HOW IS WILDLIFE POACHING CHANGING IN UGANDA AND HOW CAN WE UNDERSTAND THE CONTRIBUTION OF WILDLIFE PROTECTION EFFORTS AT MULTIPLE SCALES: MURCHISON FALLS NATIONAL PARK, UGANDA.

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by
Ingrid Nyonza Nyakabwa
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Accepted by:
Dr. Elizabeth Baldwin, Committee Chairperson
Dr. Aby Sene- Harper
Dr. Charles Chancellor
Dr. Joseph Drew Lanham

ABSTRACT

Wildlife poaching is a critical global issue that poses significant threats to biodiversity, ecological balance, and the long-term sustainability of wildlife in Sub-Saharan Africa. The illicit trade in wildlife and their derivatives continues to grow, fueled by various socio-economic, cultural, and environmental factors. As the demand for wildlife products persists, it is imperative to understand the underlying causes, impacts, and potential solutions to combat this detrimental practice.

This research examined the dimensions of wildlife poaching in and around the area of Murchison Falls National Park in Uganda, the largest and oldest National Park in Uganda. Uganda has experienced success in reversing the loss of many iconic species like elephants and buffalo, as well as lesser-known species like the hartebeest. The attention and effort placed on wildlife protection makes this an excellent place to focus on the ways the country is still experiencing stress on wildlife to shed light on its complex interplay with poverty, human-wildlife conflict, commercial interests, and cultural beliefs.

Data for this research came from documents and literature, field experience in Uganda, especially in and around villages adjacent to Murchison Falls National Park and interviews. The primary data collection was from interviews (IRB Exempt under Category 2 in accordance with federal regulations 45 CFR. 104(d), January 2019), with 26 participants (N=26), comprising of wildlife conservation managers with expertise in the field, members of Non-Governmental Organizations closely collaborating with Murchison Falls National Park authorities, as well as local community leaders and influential members residing near the national park. These took place in February of 2019, and follow up interviews in July of 2023.

Murchison Falls National Park is bordered by three districts on its southern bank, namely Buliisa, Masindi, and Kiryandongo. On its northern bank, three districts also adjoin the park, namely Nwoya, Oryam, and Packwach. Local community leaders and key members were interviewed within their respective areas of residence, which included six villages: Latoro, Layelle, Lagagaji, and Paraa in Nwoya district, as well as Muvule and Mubako villages in Buliisa district. Members of Non-Governmental Organizations were interviewed in Pakwach district and Kampala city, where they actively engage in conservation and community-related initiatives. The wildlife conservation managers, who play a critical role in park management, were interviewed both in Kampala city and at the park headquarters located in Buliisa district.

The findings of this research indicate that socio-economic challenges create an environment where individuals resort to poaching as a means of survival. The local communities residing in the vicinity of the park have a deep-rooted cultural attachment to the area, considering it an integral part of their heritage. The data also highlights the growing influence of profit-seeking activities within the realm of poaching, amplifying the need for targeted interventions that address the changing dynamics of illegal wildlife trade. The findings from the interviews help break down the motivation for poaching in the area in order to examine ways to adapt to solutions.

This park serves as a crucial provider of tourism-related wildlife services, playing a vital role in generating revenue for both park management and the local economy. Recognizing the economic significance of the park reinforces the importance of sustainable conservation practices that foster both environmental protection and economic benefits for local communities. The park management continues to address these multifaceted challenges, which may include habitat degradation, encroachment, wildlife crimes, and conflicts between human activities and

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conservation goals. Ongoing adaptability is key to ensuring the long-term preservation of the park's unique biodiversity. The active involvement and engagement of local communities have become increasingly critical in managing the conservation of the park. Recognizing the intrinsic value of local knowledge and experiences, community participation enables more effective and inclusive conservation strategies that align with the needs and aspirations of the people living in close proximity to the park. The recent discovery of oil within this expansive protected area represents a novel development in Uganda. This discovery has introduced a complex interplay between economic development, livelihood needs, and conservation management. This data is about a poaching in a specific place, but many of the findings are relevant to other locations. By breaking down any unwanted activity into its parts in order to understand it and the pathways to understanding motivations, leverage points, then the ways to adapt to changes may become clear as it has in this research.

