbated environmental degradation which has raised tension between Baringo and Elgeiyo Marakwet County Governments brought about by the shifting of Kerio Valley course which has eaten part of Baring land towards the neighboring county. HWC escalation by NGOS. A few did conduct awareness creation to communities on land rights. People were encouraged to stay put as sponsoring NGOs secured legal justice attempts. Unresolved land conflict arising from unclear adjudication area by Kapluk adjudication section in Kabutiei location. There were double land registrations to individuals. Lack of understanding of the people in the affected communities on the importance and benefits of wildlife conservation. More capacity building is necessary for them to deeply know the value of the industry towards community and subsequently county development.

Subsistence poaching by illegal residents and bee keeping. Poachers mostly come from outside Communities. Their activity is aimed at attempts to sabotage government conservation efforts. It is a cultural practice by Tugen communities to keep hives in the heart of Kerio Valley where tall trees are preferred for bee keeping. They attract bees for generation of huge volumes of honey.

Minima activities inside the reserve. Given the expansiveness of the reserve, criminal have used the areas as a hide-out to carry out illegal activities. There is rampant sake

of illicit brew inside the area on grounds that it is a far flank area from law enforcers. It is also difficult to catch thieves of livestock who flee and seek refuge inside the reserve. School dropouts also find solace there thus they become an extension of gangs inside the area. Blocked historical elephants, migratory route by hum settlement (Curnow, 2001). In archive document, they are referred to as old elephant migratory routes examples are Pai area, Karaton where a police station has been built.

The results corroborated those of Masago and Kweingoti (2018), who found that the displacement of natural wildlife territory is a consequence of human population growth into areas formerly occupied by wild animals. As their natural food sources dwindle, wild animals must go elsewhere for sustenance. Alternatively, human-created resources attract wildlife, which can lead to conflict. As wildlife and human populations grow, so does the potential for conflict as their shared habitats become more crowded. Animals benefit unnaturally from human activity because it provides them with food and shelter, but it also poses a devastating threat to humans and other animals. When people collect fish and grassland pasture, for example, it creates a competitive environment for those resources. The disproportionate focus on protecting "flagship" or "game" species can endanger more endangered species.

Therefore, based on the foregoing, one major cause of HWC was competition for water resource and food. Because swelling human population, land resource is overstretched hence, people have been forced to cultivate inside the reserve since the area has high deposits of alluvial soils which are good and fertile for farming. This has forced locals to resort to destruction of vegetation cover, the wild life habitats / niches thus both the people and wild animals are exposed to HWC. Residents have

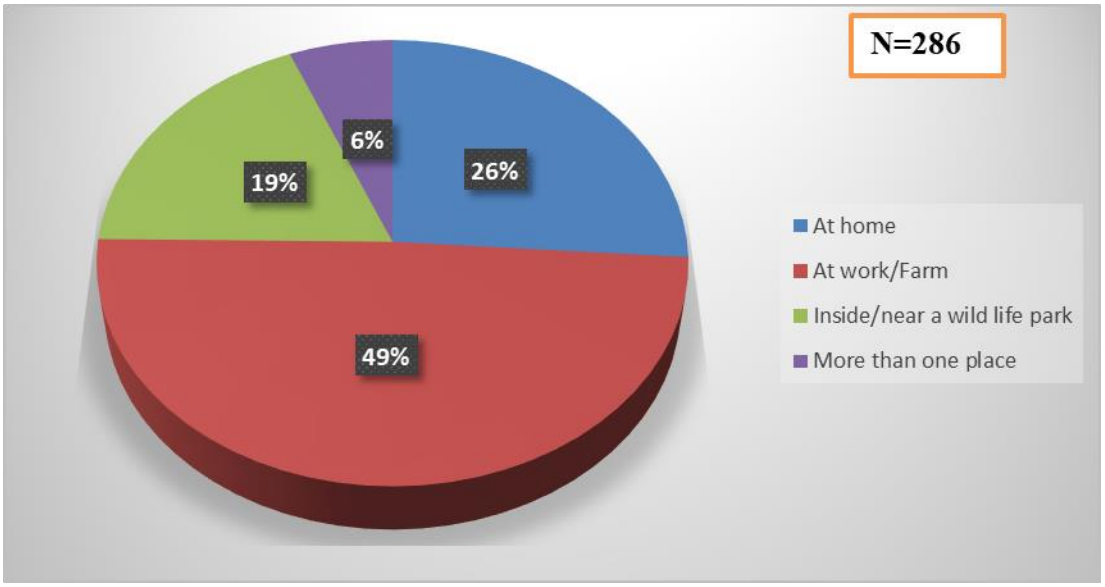
therefore invaded the conservation area for farming, settlements and livestock keeping (Conover, 2002).

Generational gap has also fueled HWC. The young generation in Baringo North attaches little value on wild life conservation as opposed to the old generation that once co-existed with wild life as God given resource in the area. Political interference comes about where civic leaders in the County comprise their positions to guard against their being voted out during the countries' election cycles. This explains why there has been a protracted boundary dispute. There are three demarcated boundaries all of which have been politicized. As a result the county's leadership has perpetuated laxity in implementing the fencing of the gazzetted national reserve while hiding under the excuse of un availability of funds. The same Baringo County Government has reneged in releasing a task force report already in place. It was set up to to address the perennial HWC. Because of its delayed release it has heightened HWC.

4.3 Places where survivors were attacked by Wild Animals in Baringo North Sub-county

The study sought to establish the most common places where wild animals attacked survivors on Baringo North Sub-county. The results were as indicated in Figure 4.7

Figure 4.7: Places where Wild animal attacks occurred



Source: Field Data, 2021

The results from the 286 survivors revealed that out of the survivors indicated that most of the attacks occurred at work/ in farms as supported by 140 (49.1%), another 74 (26.1 %) survivors stated that the attacks occurred at home at home while 53 (18.6%) were of the opinion that the attacks were common inside/near wild life park, finally 17 (6.2%) said that the attacks occurred in more than two places. Most wild animal's attacks occur during occupational working hours. Mostly during the day. Farming and livestock keeping are economic activities carried out during the day. Some attacks that occur around homes take place during dry session when snakes, baboons and monkeys roam into peoples' places of residence in search of water and food. Attacks that occur around Kamnarok National Reserve are caused by human activities inside or near the area.

4.4 Incidences of Teachers and Other school Staff being attacked by Wild Animals

The sought to establish whether there were incidences of teachers being attacked by wild animals in Baringo North sub-county. The respondents were asked whether they

have heard or witnessed teaching or non-teaching staff being attacked by world animal. The results were from the 286 respondents revealed that 209 (73.2%) said the had heard or witnessed these incidences while 77 (26.8%) were of the contrary opinion. The findings are as shown in Figure 4.8.

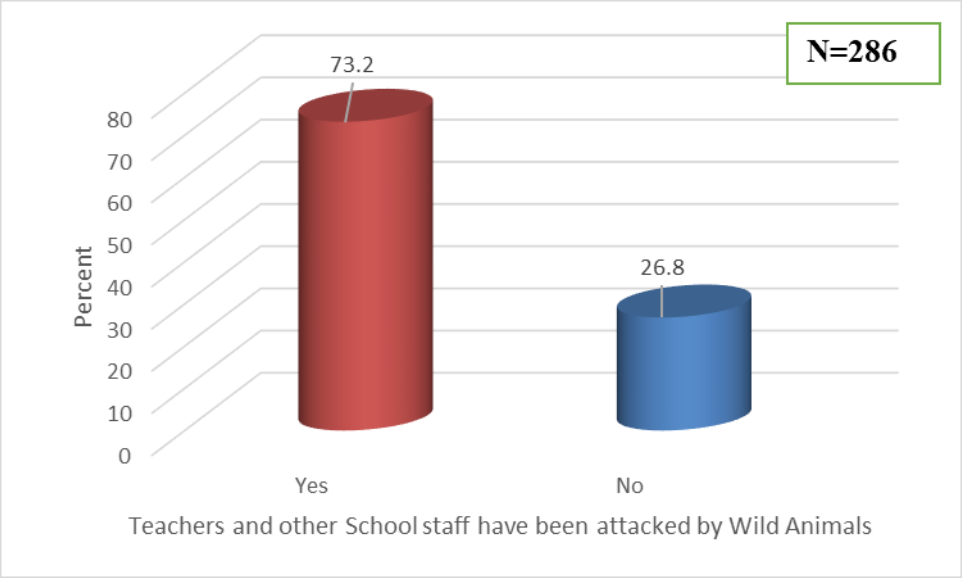


Figure 4.8: Whether teachers and other School staff have been attacked by Wild Animals

Source: Field Data, 2021

4.5 Factors the Aggravate Human-Wildlife Conflicts in Baringo North Sub-County

The study sought find out the factors that aggravated human wildlife conflicts in Baringo North-Sub-County. The respondents were asked whether they believed that massive Losses in crops and livestock lead anger hence people hunting and killing Wild Animals, out of the 286 respondents, 217 (76%) strongly agreed while 69 (24%) indicated that they agreed. The respondents were further asked whether they believed that co-existence between humans and wild animals has been affected due to insufficient land, the results revealed that 126 (44%) Strongly agreed, 80 (28%) agreed, 34 (12%) were undecided, and 46 (16%) strongly disagreed. The study further sought establish whether poverty and overpopulation is driver to human wildlife

conflicts as wildlife habitats are disappearing at an alarming rate, the results revealed that 194 (68%) strongly agreed, 23 (8%) agreed, 23 (8%) were undecided, 11 (4%) disagreed and 34 (12%) strongly disagreed. Additionally the study sought to establish Whether the challenges faced in improving community livelihood around Baringo North Sub-County also contributes to human-wildlife conflicts in the study area, the results revealed that 149 (52%) strongly agreed and 114 (40%) agreed while 23 (8%) disagreed and 23 (8%) strongly disagreed.

Table 4. 2: Factors the Aggravate Human-Wildlife Conflicts

Factors	SA		A		UD		D		SD	
	%	N	%	N	%	N	%	N	%	N
Massive Losses in crops and livestock lead anger hence people Hunting and Killing Wild Animals	76	217	24	69	0	0	0.0	0	0.0	0
Co-existence between humans and wild animals has been affected due to scarce land	44	126	28	80	12	34	0.0	0	16	46
Poverty and overpopulation is driver to human wildlife conflicts as wildlife habitats are disappearing at an alarming rate	68	194	8.0	23	8.0	23	4.0	11	12.0	34
An improvement on community livelihood around Baringo North Sub-County remains a challenge as in other conservation areas.	52	149	40	114	0	0	8.0	23	0.0	0

SA-strongly Agree, A- Agree, UD-Undecided, D-Disagreed and SD-Strongly Disagree

Source: Field Data, 2021

Based on the findings it is therefore evident that Economic losses trigger retaliatory attacks by people as in crop destruction and livestock killings. This implies that people's apathy toward wild life conservation whose huge prospects in earning are yet to be understood by the locals. Foreign earnings have not been generated to benefit the people because the HWC has paralyzed efforts to invite investors to come and develop tourism facilities within and around the conservation area. Reduced land size for households in Baringo North Sub County as a result of population explosion has also aggravated HWC in the area (Hamissou & DeSilvestre, 2008). This is based on perception that human needs must supersede wild animal's needs. Besides, some respondents feel that pressure for land settlements is a critical issue in Baringo North Sub County. This is because they are aware that some people migrate from their other ancestral lands into the reserve to justify HWC. On the overall, poverty and increased population density have fuel HWC as expressed by most of the respondents. In view of this, people have systematically encroached into the conservation area for economic activities and settlements. The few respondents who gave divergent position could be those who are pro conservation of wild life as a natural heritage.

4.6 Perception and Attitude of Respondents towards Wildlife and Handling of Human-Wildlife conflicts in Baringo North Sub-County

The study sought to establish the perception of respondents towards human-wildlife conflicts in the study area. The findings were as indicated in Table 4.3. The results of the study revealed that 149 (52%) strongly agreed with assertion that Crop and property damage are not or rarely compensated by the government and 92 (32%) agreed with this assertion. The results also revealed that 126 (44%) strongly agreed and 92 (32%) agreed with the assertion that wildlife induced deaths or injuries were poorly or never compensated. The findings of the study also revealed that 126 (44%)

Strongly agreed and 92(32%) agreed with the arguments that locals can frustrate conservation programs/projects. The study also found that 149 (52%) strongly agreed and 92 (32%) agreed with argument that wild animals destroy more crops than livestock.

Additionally, the study revealed that the respondents perceived that traditional resources in the National Reserve had reduced hence causing community hatred towards the reserve and the government as supported by 92 (32%) who strongly agreed and 103 (36%) who agreed with this assertion. The findings of the study further revealed that 103 (36%) strongly agreed and 92 (32%) agreed with the argument that state agencies such as KWS care more for wildlife than the people and finally the findings of the study revealed that 126 (44%) strongly agreed and 57 (20%) agreed with the assertion that National Reserves portray an approach in parks designs that allocate large tracts of land for wildlife. In this regard the study revealed that there were negative attitudes by majority of the respondents towards wildlife and conservation measures. Majority of the respondents saw wild animals as a threat and thus were in support of activities that would hurt these wild animals.

