

**HUMAN-WILDLIFE CONFLICTS WITHIN THE COMMUNITIES LIVING ALONG
KIRISIA FOREST AND POSSIBLE MITIGATIONS: A CASE STUDY OF KIRISIA
FOREST SAMBURU COUNTY KENYA**

**A Dissertation submitted for partial fulfillment of the requirements for the award of
M. Sc degree in Environmental Science**

Submitted By

LINDAH JEPCHIRCHIR

Roll No: 2000103023

Department of Environmental Science

Integral University, Lucknow



Internal Supervisor

DR. MONOWAR ALAM KHALID

Professor & Head, Department of Environmental Science,

Integral University, Lucknow, Uttar Pradesh, India



External Supervisor

MR. RICHARD LEMARKAT

Senior Warden, Kenya Wildlife Service, Samburu, Nairobi, Kenya



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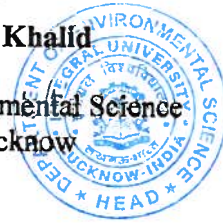
CERTIFICATE

This is to certify that **Lindah Jepchirchir**, a bonafide student of **M.Sc. Environmental Science**, 4th Semester, Session 2020-2021 to 2021-2022 at Integral University, Lucknow has completed her three months compulsory Industrial Training (March-June 2022) and **Dissertation** work entitled **“Human-Wildlife Conflicts within the Communities living along Kirisia Forest and possible Mitigations: A Case study of Kirisia Forest Samburu County, Kenya”** in partial fulfillment of the requirements for the award of degree of **Master of Environmental Science**. The work embodied in the dissertation was conducted at **Kenya Wildlife Service, Samburu, Nairobi, Kenya**. The Internal Supervisor was **Prof. Monowar Alam Khalid**, Professor & Head, Department of Environmental Science, Integral University, Lucknow.

I wish her success in her future life.

Dr. Monowar Alam Khalid
Professor
Internal Supervisor

Prof. Monowar Alam Khalid
Head
Department of Environmental Science
Integral University, Lucknow



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Date: 03.08.2022

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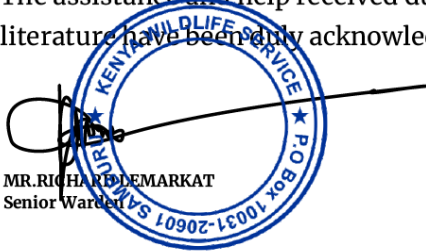
This is to certify that, the dissertation entitled 'human-wildlife conflicts within the communities living along Kirisia forest and possible mitigations.

A case study of Kirisia forest Samburu County Kenya.' submitted to Integral University, Lucknow for the partial fulfillment of the degree of Master of Environmental Science is a record of authentic research work carried out by Ms. Lindah Jepchirchir under my supervision and guidance from 04th May to 24th July 2022.

The content of this thesis are the original work of the candidate and does not form the basis of an award for any previous thesis or degree.

The assistance and help received during the dissertation work and source of literature have been duly acknowledged.

MR. RICHARD DEMARKAT
Senior Warden



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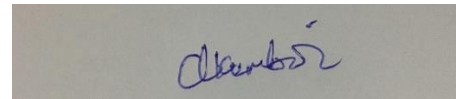
I want to specially thank Mrs. Joyce Kimutai who had given me this enormous opportunity to be part of this organization and explore the world of wildlife. I am deeply indebted to her for his valuable guidance, technical expertise, moral support and tremendous patience throughout the period that made this dissertation a reality.

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Last and above all, it is my privilege to be able to express my deepest reverence and gratitude to my parents. Their constant support throughout the period of research has been pivotal in many ways.



DECLARATION

I, Lindah Jepchirchir, do hereby declare that the dissertation entitled “Human-wildlife conflicts within the communities living along kirisia forest and possible mitigations: a case study of kirisia forest Samburu county Kenya” has been undertaken by me for the award of degree of Masters of Environmental Science. I have completed this study under the guidance of Prof. (Dr.) Monowar Alam Khalid, DSW, HOD, Department of Environmental Science, Integral University, Lucknow and Mr. Richard Lemarkat, Kenya Wildlife Service.

I also declare that contents of this report have never been published anywhere before except the quotations and references which have been duly acknowledged in the concerned places. It reflects the work done solely by me during my internship from Mar to June 2022.