DEDICATION

This dissertation is a heartfelt tribute to my parents, a testament to their profound influence on my life. In loving memory of my father, whose enduring love and guiding presence continue to resonate within us as our guardian angel, his shared passion for reading ignited my thirst for knowledge and instilled in me a deep appreciation for education during our treasured years together. I am certain that he would have taken immense pride in this remarkable achievement. To my mother, I dedicate this work, she is an embodiment of boundless love, sharp wit, spontaneous humor, and a lifetime of selfless sacrifices, epitomizing remarkable resilience, exceptional inspiration, and constant encouragement. Her unwavering support has been the steadfast pillar accompanying me throughout my life's journey.

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LIST OF ACRONYMS

ADF: Allied Democratic Forces.

AWF: African Wildlife Foundation.

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora. A multilateral treaty to protect endangered plants and animals from the threats of international trade.

COVID-19: Coronavirus disease 2019.

IUCN: The International Union for Conservation of Nature. A membership Union uniquely composed of both government and civil society organizations.

KNP: Kruger National Park.

LRA: Lord's Resistance Army.

MFNP: Murchison Falls National Park.

MOU: Memorandum of Understanding.

MTWA: Ministry of Tourism, Wildlife & Antiquities.

SANParks: South African National Parks. The body responsible for managing South Africa's national parks.

SOPs: Standard Operating Procedures.

UWA: Uganda Wildlife Authority. A semi-autonomous government agency that manages the wildlife in Uganda, including in the national parks and game reserves.

WCS: Wildlife Conservation Society

WHO: World Health Organization.

WWF: World Wildlife Fund.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

The African Wildlife Foundation notes that *"illegal wildlife trafficking is believed to be the world's fourth most valuable illicit commerce"* (African Wildlife Foundation). This trade impacts wildlife, ecosystems, and cultures. Poaching wildlife is on the rise and comes from two main sources: commercial enterprises and local bushmeat pressure. Poaching is generally defined as the extractive use of wildlife that is not permitted by the state and is therefore considered illegal (Duffy, 1999; Kahler & Gore, 2012). Poaching encompasses several interrelated activities, including the hunting, trapping, and killing of animals. Poaching is widespread in many parts of Africa and is considered one of the biggest threats facing wildlife populations. Across Africa, the rich biodiversity and precious environmental assets face a multitude of challenges from various sources. These include individuals engaging in unlawful hunting for sustenance, well-equipped poachers targeting prized specimens for international trade, and armed factions exploiting resources within protected areas to sustain their activities (Day et al., 2023).

Bushmeat harvesting is a prevalent practice across tropical and subtropical regions. In Uganda, wildlife harvesting is prohibited, yet bushmeat hunting remains commonplace. Frequently, local communities rely on bushmeat for essential sustenance and fundamental income generation (Dell et al., 2020). Motivations for poaching include poaching as a means of necessity or survival, as entertainment, as firearms training, as an acquisition of medicinal animal products, and as a form of protest of the rules or lack of benefits from wildlife conservation organizations (Moreto & Lemieux, 2015). In the past

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few years as commercial poaching intensified. Commercial poaching is defined as the illegal taking of wildlife resources for commercial gain, whereas subsistence poaching is primarily for meat consumption (Duffy, 1999).

Africa is home to the some of the world's most notable species, like elephants, rhinoceros, and gorillas. Illegal wildlife poaching is a serious threat to their survival, as 97.6% of the black rhinoceros population has been lost, over 35,000 elephants were lost last year, and less than 1,000 mountain gorillas have survived (African Wildlife Foundation, 2018). Other species affected by extreme poaching activity are pangolins, antelopes, lions, zebras, hippopotamus, and several other lesser-known animals. These species are all of ecological, socio-cultural, and economic value for the local African communities, both currently and throughout history. Until the 1960s, much of Africa was still under colonial rule. Africa was a source of natural resources for western Europe, as well as a place to explore, hunt, and grow their wealth through the exploitation of land and people. Many of the protected areas in Africa were gazetted for hunting, wherein the colonialists preserved and controlled access to game resources to exert their monopoly, which became a priority for the colonial masters (Carruters, 1995). The establishment of protected areas in the colonial era, which aimed to protect wildlife and natural habitats through strong resource use restrictions, has alienated and often displaced local communities, deprived them of their basic needs, negatively impacted their economic interests, and contributed to poaching pressure (Johannesen & Skonhoft, 2005). This history continues to impact reaction to wildlife policy.

