

**INFLUENCE OF COMMUNITY BASED CONSERVATION INTERVENTIONS ON
PEOPLE'S ATTITUDE TOWARDS LION CONSERVATION IN MERU
NATIONAL PARK, MERU COUNTY, KENYA**

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the Degree of Master of Arts in Project Planning and Management of the University of
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DECLARATION

This research project report is my original work and has not been submitted in any other university for any academic award

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DEDICATION

This work is dedicated to my loving and supportive husband Francis, my sons Reagan and Raymond and my parents Gladys and John for believing in me and pushing me to be my best.

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TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ACRONYMS AND ABBREVIATIONS	x
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	3
1.3 Purpose of the Study	4
1.4 Objectives of the Study	4
1.5 Research Questions	4
1.6 Significance of the Study	5
1.7 Delimitations of the Study.....	5
1.8 Limitations of the Study	5
1.9 Assumptions of the Study	5
1.10 Definition of Significant Terms of the Study.....	6
1.11 Organization of the Study	6
CHAPTER TWO: LITERATURE REVIEW	7
2.1 Introduction	7
2.2 People’s Attitudes Towards Lion Conservation.....	7
2.3 Conservation Education to Community and People’s Attitudes towards Lion Conservation.....	8
2.4 Conservation Benefits Accrued to Communities and People’s Attitudes towards Lion Conservation.....	10
2.5 Human Wildlife Conflict Management and Attitudes towards Lion Conservation.....	12
2.6 Park Management Policies and People’s Attitudes towards Lion Conservation	13
2.7 Theoretical Framework	14
2.7.1 Program Theory	14
2.7.2 Participatory theory	15
2.8 Conceptual Framework for the Study	15
2.9 Summary of Literature Review	17
2.10 Knowledge Gap Matrix.....	19

CHAPTER THREE: RESEARCH METHODOLOGY	22
3.1 Introduction	22
3.2 Research Design.....	22
3.3 Target Population	22
3.4 Sample Size and Sampling Procedure.....	23
3.4.1 Sample Size	23
3.4.2 Sampling Procedure.....	23
3.5 Research Instruments	24
3.5.1 Piloting of Research Instruments.....	24
3.5.2 Validity of Research Instruments	24
3.5.3 Reliability of Research Instruments	25
3.6 Data Collection Procedures	25
3.7 Data Analysis Techniques	25
3.8 Ethical Considerations.....	26
3.9 Operationalization of Variables	26
CHAPTER FOUR: PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION	30
4.1 Introduction	30
4.2 Questionnaire Return Rate	30
4.3 Demographic Characteristics of Respondents.....	30
4.3.1 Distribution of Respondents by Gender	30
4.3.2 Distribution of Respondents by Age	31
4.3.3 Distribution of Respondents by Period of Stay in the Study Area	31
4.3.4 Distribution of Respondents by Level of Education	32
4.4 Analysis of Study Variables	33
4.4.1. People’s Attitudes Towards Lion Conservation.....	33
4.4.2 Conservation Education and People’s attitudes towards Lion Conservation	35
4.4.3 Conservation Benefits Accrued to the Community and People’s Attitudes towards Lion Conservation	37
4.4.4 Human Wildlife Conflict Management and People’s Attitudes towards Lion Conservation.....	39
4.4.5 Park Management Policies and People’s Attitudes towards Lion Conservation.....	41
4.5 Correlation Test between the Dependent and Independent Variables	43
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.....	45
5.1 Summary of Findings.....	45

5.1.1 People’s Attitudes towards Lion Conservation	45
5.1.2 Conservation Education and People’s Attitudes towards Lion Conservation.....	45
5.1.3 Conservation Benefits Accrued to the Community and People’s Attitudes towards Lion Conservation	46
5.1.4 Human Wildlife Conflict Management and Attitudes towards Lion Conservation	46
5.1.5 Park Management Policies and People’s Attitudes towards Lion Conservation....	47
5.2 Conclusion.....	47
5.3 Recommendations of the Study	48
5.4 Suggestions for Further Research	48
REFERENCES.....	49
APPENDICES.....	54
Appendix I: Letter of transmittal.....	54
Appendix ii: Household Questionnaire	55
Appendix iii: Interview guide for key informants.....	61
Appendix iv: Research permit.....	62

LIST OF TABLES

Table 2.1 Knowledge Gaps from the Study Literature Review	19
Table 3.1 Target population for the study	23
Table 3.2 Operationalization of Variables	27
Table 4.1: Distribution of respondents by gender.....	30
Table 4.2: Distribution of respondents by age	31
Table 4.3: Distribution of respondents by duration of stay in the study area	32
Table 4.4: Distribution of respondents by level of education	32
Table 4.5: People's attitudes towards lion conservation	34
Table 4.6:Conservation educaton and people's attitudes towards lion conservation	36
Table 4.7:Conservation benefits accrued to communities and people's attitudes towards lion conservation	38
Table 4.8:Human wildlife conflict management and people's attitudes towards lion conservation	40
Table 4.9 :Park management policies and people's attitudes towards lion conservation	42
Table 4.10: Correlation coefficient	43

LIST OF FIGURES

Figure 1:Conceptual framework showing the relationship between community based conservation interventions and people’s attitudes towards lion conservation	15
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LIST OF ACRONYMS AND ABBREVIATIONS

CBNRM	Community Based Natural Resource Management
EE	Environmental Education
FAO	Food and Agriculture Organization
ICDP	Integrated Community Development Projects
IUCN	International Union for Conservation of Nature
MNP	Meru National Park
NGO	Non-Governmental Organization
PA	Protected Areas
TAWA	Tanzania Wildlife Authority
USA	United States of America

ABSTRACT

Communities living adjacent to protected areas have at times had to pay the cost of conservation through major social and economic losses caused by wildlife. If not well compensated, this has been reported to create resentment and intolerance resulting in retaliatory killings of the already endangered wildlife resources. It is because of this realization that conservationists have recognized the vital role of communities in the conservation of wildlife resources leading to the development of community based conservation interventions to give some sort of compensation and relief for the inevitable losses caused by wildlife. The purpose of this study sought to look at the influence of community based conservation interventions on people's attitude towards wildlife conservation in Kanjoo community adjacent to Meru National Park. The objectives of the study were to determine the influence of conservation education to communities on people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County; to establish the influence of conservation benefits accrued to communities on people's attitudes to lion conservation in Kanjoo community adjacent to Meru National Park, Meru County; to determine to what extent human wildlife conflict management influences people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County; and to establish the extent to which park management policies influences people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County. The study was informed by the program theory. This theory explains how interventions such as a project, initiative or policy is expected to result to a desired outcome towards a specific goal. Likewise, community based conservation initiatives have been introduced into the Kanjoo community to bring about a desired outcome which is tolerance and a positive attitude towards lion conservation. The study used a descriptive study design with the target population drawn from 312 households within 2.5 km buffer from the park boundary in Kanjoo village and 5 conservation groups. The sample of 107 respondents was selected using systematic sampling and 5 group representatives purposively selected. Data collection was done using a close-ended questionnaire consisting of 5 point Likert scale and interview guide for key informants. The findings revealed that majority of the respondents believed that conservation education; conservation benefits, human wildlife conflict management and park management policies had a role in influencing people's attitudes towards lion conservation. A correlation test showed that all the independent variables except conservation education had either a weak or moderate positive correlation with the dependent variable with $(r(105)=0.37, p=0.00)$ for conservation benefits $(r(105)=0.30, p=0.05)$ for human wildlife conflict management and $(r(105)=0.18, p=0.07)$ for park management policies. Conservation education $(r(105)=0.08, p=0.39)$ shows that despite majority 71% not having received any conservation education, they were still very tolerant of lions. It was however found that lions are not a major source of conflict in the community and therefore were not considered a threat by the community hence the positive attitude. Non-formal visual methods of passing conservation education were found to be more popular and impactful while both shared and individual benefits were found to both influence community's attitude to conservation. Delayed compensation for conflict negatively affected people's attitudes while good relationship with park management created resource ownership and willingness to protect the natural resources from wildlife crime. The study recommends use of non-formal participatory channels of conservation education, engaging communities in projects that yield benefits that solve their economic and social problems, timely compensation of human wildlife conflict victims and friendly enforcement of park management policies to build trust and create a healthy relationship between park management and local communities. Further studies should be done in the study area focusing on elephants, which are the major source of conflict and on cultural and beliefs of the community towards lions and other wildlife.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

For decades, wildlife conservation has highly relied on protected areas which are controlled by central governments, private or international institutions. However, alternative models such as community based conservation which recognizes the key role of indigenous people and their cultural indigenous knowledge are proving to be more successful (Manzur, 2013). Murray and Agyare (2018) noted that local community perceptions and attitudes whether shaped by social-cultural or religious beliefs are an important tool in gauging community support for conservation interventions. In cases of illegal wildlife trade, these communities are in close proximity with wildlife habitat and can provide crucial information on detected illegal activities to wildlife authorities. Their actions are however influenced by the interactions, perceptions and attitudes they have towards these animals and the park management authorities (Biggs et al., 2015). This brings out the question of resource ownership where most communities have been heard associating wildlife with government property since they feel left out in the distribution of benefits. This shows that most people are not able to relate infrastructural development to wildlife with some expecting direct economic benefits from the park management.

In Asia, Kashmir valley located around Dachigan National Park, communities constantly suffer losses through human wildlife conflict from black bears and leopards. This situation has created resentment from the community towards wildlife and conservation policies whereby they feel that the wildlife authorities care more about wildlife than them as they are not involved in the management of the wildlife resources leading to retaliatory killings. To restore the trust between the communities and wildlife authorities conflict mitigation strategies, education and awareness, compensation for their economic losses and local community participation in making decisions concerning the resources was proposed (Mir, Noor, Habib and Veeraswami , 2015). This shows that for the success of wildlife conservation the needs of the communities adjacent to the parks have to be addressed.

In Africa, local communities and wildlife have had a peaceful co-existence for decades. However, in the recent past, the pressure on the ecosystem to meet the needs of the rapidly expanding human population has contributed largely to loss of habitats threatening wildlife survival and reproduction with most almost facing extinction (Pizzi et al., 2013). The wildlife species decline, which occurs in

both protected and unprotected areas is human induced through activities such as land subdivision, infrastructural development, poaching for trophy and bush meat, diseases, livestock incursions into protected areas, weak law enforcement, poor governance, community negative perceptions among others (Ogutu et al., 2016). This stresses the need for localized wildlife conservation interventions specifically constructed to address the challenges in different landscapes.

In Southern Africa, conservation efforts in the 1980's and 1990's had completely displaced communities and put restrictions to accessibility of protected areas leading to resistance to conservation. However, in the 20th century a participatory approach was adopted encouraging governments and tour operators to factor in community aspects during policy formulation which led to tremendous support from communities and ownership of conservation initiatives (Snyman, 2014). Community participation has presently been widely adopted in most African countries and has become a precedent in all development projects that aim at achieving success.

A study conducted in Tarangire ecosystem in Tanzania revealed that for pastoralist communities living near the Park, 75% of livestock losses are attributed to predation by large predators which heavily impact on households' economic wellbeing (Mkonyi, Estes, Msuha, Lichtenfeld and Durant, 2017). These predation cases result in retaliatory killings which have seen most large predator's population on constant decline over the years. However, these conflicts have been significantly reduced by improving formal and conservation awareness education at all levels (primary, secondary and tertiary school education), reinforcing boma enclosures and improving herding practices such as increasing the number of herders per herd (Mkonyi et al., 2017). Introducing conservation education at a young age has brought up a generation that is more aware of their environment and are more appreciative of the interactions in the ecosystem and the role played by different species.

Kenya takes pride in its diversity of wildlife species, a major contribution to its GDP. Over the years, the population increase has led to shrinking wildlife spaces and as a result, increased human wildlife conflict termed as "the cost of conservation". This friction has led to increased research on intervention strategies which promise some level of benefit and consolation to aggrieved communities and create tolerance towards wildlife (Meguro, 2014). For instance, in Samburu ecosystem, Ewaso Lions, a conservation organization, has adopted a community engagement approach to conserve lions and reduce human wildlife conflict through capacity building and harnessing indigenous knowledge for conservation. Groups of young men, old men, women and children have been assigned different roles in conservation leading to development of lasting

solutions to human wildlife conflict (Bhalla and Gurd, 2014). This initiative has brought out the critical role of women in conservation which has been overlooked for a long time despite the fact that they interact more with the environment as the primary caregivers.