Table 4.3: Perceptions and Attitudes of respondents towards Wildlife and Handling of Human-Wildlife conflicts in Baringo North Sub-County

	SA		A		UD		D		SD	
Perceptions and Attitudes	%	N	%	N	%	N	%	N	%	N
Crop and property damage are not or rarely compensated by the government	52	149	32	92	4	11	8	23	4	11
Wildlife induced deaths or injuries are poorly or never compensated	44	126	32	92	8	23	8	23	8	23
Locals can frustrate conservation programs/projects	44	126	32	92	4	11	16	46	4	11
Wild animals destroy more crops than livestock	52	149	32	92	8	23	8	23	0	0
Traditional resources in the National Reserve have reduced hence causing community hatred towards the reserve and the government	32	92	36	103	8	23	12	34	12	34
State agencies e. g KWS care more for wildlife than the people	36	103	32	92	4	11	16	46	12	34
National Reserves portray an approach in parks designs that allocate large tracts of land for wildlife	44	126	20	57	12	34	8	23	16	46

Key: SA-Strongly Agree, A- Agree, UD-Undecided, D-Disagreed and SD-Strongly Disagree

Source: Field Data, 2021

Findings corroborated those of a research by Roque de Pinho (2009), who concluded that many respondents believed that conservationists and the government cared more about wildlife than they did about human well-being (as has been reported for Kenya's Amboseli National Park). An earlier study on the attitudes of teachers toward wildlife in the Ladakh region of Jammu and Kashmir concurs with the findings of Mir et al. (2015), who reported that the majority of their respondents held a favourable opinion

of wildlife and its conservation (Barthwal and Mathur 2012). Negative views toward wildlife and conservation policy in and around protected areas are often attributed to livestock losses and crop damage (Wang et al 2006). Although just a minority of respondents held unfavorable views on protecting wildlife, these views are noteworthy since even a tiny group of people opposed to conservation can significantly impede conservation efforts by engaging in criminal actions targeting endangered animals. The study's participants' opinions toward wildlife conservation were most influenced by their gender, the extent to which their crops or animals were damaged, and the number of cattle they possessed. Attitudes were not significantly influenced by occupation, age, family size, wealth, or the size of the landholdings. Respondents' perspectives were influenced by the number of animals they owned, with those who had a greater number of cattle being more likely to rely on livestock revenue and hence view potential predators as a threat. Suryawanshi et al. (2013) found that communities with larger numbers of economically significant animals (such as yaks and horses) viewed the snow leopard as a greater danger.

From the foregoing the researcher established that most of the respondents had negative perception and attitudes towards wild life conservation in Baringo North Sub County. This is because area residents incur great losses in crop and property destruction such as livestock, fences, dams etc. Compensation for such losses is scanty and even the few who would be beneficiaries wait for a long time to receive the little compensation. Greater is the pain when the government fails to compensate injuries / survivors who have lost loved ones through wild animal’s attacks. Poor response to compensation of survivors tends to bring about hostile communities who subsequently frustrate conservation efforts.

Further wild life destroys crops / farms more than livestock because most of the residents are farmers. Cases of livestock killings are generally based on the location where the attack occurs as well as the time. Most livestock keepers have strongly secured Kraals to keep wild life at bay. It is also notable that livestock keepers are not as many as farmers. This is because pasture is poorly distributed geographically as a result of varied land terrains. Farming is one main economic activity across Baringo North Sub County. Because of dwindling resources, the locals perceive the conservation as less important. KWS offers little help to the community, since its main concern is to protect the wild life. It has little attention towards the people. To them, the locals are to blame for a continued HWC in Baringo North Sub County. As a result, there has been a growing negative perception towards conservation efforts by the locals.

CHAPTER FIVE

NATURE AND EXTENT OF HUMAN-WILDLIFE CONFLICT IN BARINGO NORTH SUB-COUNTY, KENYA

5.1. Risk of Wild Animals attacking Children

The study sought to establish the risk of wild life attacks that was faced children in Baringo County. This was based on three considerations namely; whether the children cross paths with animals; whether the schools that children attend are close to wildlife reserve and the history of wild animals attacks among the survivor's children. Based on these units of analysis, the study revealed that there is a risk of the children meeting wild animals as indicated by 178 (61.2%) of the survivors who stated that children cross paths with wild animals, another 178 (61.2%) of the survivors stated that the schools are located close to wildlife reserves and 172 (60.2%) of the survivors reported knowing either their or other people's children who had been attacked by wild animals.

Table 5.1: Risk of Children getting attacked by Wild Animals

Risk of Children getting Attacked by Wild Animals	**YES**		**NO**		**N**
	%	n	%	n	
Children crossing path with animals	62.1	178	37.9	108	**286**
Is the school close to wildlife reserve	62.1	178	37.9	108	**286**
Has your child been attacked by wild animals	60.2	172	39.8	114	**286**

Source: Field Data, 2021

Greater percentage of respondents was in agreement they were exposed to the risk of wild animal's attacks as they use paths network in and around the protected area. This is because some of the schools are located inside the national reserve. Some respondents also confirmed children's injuries or deaths from wild life attacks.

5.2 Incidences of attack by Wild Animals

The study sought to establish the incidences of wild life attacks in Baringo North Sub-County. The respondents were asked whether they had been attacked by wild animals in the past, out of the 286 respondents, 274 (95.70%) stated that they had been attacked by wild Animals while 12 (4.3%) indicated that they had not faced any wild life attacks. The results were as indicated in Figure 5.1.

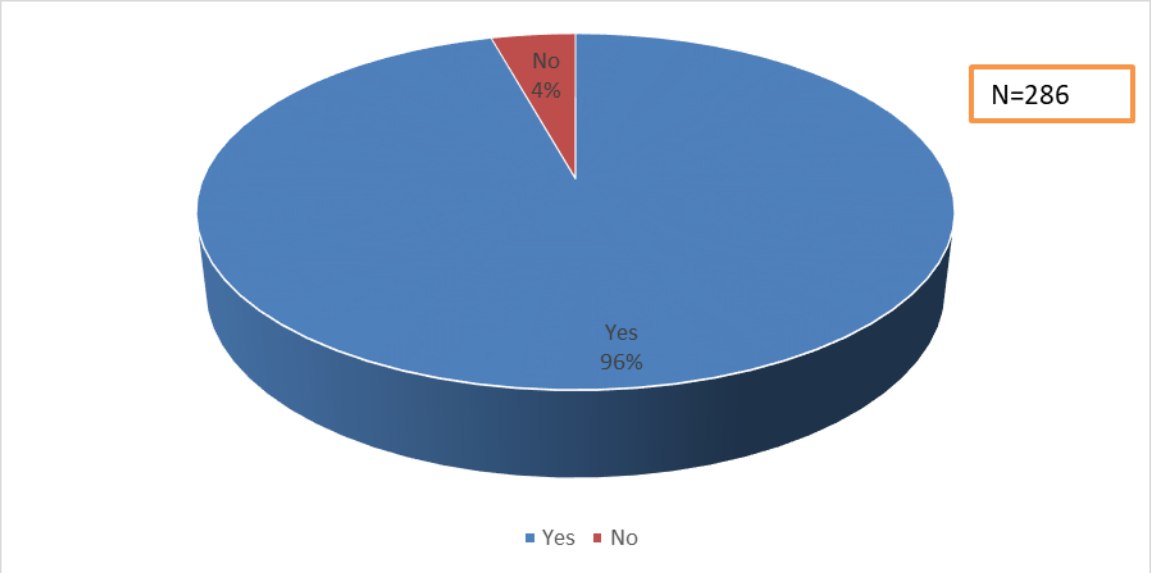


Figure 5.1: Whether Respondents had been attacked by Wild Animals

Source: Field Data, 2021

The findings indicate that most respondents had directly or indirectly experienced wild animal's attacks. This could have been destruction of wild life habitats inside the

reserve in which the wild animals are forced to roam/move outside the protected area. Human encroachment into the reserve could be also be another pre-disposing factor. Competition for limited resources such as water especially during the dry sessions could also be another case in point.

5.3 Frequency of Wild Animal Attacks based on time of the Day when the animals attack.

The study sought to establish the time of the day when most wildlife attacks occurred in Baringo North Sub-County. The results from the 286 respondents revealed that most of the attacks occurred during the day with 22.4% stating that the wild animal attacks occur in the afternoon, 21.1% revealing that the attacks occurred before noon, 12.4% stating that the attacks were common early morning and 11.8% of the opinion that the attacks were common in the evening. The results were as show in Figure 5.2

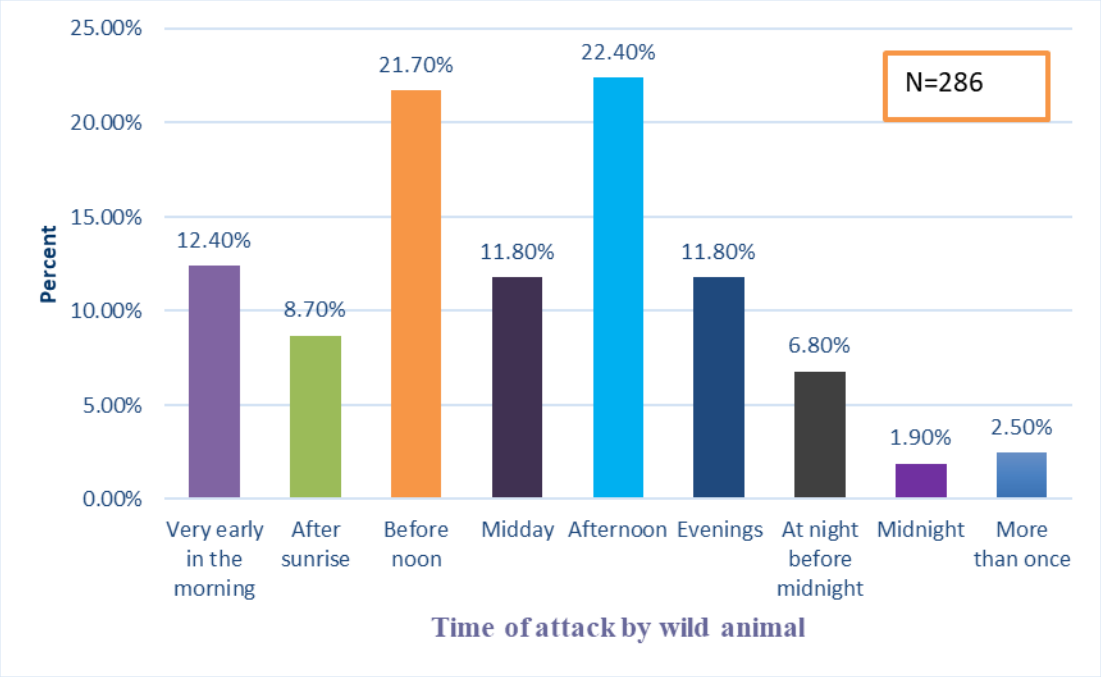


Figure 5.2: Time of Wild Animal Attacks

Source: Field Data, 2021

Most wild animals' attacks occur during the day, mostly in the afternoon. This is because of movements of people and livestock. This is the time life stock and people move around in search of pasture and water. Such movements are more pronounced before noon and are at its highest level in the afternoon. Early morning attacks could be attributed to farming activities which are carried out early before the scorching heat of the sun, common phenomena in ASAL area.

5.4 Types of Wild animals that Attack People in Baringo North Sub-County

The study sought to establish the types of wild animals that attacked residents of Baringo County. The results of the study revealed that among the animals, the snake had the highest reports of attacks to humans at (37.3%), followed by elephants (25.5%), Crocodiles (13.5%), buffalo (12.4%) while hyena and rhino having the least incidences of 1.20%. The findings were as shown in Figure 5.3

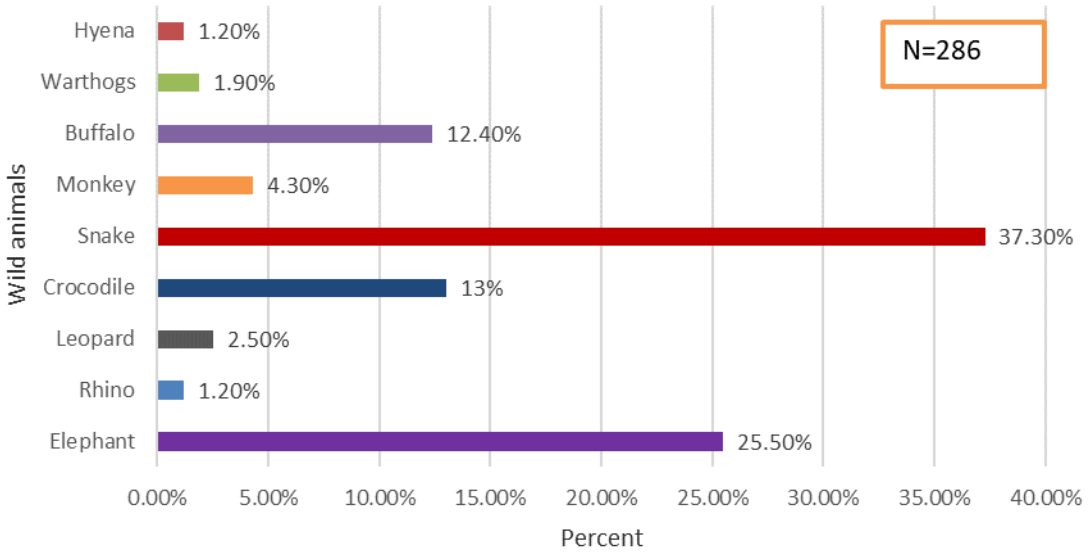


Figure 5.3: Wild animals that Attacked people in Baringo Sub-County

Source: Field Data, 2021

During the Interviews and FGD it emerged that the types of wild animals involved in HWC included: inside the reserve*;* Elephants, warthogs, snakes, zebras introduced from Rimoi / Zoi but crossed to Baringo North Sub-County; crocodiles; hyena; baboon; monkeys; outside the reserve, foxes, honey-burgers, snakes, baboons, wild-dogs.

In reference to these findings, Snakes were found to generate most attacks on people. Baringo North Sub-County has an ecological niche that harbors several types of deadly snakes. This cuts across the entire Baringo North Sub-County. Residents are therefore highly exposed to the risk of snake bites. Elephants attack people in the area because of destroyed vegetation cover inside and outside the protected area. This has forced the elephant's to move out of the reserve in search of forage. In the process they invade people's farms/ crops hence a trigger of conflict as farmers attempt to repulse them back. Pouching which is influenced by commercial ornaments of wild life products such as ivory is systematically carried out. This at times leaves some elephants wounded. Such injured elephants become very wild and aggressively attack people and livestock as well. Whenever they come their way (Musyoki, 2007). Lack of electric fence around the national reserve elephants allows move from Karmnarok national reserve to people's farms and places of residents. Based on their instincts they have permanent migratory routes and can move from one conservancy to another.