Poaching has a devastating effect on both the wildlife of Africa and the local people that poach, fight poaching, or live with the impacts of both. It is widely accepted that poaching—driven by poachers, craftsmen, and wholesalers' quest for ivory—led to the major decline of the elephant population in the 1970s and 1980s (Lemieux & Clarke, 2009). South Africa is the biggest port of exit for both illegal ivory and rhino horns, which are both sources of lucrative trade with Asian countries (Duffy, 1999). Traditional uses of rhino horn and ivory drive the complex relationship between the main causes of poaching and the demand for the materials. The marketing of new uses of ivory, however, makes anti-poaching efforts more complex, as this relationship and outlets for the banned products may significantly differ depending on the particular use and consumer country (Ferreira et al., 2014). Present day commercial poachers are well-organized gangs that hire local people using advanced technology and the promise of economic security; they have modern long-range communication devices, carry sophisticated firearms, and sometimes have better logistical capacity than law enforcement officers (Warchol et al., 2003). Traditional law enforcement techniques, such as increased or adjusted patrols, sanctions, and fines, have proven effective at reducing or preventing poaching in some instances, but scarce human and financial resources can impede these efforts (Kahler & Gore, 2012). The rise in patrolling endeavors by park rangers throughout the decade showed a corresponding decrease in the discovery of traps and snares. This correlation implies that enhanced patrolling efforts played a role in curbing the extraction of resources from the park (Sakar et al., 2022).

Law enforcement additionally employs controversial policies like "shoot to kill," where anti-poaching officers can kill poachers on the spot. These policies impact whole communities, who are often not directly leading the poaching efforts but lose community members to the poaching war.

A significant portion of empirical research investigating poachers, their tactics, and poaching patterns has primarily involved interviews with poachers and wildlife law enforcement officers in North America. Comparatively limited research has empirically explored the intricate dynamics According to the United Nations, Uganda is one of the most biodiverse countries in Africa, and place where wildlife is part of the culture, values and there is support for wildlife protection. Numbers of some species have been on the rise since the 1980s, when rhinos were wiped out completely by poaching and hunting (Reuters, 2023). An examination in a country with support for wildlife protection may reveal changes to the wildlife protection landscape, along with identifying threats that remain. Interviews with many different people engaged in the protection of wildlife, from rangers to NGOs and local people offer a glimpse into this world. Even with the support of the government, my participants requested anonymity.

A testament to the dangers in the poaching landscape, the interviews, in country, allow for the examination of the different views of how resources are used for anti-poaching efforts, how communication plays a role, and how people work on different scales spatially, temporally, and culturally is hard to understand. This dissertation examines all these factors through the use of interviews that include information-rich

sources related to anti-poaching efforts. The interviews allow for close engagement with the diverse range of experts, offering a look at the barriers and facilitators to anti-poaching efforts, with a specific interest in communication strategies, flow of resources, and differing definitions of success. This will help examine the resilience of the local communities and wildlife officials, understand the non-governmental organizations' (NGO) capacity to maintain anti-poaching efforts, and develop an understanding of how success is measured in a complex system.

Problem Statement

The illegal taking of wildlife in Africa is both a subsistence cultural act and a commercial endeavor. People working on wildlife protection measures must adapt to changes and understand the complexity of the local feeling of entitlement to wildlife and conversely the commercial pressure. The local connection includes the cultural connection people have to wildlife, for example that hippo meat is believed to enhance women's fertility and contribute to healthy babies, as well as the role of poverty and tradition of access. The pressures of commercialization is driven by markets in the middle east and Asia according to the African Wildlife Foundation (AWF.org). This complexity of management and wildlife protection is further complicated by changes in technology and development pressure.

Uganda has taken wildlife protection seriously since the end of colonial rule and most notably had success due to relative peace in the country since 2000 (Ojulu, 2023). This success has led to reversing the devastating losses from the 1960s-1970s, when rhinos were wiped out completely. Uganda is one of the most biodiverse countries in the

world, and one of the most underdeveloped. Copper, Cobalt, Oil and natural gas are possibilities for more economic growth for this second youngest population in the world and diversifying resources is critical. According to Tourism and Wildlife Minister, Tom Butime, the rebound of wildlife is "dented by the challenge of poaching and the competition for land between the national parks and neighboring communities" (Ojulu, 2023). A place with this much support for conservation and wildlife protection still facing threats can be a window into the complexity of and changes in the anti-poaching efforts from many sectors and at multiple scales.