1.2 Statement of the Problem

The tourism industry in Kenya accounts for 10% of the Gross Domestic Product (GDP) making it the third largest foreign exchange earner after agriculture and manufacturing. This contribution is significant in the economic development of the country towards the achievement of vision 2030 which aims at making Kenya a middle-income country providing its citizens with high quality life in all aspects (Wanyonyi, 2012). This makes wildlife conservation a very important aspect towards the achievement of this goal.

However, conserving wildlife in the 21st century is becoming a challenge due to the increasing competition on available resources by both human and wildlife leading to escalation of human wildlife conflicts. For instance retaliatory killings have become a norm for communities living adjacent to national parks and Meru National Park is no exception owing to the high cases of crop raids and predation incidents.

The lion is one of the endangered species and has been on the decline due to retaliatory killings and trophy hunting. Being part of the big five, it is very significant in shaping the tourism industry as one of the major tourism attraction. On the other hand, it is one of the culprits when it comes to livestock predations fuelling human wildlife conflicts in communities adjacent to protected areas. This makes lion conservation very vital for ecological, economic and social reasons.

Despite measures by park management such as fencing of the park, intensification of ranger patrols and constant wildlife monitoring, cases of human wildlife conflict and illegal activities are still being recorded. Various studies have noted that failure to involve and address concerns of communities surrounding conservation areas over time undermines conservation efforts (Odebisi, Ayeni, Umunna and Johnson, 2015). This concurs with Mir et al. (2015) who adds that people's attitudes towards wildlife greatly affect the success of conservation initiatives. For most communities, wildlife is referred to as a curse since it only brings losses in economic and social aspects. However, deriving tangible benefits from wildlife reserves such as employment, social services and direct resource use has been proven to influence community willingness to support conservation activities (Mekbeb, Zelealem and Nigel, 2010).

The relationship between communities and park management is also key in influencing community tolerance to wildlife whereby in some instances communities have felt like the management did not balance between protecting the wildlife and communities (Mir et al., 2015). This calls for a need to explore more community based interventions in an attempt to garner community support in lion conservation in Meru National Park. This study will therefore look at interventions such as conservation education to communities, conservation benefits accrued to communities, human wildlife conflict management and park management policies and their influence on people's attitudes towards lion conservation. Various studies have been done in Kenya focusing on lion conservation in communities adjacent to different protected areas such as Amboseli Ecosystem and Northern Kenya but none has been done in communities surrounding Meru National Park. This study will therefore try to fill this gap by looking at how community based conservation interventions have influenced people's attitudes towards wildlife in Kanjoo community adjacent to Meru National Park, Meru County.

1.3 Purpose of the Study

The purpose of this study was to establish the influence of community based conservation interventions on people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County.

1.4 Objectives of the Study

This study was guided by the following objectives

1. To determine the influence of conservation education to communities on people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County.
2. To establish the influence of conservation benefits accrued to communities on people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County.
3. To determine to what extent human wildlife conflict management influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County.
4. To establish the extent to which park management policies influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County

1.5 Research Questions

1. How does conservation education to communities influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County?

2. How do conservation benefits accrued to communities influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County?
3. To what extent does human wildlife conflict management influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County?
4. To what extent do park management policies influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County?

1.6 Significance of the Study

This study is expected to add to literature on community based conservation in Kenya and strategies that can help improve people's tolerance to wildlife. It is also expected to inform policy makers on formulation of community based wildlife conservation laws. The government authority under the mandate of protecting wildlife might replicate the successes of this project in other wildlife areas and in addition, the study might help in identifying training opportunities for the staff and administration.

1.7 Delimitations of the Study

The study was delimited to the Kanjoo community members living not more than a 2.5 km buffer from the western boundary of the Meru National Park in Kanjoo sub location. The study was also delimited to lion conservation in Meru National Park.

1.8 Limitations of the Study

The greatest limitations of the study was poorly developed infrastructure which required long periods of walking. Another limitation was language barrier and hostility from the respondents since the issue of human-wildlife conflict is very sensitive to communities as it touches on their economic and social wellbeing. The latter were mitigated by use of research assistants from the local community who were able to interpret the research questions to the respondents. They were also able to assure them the importance of research as a way of getting their opinions on how human wildlife conflict should be handled so that there is a peaceful coexistence.

1.9 Assumptions of the Study

The assumption was that all the respondents had the right knowledge and gave the correct information on wildlife conservation. In addition, the study assumed that the team carrying out the community based conservation interventions were well qualified to handle this project to meet the objectives and that Meru National Park offers a conducive environment for wildlife to thrive.

1.10 Definition of Significant Terms of the Study

Community based conservation interventions: Social, ecological and economic projects carried out in Kanjoo community by any conservation organization with an aim of improving community tolerance to coexist with wildlife. In this study, the interventions include conservation education, benefits in form of social amenities, human wildlife conflict management, and park management policies.

Lion conservation: Measures taken to ensure that lion populations increase, by ensuring that communities willingly protect them and their habitats. In this study, it means Kanjoo community supporting the protection of lions and their habitat which is Meru National Park.

Conservation education to communities: Teaching communities the importance of wildlife and desisting from practices that are harmful to wildlife in this case retaliatory killing, snaring and bush meat harvesting

Conservation benefits accrued: Benefits given to communities as a way of giving back for their participation in conservation activities in this case infrastructural development such as schools, health centres, transport network, employment among others in Kanjoo community

Human wildlife conflict: Disturbance, loss or destruction of property caused by wildlife from Meru National Park to Kanjoo community.

Park management policies: Guidelines and rules that are set by park management, regulating the access and use of natural resources in the national park in this case Meru National Park.

1.11 Organization of the Study

This study is has Five chapters. Chapter One deals with the background of the study, the statement of the problem, purpose of the study, objectives of the study, significance of the study, delimitations of the study, limitation of the study, assumptions of the study, definition of significant terms and the organization of the study. Chapter Two reviews related literature based on the study objectives. It also consists of the theoretical framework and conceptual framework of the study. Chapter Three describes the research methodology that was used in this study. It includes the study design, the target population of the study, the sample size and sampling procedure, methods of data collection, instrument validity, instrument reliability, data analysis methods and data presentation methods. Chapter Four includes presentation of findings, analysis and interpretation while Chapter Five highlights the summary of findings, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter mainly highlights literature related to people's attitudes towards lion conservation, conservation education to communities and people's attitudes towards lion conservation, conservation benefits accrued to communities and people's attitudes towards lion conservation, human wildlife conflict management and people's attitudes towards lion conservation and park management policies and people's attitudes towards lion conservation. The chapter also includes theoretical framework and conceptual framework showing the relationship between the dependent and independent variables.

2.2 People's Attitudes Towards Lion Conservation

The lion is one of the species that has been listed in the IUCN Red List for Endangered species as a vulnerable species with slightly over 20,000 individuals remaining in the world (IUCN, 2015). Historically, lions existed in Africa, Europe, Middle East, and South West Asia but became extinct in Europe during the first century and in North Africa, Middle East and partly Asia between 1800 and 1950 (IUCN, 2006). This is attributed to loss of suitable habitat as a result of human encroachment (Black, 2016).

The Asiatic lion in Gir National Park was saved from the brink of extinction through critical interventions in the last stages leading to a significant growth of 240 in 1990 to 500 in 2015. This population growth has resulted in increased human wildlife conflict in the area and increased risk of epidemic disease transmission especially from domestic dogs as the lions move from protected areas to establish other suitable habitats. With this new shift, community based approaches are gaining popularity in conservation efforts such as incentive based conservation, compensation and community participation (Meena, 2017).

Africa is home to the biggest lion population with most located in Eastern and Southern Africa. The South African lions mainly live in fenced protected areas and have been on a rising trend and is not currently threatened. Despite facing various threats such as habitat loss, human-lion conflicts, reduced prey base, unregulated hunting and inbreeding, re-introduction into both state and privately owned reserves has kept the numbers stable for the last few years (Williams, 2015). Some lions have been killed by snares laid by bush meat poachers while others have contracted canine diseases such as rabies from interactions with cats and dogs especially on the western side of Kruger National Park which is facing rapid population growth (Riggio et al., 2016). Various studies have shown that

success in lion conservation has been attributed to constant monitoring of the lion population and its habitat, political commitment, legislation and community engagement through the wildlife conservation organizations. This has been done amidst a number of challenges with hunting, poaching and retaliatory killing taking the lead and others being habitat loss, low prey base and diseases (Gerald and Zoltan, 2016).

Human perceptions on wildlife have been negatively shaped by the constant conflicts and losses that come with their interactions especially for communities living adjacent to protected areas. A study conducted in Tarangire ecosystem in Tanzania targeting pastoralist communities reveals that 75% of their livestock losses are attributed to predation by large predators such as lions which heavily impact on household's economic wellbeing (Mkonyi, Estes, Msuha, Lichtenfeld and Durant, 2017). These predation cases result in retaliatory killings which have seen most large predator's population on constant decline over the years. These conflicts can be significantly reduced by improving formal and conservation awareness education at all levels, reinforcing boma enclosures and improving herding practices (Mkonyi et al., 2017).

In Kenya some communities attitudes and perceptions on wildlife are shaped by cultural beliefs as opposed to knowledge and education about wildlife. For instance, the Samburu community only kills large troublesome carnivores such as lions as a last resort. This is in relation to a cultural belief that in every herd of livestock, one belongs to wildlife (Ocholla, Mireri and Muoria, 2016). This belief is shared by communities living around Gir National Park who attributed regional pride and cultural attachment to lions as the reason for their tolerant attitude towards lions. This is owing to the fact that the lions caused minimal conflict compared with other carnivores and actually never claimed compensation for livestock loss by lions as they felt that it was the lions right to its natural food (Meena, 2012).

2.3 Conservation Education to Community and People's Attitudes towards Lion

Conservation

Conservation Education is a learning process that increases knowledge and awareness of the environment and challenges associated with environmental protection with an aim of developing the necessary skills and expertise to address the challenges, change attitudes, motivations, and commitments to make informed decisions and take responsible action (Mitsuyuki, 2017). Environmental education (EE) was one of the counter measures proposed by the United Nations Conference on the Human Environment at Stockholm in 1972 to find solutions for most

environmental problems (Mitsuyuki, 2017). Mostly EE is aimed at the young generation with the hope that it will also impact future generations through intergenerational transfer of knowledge and attitudes (Rakotomamonjy, Jones, Razafimanahaka, Ramamonjisoa and Williams, 2014).

According to Jacobson, Mc Duff and Monroe (2015), effective education is important in changing behaviours and promoting wildlife conservation. This is because the fate of our ecosystem and species depends on our ability to educate children and adults in different settings such as schools, farms, forests and communities. Critically engaging films and documentaries have proven to be more effective than the historical formal education in putting the conservation message across making visual media in environmental education attractive to many conservationists (Blewitt, 2013).

The fate of endangered species largely depends on how well the conservationists are able to communicate and raise concern and support of the public. This helps them decide whether to co-exist with wildlife, allocate resources for them or treat them as a threat. For instance successful conservation education and outreach programmes have helped revive wolves population in USA and endangered primates in Brazil (Jacobson, Duff and Monroe, 2015).

In Japan environmental education projects are faced with challenges whereby the learners are faced by a double bind situation forcing them to choose between acting in an eco-friendly way and living a comfortable life through production and consumption (Mitsuyuki, 2017). The author further adds that environmental problems are strongly linked to social problems in the modern consumerist society and therefore it is impossible to expect environmental education projects to solve environmental problems unless solving the social problems is part of the solution (Mitsuyuki, 2017).

An evaluation study of an education programme in Eastern Madagascar to promote conservation of Lemur was conducted among students and their parents. After one year of environmental education the study revealed an increase in knowledge and positive change of attitudes towards lemurs among the children and increased knowledge and less change of attitude towards lemurs by their parents. However the attitude was varied between the lemur subspecies depending on their characteristics and physical appearance (Rakotomamonjy et al., 2014). The minimal change in attitude by parents could be attributed to the andragogy theory which states that learning outcomes in adults are likely to be based on the economic benefit that are tied to the content. Therefore, the researcher will also try and focus on benefits accrued from wildlife in the area to determine if they have an effect on community attitudes.