Additionally, overstocking of elephants in the protected area is also a contributing factor. Initially, the elephant population in the reserve was about 206 in total. Presently, they number over 1000; a population size the carrying capacity of the reserve cannot sustain (Obunde *et al*., 2005). Crocodiles are the least attackers in

HWC because they attack mostly during dry season when people look for water for both domestic and livestock consumptions. They prey on them especially at Lake Kamnarok and water berms. Crocodiles are prime killers of livestock at water points. This escalates in the area since the main livelihood / source for people in Baringo North Sub-County ward rests in livestock keeping. Hyena population in Baringo North Sub-County ward is too small to trigger major attacks. A few live inside the reserve while others migrate from outside the area. Hyenas predate on small live stocks such as sheep and goats.

These results are consistent with a study done by Mukeka et al. (2019) that found 80.8% of HWC in Narok county were caused by elephants, 10.6% by buffallo, 7.6% by Burchell's zebra, 7.3% by leopards, 5.8% by spotted hyenas, and 3.3% by lions; 11.7% were caused by non-human primates. Raids on crops (50%) were the most common cause of conflict, followed by attacks on humans (27%) and animal depredation (17.6%). The areas where wheat and maize are cultivated commercially experienced the highest rates of crop raiding. Carnivores were more likely to attack animals that were about the same size as themselves. Consequently, leopards (44.0%) and spotted hyenas (37.9%) were the primary predators of sheep and goats, while lions (63.1%) and spotted hyenas (14.5%).

This study was in agreement with a study by Masago & Kweingoti (2018), which showed that livestock depredation was one of the kinds of human-wildlife conflict. Here, carnivorous and omnivorous fauna (particularly species with a broad range and high body size) often prey upon livestock, causing substantial economic damage as supported by Kissui (2008). Examples from the developed world include wolf predation on ranched and free-ranging domestic animals (Boitani et al., 2010; Lance

et al., 2010), while examples from the developing world include wolf predation of pastoral livestock (Inskip and Zimmermann, 2009). As a result, subsistence tillage is often the only option for people living in locations with high human population densities, limited arable land, and high prices, all of which make pastoral herding of cattle impossible. This is made worse in places bordering wildlife preserves, which are home to numerous herbivorous and omnivorous species. It's possible that a lack of food or the area's maximum population size for a certain species are determining factors in animal raiding behavior in protected habitats (Van Aarde and Jackson, 2007).

CHAPTER SIX

THE EFFECTS OF HUMAN WILDLIFE CONFLICT ON SOCIO-ECONOMIC AND EDUCATION DEVELOPMENT IN BARINGO NORTH SUB COUNTY

6.1 Incidences of Property Destruction due to Human Wildlife Conflicts

The study sought to establish whether respondents had experienced incidences of property destruction due to the Human wild life conflicts. The results revealed that 237 (83%) had experienced proper destruction while 49 (17%) had not experienced any incidences of property damage. The results were as indicated in Figure 6.1

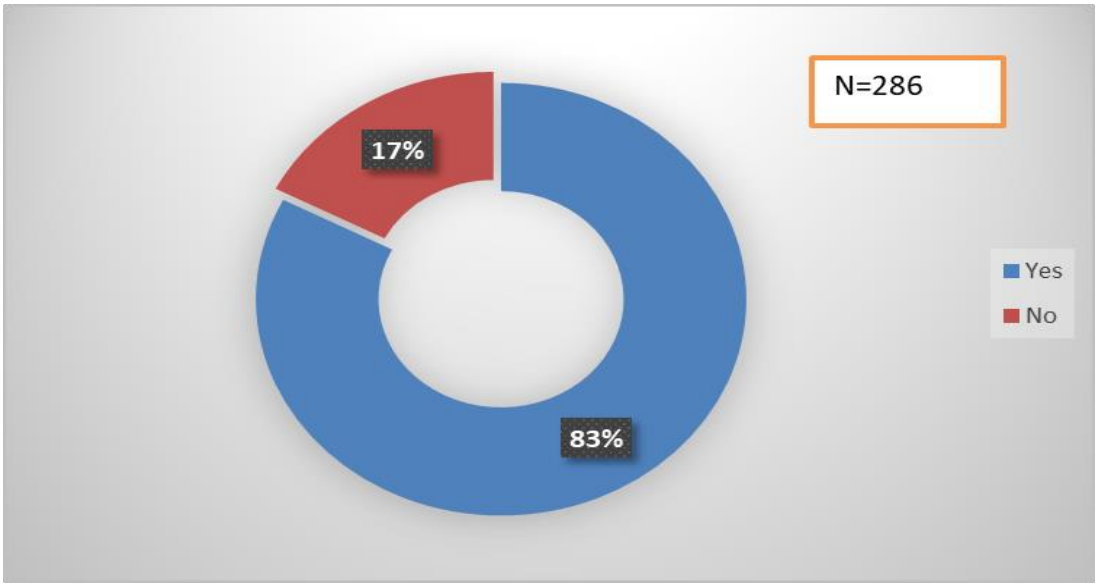


Figure 6.1 Incidences of Property of Destruction

Source: Field Data, 2021

Most locals have had economic losses through property destruction by wild animals. This is because most people are farmers. Wild life roam into people's farms leaving a trail of destruction of crops, fences etc. livestock losses have also been experienced. Community members who have not incurred such economic losses could be those less active in farming or livestock keeping.

6.2 Types of Properties commonly Destroyed by Wild Animals

The study sought to establish the types of property that are commonly damaged by wild animals. The findings revealed that 119 (41.6%) of the respondents stated that the wild animals destroyed Crops, 41 (14.3%) indicated that the animals killed livestock, 2 (0.6) stated that the wild animals destroyed beehives, 41 (14.3%) of the respondents opined that the wild animals damaged fences, 3 (1.2%) of the respondents opined that animals destroyed stores/ houses and 80 (28%) stated that the wild animals destroyed several properties including the ones already mentioned. The results were as indicated in Table 6.1

Table 6.1 Types of Property destroyed by wild animals

Responses	**Percentage**	**Frequency**
Crops	41.6	119
Killing of Livestock	14.3	41
Bee hives	0.6	2
Fence	14.3	41
Store/homes	1.2	3
Several of the mentioned properties	28.0	80
Total	**100**	**286**

Source: Field Data, 2021

According to the interviews, one of the consequences of human-animal conflict is property destruction. In addition, damage to infrastructure, such as buildings, boundaries, and utilities, or vehicle collisions, are frequent causes of conflict between human populations and wildlife species. Human mortality and injury is another sort of

wildlife conflict in which human harm and loss of life occur seldom, typically as a result of exposure to other conflicts or direct human predation, although the latter is uncommon. Additionally, crop raiding is a sort of human-animal conflict. However, the most prevalent category of human-animal interactions is the destruction of arable crops or plantations caused by wildlife foraging.

Long et al. (2020) reported that elephants were the primary offenders for crop raiding, followed by baboons and buffalos. The data are consistent with this statement. As evidenced by numerous studies, elephants are a prominent crop thief across continental Africa and Asia (Sarker, 2014). In Zimbabwe, elephants were shown to be responsible for up to 75% of all agricultural damage caused by wildlife (Lamarque et al., 2009). Costs incurred by agricultural households as a result of crop raiding are enormous, and sometimes the wild animals might damage an entire field. For instance, the expenses of crop raiding per household in the Maasai Mara National Reserve in Kenya are estimated to be between US$ 200 and US$ 400 per year, which is a substantial amount relative to the local income. In Uganda, farmers lost up to 19% of their maize on average, and crop raiding was more severe during harvest season while occurring year-round. In general, crop raiding might be catastrophic for subsistence farmers, such as those in East African nations, as they could lose their entire crop or a large portion of it for an entire year. Therefore, reducing crop damage caused by wildlife can improve local residents' standard of living.

The study's findings were congruent with those of Lamarque *et al*. (2009), who discovered that wildlife caused a substantial amount of physical infrastructure damage. Dams, water pipes, boreholes, water tanks, homes, grain bins, wire and

electric fences, livestock pens, and chicken coops are examples of the infrastructure that was frequently damaged. According to econometric calculations, infrastructure destruction can result in large economic consequences. For instance, a Burkina Faso research found that elephant damage resulted in an annual economic cost of US$587 per pound and US$23 every track kilometer. Therefore, the destruction to numerous types of Baringo North Sub County infrastructure has undoubtedly resulted in enormous economic losses.

In this sense, the highest damage is crop devastation, followed by farm fences. This is because the area provides an ideal habitat for numerous species of wildlife. The bird population is large and the species are diverse. They are well-known for descending on ripe crops and devouring them voraciously. Elephants can devastate multiple crops in a single night when they invade farms at night. Additionally, they raid stores for stockpiled grains. The decline in beekeeping is a result of bee migration to places without agriculture. This is due to the usage of pesticides, which are known to destroy bees and flowering plants that are rich in nectar for honey production.

6.3 Animals that caused most Property Damage in Baringo North Sub-county

The study sought to establish the animals that caused a lot of damage to property in Baringo North Sub-county. The findings of the study revealed that 106 (36.9%) indicated that elephants destroyed the property, 9 (3.3%) stated that Rhinos destroyed property in the area, 31 (10.7%) were of the opinion that leopards were responsible for the destruction of property in the study area, 36 (12.6%) blamed crocodiles for the destruction of property, 15 (5.1%) stated that property was destroyed by snakes, 33 (11.7%) said that monkeys and baboons caused property damage, 9 (3.3%) stated that

buffalos caused property damage, 17 (6.1%) revealed that property destruction was caused by warthogs and 29 (10.3%) opined that hyenas destroyed property. The results are as indicated in Figure 6.2

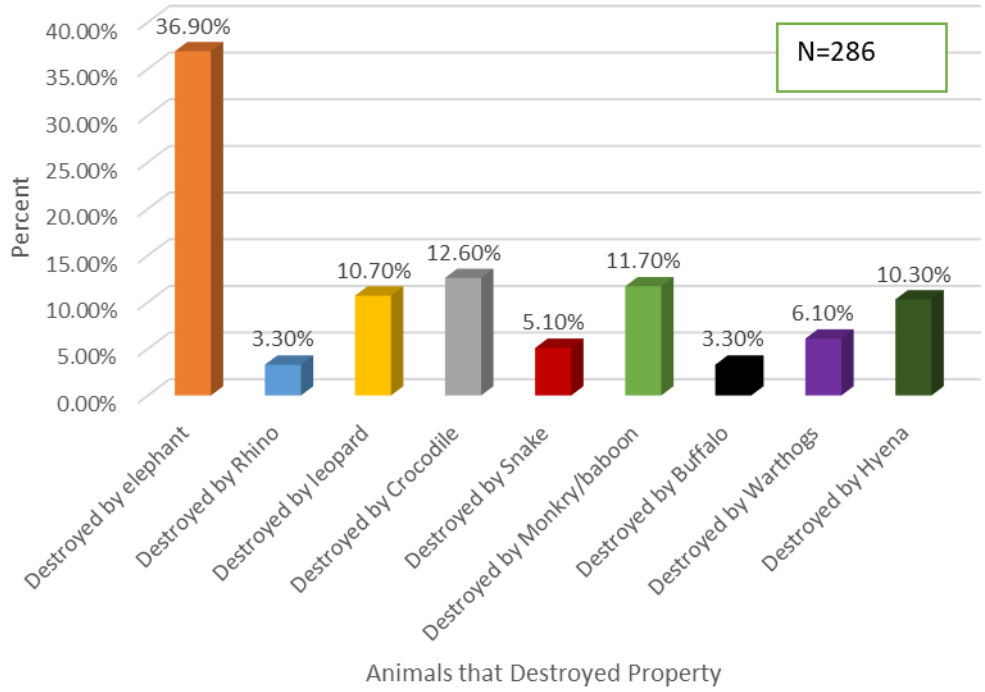


Figure 6.2: Animals that Destroyed Property

Source: Field Data, 2021

Based on the findings from Interviews and FGDs Elephants are greatest destroyers of property given their massive strength and extensive movements. Elephant's population in the national reserve is currently huge. due to habitat destruction, they are forced to roam about uncontrolled since there is no electric fence. Rhinos were wiped out through pouching. Leopards population too is very low and are mostly found in the neighboring Rimoi national game reserve. They occasionally stray into Baringo North Sub County to kill livestock. Leopards too are wild animals found to migrate from their neighboring Laikipia, Samburu and Elgeyo Marakwet Counties. Crocodile attacks are most experienced at water points during the dry sessions Python

is the only snake species in the area known to kill and feast on livestock. Some livestock are also killed by black mamba and cobra snakes-too deadly venomous snakes in Baringo North Sub County. Baboons and monkeys now roam about Baringo North Sub County following destruction and ultimately a reduction of their habitat through farming. During the dry sessions baboons are seen invading homes in search for food and water. Monkey is notorious to attack crops and fruits. Warthogs too raid farms near their habitats mostly at nights. Hyenas on the other hand kill livestock at night and thereafter relocate to their hide outs during the day.

The findings were consistent with a research by Long et al. (2020), which concluded that elephants were the most common animals responsible for crop destruction. There were other additional creatures that caused extensive property damage. Approximately half of the documented instances of HWC were attributable to livestock predation, followed by sheep. This could be attributed to a 76.3% growth in the number of goats and sheep in the country over the past four decades, while the number of cattle decreased at the same time (Ogutu et al., 2016). Hyena, leopard, and lion were the primary predatory species responsible for the majority of attacks. Hyenas are responsible for 53% of livestock assaults in the Maasai Mara National Reserve, while leopards and lions are responsible for 32% and 15%, respectively (Kolowski & Holekamp, 2005). Although the available data did not support comprehensive econometric calculations, earlier individual case studies demonstrated that livestock depredation costs can be high for rural households (Muriuki, Ipara, & Kiringe, 2017). For example, a research from Kibwezi in South Eastern Kenya found that local farmers lost 576 livestock heads (goats, lambs, and cows) (equal to $16,958) in five years owing to wild animals, specifically crocodiles (Lamarque et al., 2009).