Purpose Statement

Therefore, the purpose of this research is three-fold. First, to examine the complexity of wildlife protection efforts, especially those aimed at poaching, and how that has and continues to change. Second, to examine how people working on wildlife protection in different sectors adapt to these and other changes. Lastly, this research is designed to give voice to people in country by incorporating their experience with dignity as participants in the knowledge creation of this research. This was done by collecting the bulk of the data in Uganda, often in person, sometimes with a translator with experts and local community members engaged in and contributing to anti-poaching efforts in Uganda. The setting is a country with much success in wildlife protection, Uganda, and more specifically focused when possible, in and around Murchison Falls National Park, the largest national park in Uganda.

Research Questions

The overarching research question for this study is: How is wildlife poaching changing in Uganda and how can we understand the contribution of responses to wildlife protection efforts at multiple scales? Specifically, when possible, the focus is in and around Murchison Falls National Park. Specifically, this research focused on three research questions:

RQ1: What are the facilitators for anti-poaching efforts at multiple scales?

RQ2: What are the barriers to anti-poaching efforts at multiple scales?

RQ3: How do people involved and affected by anti-poaching efforts characterize a summary of responses to anti-poaching at multiple scales and the success of each?

In my examination, I was open to responses I was not anticipating and more specifically I asked some of the following questions to support the above research questions: How is poaching characterized in different locations and by different people involved in poaching?; How has technology and communication changed poaching in Uganda, and how can technology be used to help poaching issues, human wildlife conflict, and tourist experiences?; How has the anti-poaching conservation law enforcement changed, and how has this affected the management of conservation areas?; What is the involvement of Non-Governmental Organizations (NGOs) in financial support for anti-poaching, and how do trends in anti-poaching finances influence the strategies and tactics that are used on the ground?; How are local communities involved in the management of anti-poaching efforts to curb poaching?; How has management

dealt with sustainable tourism in relationship to poaching, and how has poaching impacted visitor satisfaction and security?

Background

There has been a shift in approaches to conservation over the past several decades, evolving from nature for people, to nature despite people, to nature and people, to nature for itself (Mace, 2014). Social scientists and anthropologists can complement biological sciences in protected area management by conducting research, documenting the socio-cultural and spiritual values of biodiversity, and identifying the cultural beliefs, norms, and rules that advance conservation (Mascia et. al., 2012). It is important to empower local communities to make decisions about conservation so that they see the benefits of conservation and become its leading advocates (Kareiva & Marvier, 2012).

There is a need for an inclusive approach to conservation that proposes a more unified and diverse conservation ethic. This ethic would actively take both dominant points of view into account—that nature can be conserved for its own sake and also meet the needs of human beings (Tallis & Lubchenco, 2014). Conservation, in general and specifically focused on protected areas and wildlife conservation, is supported by two distinct camps—those driven by anthropocentric values and those driven by biocentric values. Sagoff (2007) supports the notion that conservation is a complex system and, as such, requires that leaders, managers, and policy makers hold both of these values as simultaneously true and use the best approach for the situation. The protected areas in Uganda are managed by the Ugandan Wildlife Authority (UWA). They work with many conservation organizations that have an interest in protecting wildlife. The different

value-based drivers could lead to different measures of success, different ideas of how to spend resources, and different approaches to the communication and collaboration necessary to solve problems associated with conservation. Add to this the distinct cultural values, and there is a need to understand the scales operating. In an effort to explore some of the leaders of these conservation values in Uganda, I will describe the UWA and profile three of the most prominent conservation organizations in Uganda that work, generally, on conservation and, specifically, on anti-poaching efforts.