ABSTRACT

Human-wildlife conflicts is a global issue, which has been extensively been studied all over the world. Recent literature on human wildlife conflicts and its control are investigated and possible solution for the problem is suggested. Wildlife laws, attitude of the local people, habitat recovery and conservation effort are the main factors to reduce human wildlife- conflicts. Conflicts between humans and wild animals occur when either the need or behavior of wildlife impact negatively on human livelihoods or when the humans pursue goals that impact negatively on the needs of wildlife for instance; contentions relating to destruction, loss of life and property, and interference with rights of individuals or groups attributable directly or indirectly to wild animals. Human-wildlife conflicts are prevalent in Africa where large numbers of big mammals such as elephants and lions still roam freely in marginal rangelands and protected areas. The increase in human population has resulted to encroachment into more marginal lands inhabited by wildlife, leading to fragmentation and conversion of land, for instance, to settled agriculture and other uses incompatible with wildlife. These does not only escalate conflicts between the people, wildlife, and the authorities responsible for the conservation of wildlife, but also pose a real challenge to sustainable wildlife conservation practice. This study examined the range patterns and ecological interactions of human activities and wildlife in the western side of Kirisia forest which has natural range of resources as well as human activities in close proximity to wildlife natural habitats .It will be based and guided by objectives which Investigate human and wild animals' interactions that perpetuate human-wildlife conflicts in Kirisia forest as well as wildlife species that are in conflicts with human and nature of conflicts in selected hotspots adjacent to the forest and suggest practical strategies of curbing and mitigating these conflicts. This study was carried out from period between April to June 2022. The main method used in data collection is survey, direct observation, structured questionnaires, and interview with the local people along the forest edges, administration officers, Forest Department personnel, KFS and KWS personnel as well. To get feeling of the local people and their perception of the human-wildlife conflicts around the forest, opportunities for development and problems. Sample data was analyzed by mean of the statistical package for social sciences (SPSS) computer software.

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LIST OF ACRONYMS AND ABBREVIATIONS

HWC: HUMAN wildlife CONFLICTS

PA: Protected area

KWS: KENYA wildlife service

KFS: KENYA forest service

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CHAPTER ONE

1.1 Introduction

Heritage information consistent with the arena conservation union (world park, congress 2003) human-flora and fauna conflicts, it occurs whilst natural world necessities overlap with the ones of people' populace. The principle wildlife troubles in the Kenyan forested regions are crop damage, opposition to water and grazing, livestock predation, expanded threat of some cattle sicknesses, various inconveniences such as while protective plants, and even human fatalities (KWS, 1992; Norton-Griffiths, 1996; Campbell et al., 2000; Muruthi, 2005). Additionally, flora and fauna conservation techniques limit the people's to get right of entry to and use of the natural resources. Where such conflicts compromise the human beings' livelihoods, and solutions to conflicts aren't ok, it reduces and erodes their nearby support for conservation efforts (Mulholland and Eagles, 2002). The wild animals, a lot of that are already threatened or endangered are regularly killed in retaliation or to save from future conflicts. In Kenya massive numbers of big mammals, inclusive of several hundred wild elephants and more than 2,000 lions, still roam freely, especially in forested areas. The pastoralist folks that stay in these areas, and the agro-pastoralists and other settled small and huge-scale farmers and their households who live around their peripheries, all need to deal with the results: damage to and destruction of plants, cattle predation, competition for grazing and water, multiplied hazard of a few cattle illnesses, diverse inconveniences – together with lack of sleep due to shielding plants at night – and even direct threats to human life. As human populations hastily grow the population in Africa it here closes to tripling in the 4 decades from 1960) and settled agriculture spreads to greater marginal rangelands, conflict among wildlife and those inevitably will increase. Many conservationists might argue that co-lifestyles are feasible, even suitable, and indeed that if well controlled the presence of wildlife represents an opportunity, a probable getaway route from poverty. However, this puts the onus squarely on the ones liable for the control of flora and fauna to put in vicinity rules and measures that as a minimum reduce the threats posed with the aid of wildlife and ideally enable local human beings to acquire advantages – which includes sales wildlife-based based tourism companies. Without such regulations and measures in the vicinity, local human beings will, understandably, often take action to defend their interests – even their lives -along with harassing and killing wild animals. a number of those species are endangered, others keystone species, and so the

repercussions of such neighborhood direct actions may be felt at countrywide and worldwide levelsthat there is co-existence between man and wildlife. In Samburu Kenya, the number of predators killed by farmers has been reported to be positively correlated with the number of livestock killed by lions, hyenas, and leopards.

1.2 Statement of the problem

Conflicts springing up from human and natural world interaction along the western facet of Kirisia forest are a result of multiplied encroachment by way of citizens around this place, this has led to reduction inside the natural habitats of ungulates, constriction of species into marginal habitats patches which are in all likelihood to use the wooded area as their herbal habitat areas. Such encroachments are spontaneous in regard to the human population and this compromise the ability to preserve our wild animals. Extended dying of a few the endangered and threatened flora and fauna species might be constantly mentioned alongside the woodland if the difficulty is not addressed and these own chance of the species extinction. As a result, there's want to modify the level of network activities along the woodland which will minimize the touch betweenhumans and wildlife in their herbal setting. This study documented human-wildlife hotspots alongside the woodland and common human sports in such point and used the evaluation data in suggesting viable quality alternative approaches.

1.3 Objectives of the project

1.3.1 Broad Objective

The objective of the study is to evaluate human-wild conflicts of Kirisia Forest Samburu County in Kenya related to numerous species like hyenas, leopards, zebras, and others.

1.3.2 Specific objectives:

1. To find out the current scenario of the human-natural conflict in the selected region.
2. To explore the methods and techniques followed via the area people to reduce human-wildlife conflict.
3. To become aware of the attitude of neighborhood humans toward nature conservation and management.

1.3.3 Research questions

1. Which human activities perpetuate human natural world conflicts?
2. Frequent wildlife species that are commonly in conflicts with human?
3. Nature of human wildlife conflicts in hotspot area in forest?