One of the main mandates of KWS is promoting wildlife conservation education and extension to the public. They have established fully fledged education centres in four major parks namely Nairobi, Nakuru, Tsavo and Meru National Park. In addition they have a number of information centres in other parks to provide conservation education to members of the public visiting the parks. This contributes to the overall KWS mandate of enhancing wildlife conservation, protection and management, improving KWS's linkages and partnerships with stakeholders (www.kws.go.ke). A study conducted to establish the effectiveness of these education centres in reducing human wildlife conflict revealed that conservation education highlights the direct benefits of wildlife conservation, promotes tolerance and coexistence as well as creating opportunities through which communities can benefit economically from wildlife such as establishment of conservancies for tourism activities (Abudulghaful, 2013).

2.4 Conservation Benefits Accrued to Communities and People's Attitudes towards Lion Conservation

In order to change people's behaviour it is important to understand their motivation towards that behaviour. According to Jacobson, Duff, and Monroe, (2015), most behaviours are driven by basic needs and perceived benefits and therefore conservationists need to understand that in addition to providing information they must understand the social systems of their target group and build their self efficacy. As a result, conservation experts have come up with community outreach strategies such as Integrated Community Development Projects (ICDP) and Community Based Natural Resource Management (CBNRM) programmes with an aim of engaging the communities in resource conservation and management, showing them benefits of conservation and create a sense of resource ownership (Sosiya, 2016).

A study conducted on communities living adjacent to Gir National Park in Asia sought to find out the benefits realized by communities from forest reserves and the influence it had on their attitudes towards lion conservation. It was revealed that majority enjoyed indirect benefits in form of a clean environment, water availability and seasonal rains while minority enjoyed grazing and fuelwood collection but only during dry seasons (Meena, 2012). In addition, in villages that hosted tourist activities that attracted direct benefits to the communities, there was increased awareness and greater tolerance to lions showing a great connection of community to the protected area.

A study conducted in Nepal India on how conservation costs and benefits influence attitudes towards conservation revealed that despite major losses from wildlife, the communities were willing to support conservation as long as their livelihood needs were met. It further revealed that locally based strategies to deliver conservation benefits were more fruitful as opposed to top down approaches. Extending benefits to the smaller land owners and low income members who are more dependent on natural resources proved to be more effective in creating tolerance to wildlife conservation (Karanth and Nepal, 2011). Tourism activities in Nepal protected area did not seem to influence community attitudes towards conservation. It was noted that although locals in Nepal received employment benefits, the financial benefits were obtained by outsiders who were the main investors in the businesses which employed the locals for the low grade jobs such as gardening (Karanth and Nepal, 2011).

In rural areas of Kondoia in Tanzania, socio economic incentives were found to have a major contribution towards environmental conservation since it made conservation more desirable as opposed to degrading it (Chami, 2016). The incentives studied included provision of seedlings, fertilizers, education programmes, improved seeds and bee keeping inputs which gave communities some sense of food and economic security. Most community living adjacent to Tarangire National Park in Tanzania admitted to have received some form of conservation benefits in terms of social amenities such as classrooms, teachers houses, health centers, boreholes and tours to the park. However, when asked if they felt that wildlife was of benefit, 70% did not feel like they had benefited at all. This is because the benefits did not have a direct impact in their lives as they would expect and therefore they were not enough to make them willing to report wildlife crimes to authorities. A significance test carried out showed that conservation benefits did not influence community attitudes towards wildlife conservation unless they were well designed to fit the needs of the community with individual benefits being preferred over shared benefits (Sosiya, 2016).

In Kenyan rangelands, lions contribute to large economic losses in form of livestock predation to the pastoralist community who consider conservation as a luxury that they cannot afford. Their perception is that a decision has to be made between their economic development and lion conservation (Muriuki, Ipara and Kiringe, 2017). These findings clearly show that conservationists need to first address social needs in communities in order to effectively drive their conservation agenda.

2.5 Human Wildlife Conflict Management and Attitudes towards Lion Conservation

A study conducted in Asia described the Asiatic lions in Gir National park as more peaceful compared to other carnivores such as leopards in terms of attacks. Therefore communities living adjacent to the park showed more tolerance to lions compared to crop raiding ungulates and other carnivores. They also demonstrated dissatisfaction with the compensation given for livestock loss as they felt it did not match the market value (Meena, 2012).

In Tarangire Ecosystem Tanzania, lions contributed to 7% of livestock predation cases while hyaena led by 70% followed by leopard at 12% and wild dog at 8%. These cases increased with increase in number of livestock owned, distance from the park boundary and period of residency in the area and decreased with increased conservation education, number of herders and boma fortification. The study concluded that increased conservation education and awareness and better herding practices could lead to reduced conflict levels. The study further recommended that there was need for mitigation measures through tangible benefits to offset livestock loss in order to increase tolerance of predators in communities. This is after the realization that negative perceptions on predators were associated with length of residency and exposure to conflict as well as age and gender where most herders were men (Mkonyi et al., 2017). This shows the more one is exposed to conflict the more they are likely to have negative attitude to lions and therefore the need to manage conflict effectively.

In another study in Tarangire ecosystem it was found that wildlife induced losses and measures taken by wildlife authorities played a big role in shaping the attitudes of communities towards wildlife. Elephants were found to be the greatest culprit of human wildlife conflict and as a result have been on a decline from retaliatory killings. The wildlife authority responsible for handling conflict in community land had budget limitations making it very weak in managing of conflict animals, as a result, negative community perceptions (Sosiya, 2016). Other findings from this study revealed that most respondents did not have a problem with co existing with lions unless they attacked their livestock.

Amboseli ecosystem in Kenya has been reported as one of the areas that suffer the highest economic losses in East Africa as a result of lion predation. This has been amplified by the community's livelihood as pastoralists. This has led to high retaliatory killings as the level of tolerance in the community reduces. Various incentives in form of compensation programmes have been employed

but remain unreliable due to their low sustainability from donor dependence and also the fact that it doesn't encourage the community to protect their livestock from predation. Such monetary benefits have been found not to be very fruitful since their withdrawal jeopardizes the long term conservation (Muriuki et al., 2017).

Studies have shown that lions pay for most of the conflicts through retaliatory killings even though most attacks are from other predators such as hyaenas, leopards and even jackals. A study carried out in Amboseli however revealed that even though lions attack less frequently, their attacks which mainly targeted cattle had more significant economic loss in terms of value compared to other predators that attacked sheep and goats (Muriuki et al., 2017).

2.6 Park Management Policies and People's Attitudes towards Lion Conservation

Protection of wildlife requires great surveillance at the park boundaries which makes the community members living adjacent to these areas the first to notice suspicious activities. However, communication and networking ability between the community and wildlife authorities will determine the willingness of community members to report such activities.

A study conducted in communities adjacent to Gir National Park in Asia, revealed that the good relationship between communities and the park authorities contributed much into the conservation of the asiatic lion. This was because the community felt free to report suspicious activities to the park authorities without fear of incrimination (Meena, 2012).

For a long time wildlife conservation in African parks has been through the "fines and fences" approach characterized by evictions, strict regulations and minimal access to wildlife areas by the communities living around Protected Areas (PA). This has led to increased hostility and resentment between the PA management and communities and in the long run increased loss of biodiversity (Sosiya, 2016). However, there is a paradigm shift from this approach through the realization that communities living around PA's possess indigenous knowledge which can be tapped for the wellbeing of the ecosystem.

Access restrictions placed by park authorities in protected areas in Nepal India were viewed as loss of economic opportunities by communities living adjacent to these areas. These opportunities included firewood, pasture as well as non timber products and cultural needs. This created a negative

attitude towards park authorities who the community felt did not value their needs and input in conservation. Small land owners and low income community members seemed to have a more negative attitude towards park authorities compared to people who owned more land and were less dependent on natural resources from protected areas. Improving communication and interaction between community and park owners was deemed critical for positive attitudes and support of conservation projects. In addition, reviewing of park management policies was recommended to address the concerns of communities living adjacent to protected areas (Karanth, 2011).

In a study conducted in Tarangire National Park, community members wondered why the park management put such strict rules and penalties while the communities constantly suffered losses from wildlife. During drought seasons, the conflict increased due to shortage of pasture which resulted in livestock crossing over into the park. The herders were harassed, beaten and their livestock taken to the rangers post where the owners were heavily fined to get them back. This created a very harsh relationship between park authorities and communities leading to negative attitudes towards wildlife conservation (Sosiya, 2016).

2.7 Theoretical Framework

This study was informed by the program theory also known as intervention theory.

2.7.1 Program Theory

Program theory explains how an intervention such as a project, program, policy, strategy or initiative contributes to a certain result leading to the intended goal or outcome (Funnel and Rogers, 2011). The program theory has two components namely, theory of action and theory of change where by the theory of action explains how interventions are constructed to bring change while the theory of change entails the processes and drivers that come as a result of the action bringing about social, psychological or physical change (Funnel and Rogers, 2011). Therefore, program theory is the principal theory or model of how an intervention is expected to work. The program theory has been extensively used in the development, management and evaluation of interventions (Mayne, 2016).

In this study, the program theory has been used in the evaluation of conservation interventions whereby various community based initiatives such as conservation education to community, conservation benefits accrued to community, human wildlife conflict management and park management policies were evaluated. These interventions were expected to produce a positive outcome, which is a positive attitude and tolerance towards lion conservation. Therefore, this theory

helped the study establish how these interventions influenced people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County.

2.7.2 Participatory theory

This study is also informed by participatory theory which alludes that in these challenging times of climate change and increasing population growth, community support is vital for the conservation of natural resources. Participatory theory is an approach where stakeholders are given an opportunity to participate in decision making, implementation and benefit sharing of projects. The concept of community participation has evolved since the beginning of civilization becoming a well-recognized factor in the development sphere (Karibeeran and Kuruvilla, 2015). This recognition is attributed to the fact that as people participate in decision making and problems solving, learning takes place resulting in attitude and behaviour change. Chirenje, Giliba and Musamba (2013), add that policy and development programs which adopt a community participation approach in decision-making, are more likely to achieve their project objectives. However, it is very important for organizations to manage the expectations and commitments of the communities by clearly stating the mission of the engagement and the type of help they are able to offer (Ericson, 2004). This is after the realization that community participation in some instances has failed meet the community expectations leaving them frustrated and unable to trust other initiatives.

This study aims at identifying the important role of community based approaches in wildlife conservation in the 21st century. However, it is important to note that for community participation to be effective there is need to employ a bottom up approach in selection and designing of the projects.

2.8 Conceptual Framework for the Study

This section consists of the conceptual framework, which shows the relationship between the dependent and independent variables. The dependent variable is people's attitudes towards lion conservation while the independent variables are conservation education to communities, conservation benefits accrued to communities, human wildlife conflict management and park management policies. The moderating variable is community goodwill. See Figure 1.