Uganda Wildlife Authority (UWA)

UWA is the government agency tasked with conserving and managing all wildlife for the people of Uganda. It ensures the sustainability of wildlife resources and supervises activities that pertain to wildlife within and outside of the protected areas in Uganda, including research, wildlife interactions with local communities adjacent to parks, and tourism in the parks. UWA currently manages 10 national parks, 12 game reserves, 13 wildlife sanctuaries, and five community wildlife management areas. These protected areas cover 10% of the entire land area of Uganda. According to UWA (2023), the mission of UWA is "to conserve, economically develop, and sustainably manage the wildlife and protected areas of Uganda in partnership with neighboring communities and other stakeholders for the benefit of the people of Uganda and the global community." Its vision is to be a leading, self-sustaining wildlife conservation agency that transforms Uganda into one of the best ecotourism destinations in Africa.

UWA is charged with conserving Uganda's natural heritage, which includes animals, plants, natural features, and ecosystems in general. It also implements diverse

strategies to conserve and sustainably manage wildlife, including community participation in wildlife management, revenue sharing, collaborative management, problem animal management, wildlife use rights, and conservation education (UWA, 2023). Among the various challenges UWA is facing in its work to conserve wildlife are poachers, problem animals, encroachment, illegal grazing, and human-wildlife conflicts. They address some of these issues through strategies like placing patrols in all protected areas and arresting people who invade park land without the consent of UWA. They have also instituted tourism revenue sharing programs that contribute to government efforts to eradicate poverty and improve community livelihoods.

Wildlife management in Uganda was, historically, the government's responsibility, but this changed as local communities and other stakeholders grew concerned. As a result, wildlife use rights were introduced, include hunting, farming, ranching, and research (Uganda Wildlife Act, 2019). While UWA may have a largely anthropocentric approach to conserving Uganda's wildlife, it still displays biocentric tendencies in its management of wildlife, as it has an emphasis on, and resources dedicated to the protection of biodiversity.

African Wildlife Foundation (AWF)

The African Wildlife Foundation (AWF) is a Non- Governmental Organization that was established in 1961 to focus on Africa's unique conservation needs. The organization now works to protect the diversity of all species, humans included, across many African countries (AWF, 2018). According to AWF (2017), the foundation is the oldest international conservation organization focused solely on Africa, and its mission is

to ensure that wildlife and wild lands thrive in modern Africa. AWF recognizes that Africa's wildlife resources and ecosystems are critical for its people's, and therefore, the organization has sounded the alarm about how fast Africa is losing its species to wildlife poaching. The increased poaching could lead to wildlife extinction in a few years and would permanently alter the lives of the local communities in Africa. AWF works with other partners to empower local communities through conservation-friendly development projects. The organization realizes that people are vital to protecting these ecosystems, and if people could learn to live and share land with wildlife both within and outside of protected areas, then wildlife and people could thrive for generations to come. AWF works with governments, local communities, international agencies, and various stakeholders to empower local communities, contribute to their economic development, and protect land and habitats in order to conserve wildlife. Some of their various projects include land-use planning, climate change mitigation, ecosystems management, and wildlife corridors.

AWF has changed over the years into a largely anthropocentric organization because it dedicates itself to understanding community issues and how critical the wildlife resources are to its people. However, it also retains a biocentric approach, to a smaller extent, because it is driven by its key mission to protect Africa's iconic species from extinction.

Uganda Conservation Foundation (UCF)

The Uganda Conservation Foundation (UCF) is a Non- Governmental Organization dedicated to the protection and preservation of Uganda's rich biodiversity and natural heritage. Established to address the challenges facing the country's unique ecosystems, UCF collaborates closely with local communities, government agencies, and international partners. Focusing on wildlife conservation, anti-poaching efforts, and community engagement, UCF plays a pivotal role in safeguarding iconic species such as elephants, lions, hippos, and giraffes, among others.

Through strategic initiatives, UCF aims to combat poaching, habitat loss, and human-wildlife conflict while promoting sustainable livelihoods for neighboring communities. By providing training, equipment, and support to park rangers and wildlife enforcement units, UCF strengthens the frontline defense against illegal activities threatening Uganda's national parks. Moreover, the organization empowers local residents through education, healthcare, and income-generating projects, fostering a sense of ownership and shared responsibility for conservation.

The UCF embraces a dual approach to conservation, incorporating both biocentric and anthropocentric perspectives. In its biocentric approach, UCF emphasizes the intrinsic value of all species and ecosystems, striving to protect biodiversity for its inherent worth. Simultaneously, the organization acknowledges the vital link between healthy ecosystems and human well-being in its anthropocentric approach. By engaging local communities, promoting sustainable livelihoods, and fostering environmental education, UCF seeks a harmonious coexistence where conservation benefits both nature and people.