1.3 Justification

The assignment in Kenya as in lots of African international locations are experiencing is to provide the right fencing in especially large forested regions. Practical mitigation of human-wildlife struggle is crucial to the success of conservation in the Kirisia area and natural world conservation in Kenya in general. Dozens of mechanisms and techniques were initiated in order to reduce and control human-flora and

Fauna conflicts and provide long-term methods to the universal useful resource use conflicts around and within Kirisia forest. But, there was an increase in their human-wildlife interface problem, with extreme effects on sustainable conservation practice. Simultaneously, the traditional strategies for resolving those conflicts that have existed in African communities have progressively eroded. The extension of the precise covered regions and compelled evictions and restrictive access to useful resource use via nearby communities from the place coupled with incompatible land use practices have similarly exacerbated the hassle. Instead, one kind of approach to coping with conflicts among local communities, wildlife, and conservation author

1.4 Limitations of the study

- It isn't always viable to take the real size of damages resulting for flora and fauna and it is going to be based totally on respondents' view
- Simplest was to observe and identify primary crops and livestock harm
- All of the information was accumulated through the use of qualitative methods.

CHAPTER TWO

LITERATURE REVIEW

1.1 Literature review

Conflicts between the human and natural world have been drastically documented in the numerous AWF Heartlands, which include: Samburu (carnivores: Ogada et al. 2003, Frank 1998; elephants: Thoules 1994, Thoules and Sakwa 1995; and different animals: Ogada and Ogada 2004), Kilimanjaro (elephants: Kangwana 1993, Kikoti 2000; carnivores: wet and Worden 2003), Maasai Steppe (elephants: Foley 2002, carnivores: Kissui 2004) and Virunga (mountain gorillas: Mcfie 2003, Woodford et al. 2002; buffalo: MacFie 2003). In some regions crop damage by way of the natural world is perceived as first-rate trouble going through farmers; it threatens to undermine conservation and improvement efforts in the northern districts of Zimbabwe (mid-Zambezi Elephant venture 2002). Inside the Zimbabwe part of the Zambezi Heartland, elephants are predicted to be accountable for up to three-quarters of all crop damage due to wildlife. An exception is the Limpopo Heartland where the little human-wildlife struggle has been mentioned however where most of the wildlife regions are fenced (Munthali, private verbal exchange). Human-wildlife conflicts can have adverse impacts on flora and fauna and human beings alike. In Kilimanjaro Heartland, Muruthi et al. (2000) observed that between 1996 and 1997 a minimum 15 of elephants, representing three-quarters of the local populace's mortality were killed in conflict situations with neighborhood humans. between 1974 and 1990, one 0.33 of elephant mortalities (141 of 437 deaths) inside the Amboseli atmosphere had been as a result of human beings, for example thru spearing (Kangwana 1993). The principal issues within the Kilimanjaro Heartland are crop damage, competition for water and grazing, the killing of cattle and threat of disorder transmission, and human fatalities. In semi-arid regions in fashionable, wherein farm animals' production constitutes a first-rate part of nearby livelihoods, high levels of conflict can occur between livestock owners and wild carnivores due to predation

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study area

Kirisia woodland also domestically referred to as Loroki is one of the forested excessive altitude landscapes in Samburu County in the northern part of Kenya as shown in (parent 1); and lies at an altitude of 2,000 to 2,200m ASL (Watai & Gachathi, 2003; Hitimana et al.2005). It's one of the oldest protected areas in the country and was gazetted through the British management in 1933 (Watai&Gichohi, 2003; Nyaligu, 2013). At the time of gazettelement, the wooded area blanketed nearly 92,000ha however thereafter its acreage changed into systematically decreased, and presently covers less than 780Km² (Watai&Gachathi, 2003; Hitimana et al., 2005; Anne, 2009). The mean annual rainfall in the forest and its environs degrees among 600 – 750mm, and is acquired three times every 12 months with January and February being the driest (Watai&Gachathi, 2003; Anne, 2009; Nyaligu 2013). according to Kiringe, Mwaura, and Kimeu (2015b) the northern zone of the woodland like the Baawa region normally receive a slightly higher suggest annual rainfall of approximately 575mm in comparison to the principal place aroundMararal town which gets a median annual rainfall of 563mm even as the southern quarter in Porro location has the lowest at 552mm. Kirisia forest Reserve spans 91,452 hectares and lies on the northern stop of the Laikipia plateau in Northern Kenya. The reserve boundary encompasses 70,000 hectares of dry cedar/olive forest at the Kirisia hills and about 20,000 hectares of semi-arid and arid bushland with an altitudinal variety of 1,273m – 2,625m.