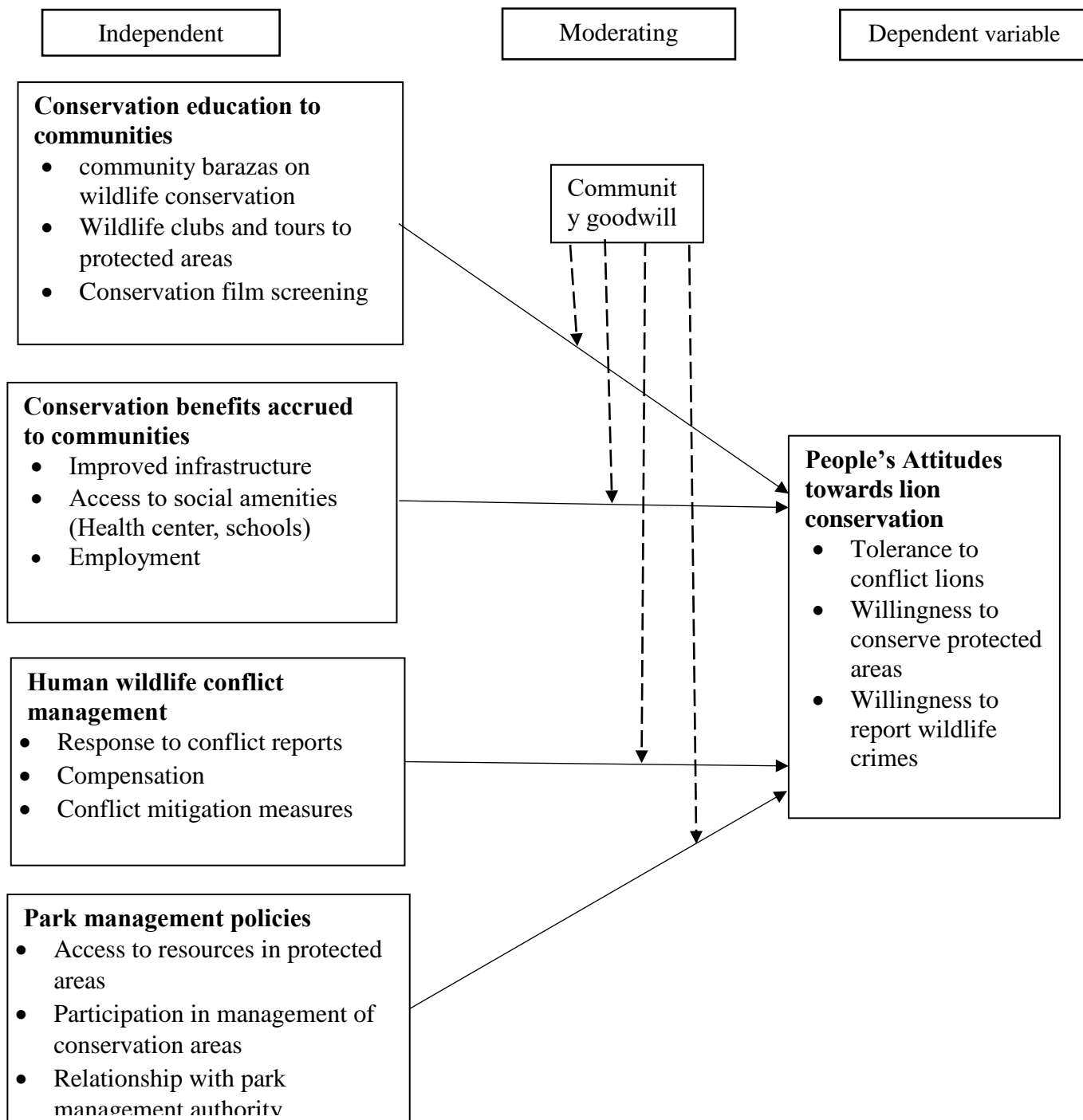


Figure 1 : Conceptual framework showing the relationship between community based conservation interventions and people's attitudes towards lion conservation

2.9 Summary of Literature Review

The literature review concentrated on other related studies on how interventions such as conservation education, conservation benefits accrued to communities, human wildlife conflict management and park management policies influenced people's attitudes towards lion conservation in different parts of the world. It was revealed that communities living adjacent to protected areas determine the success or failure of conservation interventions. This is because the perceptions they have on wildlife influences their support for such initiatives.

Conservation education and awareness came out as one of the strategies recommended in shaping community attitudes towards wildlife. Knowing and understanding the importance of conservation and role of wildlife in the ecosystem helped shed light on why we need the wildlife resources. However, the change in attitude in some studies seemed to be more effective in children as opposed to adults who attached the conservation to cost and benefits in their livelihood.

Communities who received individual benefits from conservation were more tolerant to wildlife as opposed to those with shared benefits. In addition, some felt the conservation authorities used a top down approach in delivering these benefits and therefore the communities felt the benefits did not address their immediate needs. As a result, they did not recognize the benefit and portrayed a negative attitude towards conservation. In other communities, wildlife was not about the benefits, but a sign of pride and heritage that the community was proud to protect. This brought out the role of cultural aspects in shaping people's attitudes towards conservation.

Large predators account for most of livestock losses to pastoralist communities sabotaging their livelihoods. These losses when not well compensated lead to resentment and in the long run fuel retaliatory killings of wildlife. Preventive measures came out as the most recommended conflict management strategies. This is because most compensation schemes were viewed as unsustainable and inadequate in meeting the actual value of the loss especially in cases of loss of human life. People with long periods of residency seemed to have more negative attitudes as a result of long exposure to conflict and therefore larger losses.

The strict laws and penalties, forceful enforcement of park management policies by wildlife authorities as well as unfriendly policies further influenced people's attitudes towards wildlife. Most people felt that the authorities gave more importance to wildlife as opposed to community economic and social needs especially low income community members who were more dependent on natural

resources from the protected areas. Demand for these scarce resources to sustain the growing human population led to increase in illegal activities in wildlife habitats. In addition, most community members were unwilling to report these illegal activities for fear of victimization by the park authorities. From this, it is clear that interaction between communities living adjacent to protected areas and park authorities influences their support for conservation. More gaps identified in the literature review are as shown in Table 2.1.

2.10 Knowledge Gap Matrix

Table 2.1 Knowledge Gaps from the Study Literature Review

Variable	Author and year	Study title	Findings	Knowledge gap	Focus of current study
Conservation education to communities	Rakotomamonjy, Razafimanahaka, Jones Ramamonjisoa & Williams, 2014	The effects of environmental education on children's and parents' knowledge and attitudes towards lemurs in Madagascar	Environmental education increased knowledge for both parents and children towards Lemur but only changed the attitude of children but not their parents	The study did not focus on lions but on lemurs which are primates	This study will focus on lions which are carnivores
Conservation benefits accrued to communities	Sosiya, 2016	Community Outreach Programmes and the Conservation of Protected Areas: A Case study of villages near Tarangire National Park, Tanzania.	Conservation benefits did not influence community attitudes towards wildlife conservation since they felt the benefits did not address their	The study failed to distinguish between the individual and shared benefits and how each affects people's attitudes towards wildlife.	This study will look at individual and shared benefits separately and how each affects people's attitudes towards lion conservation

			individual needs		
Human wildlife conflict management	Muriuki, Ipara and Kiringe, 2017	The cost of livestock lost to lions and other wildlife species in the Amboseli ecosystem, Kenya	Lions caused most economic losses compared to other wild animals Existence of a compensation scheme	The study failed to look at the availability of training to prevent wildlife conflict as a mitigation measure but focused only on compensation after the loss	This study will look at availability of training to prevent human wildlife conflict
Park Management policies	Karant, Nepal, 2012	Local Residents Perception of Benefits and Losses From Protected Areas in India and Nepal	Most community members felt that the park policies denied them economic opportunities to better their livelihoods	The study failed to look at willingness of communities to report wildlife crimes without fear of victimization	Will look at community willingness to report wildlife crimes without fear of victimization
People's attitudes towards lion conservation	Mkonyi, Estes, Msuha, Lichtenfeld & Durant , 2017	Socio-economic correlates and management implications of livestock	There is need for conservation interventions such as education and	The study failed to look at the nature of park management policies and	This study will look at how park management policies influence

		depredation by large carnivores in the Tarangire ecosystem, northern Tanzania	awareness, benefit sharing, conflict mitigation measures to create tolerance in communities living adjacent to protected areas	how they influence community tolerance to lions.	people’s attitudes towards lion conservation
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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design used in the study, the target population for the study, the sample size and sampling procedure used in conducting the study, research instruments, instrument reliability and validity, methods of data collection, method of data analysis and finally methods of data presentation.

3.2 Research Design

A research design is the structure or plan that guides a study on collection, measurement and analysis of data (Pandey and Pandey, 2015). This study used a descriptive survey design which aims at interpreting phenomena and relationships that exist (Best and Kahn, 2009). Descriptive research attempts to describe the status of things such as characteristics, values possible behaviour and attitudes (Mugenda and Mugenda, 2012). The researcher sought to obtain information on community behaviour, attitudes towards lion conservation as well as the status of the community based conservation initiatives, and therefore the descriptive study design was ideal for the study.

3.3 Target Population

The target population means all the members of a real or theoretical set of people, events or objects which will be investigated by the researcher and to which he will generalize the results of his research (Pandey & Pandey, 2015). Kanjoo sub location which borders Meru National Park has 1629 households (Kenya Bureau of Statistics (KNBS), 2009). These households are scattered in a large geographic area with over 50% households being over 5km away from the park boundary where human wildlife interactions are minimal and therefore their participation in the survey would not have added much value to the study. The researcher therefore mapped a 2.5 km buffer from the Meru National park boundary. The households that fell in this area from Kanjoo sub location were counted and found to be 147 households and therefore formed part of the target population.

The study also targeted 5 community conservation groups in Kanjoo sub location who acted as the key informants and ensured that they were not part of the households involved in the study. In total, the study target population was 152 as shown in table 3.1.

Table 3.1 Target population for the study

Group	Target population
Community conservation groups	5 Groups
Community members	147 Households
Total	152

3.4 Sample Size and Sampling Procedure

3.4.1 Sample Size

The Yamane formula (1967) was used to determine the sample size which resulted in 117 households which formed the sample size for the study.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size

N is the population

At 95% confidence level

$$n = \frac{147}{1 + 147 (0.05)^2}$$

$$n = 107 \text{ Households}$$

3.4.2 Sampling Procedure

The study used a systematic random sampling to select respondent households in Kanjoo community. Systematic sampling is where every K^{th} case in the population frame is selected as part of the sample (Mugenda and Mugenda, 2012). In this case, a sampling interval of one was used whereby the researcher visited every second homestead until the sample size of 107 was achieved. The head of the household male or female was the target respondent for the questionnaire. For the Community conservation groups purposive sampling was used to select the group leaders and ensured that they were not part of the respondent households.

3.5 Research Instruments

Research instruments are measurement tools meant to obtain data to answer objectives of the study. The researcher used a questionnaire to collect data. Questionnaires are a cost effective method of data collection especially when collecting data over a large geographical area. Questionnaires also give respondents adequate time to ponder over the questions and give accurate answers. The questionnaire consisted of two parts one on demographic information and the second on variables used in the study. The second section comprised a 5-point Likert scale with questions on dependent and independent variables. The researcher ensured that the research assistant was well trained to collect the data and submitted the filled questionnaires from the assistant at the end of each day.

The study also used an interview guide to gather information from the community group leaders who acted as the key informants. The interviews gave the community groups a chance to give their views on lion conservation in the area since most of them carry out conservation activities.

3.5.1 Piloting of Research Instruments

The piloting of research instruments was carried out in Murera sub location within the boundary of Meru National Park. This area was chosen because it has a population of the same characteristics in terms of economic activity and proximity to the park. A pilot study with a sample of a tenth of the total sample is adequate for pilot testing (Mugenda and Mugenda, 2012). 10% of the sample size which is 11 households were randomly selected to participate in the pilot study. The piloting helped the researcher evaluate the ease of understanding of the questions and restructured some to be able to acquire the correct information. It also helped evaluate the data analysis method, estimate the financial and human resource requirements.

3.5.2 Validity of Research Instruments

Validity refers to the accuracy and meaningfulness of inferences based on the research results (Mugenda and Mugenda, 2003). This is also the degree of truthfulness of the data or absence of error. The validity of the instrument was subjected through expert judgement of the university supervisor to ensure both construct and content validity. The supervisor checked the instruments alignment with the research objectives to ensure that they were answering the research questions of the study. A pilot study was also conducted to test the validity of the instrument. This pre testing helped check the

clarity and ability to measure the research variables. From the results, some of the questions were reconstructed and others discarded to ensure quality of the research instrument and guarantee validity.

3.5.3 Reliability of Research Instruments

Instrument reliability is the ability of an instrument to provide consistent results (Kothari, 2012). To determine the reliability of the instrument the researcher used the half split test technique. The researcher divided the questionnaires into two groups of odd numbers and even numbers. The two groups were computed and correlated to test consistency. Cronbach's Coefficient Alpha was used to further check the internal consistency. An SPSS reliability computation generated a Cronbach's Alpha value of 0.816. The alpha value ranges from 0 to 1.0 and the closer the Cronbach value is to 1.0 the higher the consistency. A value of 0.7 is considered acceptable with 0.8 considered good and 0.9 excellent (Tavakol and Dennick, 2011). Therefore with a coefficient of 0.816 the researcher considered the instrument reliable.

3.6 Data Collection Procedures

The researcher obtained a letter from the University of Nairobi which she used to apply for a research Permit from National Commission for Science, Technology and Information (NACOSTI). The researcher then sought permission from local administration to collect data in the community. Afterwards the researcher recruited a research assistant from the community to assist with the data collection process. The researchers approached households and sought permission to administer the questionnaire face to face to the heads of households. This was ideal so that if any respondent needed clarification on the questions they would be free to ask. For the interview, an appointment was booked prior to the meeting after a convenient time was agreed on. On the agreed time, the questions were administered as per the interview schedule.