Another household survey comprising 199 homes in the Amboseli ecosystem (in southern Kenya) revealed that each household lost an average of 36 livestock heads (equal to $4,820) during a period of 18 months, out of 260 livestock heads raised (Muriuki et al., 2017). Similar research undertaken in 1995 at the Kibber Wildlife Sanctuary in India revealed that animal predation was responsible for the loss of 18% of livestock (Mishra, 1997). The rates of predation may be influenced by environmental factors such as the amount of natural prey, climate circumstances such as precipitation, and cattle husbandry situations in the respective regions (Kolowski & Holekamp, 2005). Costs associated with livestock predation are typically significant in areas dominated by livestock production, with locals living next to protected areas suffering the biggest losses.

6.4 Impacts of human Wildlife conflicts on lives and livelihoods of people in Baringo North Sub-County

The study sought to establish the impacts of human-wildlife conflicts on the lives and livelihoods on the residents of Baringo North sub-county. The findings of the study showed that 126 (44%) of the respondents strongly agreed and another 126 (44.0%) agreed that human wildlife conflicts led to death of humans, however, 23 (8%) disagreed and 11 (4%) strongly disagreeing with the assertion. The study findings also revealed that 160 (56.0%) strongly agreed and 103 (36%) agreed that human wild life conflict caused of injuries among people 23 (8.0%) disagreeing. Additionally, the findings revealed that 103 (36%0 strongly agreed and 92 (32.0%) agreed that livestock death/injuries is associated with human wild life conflict. Finally, the findings of the study revealed that 240 (84.0%) strongly agreed and 46 (16%) agreed that crop damage /loss was a major impact of human-wildlife conflicts.

Table 6.2: Impacts of Human wildlife conflicts

Impacts of human-wildlife conflicts	SA		A		UD		D		SD	
	%	N	%	N	%	N	%	N	%	N
Death of humans	44.0	126	44.0	126	0.0	0	8.0	23	4.0	11
Injuries/Loss of body parts	56.0	160	36.0	103	0.0	0	8.0	23	0.0	0
Livestock death/injuries	36.0	103	32.0	92	20.0	57	8.0	23	4.0	11
Crop loss/damage	84.0	240	16.0	46	0.0	0	0.0	0	0.0	0

SA-strongly Agree, A- Agree, UD-Undecided, D-Disagreed and SD-Strongly Disagree

Source: Field Data, 2021

In support of the findings one official recalled that a few elephants came out of the National reserve in May 2017 and went all the way to poi (North Baringo Escarpment). He stated that Damages caused to communities: Killing or injuries of humans; Destruction of subsistence crops; Destruction of fruit trees, mangoes, pawpaws, bananas; Destruction of stores and even some houses; Destruction of water points especially wells, dams; Killing of livestock; Destruction of vegetation, trees felled down and Destruction of fences both temporary and semi-permanent using barbed wires and chain-links (Butler, 2000).

Additionally, members of the FGDs stated that human life has been lost through wild animals attack over years. Most of human death cases were as a result of Buffalo, elephants and snakes (bites) attacks. Human injuries through wild animal attacks have rendered some individuals disabled / maimed. Respondents who gave a divergent

opinion could be those who are not affected. Crop destruction and livestock killing have adversely affected the people‘s livelihoods. Elephants are on record as the major destroyers of crop- cereals and fruit trees such as mangoes, pawpaws, bananas etc. These are dominant crops around Baringo North Sub County. In the process of their invasion, they levelise fences, water points and stores.

The findings of the study consistent with findings of Baral, (2021) whose study investigated *the Human Wildlife Conflict and Impacts on Livelihood: A Study in Community Forestry System in Mid-Hills of Nepal.* According to their findings, people in the Kaski and Tanahun Districts lost 27% of their livestock to wildlife predation between 2015 and 2019, accounting for 23% of their household income. It was primarily chickens, goats/sheep, and cows that perished. Domesticated animals were typically maintained in herds, making them easy prey.

Similar predation incidents were seen in India near the Kibber Wildlife Sanctuary, where local farmers lost 18% of their cattle to wildlife, which accounted for 25% of their household income. Leopards, golden jackals, yellow-throated martens, and black kites were the most prevalent predators that attacked and killed livestock, while rhesus monkeys were the most prevalent crop raiders. Leopards and rhesus monkeys are well-known pest species in the central mountains, according to the local inhabitants. Leopards typically attack and kill larger livestock species, such as cows and goats, while golden jackals and jungle cats prey on poultry. Due to their curiosity, intellect, and proximity to humans, rhesus monkeys caused the most crop damage in the Shivapuri National Park, Langtang National Park, and Chitwan National Park regions of Nepal. In Africa, primates are the predominant crop-damaging pest. Predation of livestock by wildlife frequently correlates with unsuccessful farming practices, such as inadequate or nonexistent fencing, poorly constructed livestock

shelters, and allowing animals to roam in open pastureland or into community woods, where the predators are naturally found. Thus, enhanced husbandry methods, including the construction of secure enclosures, improved fencing, and stall feeding, would aid in deterring and preventing many instances of wildlife predation on livestock.

The majority of residents in the Kaski and Tanahun Districts are impoverished and farm only a few goats, lambs, and poultry; on average, each household had six animals. Therefore, the loss of any cattle to predators causes great hardship and has significant effects on their ability to support themselves. From 2015 to 2019, 67% of HWC cases occurred outside of protected areas (PAs) where large predators reside. While the Division Forest Offices have been providing local communities with forest management training and capacity-building programs, they teach essentially nothing about wildlife or conservation management approaches. Consequently, there is a paucity of understanding among the local populace regarding coexistence and coexistence with huge predators (Conover, 2002).

Community Forest user groups prepared their Community Forest Operational Plan using the 2001 Community Forestry Development Directives adopted by the Department of Forest and the Government of Nepal. However, the template contains no provisions for wildlife management within the armed forces. Therefore, none of the community forests had incorporated animal protection into their operational strategies. This is a major deficiency in the management of large predators outside of protected zones. Consequently, measures in these user-group directives are urgently required to address this issue in order to limit and mitigate the occurrence of future HWCs. In 69 out of Nepal's 77 districts, crop raiding is a significant issue. In Kaski and Tanahun, crop damage alone cost farmers 17% of their overall income. Due to

inadequate fence and protection, crop thieves have relatively easy access to crops. Although fencing, electric lines, and other security alternatives are effective deterrents, the majority of local farmers cannot afford to install and maintain them. This is likewise the case in numerous other emerging countries. In Tanzania and India, for instance, many farmers lost money due to crop raids by wildlife because they could not afford adequate fencing systems. Increasingly, agricultural losses caused by wildlife have a devastating effect on the economic and social well-being of farmers, exacerbating the financial problems of local residents.

6.5 Long-term effects of human wildlife conflicts on the National Reserve and its environs in Baringo North Sub-County

The study sought to establish the long term effects of human-wild life conflicts on the national reserve and its environs. The results of the study revealed that 160 (56.0%) of the survivors strongly agreed and 69 (24.0%) agreed that the conflicts have led to overstocking of livestock resulting in overgrazing and destruction of vegetation cover. However, 46 (16.0%) strongly disagreed while 11 (4.0%) disagreeing with this argument. The study findings also revealed that 183 (64%) strongly agreed 80 (28.0%) agreed that there was an alarming rate soil erosion which has resulted in siltation at the area thus exposing it to possible extinction, however, 11 (4.0%) disagreed. The study further revealed that 228 (80.0%) of the respondents strongly agreed that water shortage was likely to be experienced and will expose animals and humans to severe livelihoods and deaths, 46 (16.0%) agreed while 11 (4.0%) strongly disagreed. The study results further revealed that 228 (80%) strongly agreed while 23 (8%) agreed with the assertion that the destruction of wildlife habitat endangers the existence of wild life and hence likely to kill the tourism industry. The study found out both humans and wildlife would likely be exposed to suffering because of wanton

destruction of the environment around the National Reserve as supported by 183 (64%) who strongly agreed and 80 (28%) who agreed with this assertion. The results are as shown in Table 6.3

Table 6.3: Long-term effects of human wild life conflicts

Long term effects of HWC	**SA**		**A**		**UD**		**D**		**SD**	
	%	N	%	N	%	N	%	N	%	N
The conflicts have caused overstocking of livestock resulting in overgrazing and destruction of vegetation cover	56.0	160	24.0	69	0.0	0	4.0	11	16.0	46
There is alarming soil erosion which has resulted in siltation at the area thus exposing it to possible extinction.	64.0	183	28.0	80	4.0	11	0.0	0	4.0	11
Water shortage is likely to be experienced which would expose humans and animals to severe livelihoods or even deaths	80.0	228	16.0	46	0.0	0	0.0	0	4.0	11
The destruction of wildlife habitats endangers the existence of wild life species for tourism industry.	80.0	228	8.0	23	4.0	11	4.0	11	4.0	11
Both humans and wildlife would likely be exposed to suffering because of wanton destruction of the environment around the National Reserve.	64.0	183	28.0	80	0.0	0	4.0	11	4.0	11

SA-strongly Agree, A- Agree, UD-Undecided, D-Disagreed and SD-Strongly Disagree

Source: Field Data, 2021

The findings from one of the FGDs revealed that scarcity of pasture for livestock due to overgrazing and environmental degradation. This has led to starvation of livestock hence low quality for good earnings. Because of lack of pasture, communities living around Kamnarok National reserve have been forced to cross Kerio River to graze inside the neighbouring Rimoi National reserve. This has exposed them to arrests from inside the protected area. Ultimately, they end up selling their livestock to pay fines. This eventually denies them income for self-development. Illegal settlers inside Kamnarok National Game Reserve conduct illegal poaching killing of the already endangered wildlife species. Subsequently the community is denied access to the protected areas a tourist destination for revenue earnings for community development.

Additionally, it emerged from the findings that the protected area has served as a hide out for criminals who perfect thefts of people living and other property. Due to the vastness of the national reserve, it is difficult for law enforcement authorities to make any pursuit of any criminal into the area. In effect, the communities suffer economic loses through such. Because of lack of electric fence, some wildlife roam into people's farms causing destruction to property, crops, fences, livestock. This again denies communities both agricultural and livestock income. A person killed by wildlife denies family presence of breadwinners for family progress and economic stability.

The persistent HWC has delayed the development of Kamnarok National Reserve as a tourist destination for generation of revenue to the local communities as well as the Government. Destruction of water points hence people and livestock spend a lot of time to look for water for both domestic and agricultural. Time is a viable economic factor. Delayed compensation has denied the affected genuine family household

opportunity to settle down for self-employment. Serious environmental degradation which has results din the formation of deep gullies inside and outside the protected area. Consequently, arable land is lost to erosion as well as lack of access to such farms for development due to the deep gullies (no feeder roads).

The findings further revealed that the long term effects of HWC included High illiteracy levels among the affected communities thus low standard of education, Increase in poverty, settlers inside the restricted area never invest outside the area. Resident outside the reserve awaits compensation for their ancestral land they donated to the government for conservation. They also attempt to fence their land parcels for farming and improved livestock keeping. Deregistration of schools inside the reserve imply re-investment by way of meeting the present cost of purchasing land outside for school construction. This again has a blessing on school enrollment following relocation of households.

From the finding is therefore emerged that the invasion of the reserve has led to destruction of vegetation cover as a result of overstocking of livestock. The reserve has been reduced to grazing field for livestock whose keepers have fled banditry attacks from the neighboring counties. The victim's looks at the reserve as a "no man's land", consequently, soil erosion has led to the formation of deep gullies. Lake Kamnarok too is facing extension due to massive siltation. This denies the County the prospects of generating revenue through tourism as well as employment opportunities for the local youths. Due to the depletion of the surrounding environment, there is a likelihood of water shortage in the area. That puts both humans and the wild animals at risk hence an increased HWC. Subsequently, people's livelihood will be adversely affected leading to increase in poverty. Wild life will most likely die and those who

survive will migrate. The ultimate outcome would be loss of tourism opportunities and development in Baringo County. The County's potential is therefore impaired. Loss of vegetation cover translates to scarcity of pasture for both wild animals and livestock. This too imply more economic loss to the locals. This explains why livestock from Baring North Sub County have found gracing in the neighboring Rimoi Game Reserve. In effect the affected livestock keepers have incurred huge economic losses through heavy fines. The invasion of the reserve has also made it a hide out for criminals who turn to be poachers. They hunt down and kill wild life for animal ornaments. This too denies Baringo North Sub-County tourism industry potentials. The affected community suffers economic losses for lack of development of the reserve to generate tourism earning and employment opportunities. People's economic empowerment prospects becomes a mirage

6.6 Effects of Human Wildlife Conflict on the Education sector in Baringo North Sub-County

The study sought to establish the effects of human-wildlife conflicts on education sector in Baringo North Sub-county. The results from the 286 respondents revealed that conflict has resulted in loss of life of some pupils, teachers and parents as supported by 126 (44%) who strongly agreed and 103 (36%) agreed. The findings further established that the conflict has caused loss of income for victims thus their potential to pay fee for their children has reduced as supported by 160 (56%) who strongly agreed and 80 (28%) who agreed. The study also found out that there have been insecurities in schools adjacent to Kamnerok National Reserve caused by roaming wild animals as supported by 126 (44%) who strongly agreed and 149 (52%) who agreed. The study also revealed that the conflict has affected studying in schools around the National game reserve as supported by 114 (40%) who strongly agreed

and 92 (32%) who agreed. The findings also revealed that the conflicts have caused protracted disagreements on relocation of some affected schools as supported by 137 (40%) who strongly agreed and 103 (36%) who agreed.