3.2 Data collection

The study records become amassed between April and June, 2022. An initial look at which blanketed a literature survey, initial website visit discussion with nearby residents and conservation retailers for the motive of familiarization changed into conducted to get perception into the studies trouble. A trendy questionnaire becomes used to collect number one facts from the respondents residing around the Kirisia woodland. The questionnaires included fixed-response questions about neighborhood conditions, cultural and socio-financial characteristics of the neighborhood groups inclusive of distance from the forested region boundary, human-livestock-wildlife interactions,

and aid use and tenure styles. Open-ended questions have been included to elicit more great discussions of some of the issues raised. These included perceptions and attitudes closer to the conservation establishments (reports with wildlife, stage of network involvement, dating with the conservation authorities, and their recommendations for mitigating systems on human-wildlife conflicts) within the Kirisia wooded area. a fixed of based questions were advanced for the key informant interviews, basically with KWS personnel and other useful resource individuals, along with authorities and non-governmental officials. Case studies on decided on faculties, irrigation farmer's schemes, and private ranches in the take a look at the place have been additionally undertaken. General observations were made of fields broken by wild animals and human sports adjoining the forested areas. Informal conversations with key informants in villages have been also undertaken whilst the possibility arose. They have a look at the population become the entire quantity of households inside and adjacent to the Kirisia forest. The populace was stratified into 5 take a look at areas that encompass Baawa, Ngamata, and Naiborikeju. In general, 85 families had been randomly sampled from the local citizens (at the family level) dwelling inside and adjoining the Kirisia woodland. Conceptually, these had been the local community directly tormented by the wildlife or whose activities directly impacted on natural world patterns. The unit of analysis turned into the individual family, with the top of the household, or a consultant responding to the questionnaire.

3.3 Data analysis

The statistics from both primary and secondary sources were processed and analyzed the usage of the Statistical Package for the Social Sciences (SPSS) version eleven.5. both descriptive and analytical approaches had been used in records analysis. The analyses had been completed to determine the connection between variables and verify their potentiality in causing conflicts and how they convey on the peoples' livelihoods in addition to have a look at the effectiveness of the tactics in location to save you and mitigate the conflicts.

3.4 Ecological patterns and land use

The vicinity wherein the forest is located is classified as a semi-arid environment and lies in agro-ecological area IV-VI (Pratt & Gwynne, 1977). However, because of its tri-modal rainfall and excessive altitude, the wooded area acts as a crucial dry-land water tower (Nyaligu, 2013), and is

a vital water supply for the neighborhood communities in particular the pastoral Samburu who're dominant inhabitants of the vicinity (Watai&Gachathi, 2003; Anne, 2009; Nyagilu, 2013). Pastoralism is the main land use even though blended crop-farm animals farming is accomplished in wetter regions like Porro wherein maize, wheat, and different crops are grown (Hitimana et al., 2005; Anne, 2009). Kirisia wooded area is the inspiration of neighborhood livelihoods and gives various items and offerings which include dry season grazing grounds and watering websites, livestock fodder, creation materials, herbal medicine, honey, and wood fuel (Watai&Gachathi, 2003; Anne, 2009; KFS, 2012). groups within the immediate environs of the woodland live in thirteen institution ranches that had been created below the Kenya livestock improvement undertaking of 1968-1980 (Anne, 2009; Hitimana et al., 2011). but the Dorobo those who are particularly hunter-gatherers live in the woodland where bureaucracy is the backbone of their livelihoods. There has been a permanent settlement across the woodland near Maralal town for some years now. Maralal changed into being elected as an alternative management center in 1934 after Barsaloi turned into closed down in 1929 (Nigel Pavitt). The woodland Reserve has been traditionally used for dry season grazing, honey gathering, natural medicine, firewood, and building substances.

3.5 The Flora

In step with Beentje (1990) Kirisia forest has various vegetation communities, and four woody plant species have a tendency to dominate the forest pinnacle cover; *Olea europaea ssp. africana* (as much as 34 %), *Juniperus procera* (up to twenty-five%), *Podocarpus falcatus* (as much as 26 %) and *Croton megalocarpus* (15 %). the one species dominating the middle canopy are; *P. falcatus* (12-45 %), and *Olea. europaea ssp. africana* (21-28%), *Juniperus procera* (20 %), *Teclea simplicifolia* (13-15 %), and *Croton. megalocarpus* (12 %). The disturbed and rocky regions of the woodland are characterized by using small-sized trees and shrubs together with; *Euclea divinorum*, *Carissa edulis*, *Rhus natalensis*, and *Croton dichogamus*.

3.6 The Fauna

Kirisia forest also supports a diffusion of huge mammalian wildlife species including; the African elephant (*Loxodonta africana*), olive baboon (*Papio anubis*), large forest hog (*Hylochoerus meinertzhageni*), Cape buffalo (*Syncerus cafer*), not unusual zebra (*Equus burchelli*),

bush-greenback (Tragelaphus scriptus), eland (Taurotagus oryx), not unusual warthog (Phacochoerus aethiops), Maasai giraffe (Giraffa camelopardalis tippelskirchi), lion (Panthera leo) and spotted hyena (Crocuta crocuta).

3.7 Topography and drainage.

The topography of the hills is made up of metamorphic rock in the form of granitoid gneiss at an altitude of one,273 to 2,625 metres. The North going through the aspect of the hills form steep slopes with numerous sheer granitic naked rock faces and deep seasonal river valleys that form vital water channels to underground water catchments in the seasonal rivers in the areas among Kirisia and the Mathews range. The North/West segment of the woodland reserve ends near the sheer drop, which makes up the East wall of the brilliant Rift Valley. The South/East side of the hills slope gradually down to satisfy the shallow soil flats of the Kirisia woodland which make bigger well into Laikipia County.

3.8 The climate

Climate Annual rainfall in Kirisia is approximately 600mm – 800mm. The lengthy rains are in April/May with the quick rains in November. The driest months are January and February, which concur with the duration of maximum fireplace danger from honey hunters.