3.7 Data Analysis Techniques

Data analysis was done by use of SPSS Statistical package version 20.0. The researcher used descriptive statistics to show frequencies, percentages means and standard deviation. Inferential statistics involving spearman correlation coefficient was used to test correlation between the dependent and independent variables.

3.8 Ethical Considerations

The researcher obtained a research permit from National Commission for Science, Technology and Innovation (NACOSTI). The researcher also informed the respondent the objective of the study which was for academic purposes and assured them of confidentiality and anonymity of all the information so they could give informed consent. The respondents were informed of their rights to decline to answer any question that they felt was inappropriate and air their opinion without fear of incrimination.

The researcher also ensured that no respondent was coerced to participate in the study against their will and personal details were limited to general information. The researcher finally ensured that the research assistants were well briefed on the code of conduct throughout the data collection process in terms of language, respect for the respondents and assuring the respondents confidentiality.

3.9 Operationalization of Variables

Operationalization of the variable table outlines the dependent and independent variables, indicators, measurement, measurement scale, data analysis technique and tools of analysis as shown in Table 3.2.

Table 3.2 Operationalization of Variables

Objective	Variable	Indicators	Measurement	Measurement Scale	Data analysis technique	Tools of analysis
	Dependent variable Attitudes towards wildlife conservation	Willingness to conserve lions and their habitat	Level of tolerance to conflict lions Number of people willing to conserve protected areas Number of people willing to report wildlife crime	Ordinal Interval	Descriptive statistics Inferential statistics	Frequencies percentages Mean Standard deviation Spearman correlation coefficient
To determine the influence of conservation education on people's attitudes to lion conservation in Kanjoo community adjacent to Meru	Independent variable Conservation education	Participation in conservation education activities	Level of exposure to conservation education	Ordinal	Descriptive statistics Inferential statistics	Frequencies percentages Mean Standard deviation Spearman correlation coefficient

National Park, Meru County						
To establish the influence of conservation benefits accrued to communities on people's attitudes to lion conservation in Kanjoo community adjacent to Meru National Park, Meru County	Independent variable Conservation benefits accrued to communities	Perceived benefits from conservation	Status of infrastructure Level of individual and shared benefits Accrued to communities	Ordinal	Descriptive statistics Inferential statistics	Frequencies percentages Mean Standard deviation Spearman correlation coefficient
To determine to what extent human wildlife conflict management influence people's attitudes towards lion	Independent variable Wildlife conflict management	Level of human wildlife conflict Conflict management strategies	Level of human wildlife conflict Level of lion conflict Status of human wildlife	Ordinal	Descriptive statistics Inferential statistics	Frequencies percentages Mean Standard deviation

conservation in Kanjoo community adjacent to Meru National Park, Meru County.			conflict management Rate of response to human wildlife conflict			
To establish the extent to which park management policies influence people's attitudes towards lion conservation in Kanjoo community adjacent to Meru National Park, Meru County	Independent variable Park management policies	Community participation in conservation activities Community interaction with natural resources	Level of participation in conservation activities Status of access to natural resources in protected areas Status of relationship with park management authorities	Ordinal	Descriptive statistics Inferential statistics	Frequencies percentages Mean Standard deviation Spearman correlation coefficient

CHAPTER FOUR
PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter highlights the data collection procedures, response rate, demographics of the respondents, the results obtained from the data based on the research questions and the interpretation of the results.

4.2 Questionnaire Return Rate

The response rate for the questionnaire was 100% for the community households. A total of 107 questionnaires were administered to 107 household heads. The 5 key informant interview respondents fully participated in the survey. This excellent return rate was as a result of the dedicated research assistant who was well known for his commitment in responding to human wildlife conflict issues and his constant follow up on the respondents at their homesteads. This indicates that the sample is adequate to give a meaningful generalization.

4.3 Demographic Characteristics of Respondents

The demographic characteristics of the respondents provides information on the respondents that has the ability to influence their attitude on wildlife .This is based on their interactions overtime and exposure to conflict. The characteristics captured included gender, age, period of stay in the area and level of education.

4.3.1 Distribution of Respondents by Gender

The study sought to establish the gender of the respondents. The findings are shown in table 4.1

Table 4.1: Distribution of respondents by gender

Gender	Frequency	Percentage
Female	50	46.7
Male	57	53.3
Total	107	100

Table 4.1 shows that out of 107 households 50 (46.7 %) of the household heads who participated in the study were female while 57 (53.3 %) were male. This shows that both genders were well

represented in the survey. Since both genders have different forms of interactions with the environment especially in their day to day activities, their diverse opinions were very vital for this study.

4.3.2 Distribution of Respondents by Age

The respondents were asked to state their age category. The findings are shown in table 4.2

Table 4.2: Distribution of respondents by age

Age	Frequency	Percentage
20 to 30	21	19.6
31 to 40	38	35.5
41 to 50	34	31.8
51 to 60	9	8.4
Above 60	5	4.7
Total	107	100

Table 4.2 indicates that the age of respondents ranged from 20 years to above 60 years 21 (19.6%) were between 20 and 30 years, 38 (35.5%) between 31 and 40 years, 34 (31.8%) between 41 and 50 years, 9 (8.4%) between 51 and 60 years and 5 (4.7%) above 60 years. Majority of the respondents 38 (35.5%) were aged between 30-40 years which indicated that they were at the peak of their lives, very energetic and productive and therefore interacted more with the environment in search of better their livelihoods. Therefore, they were likely to be very aware of the economic, social and environmental challenges in the area.

4.3.3 Distribution of Respondents by Period of Stay in the Study Area

The study also evaluated how long the community members had resided in the area as an indication of how aware they were of the social systems .The results of the analysed data is shown in Table 4.3.

Table 4.3: Distribution of respondents by duration of stay in the study area

Period of stay	Frequency	Percentage
Below 5 years	7	6.5
6 to 15years	28	26.2
16 to 25 years	32	29.9
Above 25 years	40	37.4
Total	107	100

Table 4.3 shows that 7 (6.5%) of the community respondents had resided in the area less than 5 years, 28 (26.2%) for 6 to 15 years, 32 (29.9%) had stayed for 16 to 25 years while 40 (37.4%) had resided for over 25 years. From the results majority of the respondents 72 (67.3%) have been residing in the area for over 15 years and were therefore aware of the interactions between the community, wildlife and park management.

4.3.4 Distribution of Respondents by Level of Education

This study sought to establish at the level of education of the respondents. The findings are as shown in table 4.4.

Table 4.4: Distribution of respondents by level of education

Level of education	Frequency	Percentage
No formal education	6	5.6
Primary	91	85.0
Secondary	7	6.5
Tertiary	3	2.8
Total	107	100

Table 4.4 shows that 6 (5.6%) of the respondents had received no formal education, 91 (85.0%) had received primary education, 7 (6.5%) of the respondents had studied up to secondary level while 3 (2.8%) had tertiary education. This showed that majority 85% of the respondents had basic formal education and therefore had some level of exposure to formal conservation and environmental knowledge and understanding.

4.4 Analysis of Study Variables

4.4.1. People's Attitudes Towards Lion Conservation

The study sought to assess people's attitudes towards lion conservation by asking for their level of agreement to various statements focusing on tolerance of conflict lions, protection of the protected areas which are the lions habitats, willingness to engage in activities that promote lion conservation and desire to have lion populations thrive. The respondents rated the statements using a 5-point Likert scale and the findings were as shown in table 4.5.

Table 4.5 People's attitudes towards lion conservation

Attitude statements		SD	D	N	A	SA	Total	Mean	Standard deviation
Lions that attack livestock or people should be killed	Freq. Percent	40 37.4%	58 54.2%	2 1.9%	7 6.5%	0 .0%	107 100%	1.78	.781
Lions are of no benefit to my community	Freq. Percent	20 18.7%	51 47.7%	2 1.9%	28 26.2%	6 5.6%	107 100%	2.52	1.224
Communities should be allowed to hunt wildlife	Freq. Percent	33 30.8%	69 64.5%	2 1.9%	3 2.8%	0 .0%	107 100%	1.77	.623
National Parks should be subdivided and given to people for farming and settlement	Freq. Percent	19 17.8%	64 59.8%	5 4.7%	19 17.8%	0 .0%	107 100%	2.22	.945
I would not be concerned if all the lions died and became extinct	Freq. Percent	7 6.5%	84 78.5%	5 4.7%	11 10.3%	0 .0%	107 100%	2.19	.702
Communities should be allowed to collect firewood and graze their livestock in the park	Freq. Percent	17 15.9%	72 67.3%	1 .9%	17 15.9%	0 .0%	107 100%	2.17	.885
Conserving national parks is a waste of money	Freq. Percent	46 43.0%	59 55.1%	0 .0%	1 .9%	1 .9%	107 100%	1.62	.639
I would not participate in activities that help conserve lions	Freq. Percent	10 9.3%	85 79.4%	0 .0%	9 8.4%	3 2.8%	107 100%	2.16	.814
Composite value								2.05	0.827

The findings on table 4.5 indicate that when asked whether lions that kill livestock or injure people should be killed, majority of the respondents 40 (37.4%) and 58 (54.2%) strongly disagreed and disagreed respectively. 2 (1.9%) were neutral while 7(1.9%) agreed. A mean of 1.78 was obtained which showed that most of the respondents strongly disagreed with this statement. Further, a majority 84 (78.5%) disagreed with the statement that they would not be concerned if all lions died and became

extinct. 20 (18.7%) and 51(47.7%) of the respondents strongly disagreed and disagreed respectively to the statement that lions are of no benefit to their community. From the findings, majority of the respondents were in disagreement with this statement with a mean of 2.52. This shows that the community is tolerant of conflict lions and appreciated their existence despite the losses they caused.

When asked whether they thought communities should be allowed to hunt wildlife majority disagreed with 33 (30.8%) and 69 (64.5%) strongly disagreeing and disagreeing respectively. Only 3 (2.8%) respondents agreed that people should be allowed to hunt wildlife. Similar results were seen when asked if the communities should be allowed to collect firewood and graze in the park with a majority 72 (67.3%) disagreeing with the statement. A further 64(59.8%) and 19 (17.8%) strongly disagreed and disagreed respectively that national parks should be subdivided and people allocated the land for farming. Despite the constant shrinking of land as a result of human population increase, the community still felt that wildlife deserved to have their own space in the environment free from human encroachment.

Majority of the respondents 98.1% and 88.7% either disagreed or strongly disagreed with the statement that conservation of national parks is a waste of money and that they would not participate with lion conservation activities respectively. In total a composite mean of 2.05 was obtained meaning that majority of the respondents disagreed with the statements that portrayed a negative perception. This shows that the Kanjoo community appreciates conservation efforts, would be willing to be part of the conservation activities and have a positive attitude towards lions. This findings are similar to Meena, 2012 who found out that despite lions being conflict animals communities took pride in having them as part of their natural heritage.

4.4.2 Conservation Education and People's attitudes towards Lion Conservation

In this section, the respondents rated six statements relevant to conservation education and its influence in people's attitudes towards lion conservation. This was in regard to their participation in conservation education activities and their opinion on to what extent these activities influenced lion conservation. The results are shown in table 4.6

Table 4.6: Conservation education and people's attitudes towards lion conservation

Statements		Not at all	Little extent	Moderate extent	High extent	Very high extent	Total	Mean	Standard deviation
I have been involved in conservation education forums in my community	Freq. Percent	71 66.4%	32 29.9%	2 1.9%	2 1.9%	0 .0%	107 100%	1.393	0.626
Conservation films influence people's attitudes towards lion conservation	Freq. Percent	0 .0%	2 1.9%	4 3.7%	97 90.7%	4 3.7%	107 100%	3.963	0.387
There are enough conservation education exposure in the community	Freq. Percent	46 43.0%	51 47.7%	10 9.3%	0 .0%	0 .0%	107 100%	1.664	0.643
Wildlife clubs in schools play a big role in shaping young people's attitudes towards lions and other wildlife	Freq. Percent	1 .9%	0 .0%	0 .0%	97 91.5%	8 7.5%	106 99.1%	4.047	0.400
KWS barazas on wildlife conservation plays a big role in shaping people's attitudes towards lions and other wildlife	Freq. Percent	0 .0%	2 1.9%	16 15.0%	82 76.6%	7 6.5%	107 100%	3.879	0.527
If people get opportunities to tour the park they will appreciate wildlife more	Freq. Percent	0 .0%	1 .9%	1 .9%	62 57.9%	43 40.2%	107 100%	4.374	0.558
Composite value								3.220	0.523

The findings in table 4.6 show that majority of the respondents 71 (66.4%) had not participated or been involved in any conservation education forum while 32 (29.9%) had been involved in conservation to a little extent. In addition, 46 (43, 0%) felt that the community had no adequate exposure to conservation education at all while 51 (47.7%) felt the community was exposed to conservation education to a little extent. This indicates that the awareness levels in terms of wildlife conservation was very low .When asked to rate to what extent conservation education activities such as conservation films, wildlife clubs, KWS barazas and tours to the park influenced people's attitudes

towards lions and other wildlife the majority responded to a high extent with 97 (90.7%), 97 (91.5%), 82 (76.6%) and 62 (57.9%) respectively.