Table 6.4: Likely effect of wild life conflict on Education Sector

Effect of wild life conflict on Education sector	SA		A		UD		D		SD	
	%	N	%	N	%	N	%	N	%	N
The conflict has resulted in loss of life of some pupils, teachers and parents	44	126	36.0	103	4.0	11	4.0	11	12.0	34
The conflict has caused loss of income for victims thus their potential to pay fee for their children has reduced	56.0	160	28.0	80	4.0	11	8.0	23	4.0	11
There have been insecurities in schools adjacent to Kamnerok National Reserve caused by roaming wild animals	44.0	126	52.0	149	0.0	0	0.0	0	4.0	11
The conflict has affected studying in schools around the National game reserve	40.0	114	32.0	92	12.0	34	12.0	34	4.0	11
The conflict has caused protracted disagreements on relocation of some affected schools	48.0	137	36.0	103	4.0	11	4.0	11	8.0	23

SA-strongly Agree, A- Agree, UD-Undecided, D-Disagreed and SD-Strongly Disagree

Source: Field Data, 2021

The FGD participants opined that the roaming of wildlife such as elephants which obstruct them from getting to school. As such cases of late reporting to school for fear of attacks are common especially during peak of harvesting season. This translates to

poor attendance at school which leads to poor syllabus coverage. There are cases of teacher/learner absenteeism as a result of the insecurity. Some leaners track to distant schools. Poverty arising from damages to property (crops and livestock). This translates to loss of income for fees payment by families as well as bursaries which would have been generated through tourism from the conserved wildlife at Kamnarok National Game Reserve. Increase in ill-health cases arising from poor coverage of hospitals construction insides the reserve since it is a government gazette area. Sick learners fail to attend school for lack of treatment due to lack of access to nearby hospitals. Such has long term effects in the child's learning. Loss of breadwinners in households which leaves children orphaned. That again poses economic challenges to the affected families leading to cases of school dropout or poor academic performance. Delayed communities' infrastructural development social amenities such as permanent school buildings, good clean water supply to schools and good possible roads and bridges across streams that cut across communities and their adjacent schools.

Results interviews by ACC revealed that Schools inside the gazette area never funded by the government as they are in a restricted area. They cannot attract CDF or development funds from the ministry of education. No title deed can be registered under their particulars. Insecurity of leaners and teachers by roaming elephants and crocodiles. In effect, learner or teacher absenteeism cases are reported. Their movement is curtailed. That gain impacts on overall curriculum delivery. School drop-out as school going children get exposed to social immorality triggered by the illicit brews which promote high number of drunkards who lure school girls into sexual misbehavior and boys to alcoholism. Teenage and early marriages are a

common practice. People living inside the reserve ensure temporary settlement since being on government land it is not possible to put up permanent housing and toilets. Consequently, there is poor sanitation because for lack of toilets and clean water supply. This leaves children vulnerable to waterborne diseases like typhoid, dysentery, cholera and amoebiasis.

Additionally, it emerged from both the FGDs and interviews that the cultural practice of giving young children some inheritance of livestock, land for cultivation encourages school age children to demean the importance e of formal education and therefore concentrate on livestock herding and farming. As s result, overage children enroll in Class 1 – 10 years old, instead of the right age of 6 years. Ultimately, parents exploit children's rights to formal education. Protracted land dispute has enlisted invasions of the reserve by migrants. This has created rivalry between the indigenous dominant clans. In effect, they treat migrants with suspicion and therefore, by design, deny their children bursary and relief food from the government. This ultimately affects their schooling. Lack of access routes or road network inside the protected area. Learners strain to get to their school for lack of road networks and bridges across the reserve. Given the wide distances between the schools, some leaners opt out of school consequently low school enrolments. The affected schools face government deregistration for lack of threshold.

The study's findings were congruent with those of Masago and Kweingoti's (2018) study, which concluded that human-wildlife conflict posed a threat to the attainment of a decent education. Wildlife creates unease within a community, which results in school absences. Wherever absenteeism occurs, the consequences are evident: At the national level, chronic kindergarten absence was related with a lower quality of

education in first grade, with the negative effect occurring twice as frequently among students from low-income families. The achievement disparity widens at every level. The researchers discovered a substantial association between sixth-grade attendance and on-time high school graduation rates.

Therefore, there a general consensus from these findings that HWC has led to loss of lives of learners whose future potentials are cut short. This has left survivors exposed to poverty and disillusionment. Property destruction translates to loss of income to households hence their inability to educate their children. Community poverty index is worsened. Drop out cases could also aggravates criminality which could pose security threats in the area. Roaming wild life has posed insecurity to both learners and teachers. This is because the conservation area lacks electric fences. Such threats negatively impact on effective curriculum implementation since learners/teachers lack concentration. This ultimately translates to poor quality education. Which in turn limits the areas youth prospects for good careers. The schools inside or near the reserve have been denied the infrastructural development since their relocation is imminent. They also cannot attract any funding because of their locations. Such schools experience poorly constructed classrooms and un-conducive learning environment. This again negatively impacts on Lerner performance index. Some learners cover long distances to attend schooling. This has a bearing in time management and consequent performance. Ill health cases of learners are common due to lack of nearby developed health facilities. This also affects learner's performances. The affected schools cannot also benefit from clean water supplies. This has a bearing on the health status of learners and ultimately performance.

CHAPTER SEVEN

EFFECTIVENESS OF EMERGENCY RESPONSE STRATEGIES IN THE MANAGEMENT OF HUMAN WILDLIFE CONFLICT BARINGO NORTH SUB-COUNTY, KENYA

7.1 Coping Strategies for the Victims of Human-wildlife Conflicts in Baringo North-Sub County

The study sought to establish the copying strategies for the victims of human wild life conflicts in Baringo North sub-county. The findings of the study revealed that 213 (74.4%) agreed with medical treatment after attack as a copying strategy while 73 (25.5%) were of the contrary opinion. The findings further revealed that 59 (20.5%) of the respondents agreed with psychotherapy after the attack as a copying strategy while 227 (79.5%) were of the contrary opinion. The findings also showed that 41 (14.3%) of the respondents were of the opinion that compensation from the attack was a copying strategy while 245 (85.7%) were of the contrary opinion.

Table 7.1: Coping strategies for victims of human wild life conflicts

Coping Strategy	**Yes**		**No**	
	N	**%**	**N**	**%**
Medical treatment after attack	**213**	**74.5**	**73**	**25.5**
psychotherapy after the attack	**59**	**20.5**	**227**	**79.5**
Compensation from the attack	**41**	**14.3**	**245**	**85.7**

Source: Field Data, 2021

During the FGDs it emerged that most victims of wild animals attacks get treated at hospital facilitates within the County. The few respondents with divergent opinions that victims incur financial costs yet the government should be responsible to meet

medical expenses generated from wild animal's attacks. Psycho-therapy as a strategy is lowly undertaken because of the counter blame/ blame game. Compensation of victims of HWC becomes some source of consolation. This could best be explained in terms of poverty index which leaves victim's hopelessness. Compensations were also based on the location of wild life attacks. Victims of wild animal's attacks outside the gazetted reserve were eligible for compensation. Cases of attacks inside the reserve were not compensable as per government Policy.

7.2 Forms of Compensation

The study sought to establish the forms of compensation given to victims of human wildlife conflicts. The findings are presented in Figure 7.1.

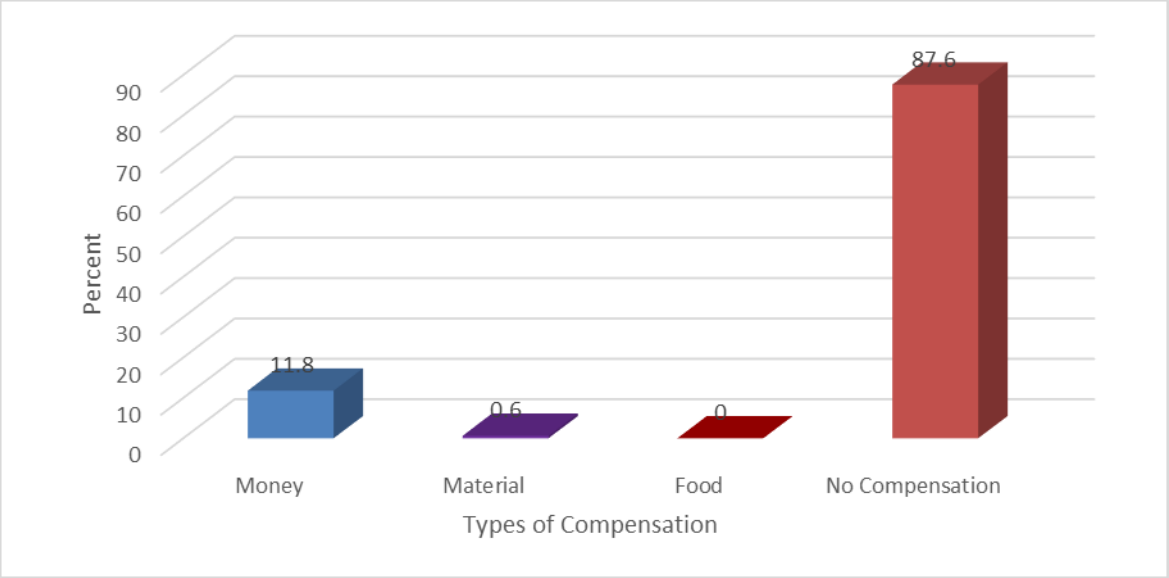


Figure 7.1: Forms of Compensation

Source: Field Data, 2021

The findings revealed that 250 (87.6%) of the respondents stated that there was no compensation given to the victims of HWC, 34 (11.8%) of the respondents stated that there was monetary compensation whereas 2 (0.6%) were of the opinion that there was materials compensation. It follows that most of the respondents were of the

opinion that there were not compensated by the authorities even when they have lost their properties due to attacks by wildlife.

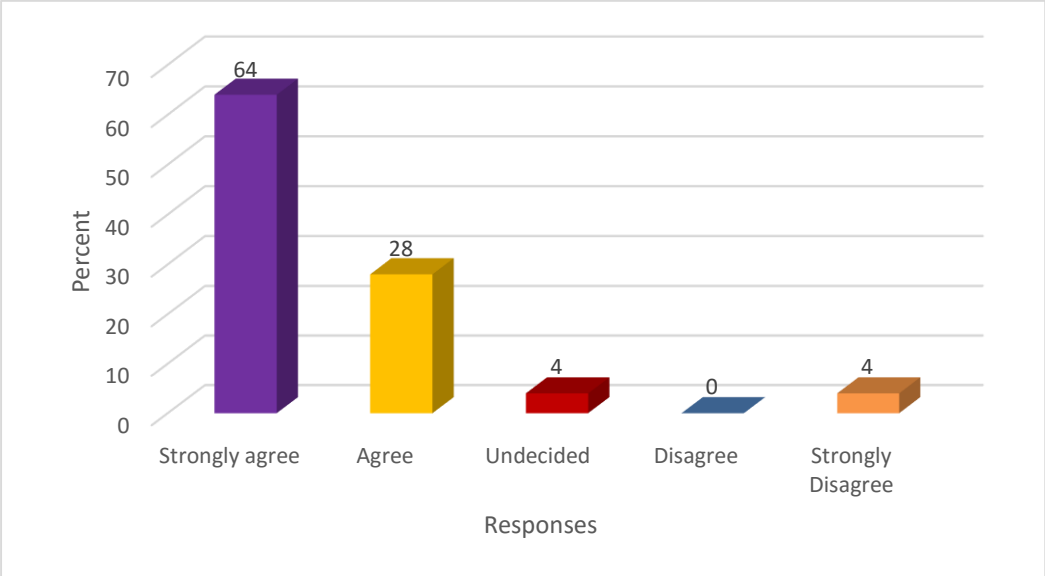
7.3 Strategies to Prevent Attacks from Wild animals in Baringo North Sub-County

The study sought to find out the various strategies that had been put in place to prevent attacks by wild animals in the Baringo North Sub-County. The findings were as discussed in the subsequent sections.

7.3.1 The Government should initiate Dialogue with the Communities Living Adjacent to the National Reserve

The study sought to establish the extent to which the respondents agreed with the assertion that the government should initiate dialogue with communities living adjacent .to the national reserve. The findings are presented in Figure 7.2.

Figure 7.2: Government to Initiate Dialogue with Communities Living Adjacent to the National Reserve



Source: Field Data, 2021

The findings revealed that 183 (64%) of the respondents strongly agreed, 80 (28%) agreed, 11 (4%) were undecided and 11 (4%) strongly disagreed. A greater percentage

of the respondents were in agreement. This could be the position held by those who are pro conservation potentials. They were aware of future prospects of tourism earnings that can be generated from conservation. The small number of respondents who negatively responded could be a representative of those who capitalize on the conflicts.

7.3.2 Electric fencing around the National Reserve will assist to keep off straying wildlife as a Coping Strategy

The study sought to establish the extent to which the respondents agreed with the assertion that electric fencing around the national reserve will assist to keep off straying wildlife as a copying strategy. According to the study findings as indicated on figure 6.3 revealed that 194 (68%) of the respondents strongly agreed, 69 (24%) agreed, 11 (4%) strongly disagreed and 11 (4%) disagreed.