CHAPTER FOUR

RESULTS AND FINDINGS

4.1 Human activities that perpetuate conflicts

The suggested distance from the Kirisia forest to the households surveyed turned into 7.5 km, while the closest household to the forest boundary turned into 0.3 km and the furthest family became 8 km. The majority of the households (35.9%) have been positioned between two and four kilometers from the woodland boundary, whilst 12.3% of the families had been placed 1.0 km from the forest boundary. The not unusual sort of land tenure inside the surveyed region turned into where the families owned the land without title deeds (57%), observed through households that owned the land communally (28%), and then those who owned the land with title deeds (6%). The relaxation of households either had borrowed the land (1%), leased the land (1%), or, as squatters on the land (7%). The majority of families (65%) owned land of much less than 12 acres. households that owned land ranging between 4 acres have been 28%, whilst 21% of the households owned land between 4 and 6 acres, 11% owned land ranging between seven and nine acres, and 9% owned land within the range of 10 to 12 acres.

4.2 Communities Livelihood devices.

The communities recognized four extraordinary varieties of livelihood structures that they had been engaged in. that covered agro-pastoralism (or blended farming, where cattle are stored collectively with crop growing), farming (crop farming alone) pastoralism (retaining of livestock simplest), enterprise and other non-categorized livelihood alternatives. The majority of the families (69%) practiced combined farming, even as 18% practiced farm animals farming, 10% crop, and 3 % on other activities.

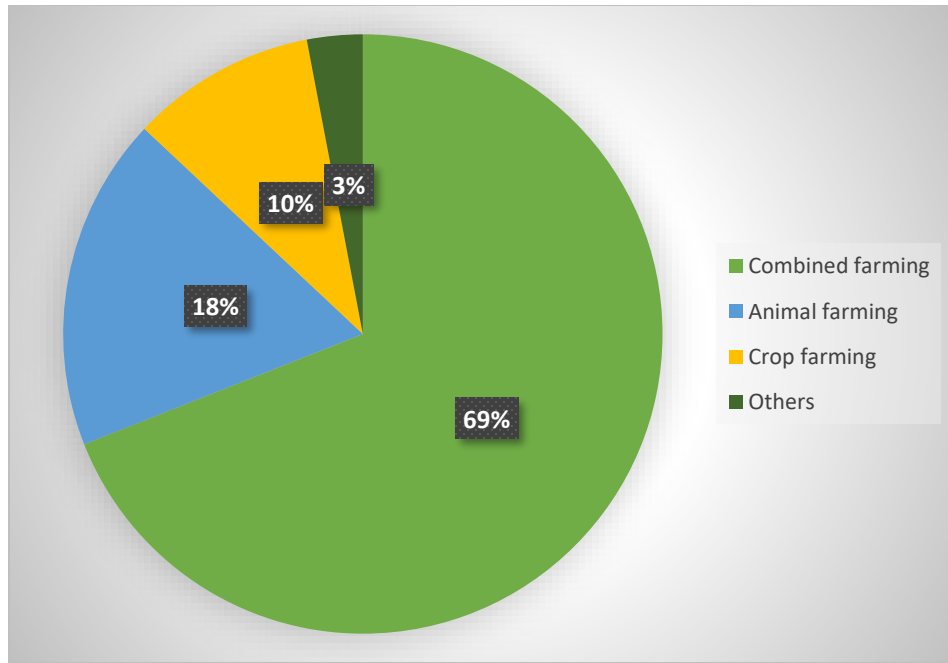


Fig 2. Representation of human activities along Kirisia forest

4.1.2 Table: size of the farm each farmer owns, the results are tabulated below.

Size of farm (ha)	No. of farmers
1-3	8
4-6	7
7-9	5
10-12	6
13-15	4
16-above	10

From the table above are miles obtrusive that the variety of farmers that personal huge pieces of land is barely better if not identical to people who own small portions of land while others personal small farms, others have slightly larger farms with others boasting of proudly owning large farms in the same measure as shown in parent 3 below. The small farms are attributed to the subdivision of land due to the inheritance of land via children from their parents regardless of some of the villagers conducting other activities for profits, the subsequent is attributed as the primary source of profits earn for many of the villagers; cattle farming, blended farming, and crop farming