Although 96.3% of the respondents claimed not to have been involved in any conservation education forum, majority agreed that conservation education activities such as conservation film screening, wildlife clubs in schools, visits to the parks and community barazas would to a large extent influence people's attitudes towards lion conservation positively. Opportunity to visit National Park was revealed as the most influential conservation education activity with a mean of 4.374 followed by wildlife clubs, conservation films and lastly KWS barazas with 4.047, 3.963 and 3.879 respectively. This was way above the composite mean of 3.220. This findings are similar to Blewitt (2013) who reported that the use of visual media in passing conservation messages such as films and documentaries had proven to be more effective than the historical formal education. This calls for diversification on ways of carrying out conservation education rather than having it taught in class setup. One of the key informants stated.

“When were young we used to visit the national park and we would learn a lot, nowadays we don't get the opportunity.”

4.4.3 Conservation Benefits Accrued to the Community and People's Attitudes towards Lion Conservation

The study sought to establish if conservation benefits accrued to the community influences people's attitudes towards lion conservation. The respondents were asked to state their extent of agreement regarding conservation benefits accrued to the community and their level of influence towards lion and other wildlife conservation. The results are shown in table 4.7.

Table 4.7 :Conservation benefits accrued to communities and people's attitudes towards lion conservation

Statements		Not at all	Little extent	Moderate extent	High extent	Very high extent	Total	Mean	Standard deviation
My community benefits from wildlife in Meru National Park	Freq. Percent	9 8.5%	19 17.9%	17 16.0%	57 53.8%	4 3.8%	106 99.1%	3.26	1.072
Individual benefits such as employment makes people more tolerant towards wildlife	Freq. Percent	0 .0%	1 .9%	3 2.8%	86 80.4%	17 15.9%	107 100%	4.11	.462
Infrastructural projects by conservation organizations such as construction of classrooms, roads, health centres and water sources makes people more tolerant to lions and other wildlife	Freq. Percent	1 .9%	1 .9%	3 2.8%	79 74.5%	22 20.8%	106 99.1%	4.13	.587
If I do not receive any benefit from conservation I will still conserve wildlife	Freq. Percent	17 15.9%	50 46.7%	2 1.9%	16 15.0%	22 20.6%	107 100%	2.78	1.430
Wildlife benefits collected by the government trickles down to the local community	Freq. Percent	9 8.5%	37 34.9%	10 9.4%	7 6.6%	43 40.6%	106 99.1%	3.36	1.507
Composite value								3.53	1.012

The findings on table 4.7 state that majority of the respondents 57 (53.8%) depicted by a mean of 3.26 felt that the community benefited from wildlife in Meru National Park to a high extent. However, 37 (34.9%) felt that the wildlife benefited the government more than it benefited the local community. There was no major difference between the level of influence of individual benefits such as employment and shared benefits such as infrastructural developments e.g. schools, health centres , roads and water with both scoring a mean of 4.11 and 4.13 respectively. Majority of the respondents claimed that both influenced people’s attitudes towards wildlife to high extent with individual

benefits and shared benefits scoring 86 (80.4%) and 79 (74.5%) respectively. A key informant said this about the shared benefits

“Wildlife benefits me, my children go to school funded by conservation organizations and my family gets medication from a facility built by KWS”

This result differs from the study conducted in Tarangire ecosystem by Sosiya (2016) where 70% of the respondents termed shared benefits as not beneficial and therefore had less impact on their tolerance to wildlife with most preferring individual benefits. 67 (62.6%) of the respondents responded between to a high extent and very high extent they would not conserve wildlife if they did not receive any conservation benefits. However, 22 (20.6%) would be willing to conserve wildlife with or without benefits. This shows that to a large extent, people’s attitudes towards lions and other wildlife are influenced by the benefits they receive from conservation. The composite mean for conservation benefits accrued to communities was 3.53 indicating that benefits played a big role in influencing people’s attitudes to lion conservation. A study conducted in Kondoza Tanzania by Chami (2016) also found out that benefits that give the community some sense of food security and economic empowerment are more likely to impact community’s attitudes positively

4.4.4 Human Wildlife Conflict Management and People’s Attitudes towards Lion Conservation

The study sought to establish to what extent wildlife conflict management influenced their attitudes towards lion conservation. Statements on the level of conflict over the last five years, their satisfaction with how the conflict was handled and how this influenced their attitudes towards lions and other wildlife were asked. The findings are as shown in table 4.8.

Table 4.8 :Human wildlife conflict management and people's attitudes towards lion conservation

Statements		Not at all	Little extent	Moderate extent	High extent	Very high extent	Total	Mean	Std. Deviation
The level of human wildlife conflict has reduced over the last 5 years	Freq. Percent	1 .9%	71 66.4%	17 15.9%	17 15.9%	1 .9%	107 100%	2.50	.805
I am satisfied with the handling of human wildlife conflict	Freq. Percent	32 30.2%	25 23.6%	21 19.8%	28 26.4%	0 .0%	106 99.1%	2.42	1.179
If I receive adequate compensation for wildlife damages I will be more tolerant of lions and other wildlife	Freq. Percent	0 .0%	7 6.5%	4 3.7%	76 71.0%	20 18.7%	107 100%	4.02	.700
Lions are conflict animals in my community	Freq. Percent	55 51.9%	35 33.0%	9 8.5%	7 6.6%	0 .0%	106 99.1%	1.70	.886
I have received training on what to do to prevent wildlife conflict.	Freq. Percent	86 80.4%	16 15.0%	2 1.9%	2 1.9%	1 .9%	107 100%	1.28	.684
Even without compensation for wildlife damage I will still support conservation	Freq. Percent	49 45.8%	25 23.4%	6 5.6%	27 25.2%	0 .0%	107 100%	2.10	1.236
Composite value								2.34	0.915

The findings on table 4.8 shows that majority of the respondents 71 (66.4%) felt that human wildlife conflict had increased over the last 5 years. 57 (53.6%) were not satisfied or were satisfied to a little extent of the way human wildlife conflict issues were handled while 21 (19.8%) and 28 (26.4%)

were satisfied to a moderate extent and high extent respectively depicted by a mean of 2.42. One of the key informants responded by saying.

“Most members are supposed to be compensated though none has ever been compensated for more than 5 years even after filling the forms”

When asked whether adequate compensation could increase their tolerance towards lions and other wildlife 76 (71.0%) replied to a high extent with a mean of 4.02. However 90 (84.9 %) confirmed that lions were either not responsible for most conflicts or just to a little extent. When asked if they had received any training on what they can do to prevent wildlife conflict 86 (80.4%) claimed not to have received any training with a mean of 1.28 . Only 27 (25.2%) of the respondents would still conserve lions even without compensation for damages. This findings show that with adequate compensation the Kanjoo community was willing to support lion conservation although the major problematic animals were found to be baboons and elephants. These findings are similar to a study in Tarangire by Sosiya (2016) who found out that delayed compensation to affected communities lead to negative perceptions towards wildlife.

4.4.5 Park Management Policies and People’s Attitudes towards Lion Conservation

The study sought to establish the influence of park management policies and lion conservation. This was done by testing the level of agreement on statements regarding the park management policies on access to the park resources, community participation in conservation, the manner in which they are enforced and how they influence people’s attitudes towards lions and other wildlife conservation. The results are as shown on table 4.9.

Table 4.9 :Park management policies and people's attitudes towards lion conservation

Statements		Not at all	Little extent	Moderate extent	High extent	Very high extent	Total	Mean	Standard Deviation
The park management policies are friendly to my community	Freq. Percent	20 18.9%	38 35.8%	23 21.7%	24 22.6%	1 .9%	106	2.51	1.071
If communities are allowed to harvest resources from the park they will be more tolerant towards lions and other wildlife	Freq. Percent	11 10.3%	31 29.0%	10 9.3%	53 49.5%	2 1.9%	107	3.04	1.132
The park and wildlife resources belong to my community	Freq. Percent	20 18.7%	14 13.1%	11 10.3%	55 51.4%	7 6.5%	107	3.14	1.285
I would report illegal activities happening in the park to the park authorities without fear of incrimination.	Freq. Percent	10 9.3%	5 4.7%	2 1.9%	68 63.6%	22 20.6%	107	3.81	1.109
There is a very good relationship between park authorities and the community	Freq. Percent	1 .9%	5 4.7%	8 7.5%	77 72.0%	16 15.0%	107	3.95	.706
If the park authorities are friendly to the community then the community is more likely to support lion conservation	Freq. Percent	1 1.0%	0 .0%	0 .0%	25 23.8%	79 75.2%	105	4.72	.563
Composite value								3.528	0.978

The findings on table 4.9 indicate varied opinions on friendliness of park management policies. 38 (35.8%) and 23 (21.7%) rated the policy friendliness statement to little and moderate extent respectively , 20 (18.9%) felt that the policies were not friendly at all while 24 (22.6%) felt they did to a high extent depicted by a mean of 2.51. 62 (57.9%) stated that the wildlife resources belonged to the community although 53 (49.5%) felt that if the community was allowed to harvest these resources from the park they would be more tolerant to lions and other wildlife. Majority 77 (72.0%) claimed to have a very good relationship with park management authorities with 90 (84.2%) willing to report

any wildlife crime happening in the park to the authorities without fear of incrimination depicted by a mean of 3.81. When asked if the nature of relationship between park authorities and the community contributed to their attitude towards wildlife conservation 79 (75.2%) rated the statement to a very high extent with a mean of 4.72, which was far above the composite mean of 3.53. This findings show that apart from policies being favourable to communities the way they are enforced plays a very big role in influencing people’s attitudes towards wildlife. This finding is similar to a study conducted in Gir National Park where the friendliness of the park authorities was found to have contributed to community support in conserving the Asiatic Lion (Meena, 2012).

4.5 Correlation Test between the Dependent and Independent Variables

The study sought to find out whether there existed a relationship between the independent and dependent variables of the study. A spearman correlation test was performed between conservation education, conservation benefits accrued to communities, human wildlife conflict management, park management policies and tolerance to conflict lions. The findings are as shown in table 4.10.

Table 4.10. Correlation coefficient

	Spearman correlation	Conservation Education to communities	Conservation benefits accrued to communities	Human wildlife conflict management	Park management policies	Tolerance to conflict lions
Conservation Education to communities	rs	1				
Conservation benefits accrued to communities	rs Sig.(2tailed)	-0.15 0.13	1			
Human wildlife conflict management	rs Sig.(2tailed)	0.06 0.51	-0.09 0.37	1		
Park management policies	rs Sig.(2tailed)	0.05 0.65	.49** 0.00	-0.04 0.66	1	
Tolerance to conflict lions	rs Sig.(2tailed)	0.08 0.39	.37** 0.00	.20* 0.05	0.18 0.07	1

*(**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).*

The findings in table 4.10 revealed that the relationship between conservation education and people's attitudes towards lion conservation is not significant ($r(105) = 0.08, p = 0.39$). This shows that regardless of the exposure to conservation education the community was very tolerant and supportive of lion conservation. The test also revealed a significant moderate positive relationship between conservation benefits accrued to communities and human wildlife conflict management and people's attitudes towards lion conservation with ($r(105) = 0.37, p = 0.00$) and ($r(105) = 0.30, p = 0.05$) respectively. This result showed that increased conservation benefits and proper management of human wildlife conflict had a positive influence on community attitudes towards lion conservation. However, the relationship was moderate meaning there could be other factors that influenced the community attitudes. Park management policies had a weak negative relationship with people's attitudes towards wildlife conservation that was not significant ($r(105) = 0.18, p = 0.07$). This could mean that even without the policies the community's attitudes towards wildlife was very positive. This is supported by the fact that a number of respondents claimed that they would still support conservation even without receiving benefits and compensation. A similar result was found in Gir National Park by Meena (2012) whereby despite major conflicts with wildlife, communities preferred that other wildlife responsible for conflict be translocated and the lions to be retained as they were considered peaceful. Others attributed their attitude to cultural attachment and regional pride

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of the summary of findings from the study variables, conclusions and recommendations.