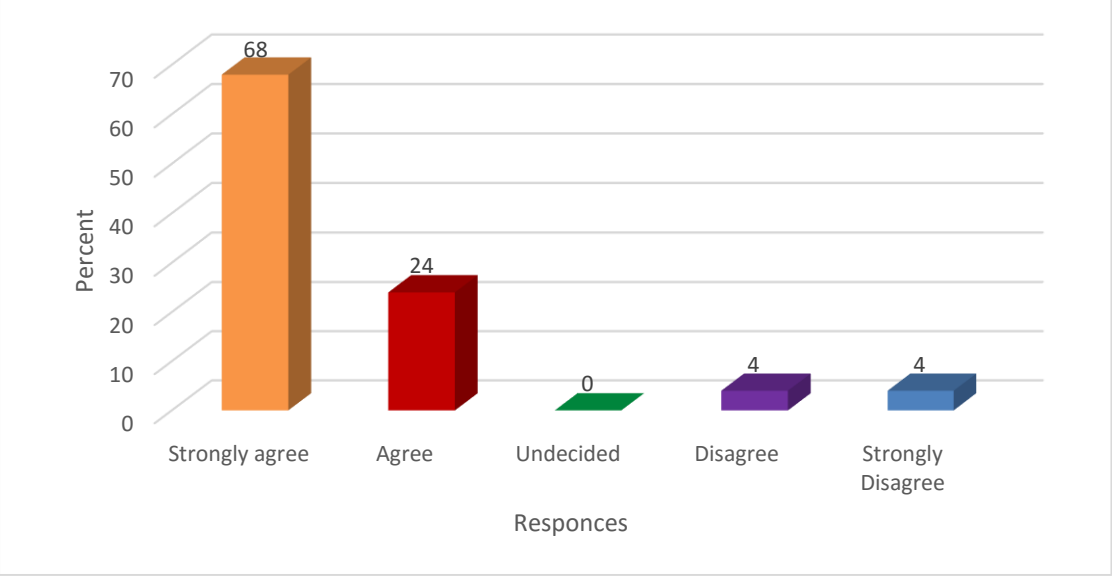


Figure 7.3: Electric Fencing of National Parks to Assist in Keeping Off Wild Animals

Source: Field Data, 2021

During an interview by one of the chiefs he indicated that communities coping mechanisms: Raising formal complaints whenever there are attacks, injuries or destruction of property, fencing off their farms in attempt to keep the roaming wildlife at bay, Using traditional methods to keep off wildlife from their farms/places of residence. Use of smoke /fires, shouting at the approaching wild animal, beating of tins/drums. Insistence on fencing by the Government as well as compensate genuine owners. Appeals to the Government initiate co-operate social responsibility activities. Appeals to the Government to relocate "foreign" invaders from cattle rustling prone areas of Baringo North. One elder strongly pointed out, "*kila mtu anajua kwao, watoke ndani ya Game Reserve*". (Everybody knows their home, let them get out of the game reserve)

Respondents in the FGDs opined that respondents were in agreement on the need to fence off the conservation area as a coping strategy. These represent community members who value the existence of the national reserve. Other coping mechanisms were drawn from traditional methods employed to deter wild animals from invasion. This implies a historical co-existence between humans and world life. It could also mean that there exist a general positive people's perceptions towards wild life. It also explains why some locals feel that HWC would not have persisted were it not for a protracted dispute. The Government has addressed the conflict early enough because of delay, the anti-conservation groups have found refuge in the reserve.

7.3.3 Community awareness creation on the economic value of the area and the wild game in the Reserve for the community and Baringo North Sub- County

The study sought to establish whether community awareness creation on the economic value of the area and the wild game in the Reserve for the community and

Baringo North Sub- County would be helpful in taming HWC. The findings are presented in Figure 6.4.

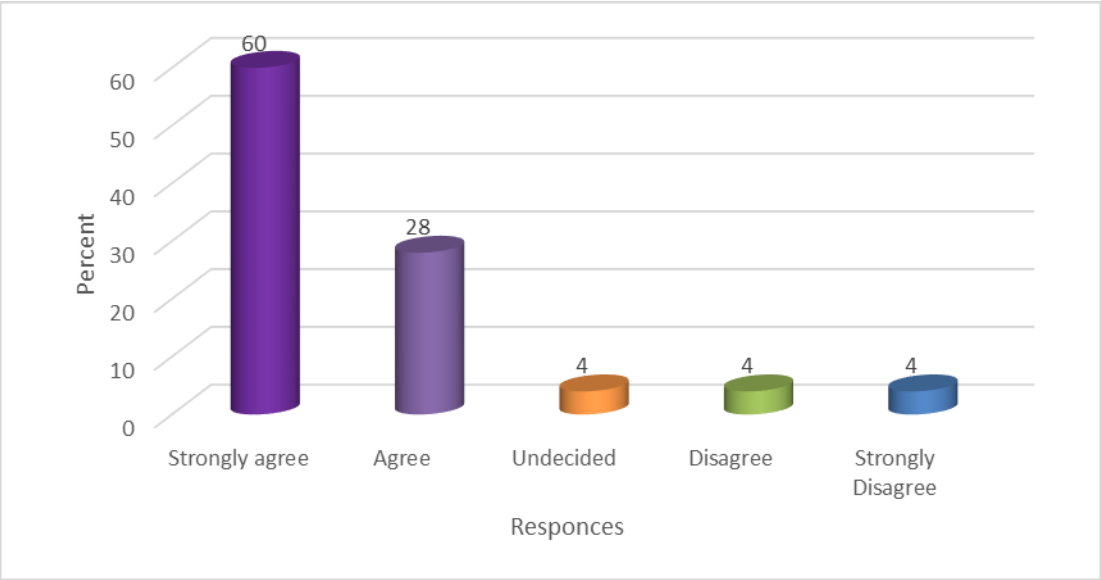


Figure 7.4: Community awareness creation on the economic value of the area and the wild game in the Reserve for the community, Baringo North Sub-County can help in taming HWC

Source: Field Data, 2021

The findings revealed that 171 (60%) of the respondents strongly agreed, 80 (28%) agreed, 11 (4%) were undecided, 11 (4%) disagreed while11 (4%) strongly disagreed. Members of the FGDs did register that conservation of wild life translates to economic gains for development. This confirms the fact that with the establishment of Kamnarok National Reserve, Baringo North Sub County residents would greatly realize the huge economic potential of the tourism industry. These again could imply that advocates against conservation measures are opportunistic who have constantly perpetuated HWC. The fact that the discovery of the tourism potential in Kerio valley by Colonial and successive / Kenya Governments indeed justifies the need to arrest

HWC. That will pave the way for sustainable conservation for economic development. The net effect will be improved community lively hood

7.3.4 Community-based Conservation Strengthens Nature of conservation and provides Socio-economic gains for the local people

The study sought to establish weather Community-based Conservation Strengthens Nature of conservation and provides Socio-economic gains for the local people. The findings in Figure 6.5 revealed that 160 (56%) of the strongly agreed and 103 (36%) agreed, 11 (4%) disagreed while 11 (4%) strongly disagreed

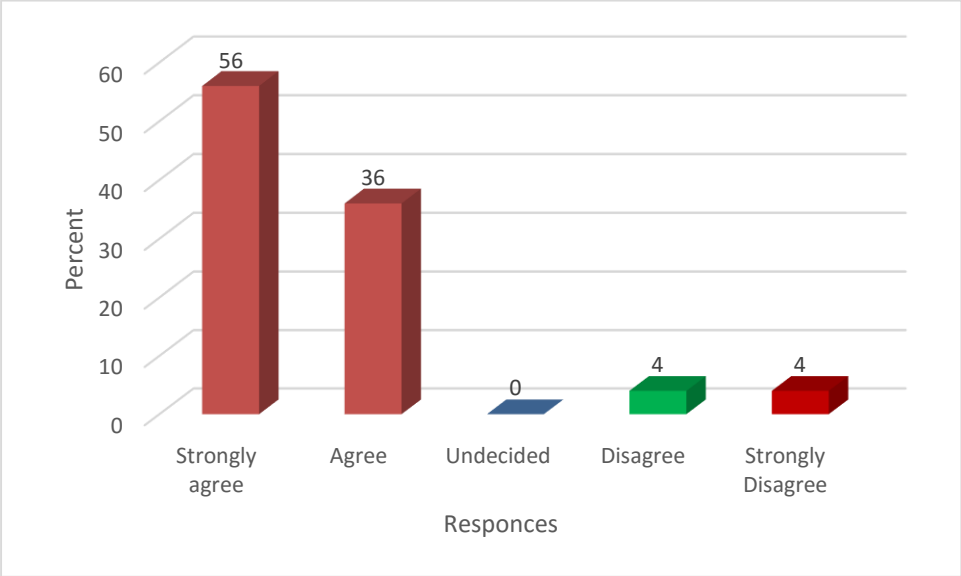


Figure 7.5: Community-based Conservation Strengthens Nature of conservation and provides Socio-economic gains for the local people.

Field Data, 2021

During the interviews with FGD, it emerged that the historical foundation of the conservation area traces back to colonial period. It all started at Rimo in Elgeiyo Marakwet in the years 1948, 1949 and 1950. The local's oral narrative has it that a Second World War prisoner was exiled to the area as an Isolation case. He came to

live in a grass thatched housing structure there at Rimoi. Through him, the colonial government conscripted some African men to offer labour services to him. They made a road from Rimoi to Lake Kamnarok for the locally nicknamed prisoner – Kipsomorgut so that he would routinely visit the ox-bow lake. The road ended at a location locally called Tabar where a signpost inscribed "Rimo Game Park" was fixed at the base of an acacia tree.it directed other visiting white tourists to a tent-mad camp at Tabar. Outside the camp, a metal frame staircase was erected for the citizens to climb up for an exciting view of grazing elephants and other wild game. To further his personal interests, the white man prisoner used local labour to clear 100 acres of land to practice agriculture; one labourer was called Kipkarne Arap Kipyo. He planted groundnuts and sorghum while the farm was guarded by an employed game warded named Chemogol from Elgeiyo Marakwet County. The warden was also charged with the responsibility of receiving reports from local appointees on any killings of wildlife by hunters are such was Mr. Cheribet Arap Chemonyei whose commitment to duty saw him secure the company of wildlife offices from Tambach for a manhunt of hunters at the valley. One of them was raided in his make shift structure near Kerio. The wildlife hides and skins were confiscated and the hunter got arrested and taken to serve imprisonment at Tambach (Elgeiyo Marakwet). The prisoner tourists camp was pulled out in the year 1960 at the advent of independence.

Another FGD participant stated that Successive Parliaments did deliberate on the need to demarcate Kerio Valley as a National Game Reserve. The area was seen as a potential tourist destination for tourism earnings. The government involvement with Baringo District Leadership 1983 – 1983 culminated in the community's acceptance to surrender their land for wildlife conservation. This prompted the then Wildlife and

Tourism Minister to Gazette the area in 1983. After the official gazettement, Baringo County Council officers with those from KWS came to fix concrete beacon along the reserves agreed boundary. Again, in local labour was sourced from community. Having agreed to the objectives by a section of community members, the government went on to register the affected households which numbered 350. They were destined for compensation

Most respondents were in agreement, an indication that residents around Karmnarok Game Reserve are willing to be involved in conservation efforts. Their proper participation will likely minimize if not solve the perennial HWC if not checked, HWC would soon collapse the existence of the conservancy

7.3.5 Community-wildlife conservation is based on the principle that local communities shall participate to benefit from wildlife conservation

The study sought to find out whether Community-wildlife conservation is based on the principle that local communities shall participate to benefit from wildlife conservation. The findings in Figure 6.6 revealed that 137 (48%) of the respondents strongly agreed, 114 (40%) agreed, 11 (4%) were undecided, 11 (4%) disagreed while 11(4%) strongly disagreed.

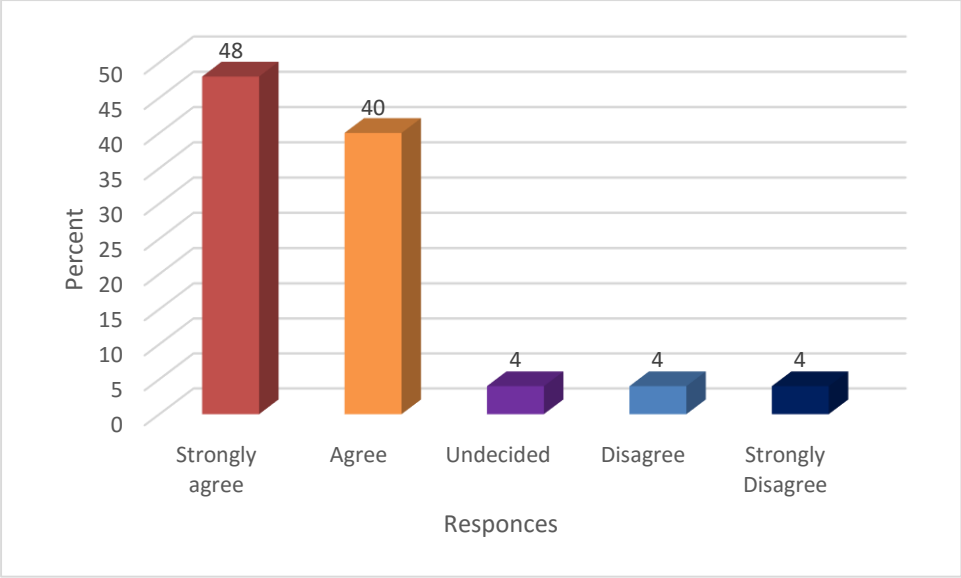


Figure 7.6 Community-wildlife conservation is based on the principle that local communities shall participate to benefit from wildlife conservation

Source: Field Data, 2021

7.3.6 Combined government-community wildlife conservation motivates communities towards wildlife conservation without which wildlife conservation efforts are doomed to fail.

The study sought to find out whether Combined government-community wildlife conservation motivates communities towards wildlife conservation without which wildlife conservation efforts are doomed to fail. The findings in Figure 6.7 revealed that 160 (56%) of the respondents strongly agreed, 103(36%) agreed, 11 (4%) disagreed while 11(4%) strongly disagreed.