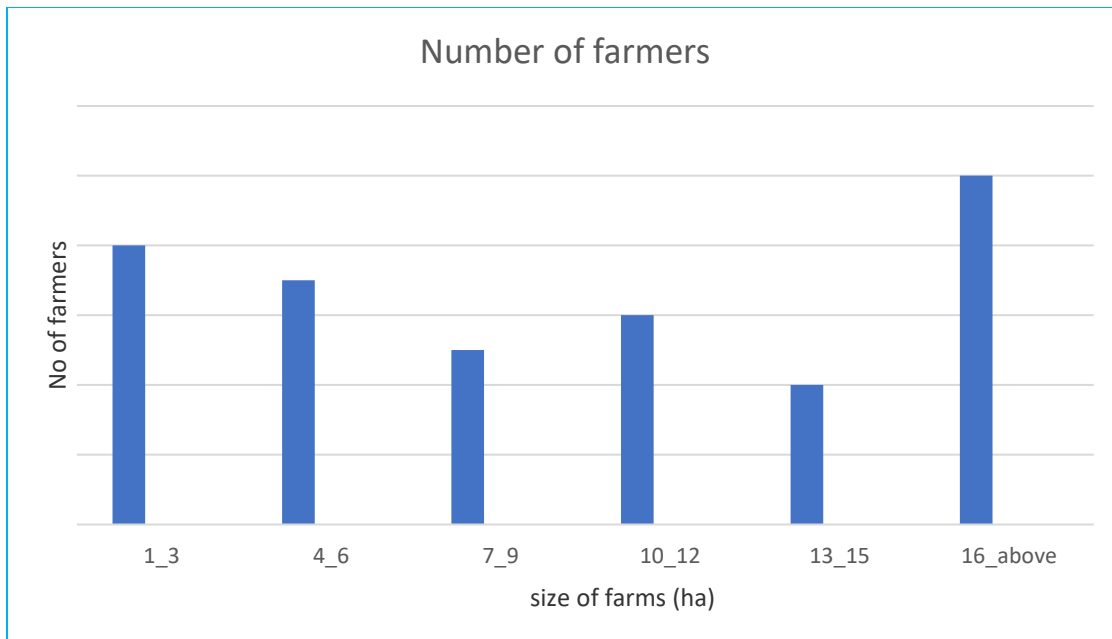


Fig 3. Graphical representation of the size of the farm each farmer owns

4.3. Common wildlife Species which are typically in Conflicts

Twelve distinct kinds of wildlife were mentioned to typically go to the network farms. Elephants had been stated by means by 97% of the farmers, Monkeys with the aid of 91%, Baboons by using 83%, Buffaloes by means by 71%, Hyenas by 61%, and Lions by 26% of the farmers. The Monkeys, Baboons and Hyenas frequented the farms all through the year, even as the Elephants, Buffaloes, and Lions specially visited the farms in the dry season. The wild animals frequent the farms owned by way of the groups to search for meals, water, and salts. The majority of the farmers (92%) diagnosed meals as the primary cause the wild animals moved into the network farms. in the course of the dry season, the wild animals may additionally go away from the TCA location to search for water also, which can be scarce presently of the 12 months. The animals had been discovered to noticeably always visit the farms within the dry season and seldom in the moist season when they flow returned to the forest. The majority of the animals are so often common on the farms all 12 months round.



Plate 1. A picture of spotted hyena (*Crocuta Crocuta*) killed.

4.4 Nature of Human-Wildlife conflicts (H.W.C)

Sorts of conflicts have been observed to exist in the Kirisia forest and adjacent network-owned regions. They encompass: while the humans and their livestock move into the forest to get right of entry to the sources that they want and shortage in their areas. Whilst wild animals disperse from the forest into the network land both to feed on their crops or on their everyday migrations to their feeding or breeding regions most of the time the animals both do one or more of the following;

- Injure or kill people
- consume or break plants at the farms,
- Kill or injure farm animals,
- Transmit illnesses or ailment-causing parasites to livestock,
- utilize the grazing sources meant for network livestock.



Plate 2. A boy injured by a spotted hyena associated with human-wildlife conflicts.

The majority of the respondents (55%) said that the character of conflicts among human beings and wildlife is critical, at the same time as 47% pronounced that the character of the how to be very serious. Usually, all the adjacent groups are equally affected. The majority of the households (38%) stated that the conflicts took place frequently, whilst 28% of the respondents stated that they happened very regularly and 33% of the respondents pronounced they took place fairly often. The respondents suggested various properties that the wild animals use and ruin on their farms these included 63.8% farm produce, 29.8% livestock, 4% water structures, and 2.4% fencing systems. Grazing is practiced by the Samburu pastoralists inside the Kirisia forest at some point in the Dry season. There is a stunningly variety of ‘Laleta’ (bomas) within the forest totally on the tops of ridges, which seem to were used time and again over many years. up to now, this exercise most effective occurs in the course of the dry season (commonly from January-march &to September – November)

as shown in (figure 4) below, but with climatic change, there might be an increasing tendency to spend longer periods inside the forest area, which will be extremely negative to positive already

threatened floral and wildlife of their natural habitat. The significance of the forest area for dry season grazing and watering is taken into consideration very excessively. This is sincerely a colonization of wildlife herbal habitat which brings about the opposition of constrained resources between wildlife and livestock hence conflicts.