5.1 Summary of Findings.

The study was conducted in Kanjoo community adjacent to Meru National Park. Meru National Park is a fenced protected area with minimal access to community members but experiencing human wildlife conflict from wildlife that stray out of the park. A questionnaire with 5-point Likert scale items was administered to 107 households seeking to understand how various community based conservation interventions influenced people's attitudes towards wildlife. These interventions included conservation education, conservation benefits, human wildlife conflict management and park management policies. The findings were as follows.

5.1.1 People's Attitudes towards Lion Conservation

The study found out that generally, the Kanjoo community is tolerant towards lions and 81.6% believed that lions that killed livestock or injured people should not be killed. 66.4% said that lions are beneficial to the community and 85% would be concerned if lions became extinct. Majority of the respondents, 98.1% acknowledged the importance of protected areas with 88.7% expressing willingness to participate in lion conservation activities.

All the conservation interventions seemed to have either a weak or a moderate positive relationship with people's attitudes towards lion conservation which showed that even without the interventions the community was likely to support lion conservation activities. This findings could be attributed to the fact that the Kanjoo community is an agricultural community and therefore the loses related to lions are less compared to herbivores. In pastoralist communities, people's attitudes towards lions have been found to be more negative forcing conservationists to decide between lion conservation and community development (Muriuki et al., 2017).

5.1.2 Conservation Education and People's Attitudes towards Lion Conservation.

Although 96.3% , of the respondents claimed not to have been involved in any conservation education forum, majority agreed that conservation education activities such as conservation film screening,

wildlife clubs in schools, visits to the parks and community barazas would to a large extent influence people's attitudes towards lion conservation positively. Opportunity to visit National Park was revealed the most influential conservation education activity with a mean of 4.374 followed by wildlife clubs, conservation films and lastly KWS barazas with 4.047, 3.963 and 3.879 respectively. This was way above the composite mean of 3.220. This showed that informal and participatory channels of passing conservation messages were found to be much more effective than the formal ones. A spearman correlation test showed no relationship between conservation education and people's attitudes towards lion conservation $r(105) = 0.08, p = 0.39$.

5.1.3 Conservation Benefits Accrued to the Community and People's Attitudes towards Lion Conservation

From the findings, it emerged that conservation benefits influenced people's attitudes towards lion conservation. The Kanjoo community claimed that both shared and individual benefits influenced people's attitudes towards lion conservation with a mean of 4.11 and 4.13 respectively. 62.6% claimed that they would not conserve wildlife if they did not receive any form of benefit while only 20.6% would conserve wildlife regardless of benefits or not. Majority claimed to have received benefits from conservation indicated by a mean of 3.26 while others with a mean of 3.36 felt that the benefits of conservation trickled from the government to the communities. This is a very encouraging response owing to the fact that most studies have found that communities always feel left out in the sharing of benefits from wildlife conservation. A spearman correlation test showed moderate positive correlation between conservation benefits and tolerance to lions ($r(105) = 0.37, p = 0.00$).

5.1.4 Human Wildlife Conflict Management and Attitudes towards Lion Conservation

According to 66.4% of the respondents, human wildlife cases had increased over the last 5 years with 53.6% of them not satisfied with the way human wildlife conflict is handled in their area. This is because compensation was yet to be given to most of the affected households even after filling the required forms. It was further revealed that 80.4% had not received any training on how they could prevent human wildlife conflict in their homesteads. However, with adequate compensation the community was willing to be more tolerant to wildlife and support conservation with 74.8% not willing to conserve wildlife without adequate compensation depicted by a mean of 4.02. A spearman correlation test however revealed a moderate positive correlation between human wildlife conflict management and people's attitudes towards lion conservation ($r(105) = 0.30, p = 0.05$). This could be

related to the fact that lions were not considered a conflict animal as elephants and baboons contributed to most of the losses.

5.1.5 Park Management Policies and People's Attitudes towards Lion Conservation

Majority of the respondents 53.7% found the park management policies to be unfriendly since they did not allow community access into the protected areas. However the possibility of park access to influence people's attitudes towards wildlife was varied across the respondents with half feeling that it would make them more tolerant while the other half felt that it was okay to have park access limited indicated by a mean of 3.02. A majority 72.0% had a very good relationship with the park management who they found very friendly and as a result, they felt free to report any wildlife crime without fear of incrimination indicated by a mean of 3.81. When asked whether the relationship between park management and community influenced people's attitudes towards lion conservation majority replied to a high extent with a mean of 4.72. This shows despite the friendliness of park management policies, the manner in which they are enforced is very critical in garnering support for conservation from communities adjacent to the park.

5.2 Conclusion

The study found that conservation education, conservation benefits, human wildlife conflict management and park management policies to some extent influence people's attitudes towards lion conservation. The study found that people prefer visual media of conservation education such as films and visits to the park as they have more impact in passing the conservation message.

The study also found that conservation benefits whether shared or not shared increases community willingness to conserve wildlife. This benefits cause more impact when the community is given a chance to participate in their selection as well as implementation and when they offer economic benefits. The study further found that the level of conflict caused by the animal itself determines the community's tolerance and willingness to conserve it. For instance, communities that depend on agriculture are likely to experience higher levels of conflict from herbivores compared to carnivores and therefore are a bit more tolerant to carnivores. The level of satisfaction from compensation for the conflicts also influences their willingness to participate in their conservation. Finally, park management policies and their enforcement contribute to how valued the community feels and contributes to their feeling of resource ownership. When there is a sense of ownership, the community

is willing to protect the resources by reporting any illegal activities and respecting the protected areas as wildlife habitat.

5.3 Recommendations of the Study

Based on the findings, the following recommendations were made

- i. Conservation organizations should use more non formal visual conservation education methods to pass conservation messages such as conservation films and local tourism to pass conservation message.
- ii. Conservation organizations should consider conservation benefits that give direct economic benefits and solve issues such as food security and financial empowerment to communities living adjacent to protected areas.
- iii. The government should ensure that compensation from wildlife loss is done within the shortest period possible to prevent build up of resentment towards wildlife by the victims.
- iv. Conservation organizations should cultivate a healthy network of communication between park management authorities and communities living adjacent to protected areas so that they can build trust and share intelligence regarding wildlife crimes.

5.4 Suggestions for Further Research

This study recommends the following

- i. Since this study was carried out in an agricultural community where lions did not seem to cause much conflict compared to herbivores, a study on people's attitudes towards herbivores such as elephants should be carried out in the same region.
- ii. The community generally seemed very tolerant to lions despite the losses they cause, a study on cultural beliefs towards lions should be considered to determine their role in influencing people's attitudes towards conflict lions.

REFERENCES

- Abudulghaful, F. (2013). *Influence of Kenya Wildlife Conservation Education Program on Reducing Human Wildlife Conflict*. MSC: University of Nairobi.
- Bauer, H., Merwe, S. (2004). Inventory of free-ranging lion *Panthera Leo* in Africa. *Oryx*, 38 (1) 26–31.
- Benyr, G., Littlewood, A., & Czirák, Z. (2017). *Sustainability of Lion Trophy Hunting in Tanzania*. CITES .
- Best, J.W., Kahn, J.V. (2009) *Research in Education*. (9th Ed.). New Delhi: Prentice Hill
- Biggs, D., Cooney, R., Roe, D., Dublin, H., Allan, J., Challender, D., Skinn, D. (2015). Engaging local communities in tackling illegal wildlife trade: Can a ‘Theory of Change’ help? (IIED Discussion Paper). London: IIED
- Bhalla, S., & Gurd, H. (2014). Empowering local communities in Kenya to conserve lions. *Current conservation*, 8, (4), 4-11.
- Blewitt, J. (2013). *The Media, animal conservation and environmental Education*. London: Routledge.
- Born Free Foundation. (2019). *An Overview of the Lions in Meru National Park*. Nairobi: Simiyu, N., Gitonga, M., Nyaga, M., Cheruiyot, V., Mutisya, S., Ng’weno, C.
- Catherman, R. (2013). *Monitoring and Evaluating programs and projects using GIS*. USA: MEDRIX.
- Chami, A.A (2016). Roles of Socio-Economic Incentives towards Sustainable Environmental Conservation of Kondoa Rehabilitated Rural Areas, Dodoma, Tanzania. *Journal of Ecosystem & Ecography* 6 (3) 1-11
- Chardonnet, P. (Ed). (2002). *Conservation of the African Lion: Contribution to a Status Survey*. International Foundation for the Conservation of Wildlife, France & Conservation Force, USA
- Chirenje, L.I, Giliba, R.A & Musamba, E.B. (2013). Local communities’ participation in decision-making processes through planning and budgeting in African countries. *Chinese Journal of Population Resources and Environment* 11 (1) 10-16
- David Sheldrick Wildlife Trust. (2013). *De-Snaring Report*. Nairobi: unpublished.
- Duffe, J., Seed, E., & Morehouse, B. (2014, April 5). *Geospatial Technologies for Wildlife Enforcement in Protected Areas*. Retrieved from Research gate: <https://www.researchgate.net/publication/266495605>

- Ericson, J.A. (2004). A participatory approach to conservation in the Calakmul Biosphere Reserve, Campeche, Mexico. *Landscape and Urban Planning* 74 (2006) 242–266
- FAO. (2015). *Illegal Hunting and the Bush Meat Trade in Savannah Africa: Drivers, Impacts & Solutions To Address The Problem*. Zimbabwe: FAO.
- Funnel, S.C., Rogers, P.J. (2011). *Purposeful Program Theory: Effective use of theories of change and logic models*. New Jersey: John Wiley & Sons
- Gerald, B., Littlewood, A., Czirak, Z. (2017). Sustainability of Lion Trophy Hunting in Tanzania. Tanzania: EU CITES Scientific Review Group
- GOK. (2017) Wildlife Migratory Corridors and Dispersal areas. Kenya Rangelands and Coastal Terrestrial Ecosystems. Nairobi: Govt Press.
- Gray, T. N., Hughes, A. C., Laurance, W. F., Long, B., Lynam, A. J., O’Kelly, H., . . . Wilkinson, N. M. (2017). The wildlife snaring crisis: an insidious and pervasive threat to biodiversity in Southeast Asia. *Biodiversity Conservation*, 1-8.
- Gunawan, J. (2015). Ensuring Trustworthiness in Qualitative Research. *Belitung nursing journal* 1(1) 10-11.
- IUCN SSC Cat Specialist Group (2006). Conservation Strategy for the Lion (*Panthera leo*) in Eastern and Southern Africa. Eastern and Southern African Lion Workshop, Johannesburg, 8 – 13 January 2006. IUCN SSC Cat Specialist Group report, 55 pages
- Jacobson, S. k., Duff, M. D., & Monroe, M. C. (2015). *Conservation education and outreach techniques*. United Kingdom: Oxford University Press.
- Karant, K. K., (2012). Local Residents Perception of Benefits and Losses from Protected Areas in India and Nepal. *Environmental Management*, 49, 372-386
- Karebeeran, S., Kuruvilla, C. (2015). Community participation towards effective social work practice. *Indian journal of applied research* 5 (12) 16-18.
- KNBS (2010). *The 2009 Kenya Population and Housing Census*. GOK Press.
- Kothari, C. (2004). *Research Methodology: Methods and Techniques*. New Delhi: New Age International Publishers.
- Kylie, P. (Ed). (2017). The SAGE Encyclopaedia of Out-of-School Learning: "Community Outreach Programs. Thousand Oaks: SAGE.
- Mairota, P., Cafarelli, B., Didham, R. K., Lovergine, F. P., Lucas, R. M., Nagendra, H., . . . Tarantino, C. (2015). Challenges and opportunities in harnessing satellite remote sensing for biodiversity monitoring. *Ecological Informatics*, 30, 207-214.