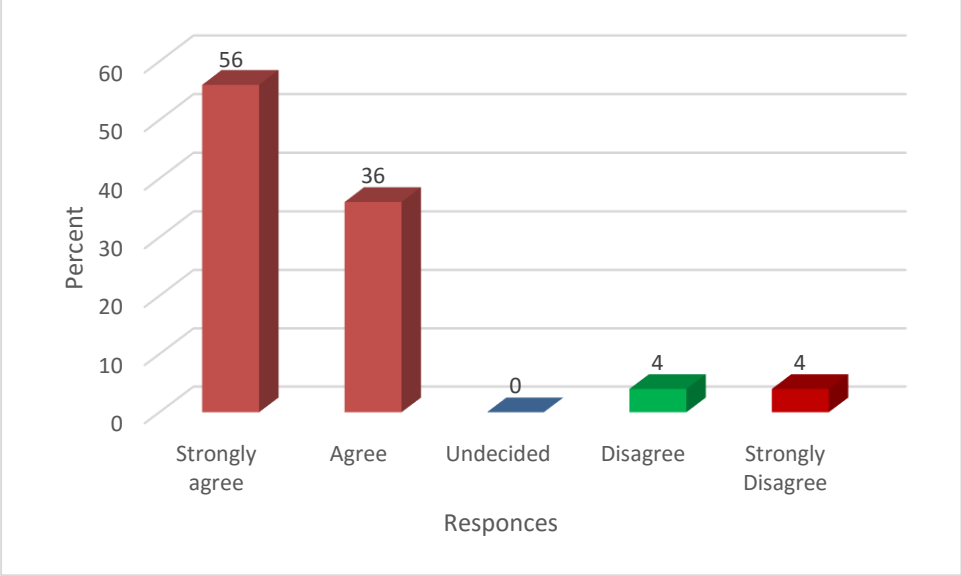


Figure 7.7 Combined government-community wildlife conservation motivates communities towards wildlife conservation without which wildlife conservation efforts are doomed to fail

Source Field Data, 2021

In support of the findings, it emerged from one of the FGDs that the historical foundation of Kamnarok National Reserve is entrenched in Tugen community value for wildlife co-existence. The older people left the valley basin devoid of any human activities save for small hunting and bee keeping. People settled up the Tugen escarpment on grounds of its vantage point for security surveillance as well as skillful avoidance of disturbance to the wildlife and their habitats. The valley was associated with wildlife as their God-given habitats. Community elders then designated specific place / locations for wild animals-related species. Examples: Kubo ngetuny – a lion's habitat; Beeb Kibaw – water for rhino; Kimugungon – footprints/hoof paths; Chatipbel – migratory route for elephants; Kap kuikui – a location for crocodiles (also kuikui).

It also emerged from the FGDs that the community endorsed Government's proposal to set aside part of Kerio Valley for wildlife conservation. The government came to hold public barazas to sensitize communities on bio-diversity in existence at Kerio Valley 1970s – 1980s. Community elders gave the government a total acceptance to surrender the identified stretch of land parcel, currently occupied by Kamnarok National Game Reserve (1983).Elder form the area, echoed a statement by one man from *njongiate* who was present at local Kamnarok Baraza having told the government leaders that "*ngombe yangu hujilisha mchana na wenu* (wildlife*) hujilisha usiku"*

The government had engaged all leaders in the creation awareness campaign then North Baringo Area MP, Baringo County Council Leadership, Area Councilors and Provincial Administration such as District Commissioner, Are District Officer and

ALL Area Chiefs. In support of conservation about 26 sub-clans along Baringo Kerio Valley in each sub location agreed unanimously to the government proposal.

In response to communities' gesture, the government development of GPRS maps to inform the Ministry of Lands officers on demarcation boundary bordering the given-out land parcel for wildlife conservation and left out community lad for adjudication and subsequent land registration for individual ownership. The declaration of the area for land demarcations outside the conservation area was only objected on grounds of the need for compensation of the affected families. This explains why land demarcation and registration by the Ministry of Lands followed the National Game Reserve designated boundary. Both the Baringo County Council and KWS officers hired local labour from the affected communities to clear Kamnarok National Game reserve in 1986, including the few communities' youth who had earlier on objected to the conservation decision. They were paid as casuals. The county council later used a grader to clear it.

To tame the problems of HWC community members Participated in the formation of a task Force. Given the prolonged HC, all the affected communities in all sub-locations in Barwesa ward nominated each representative to form a task force under the management of Baringo County Government in 2014. The Task Force came into operation in the year 215. There were 7 community representatives and other 15 co-opted persons.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The general objective was to assess the effects of human wildlife conflict on social, economic and education developments in Baringo North Sub-County, Kenya. This objective was adequately addressed in the research methodology by application of both qualitative and quantitative research approaches. This was done through the the use of both primary and secondary data that addressed the following specific objectives were: to examine the nature and extent of wildlife Conflicts developments in Baringo North Sub-County, Kenya; To identify the causes of human wildlife conflict in Baringo North Sub County, to Evaluate the impacts of human wildlife conflict on socio-economic and education development in Baringo North Sub County, Kenya and Analyze the effectiveness of emergency response strategies in the management of human wildlife conflict for social, economic and education developments in Baringo North Sub-County, Kenya

8.1 Summary of the findings

In line with objective one that concerned the main causes of HWC, the findings indicate that, 148 (52%) of the participants agreed that shared water sources was a cause of human wildlife conflict, while 92 (32%) strongly agreed, however 23 (8%) were undecided and strongly disagreed respectively. Additionally, 137 (48%) of the participants strongly agreed sources of food for both humans and wild animals was another major cause of human-wild life conflicts while 103 (36.0%) agreed with the same. The study further Sought to establish whether Migration of people also caused human-wildlife conflicts, and it was established that 126 (44%) strongly agreed with this assertion while another 67 (24%) agreed.

In line with the specific objective two, the study revealed that there was risk of the children meeting wild animals as indicated by 178 (61.2%) of the respondents indicating that children cross paths with wild animals, supported by 178 (61.2%) of the respondents indicating that the schools were located close to wildlife reserves. According to the findings among the animals that attacked people, the snake had the highest reports of attacks to humans at (37.3%), followed by elephants (25.5%), Crocodiles (13.5%), buffalo (12.4%) while hyena and rhino having the least incidences of 1.20%. The findings also indicated that, 148 (52%) of the participants agreed that shared water sources was a cause of human wildlife conflict, while 92(32%) strongly agreed, however 23(8%) were undecided and strongly disagreed respectively. Study findings further indicated that 137 (48%) of the participants strongly agreed sources of food for both humans and wild animals was another major cause of human-wild life conflicts. On examination of the place where wild animals attacked survivors on Baringo North Sub-county, findings indicated that most of the attacks occurred at work/ in farms as supported by 140 (49.1%), another 74 (26.1 %) survivors stated that the attacks occurred at home at home while 53 (18.6%) were of the opinion that the attacks were common inside/near wild life park. The study further revealed that poverty and overpopulation are drivers to human wildlife conflicts as wildlife habitats are disappearing at an alarming rate, as supported by 194 (68%) response rate.

In line with specific objective three of the study, the findings revealed that types of property that were commonly damaged by wild animals were crops as supported by 119 (41.6%) of the respondents and 41 (41.3%) indicated that livestock were also affected. Findings of the study showed that 126 (44%) of the respondents strongly

agreed that human wildlife conflicts led to death of humans. The study further revealed that 228 (80.0%) of the respondents strongly agreed that water shortage was also another cause of human wildlife conflict as human fight for limited resource which is shared by the wild animals hence being attacked by snakes on the way or elephants and other wild animals. The study results also revealed that 228 (80%) of the respondents strongly agreed that the destruction of wildlife habitat endangers the existence of wild life and hence likely to kill the tourism industry. Finally the study found out that both humans and wildlife would likely be exposed to suffering because of wanton destruction of the environment around the National Reserve as supported by 183 (64%) response rates.

In line with specific objective four, the findings revealed that 59 (20.5%) of the respondents agreed with psychotherapy after the attack as a copying strategy while 227 (79.5%) were of the contrary opinion. The findings also showed that 41 (14.3%) of the respondents were of the opinion that compensation from the attack was a copying strategy while 245 (85.7%) were of the contrary opinion. The study further, sought to establish the extent to which the respondents agreed with the assertion that the government should initiate dialogue with communities living adjacent to the national reserve. The findings revealed that 64% strongly agreed, 28 agreed, 4% were undecided and 4% strongly disagreed. The respondents also asserted that that electric fencing around the national reserve assisted in keeping off stray wild animals. This was supported as a copying strategy by 68% of them who strongly agreed. On establishing whether community awareness had influence on economic value of the area and the wild game in the Reserve for the community in Baringo Sub- County, the findings revealed that 60% of the strongly agreed and 24% agreed. Additionally, the

study sought to establish weather Community-based Conservation Strengthens Nature of conservation and provides Socio-economic gains for the local people. The findings revealed that 56% of the strongly agreed and 36% agreed. On investigating if combined government- community wildlife conservation motivates communities towards wildlife conservation without which wildlife conservation efforts are doomed to fail the findings revealed that 56% of the reacted positively over it, indicating that government- community wildlife conservation motivated communities towards wildlife conservation.

8.2 Conclusions of the Study

Based on the findings the study makes the following conclusions;

The overall conclusion of the study is that HWC negatively impacts on social economic and education in Baringo Sub County. With regard to social economic development, human encroachment into the reserve has led to loss of biodiversity in the study area and therefore, affected economic opportunities that could emanate from these tourism earnings. In reference to education, there have been cases of school drop-outs and absenteeism for both students and teachers therefore affecting education Standards attainments in the area.

In line with first specific objective, the study concludes that a number of factors were identified as causing HWC in Baringo County. Among them are the shared water sources, sources of food for both humans and wild animals and Migration of people in to the wildlife area.

In line with objective two, the study concludes that there was risk of the children meeting wild animals as they cross paths with wild animals and that some schools are located close to wildlife reserves. Among the animals that attacked people, the snake had the highest reports of attacks to humans, followed by elephant, Crocodiles,

buffalo while hyena and rhino having the least incidences. Most of the attacks were found to occur at work/ in farm, at home and were also common inside/near wild life park. Poverty and overpopulation were identified as drivers to human wildlife conflicts as wildlife habitats are disappearing at an alarming rate. There has been increased insecurity around schools adjacent to the national reserve caused by roaming animals and which has remained a perennial problem but government agencies have not taken care of proactive stand to get a permanent solution.

In line the third specific objective, the study concludes that the types of property that were commonly damaged by wild animals were crops and livestock. Human wildlife conflicts has also led to death of humans. The destruction of wildlife habitat endangers the existence of wild life and hence likely to kill the tourism industry. Humans and wildlife are likely to be exposed to suffering because of wanton destruction of the environment around the National Reserve.

In line with fourth specific objective, the study concludes that the victims did not receive the psychotherapy and the compensation they are supposed to receive for loss of lives and property. The government should initiate dialogue with communities living adjacent to the national reserve and that the electric fencing should be raised around the national reserve to assist in keeping off stray wild animals. The community should be made aware of the economic value of the game reserve and that Community-based Conservation efforts should be strengthened so as the local can reap the benefits of the reserve. The study concludes that the strategies employed in the management of HWC are not effective in dealing with the problem since they are short lived and are often reactive in nature. In this regard, there is need to have for a more proactive approach by both national and county governments to tackle the

situation differently. There is need to have a more preventive approach as opposed to the current reactive approach.

8.3 Recommendations of the Study

Based on the findings and the conclusions, the study made the following recommendations;

First, despite some awareness creation on the value of wild life conservation, there still remain some underlying negative perceptions among community members. Therefore, there is need to address HWC to pave way for a realistic social-economic development.

Secondly, due to increased incidences of wildlife attacks causing damages, injuries and deaths, both the County Government of Baringo. Government should resolve HWC by generating, lasting solutions like fencing off the reserve to keep off roaming wildlife.

Finally, compensation policy should also be simplified for prompt actions. The initial owners of the land in which the reserve covers should also be compensated well to deal with the problem of people encroaching back into the reserved land. Coping strategies employed are short-lived; there is need for government Agencies to be proactive to forestall belated attempts to address HWC.

8.4 Suggestion for further studies

The study recommends the research to be done on the nature and extent of Human Wildlife Conflicts on Socio- economic development in other counties which experiences brunt's of wildlife conflict as this study covered only Baringo North Sub-

County. Assess the extent and scale of the impacts of human wildlife conflict on socio-economic and education development in Baringo North Sub County, Kenya and analyze the challenges affecting implementation of emergency response strategies in the management of human wildlife conflict in Baringo North Sub-County, Kenya.

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APPENDICES

Appendix I: Letter of Introduction

I am a graduate student at Masinde Muliro University of Science and Technology. As a partial fulfillment of the requirements of Master of Science degree in Disaster Management and Humanitarian Assistance, I am carrying out a research on Human Wildlife Conflict in Baringo North Sub-county. The purpose of this letter is to request you to provide information in the questionnaire by answering the questions honestly and completely.

Please note that you are assured of confidentiality on the information that you are going to provide.

Thank you.

Yours Faithfully

Gideon Cheptarus

CDM/04/05

Cell phone: 0722418790

Email gcheptarus60@gmail.com

Appendix II: Questionnaires for Headteachers and Ministry of Interior (Chiefs and ACC)

[KWS INTERIOR MINISTRY, EDUCATION MINISTRY]

Part A: Personal information

1. Gender: Male [] Female [ ]
2. Department/Ministry
   KWS [ ] Interior Ministry [ ] Education Ministry [ ]
   Position/ Title …….
3. Education level
   Secondary [ ] Diploma [ ] Degree [ ] Masters [ ]
4. Years of service in the current position
   1-5 yrs [ ] 6-10yrs [ ] Over 10 [ ]

Part B: Human wildlife conflicts

5. What is the nature of Human wildlife conflicts at Baringo North Sub-County:
   Human caused [ ] Animal caused [ ] Not known [ ]
   Both human and animal [ ]
6. To what extent do you agree with the following factors/statements on the likely causes of Human wildlife conflicts in Baringo North Sub-County? Use scale 1-5 where 5-strongly Agree, 4- Agree , 3- Undecided 2-Disagreed and 1 Strongly Disagree

Statement	**5**	**4**	**3**	**2**	**1**
Water					
Food					
Migration of people					
Habitats destruction in the reserve					

7. The following are the likely effects of human wildlife conflicts on the social, economic and educational developments around Baringo North Sub-County. Indicate to what extent you agree with the following Use scale 1-5 where 5-Stongly Agree,4-Agree, 3-Undecided , 2 – Disagree and 1- Strongly Disagree

Statement	**5**	**4**	**3**	**2**	**1**
Death of humans					
Injuries					
Livestock death/injuries					
Crop loss/damage					

8. The following are statements on the nature and extent of the situation of human wild life conflicts around Baringo North Sub-County .To what external do you agree with each one of them? Use scale 1-5 where 5-Stongly Agree, 4-agree, 3-Undecided, 2- Disagree and 1- Strongly Disagree statement.
   The locals have PTO

Statement	**5**	**4**	**3**	**2**	**1**
The locals have suffered losses in crops and livestock due to attacks by wild animals in the recent past					
Co-existence between humans and wild animals over years was never a problem since land was adequate					
Poverty and overpopulation are some of the factors driving human wildlife conflicts as wildlife habitats are disappearing at an alarming rate					
An improvement on community livelihood around Baringo North Sub-					

County remains a challenge as in other conservation areas.					