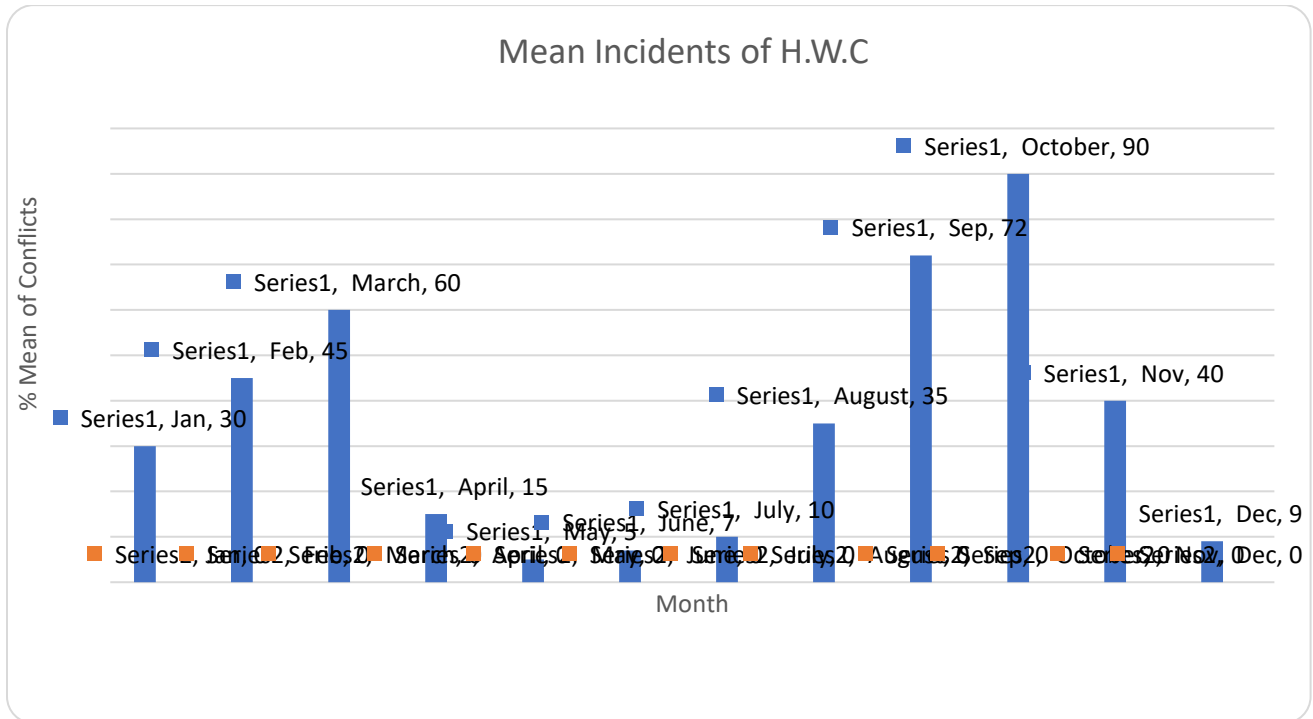


Fig 4: Mean monthly number of H.W.C incidents in Kirisia reserve area

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

1.1 Discussion

The greater closer the households and farms are to the forest boundary, the greater the conflicts among the people and the natural world and this warrants unique interest in designing mitigation measures. The impact on of natural world in the families isn't always confined to the regions next to the woodland, however, is full-size up to 1kmms. That is because of the truth that wildlife does migrate lengthy distances searching for meals and domestic stages. The families in Baawa and Naiborkeju hotspots were determined to be closer to the forest boundary. The family livelihood structures have implications on human-natural world conflicts and inthe use of the sources inside and outdoor the wooded area as most people of human beings (93% of the families) are engaged in activities that compete at once with flora and fauna. Agro-pastoralism, pastoralism, and crop farming are livelihood structures that rely on the herbal assets for them to be sustainable and additionally they bring about perennial warfare with flora and fauna, and among pastoralists and farmers. The shift in land tenure structures toward consolidation and individualization in the area where many natural world regions and communally owned lands were subdivided into smaller for my part owned farms and agreement schemes has altered get admission to water and grazing areas for the pastoral people. This has intensified competition and conflicts between distinct land users. Wherein and while the respondents took their animals to the wooded area during the dry season, would reason conflicts in that that is additionally a time whilst the Kirisia woodland is pressed to provide for its wild animals for water and meals. The commodities sought with the aid of the groups inside the wooded area are also needed via the wild animals of their wooded area habitat and this creates competition causing conflicts. The results show the value of the natural world trouble to the farmers and the resulting conflicts that rise up.

The whole scenario may be summarized as follows:

Throughout the year the farmers have wild animals feeding on their vegetation. These include Baboons and Monkeys, which feed on their vegetation, whilst the hyenas are ingesting their animals. At some stage in the dry season, they should cope with animals on their crop and predators on their animals. These include Elephants, Buffaloes, lions, and Hyenas.

The grazing animals (especially buffaloes and zebras) which are common in the grazing regions of the network for the duration of the 12 months make use of group's grazing and water resources developing an opposition for the same.

The wild animals directly and/ or in a roundabout way transmit sicknesses to the domestic animals i.e., the two important examples are;

The buffaloes deliver the protozoan that reasons Trypanosomiasis, and Viruses that reason Foot and mouth sickness, they pass these illnesses to farm animals.

The buffaloes and other wild animals additionally bring ticks that transmit tick-borne illnesses to farm animals, including East coast fever, Anaplasmosis, and Babesiosis.

This implies that the battle/ trouble is particularly in the course of the 12 months and contains special species of animals. This has the following socio-economic damages; lack of vegetation, lack of animals, loss of profits from ailment control and remedy, loss of grazing resources, loss of price range in animal management facilities, lack of water centers and farm structures, lack of human life and accidents and inconveniences in shielding their property.

5.2 Conclusions and recommendations.

The subsequent have been cautioned (encouraged) with the aid of the respondents as remedies to wildlife risk.

Enclosing the wild animals inside the forested conservation area. This idea became famous with many farmers. They recommended that the animals be fenced within the Kirisia forest area using an electric fence.