- Manzur, V. M. (2013). *Community Action for Conservation*. New York: Springer.
- Mayne, J., & Johnson, N. (2015). Using theories of change in the Agriculture for Nutrition and Health CGIAR research program. *Evaluation*, 21 (4), 407–428.
- Meena, V. (2014) Conservation of Asiatic lions: where do we go now? *Current conservation*, 8, (4), 26-30.
- Meguro, T., (2014). Becoming Conservationists, Concealing Victims: Conflict and Positionings of Maasai, regarding Wildlife Conservation in Kenya. *African Study Monographs*, 50,155–172.
- Mekbeb, E.T., Ashenafi, T.Z., Williams, N.L. (2010). Community Attitudes towards Wildlife Conservation in (pp. 287-292).Ethiopia: George Wright Society Conference
- Mir, Z., R., Noor, A., Habib, B., Veeraswam, G., G., (2015). Attitudes of Local People Towards Wildlife Conservation: A case Study from the Kashmir Valley. *Mountain Research and Development* 35 (4), 392-400.
- Mitsuyuki, I. (2017). Beyond the Limitations of Environmental Education in Japan. *Educational Studies in Japan: International Yearbook* 11, 3-14.
- Mkonyi,F.J., Estes,A.B, Msuha,M.J., Lichtenfeld,L.L, Durant,S.M, (2017) Socio-economic correlates and management implications of livestock depredation by large carnivores in the Tarangire ecosystem, northern Tanzania, *International Journal of Biodiversity Science, Ecosystem Services & Management* 13, (1), 248–263
- Mugenda, O., & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: African Centre for Technology Studies.
- Muriuki, M., Ipara, H., & Kiringe, J. (2017). The cost of livestock lost to lions and other wildlife species in the Amboseli ecosystem, Kenya. *European Journal of Wildlife research*, 1-11.
- Murray, G., & Agyare, A. (2018). Religion and perceptions of community-based conservation in Ghana, West Africa. *PLoS ONE*, 13(4).
- Nyirenda, R.V., & Chomba, C. (2012). Field foot patrol effectiveness in Kafue National Park, Zambia. *Journal of Ecology and the Natural Environment*, 4(6), 163-172
- Ocholla, G., Mireri, C., & Muoria, P. (2016). Application of Indigenous Knowledge Systems in Wildlife Management. *International Journal of Applied Science and Technology*, 6(4), 72-80.
- Odebiyi, B.R.,Ayeni S. M.,Umunna, M. O., & Johnson, J.J. (2015) Communities Attitudes towards Conservation in Gashakagumti National Park Nigeria .*Journal of Research in Forestry, Wildlife and Environment* , 7 (2) 67-80.
- Ogotu, J. O., Piepho, H.-P., Said, M. Y., Ojwang, G. O., Njino, L. W., Kifugo, S. C., & Wargute, P. W. (2016). Extreme Wildlife Declines and Concurrent Increase in Livestock Numbers in Kenya: What Are the Causes? *PLoS One*, 11 (9), 1-46.

- O'Neil, T. A., Bettinger, P., Marcot, B. G., Luscombe, B. W., Koeln, G. T., Bruner, H., . . . Bernatas, S. (2014, April 5). *Application of Spatial Technologies in Wildlife Biology*. Retrieved from Research gate: <https://www.researchgate.net/publication/254065471>
- Pandey, P., & Pandey, M. M. (2015). *Research Methodology: Tools and Techniques*. Romania: Bridge Center.
- Pettorelli, N., Laurance, W. F., O'Brien, T. G., Wegmann, M., Nagendra, H., & Turner, W. (2014 (51)). Satellite remote sensing for applied ecologists: opportunities and challenges. *Journal of Applied Ecology*, 839-848.
- Pizzi, F., Anna, M., Martina, L., Nadia, G., Alessandra, M., & Luciano, M. M. (2013). Conservation of endangered animals: From biotechnologies to digital preservation. *Natural Science*, 5, 903-913.
- Rakotomamonjy, S. N., Jones, J. P., Razafimanahaka, J. H., Ramamonjisoa, B., & Williams, S. J. (2014). The effects of environmental education on children's and parents' knowledge and attitudes towards lemurs in Madagascar. *Animal Conservation*, 1-11.
- Riggio, J., Dollar, T. C., Durant, S. M., Jacobson, A. P., Kiffer, C., Pimm, S. L., . . . (2016). Lion populations may be declining in Africa but not as Bauer et al. suggest. *Proc Natl Acad Sci*. 113 (2) 107–108
- Snyman, S., (2014)., 'Assessment of the main factors impacting community members' attitudes towards tourism and protected areas in six southern African countries. *Koedoe*, 56 (2), 1-12
- Sosiya, T., (2016). Community Outreach Programmes and the Conservation of Protected Areas: A Case study of villages near Tarangire National Park, Tanzania. Norwegian University of Science and Technology
- Steklis, D., Madry, S., Steklis, N. G., & Faust, N. (2014, April 5). *GIS Applications for Gorilla Behavior and Habitat Analysis*. Retrieved from Research gate: <https://www.researchgate.net/publication/260350419>
- Syombua, J. M. (2013). *An Analysis of Human-Wildlife Conflicts in Tsavo West – Amboseli Agro-Ecosystem Using an Integrated Geospatial Approach: A Case Study of Taveta District*. Nairobi: University of Nairobi PHD.
- Tavakol, M., Dennick, R. (2011) Making sense of Cronbach's alpha. *Int J Med Educ*. 2, 53-5.
- Tuqa, J., Funston, P., Musyoki, C., Ojwang, G., Gichuki, N., & Bauer, H. T. (2014). Impact of severe climate variability on lion home range and movement patterns in the Amboseli ecosystem, Kenya. *Global Ecology and Conservation*, 2, 1-10.
- UNEP. (2014). *Protected Planet Report 2014*. Cambridge: UNEP-WCMC.
- Verma, A., Wal, R. v., & Fischer, A. (2016). Imagining wildlife: New technologies and animal censuses, maps and museums. *Geoforum*, 75, 75-86.

- Williams, V.L., Newton, D.J., Loveridge, A.J. and Macdonald, D.W. (2015). *Bones of Contention: An Assessment of the South African Trade in African Lion Panthera leo Bones and Other Body Parts*. TRAFFIC, Cambridge, UK & WildCRU, Oxford, UK
- Wanyonyi, E.W. (2012). Mobilizing Resources for Wildlife Conservation in Kenya beyond the 21st Century. *The George Wright Forum*, 29 (1), 118–125
- Zhang, L., Dong, L., Lin, L., Feng, L., Yan, F., Wang, L., . . . Luo, A. (2015). Asian Elephants in China: Estimating Population Size and Evaluating Habitat Suitability. *PLoS ONE*, 10 (5), 1-13.

APPENDICES

Appendix I: Letter of transmittal

Linda Mugure Kimotho
University of Nairobi,
Department of Extra Mural studies,

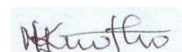
Dear respondent,

I am a student at the University of Nairobi, pursuing a Master of Arts Degree in Project Planning and Management. I am conducting a study on the influence of Community based Conservation initiatives on people's attitudes towards lion conservation in Meru County, Kenya.

The research entails gathering information for the above mentioned study and you have been carefully selected as a member of the Kanjoo community. Kindly give consent and provide the required information to the best of your knowledge. The responses will be handled with utmost confidentiality and anonymity and will only be used for the purpose of this study.

Yours Faithfully

Linda Kimotho



L50/88864/2016

Appendix ii: Household Questionnaire

My name isa master's student in Project Planning and Management at the University of Nairobi. I am interested in your views and opinion on certain wildlife conservation issues and humbly request that you give an honest answer to the following questions. I assure you that the information you give will be treated as confidential. This will take at most 10 minutes.

Section A: General information

1. Age {Tick as appropriate}

20 to 30
31 to 40
41 to 50
51 to 60
Above 60

2. Period of stay in area {Tick as appropriate}

Below 5 years	
6 to 15 years	
16 to 25 years.	
Above 25 years.	

3. Gender {Tick as appropriate}

Male	
Female	

4. Highest level of education {Tick as appropriate}

None	
Primary	
Secondary	
Tertiary	

Section B: Attitudes towards lion conservation

5. What is your level of agreement to the statements below?

Using a 5 point Likert scale (1=Strongly disagree , 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree)

	Attitudinal Statements	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
5.1	Lions that attack livestock or people should be killed					
5.2	Lions are of no benefit to my community					
5.3	Communities should be allowed to hunt wildlife for meat					
5.4	National Parks should be subdivided and given to people for farming and settlement					
5.5	I would not be concerned if all the lions died and got finished					
5.6	Communities should be allowed to collect firewood and graze their livestock in the park					
5.7	Conserving national parks is a waste of money					
5.8	I would not participate in activities that help conserve lions					

Section C: Conservation Education of communities and attitudes towards lion conservation

6. To what extent do you agree with the following statements?

	Statements	Not at all	To a little extent	To a moderate extent	To a high extent	To a very high extent
6.1	I have been involved in conservation education forums in my community					
6.2	Conservation films influence people's attitudes towards lion conservation					
6.3	There are enough conservation education exposure in the community					
6.4	Wildlife clubs in schools play a big role in shaping young people's attitudes towards lions and other wildlife					
6.5	KWS barazas on wildlife conservation plays a big role in shaping people's attitudes towards lions and other wildlife					
6.6	If people get opportunities to tour the park they will appreciate wildlife more					

Section D: Conservation benefits accrued to community

7.To what extent do you agree with the following statements

	Attitudinal Statements	Not at all	To a little extent	To a moderate extent	To a high extent	To a very high extent
7.1	My community benefits from wildlife in Meru National Park					
7.2	Individual benefits such as employment makes people more tolerant towards wildlife					
7.3	Infrastructural projects by conservation organizations such as construction of classrooms, roads, health centres and water sources makes people more tolerant to lions and other wildlife					
7.4	If I do not receive any benefit from conservation I will still conserve wildlife					
7.5	Wildlife benefits collected by the government trickles down to the local community					

Section E: Human wildlife conflict management

8. To what extent do you agree with the following statements?

	Statements	Not at all	To a little extent	To a moderate extent	To a high extent	To a very high extent
8.1	The level of human wildlife conflict has reduced over the last 5 years					
8.2	I am satisfied with KWS handling of human wildlife conflict					
8.3	If I receive adequate compensation for wildlife damages I will be more tolerant of lions and other wildlife					
8.4	Lions contribute to highest cases of conflict in my community					
8.5	I have received training on what to do to prevent wildlife conflict.					
8.7	Even without compensation for wildlife damage I will still support conservation					

Section F: Park management policies

9. To what extent do you agree with the following statements

	Statements	Not at all	To a little extent	To a moderate extent	To a high extent	To a very high extent
9.1	The park management policies are friendly to my community					
9.2	If communities are allowed to harvest resources from the park they will be more tolerant towards lions and other wildlife					
9.3	The park and wildlife resources belong to my community					
9.4	I would report illegal activities happening in the park to the park authorities without fear of incrimination.					
9.5	There is a very good relationship between park authorities and the community					
9.6	If the park authorities are friendly to the community then the community is more likely to support conservation					

Thank you for your time.

Appendix iii: Interview guide for key informants

My name isa masters student in Project Planning and Management at the University of Nairobi. I am interested in assessing the impact of the Heritage Project on wildlife conservation and humbly request that you give an honest answer to the following questions. I assure you that the information you give will be treated as confidential. This will take at most 10 minutes.

1. 1.What do you think is the contribution of the following community based initiatives to efforts in wildlife conservation
 - a) Conservation education
 - b) Conservation benefits
2. How would you describe human wildlife conflict in your area in the past 5 years?
 - a) Increase
 - b) Remained the same
 - c) Reduced
- 2.1 What would you state as the reason?
3. Are you happy with the way issues of human wildlife conflict is handled?
4. Has your community benefited from having wildlife in the area
How?
5. Do you think the needs of the communities have been adequately involved in decisions regarding wildlife conservation?
6. Do you think the community is more tolerant to wildlife than before? And why is that?
7. What is your view on lion conservation?

Thank you for your time.