9. The following statements suggest a general assessment on human wildlife conflicts around Baringo North Sub-County. To what extent do you agree with each one of them? Use scale 1-5 where 5- Strongly Agree, 4-Agree, 3-Undecided, 2- Disagree, 1-Strongly Disagree. PTO

Statement	**5**	**4**	**3**	**2**	**1**
Crop and property damage are not or rarely compensated by the government					
Wildlife induced deaths or injuries are poorly or never compensated					
Locals can frustrate conservation programmes/projects					
Wild animals destroy more crops than livestock					
Traditional resources in the National Reserve have reduced hence causing community hatred towards the reserve and the government					
State agencies e.g KWS care more for wildlife than the people					
National Reserves portray an approach in parks designs that allocate large tracts of land for wildlife					

10. The following are statements on the likely long-term effects of human wildlife conflicts on the National Reserve and its environment.
    To what extent do you agree with each one of them? Use scale 1-5 where, 5-Strongly Agree, 4-Agree, 3-Undecided, 2-Disagree, and 1-Strongly Disagree.

Statement	**5**	**4**	**3**	**2**	**1**
The conflicts have caused overstocking of livestock resulting in overgrazing and destruction of vegetation cover					
There is alarming soil erosion which has resulted in siltation at the area thus exposing it to possible extinction.					
Water shortage is likely to be experienced which would expose human and animals to severe livelihoods or even deaths					
The destruction of wildlife habitats endangers the existence of wild life species for tourism industry.					
Both humans and wildlife would likely be exposed to suffering because of wanton destruction of the environment around the National Reserve.					

11. The following are statement on stakeholders' likely views on Human wildlife conflicts around Baringo North Sub-County. To what extent do you agree with each one of them? Use scale 1-5 where, 5-Strongly Agree, 4-Agree, 3-Undecided, 2-Disagree, and 1-Strongly Disagree.

Statement	**5**	**4**	**3**	**2**	**1**
The government should initiate dialogue with the communities living adjacent to the National Reserve					
Human wildlife conflicts have slowed down the social, economic and educational developments of the affected communities.					
Electric fencing around the National Reserve will assist to keep off straying wildlife as a coping strategy					
There is need for community awareness creation on the economic value of the area and the wild game in the Reserve for the community, Baringo County and the Country.					

12. The following statements relate to community participation in an effort to minimize human wildlife conflicts around Baringo North Sub-County. To what extent do you agree with each one of them? Use scale 1-5 where, 5-strongly Agree, 4-Agree, 3-Undecided, 2-Disagree and 1-Strongly Disagree.

Statement	**5**	**4**	**3**	**2**	**1**
Community participation is on the recognition that protected areas in Kenya will survive if human needs are addressed.					
The future of protected areas remain insecure if they do not have the support from the affected communities					
Community-based conservation strengthens nature conservation and thus provides socio-economic gains for the local people.					
Community-wildlife conservation is based on the principle that local communities shall participate to benefit from wildlife conservation					
Combined government-community wildlife conservation motivates communities towards wildlife conservation without which wildlife conservation efforts are doomed to fail.					

13.The following are statements on the likely effect of HWC on the education sector in Baringo North Sub-County. To what extent do you agree with each of them? Use scale 1-5 where, 5-strongly Agree, 4-Agree, 3-Undecided, 2-Disagree and 1-Strongly Disagree.

Statement	**5**	**4**	**3**	**2**	**1**
The conflict has resulted in loss of life of some pupils, teachers and parents					
The conflict has caused loss of income for victims thus their potential to pay fee for their children has reduced					
There have been insecurities in schools adjacent to Kamnerok National Reserve caused by roaming wild animals					
The conflict has affected studding in schools around the National game reserve					
The conflict has caused protracted disagreements on relocation of some affected schools					

Appendix III: Interview Schedule for County and National Government Office Bearers

Part A: Personal information

1. Gender: [ ] Female [ ]

2. Ministry/Department……

3. County Government [ ] National Government [ ]
   Office position /Title ……

4. Education level: Secondary [ ] Diploma [ ] Degree [ ] Master [ ]

Part B: Human wildlife conflicts

5. (a)What forms of Human wildlife conflict exist around Baringo North Sub-County?

   (b)What are its causes?

   (c)What main types of animals are involved in Human Wildlife conflicts there?

   (d)What types of damages/ injuries are reported?

6. (a) What are the pre-disposing factors of human wildlife conflicts around Baringo North Sub-County?

   (b) What effects do such conflicts have on social, economic and educational developments of the affected communities?

Part C: Land use Patterns

7. (a) What are the economic activities undertaken around the national Reserve?

   (b) Which ones does the government encourage and why?

   (c)Which ones does it discourage and why?

8. (a) How have poverty and over population triggered Human wildlife conflicts in and around the National Reserve?

   (b)What is the frequency of occurrence of the following aspects of human induced wildlife conflicts in and around the National Reserve?

   (i) Poaching

   (ii)Farming inside the reserve

(iii) Charcoal burning

(iv) Grazing of livestock

9. What are the environmental changes observed around the National Reserve that have occurred as a result of Human wildlife conflicts

10. (a) How does the government respond to these Human –Wildlife conflicts around Baringo North Sub-County?

PART D: Current Mitigation Measures

12. (a) What has KWS done to maintain the National Reserve against environmental degradation?

(b) What strategies has KWS adopted to deal with Human Wildlife conflicts around the National Reserve?

(ii)How effective have they been/are they?

13(a) How have the communities around the National Reserve frustrated government conservation efforts?

(b)What challenges does the government face in its conservation measures at the National Reserve?

(c)How does the government respond to reported cases of damage as in respect to?

(i) Humans

(ii) Crops

(iii) Livestock

(d) How does the government compensate such damages?

14. (a) What community issues have been addressed by the government towards sustainable wildlife conservation in the national reserve?

(b) (i)What is the future wellbeing of wildlife species at Baringo North Sub-County towards sustainability and conservation of bio diversity?

(ii) Comment on the likely hood that the conservation around the national reserve in Baringo North Sub-county faces extinction due to siltation and environmental degradation.

(iii)What are its likely impacts on biodiversity and community's socio-economic development?

15. (a) How can community participation help in managing human wildlife conflicts around Baringo North Sub-County?

(b)Which mitigations measures do you propose for effective management of human wildlife conflicts around Baringo North Sub-County?

(c)(i)Which non- governmental organizations mostly respond to humanitarian assistance in managing Human wildlife conflicts at the county?

(ii) What humanitarian assistance do they always provide?

(iii) What are their contributions towards Human wildlife conflicts management in the county?

Appendix IV: Interview Guide for Focused Group Discussion (CBO's Village Elders and Opinion Leaders)

PART A: Personal /Group Information

1. Gender: Male { } Female { }

2. Group category: CBO { } Village elders Opinion leaders { }
   Name…….. Location…….. Sub-location……..

3. Office position/ title
   (i) An official{ } Retired chief { } Member { }

4. What is/are your age bracket(s)? Less than 30 years { } 30-39 years { } 40-49 years { } 50-59 years { } 60 years and above { }

5. What is the average family size of the communities living around Baringo North Sub-County 3-6 { } 6-10 { } Above 10 { }

6. What is the main land use by the communities living around Baringo North Sub-County?

PART B: Human Population and Settlement Patterns

7. (a) (i) What is the average number of residents living around the National Reserve?
   (ii) Estimate the distance between the people's places of residents and the National Reserve [Those that apply]? Within Buffer zone [ ] 3-5 kms [ ] 5-10kms [ ] Beyond 10kms [ ]

(b) How frequent do wild animals from the reserve come around your farms or places of residents

(c) What damages do the communities get from the wildlife conserved at the National Reserve?

8. What are the likely causes of Human wildlife conflict around Baringo North Sub-County?

9. (a) What community's economic activities are there around the National Reserve?
   (b) What are the water sources for the communities living around the National Reserve?

10. (i) What human Wildlife conflicts are experienced most over water sources in Baringo North Sub-County?
    (ii)What are the impacts of such conflicts?

11. (a) How do the communities around the national reserve participate in the establishment of Baringo North Sub-County?
    (b)How did the Government arrive at a consensus to Gazette Kamnorok National Reserve?

12. How have the affected communities coped with human wildlife conflict around the national reserve?

PART C: Wildlife Species

13. (a)Which wildlife species conflicts with humans around Kamnorok National Reserve and Baringo North Subcounty?
    (b)What are the effects of such conflicts on the community's socio-economic and education development?

    (c)What forms of compensation does the government give to victims of human wildlife conflicts around the National Reserve and in Baringo North Sub county?

    (d)What are the conditions under which the government makes compensation?

    (e) How satisfying or effective are they?

14. Which wildlife species frequently cause damage to people's property in respect to
        (i) farms/crops
        (ii)Livestock
        (iii)Fences

    (b)Which crops or livestock's are frequently attacked?

    (c)Which types of wild animals from the national Reserve frequently cause the greatest losses?

    (d) What has been the trend of human wildlife conflicts in general over years around Kamnorok National Reserve and in Baringo North Sub county?

PART D: mitigating Measures

15. (a) How do communities living around the national reserve respond to wildlife invasions on farms?

    (b)What environmental changes have you observed around the national reserve over years?

    (c) How has KWS and other organizations helped to maintain the Reserve's habitats

    (d)What strategies do they use to deal with Human wildlife conflicts around Baringo North Sub-County?

    (e) Suggest ways that the government and other organizations can use to minimize Human wildlife conflicts around Baringo North Sub-County and in Baringo North Sub county?

Appendix V: Interview Schedule for Civil Society Leadership in Baringo County

PART A PERSONAL INFORMATION

1. Gender:{Male} [ ] Female [ ]

2. Name of organization ……

3. Office position/title…….

4. Education level
   [Secondary] [ ] Diploma [ ] Degree [ ] Masters [ ]

Part B: Human –wildlife conflict around Baringo North Sub-County and in Baringo North Sub county.

5 (a) What forms of Human –Wildlife conflicts exist around Baringo North Sub county?

(b)What are its likely causes?

(c)Which animals are involved in the Human Wildlife conflict there and the entire County of Baringo?

(d) What are the effects of such HWC on people and animals?

(e) How does the conflict affect social, economic and educational development of the communities around the National Reserve and in Baringo North Sub county?

6 What are the coping strategies adapted by the affected communities around the National Reserve and in Baringo North Sub county in response to human wildlife conflicts management?

7 (a) In what ways has your organization provided emergency responses to the victims of human wildlife conflicts around the National Reserve and others in the County?

(b)What humanitarian assistance does your organization provide as emergency response in the management of human wildlife conflicts at the National Reserve and other reserves in Baringo County?

8 (a) What role does your organization play in educating communities on the value of wildlife conservation around Baringo North Sub-County and Baringo North entirely.

(b) Comment on the likely long-term impacts of the Human wildlife conflicts witnessed around Baringo North Sub-County on biodiversity in the area?

9. What appeals can you make to all stakeholders' as concerns the future survival of the National Reserve in respect to?

(i) Communities

(ii) Government

(iii) Civil society groups

10. (a) To what extent has community participation been used in the management of human wildlife conflicts around Baringo North Sub-County?

(b) How effective has it been?

Appendix VI: University Authorization Letter

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

Date: 24th June, 2020

Gideon Cheptarus,
CDM/G/04/05,
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Cheptarus,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters proposal entitled **"Effects of Human Wildlife Conflict on Social, Economic and Education Developments in Baringo North Sub-County, Kenya"** and appointed the following as supervisors:

1. Dr. Standslause F.O. Odhiambo
2. Dr. Ferdinand Nabiswa

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Disaster Management and Humanitarian Assistance Graduate Studies Committee; Chairman, Emergency Management Studies & Departmental Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your Master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

DEAN SCHOOL OF GRADUATE STUDIES MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Dr. Consolata Ngala
DEPUTY DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

Appendix VII NACOSTI Research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **827904**

Date of Issue: **13/July/2020**

RESEARCH LICENSE

This is to Certify that Mr.. Gideon Kabutie Cheptarus of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Baringo on the topic: EFFECTS OF HUMAN WILDLIFE CONFLICT ON SOCIAL, ECONOMIC AND EDUCATION DEVELOPMENTS IN BARINGO NORTH SUB-COUNTY, KENYA for the period ending : 13/July/2021.

License No: **NACOSTI/P/20/5731**

827904

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

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THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearence from relevant Government Agencies
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National Commission for Science, Technology and Innovation
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E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix VIII: Research Authorization

OFFICE OF THE PRESIDENT

Telephone. 053-21285
Fax. (053)-21285
E-Mail:
baringocountycommissioner@yahoo.com
baringocountycommissioner@gmail.com

When replying please quote:

MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

COUNTY COMMISSIONER'S OFFICE,
BARINGO COUNTY,
P.O. BOX 1 - 30400
KABARNET.

REF.NO: **ADM.18/1 VOL.II/172**

20TH JULY, 2020

TO WHOM IT MAY CONCERN:

RE: RESEARCH AUTHORIZATION

Reference is made to Licence No. NACOSTI/P/20/5731 dated 13th July, 2020 from the Director General – NACOSTI.

This is to confirm that **Gideon Kabutie Cheptarus** of **Masinde Muliro University** has been authorized to carry out research on "**Effects of Human Wildlife Conflict on Social, Economic and Education Developments in Baringo North Sub County**" for the period ending **13th July, 2021.**

Please accord him the necessary support.

COUNTY COMMISSIONER
BARINGO COUNTY
P. O. Box 1 - 30400, KABARNET

V. N. MBAYI
For: COUNTY COMMISSIONER
BARINGO COUNTY

Appendix IX: Krejie and Morgan 1970 Table of Determining Sample Size.

Table for Determining Sample Size from a Given Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
***S* is sample size.**

Appendix X: Photographs from Research Field