Reimbursement for broken property and human injuries. The respondents recommended that reimbursement be carried out through the KWS (who the human beings consider owning the animals) for all the damaged assets and human injuries. They believed the progressed reimbursement will exchange the terrible mindset of the humans in the direction of the wild

animals. The subsequent suggestions relating to the reimbursement for the property have been advocated: compensation is executed speedy and is now not behind schedule. The method of compensation is a bit shortened (less bulky). Compensation is done for vegetation and animals.

KWS to be greater vigilant on top of things and coping with their animals' many respondents suggested the KWS be extra vigilant in their management of the wild animals. The subsequent have been especially suggested; display the motion of the animals all the time, for you to be sure that the animals aren't shifting out of doors of the Kirisia forest. Station game rangers in the hotspots in order to protect the humans and manipulate the animals efficaciously respond fast while known as, offer a hotline that may be utilized by the communities in times of emergency, appoint the local populace as Rangers in KWS, search stray animals straight away. KWS to provide water to the animals. Maximum of the animals causing issues to the people invade the farms to search for water, especially in the course of the dry season. The people felt that if the animals were provided with water within or outdoor the Kirisia forest, the human-wildlife conflict may be minimized.

Provision of wildlife benefits the faculties or the humans. The KWS can also offer direct and oblique benefits to the areas laid low by the natural world threat. The benefits recommended protected: Provision of school charges to scholars in the colleges affected. Community improvement projects together with colleges, hospitals, and infrastructure. Offer desks and different mastering materials

Educate the groups and create environmental conservation consciousness among communities on flora and fauna conservation troubles and also a way to control wild animals. Create awareness of the monetary benefits of wildlife determined within the Kirisia. This goal may be accomplished by taking people to the parks, teaching in faculties, use of motion pictures and photographs.

Brief reaction by way of KWS at some point of emergency KWS to respond fast to an emergency by means of imparting an ambulance within the local health facilities.

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APPENDICES

Appendix I. Questionnaire

ASSESSMENT OF HUMAN-WILDLIFE CONFLICTS WITHIN THE COMMUNITIES AROUND WESTERN SIDE OF KIRISIA FOREST AND POSSIBLE MITIGATIONS. A CASE STUDY OF KIRISIA FOREST SAMBURU COUNTY KENYA

**My name LindahJepchirchir pursuing a degree in M.Sc. in Environmental
Science at Intergral University.**

The solemn purpose of administering this questionnaire is to collect data in aid of research project as a fulfillment of a degree award in M.Sc. Environmental science by the Department of environmental science. The information collected shall be treated as private and confidential and will be used for the stated purpose alone.

A. PERSONAL INFORMATION

(Tick and state where necessary)

1. Residence(village).....
2. Sex Male Female
3. Age in years a. 18-22 b. 23-27 c. 28-32 d.33-37 e. 38-42
4. Occupation
5. Marital status: a. married b. Unmarried c. Divorced
6. Highest level of education attainment:
a. Primary b. Secondary Tertiary other
specify.....
7. How long have you occupied your current premises or have you stayed in this forest
neighborhood?.....

B. TYPE OF ANIMALS THAT ARE COMMONLY IN CONFLICTS

Questionnaire schedule for resident community surrounding the forest.

1. Do you have an idea on the existence of the wildlife within the forest?

a) Yes [] No []

b) If yes which one

.....
.....

2. Have you ever come across any wild animal along the forest?

a) Yes [] No []

b) If yes which species type

.....
.....

3. What was their form of distribution?

a) Clumped [] b) Random [] c) Uniform []

4. When did you last see these animals?

a) One day ago b) Few weeks ago [] c) Few months ago []

d) Can't recall [].

C. SEASONALITY OF CONFLICTS OCCURANCE RELATED TO HUMAN ACTIVITES THAT PERPETUATE CONFLICTS.

1. From what month of the year did you start seeing the animals?

.....

2. When did you stop seeing the animal?

.....
3. What is your take about animals being found outside the forestboundary?
.....
.....

4. What do you think drives these animals to move outside the forest habitat?
.....
.....

5. How far from the forest reserve have you come across these wild animals?
.....

D.CASES & AND NATURE OF HUMAN WILDLIFE CONFLICTS.

1. What kind of livelihood system do you engage in?

a) Agro pastoralism [] b) Crop farming [] Pastoralism farming [] other specify,
.....

2. Do the wild animals cause any negative impacts on any of these livelihood activities?

a) Yes [] b) No []

If yes to what extent.....

3. Have you had any attack from the wildlife to livestock?

a.) Yes [] b. No []

If yes, what was your action toward it?
.....
.....

4. Do you get any compensation from the damages caused by wild animals?

a.) Yes [] b.) No []

5. Have there been any cases reported concerning attacks to human by the wild animals?

a.) Yes [] b.) No []

If Yes, Have the attack caused any deaths?

a.) Yes [] b. No []

If yes, what is the mean and channel of compensations?

.....
.....

6. Do you think the forest rangers and KWS rangers in term are putting enough efforts in term of Human wildlife conflicts control?

a.) Yes [] b. []

If no, what do you think should be done?

.....
.....

THANK YOU FOR YOUR PRECIOUS TIME AND SINCERE RESPONSE.

Lindah Jepchirchir PHONE NO: +254729234179 Email address: leshanlin@student.iul.ac.in