Wildlife Conservation Society (WCS)

The Wildlife Conservation Society (WCS) is a wildlife conservation organization whose goal is "to conserve the world's largest wild places in 16 priority regions including Africa, which are home to more than 50% of the planet's biodiversity." According to the Wildlife Conservation Society (2018), the organization uses science to discover and understand the natural world in order to provide scientific knowledge to decision-makers, communities, and wildlife supporters. This information can guide stakeholders to engage, take action, and protect wildlife and wild places. In their 2020 Strategy, WCS aims to maintain its historic focus on the protection of species and continue to set the bar for science, conservation action, and education that drives the protection of wildlife and wild places. By devising a plan to engage with a fast-changing world, WCS engages a broad array of science and policy interventions that aid in conservation solutions. These interventions include working to stop illegal wildlife trade, addressing climate change, managing wildlife, and investigating combat diseases in wildlife. WCS prides itself on expanding its field observation operations to over sixty countries in the world, saving wildlife, and connecting people to nature, especially through their zoo projects like the Bronx Zoo in New York. According to WCS (2018), the organization has provided over 400 guests with immersive experiences at zoos and aquariums in New York, inspiring millions of people to care about nature and support conservation field programs around the world. Their work has also made developments in information technology, enabling

them to share their mission and work with millions of people across the United States and other countries.

WCS operates the largest and longest standing field conservation program in Africa, where their projects span the natural diversity that makes Africa a place of global interest and concern. They are working to protect the continent's most ecologically intact wild places, while also conducting ground-breaking research on some of the most charismatic and threatened species, including forest elephants and gorillas (WCS, 2018). WCS is committed to conserving Africa's wildlife through powerful partnerships designed to benefit people and nature, specifically in priority regions like the East African forests and savannas. WCS attaches a lot of value to field science, particularly on species and ecosystems, mainly to protect ecologically intact wild places. Therefore, WCS appears, to me, to be driven more by a biocentric approach than anthropocentric. However, the organization uses anthropocentric focal points to manage successful programs that are supported through funding and local partnerships in target countries.

World Wildlife Foundation for Nature (WWF)

The World Wildlife Foundation (WWF) is an international NGO that works in wilderness and nature preservation with the aim to protect nature from human impact. According to WWF (2018), WWF is the largest conservation organization operating in more than 100 countries. The organization's mission "is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature." These projects include work across many African countries. WWF's work is grounded in science to develop innovative approaches to conservation in an effort to meet

both the needs of nature and people in a fast-changing world. These approaches can then be used to connect natural and social systems, with the goal of tackling emerging threats and ensuring that the systems protect the world's valuable species and their habitats. WWF envisions a future where people work together to challenge threats to nature and help ensure nature's ability to provide for every living thing, including humans.

The work of WWF is organized in six particular areas: wildlife, forests, oceans, fresh water, climate, and food. According to WWF (2018), their work has evolved from saving species and threatened landscapes to a focus on the larger global threats and forces that affect wildlife and wild places. WWF recognizes that people are at the center of their work because humans living near threatened ecosystems and wildlife can mitigate threats and ensure nature's survival. WWF works globally with various sectors to educate and influence individuals, local communities, governments, businesses, civil society, and academia to make sustainable choices and decisions. WWF is somewhere in the middle of the biocentric/anthropocentric continuum because it dedicates almost an equal effort to protecting wildlife and its habitats as it does to understanding the human contribution necessary to ensure biodiversity survival.

Understanding Conservation Focus

Various individuals, organizations, governments' societies, and a multitude of stakeholders attach different values to conservation and approach it using different lenses. There are divergent opinions between conservationists who focus on improving human well-being and those who focus on the extinction of species and their habitats. Conservation biologists often focus on individual endangered, critical species and are

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particularly concerned with increasing rates of extinction; if their habitats disappear, then species will disappear too (Soule, 1985). Conservation biologists resist the claim that conservation's purpose is to manage nature for human benefit. When monetary value and economics justify the existence of species, the extinction of a species can be monetized, as well (Miller et al., 2014). The sustainable use of biodiversity, a utilitarian concept that international conservation groups promote in soft protected areas, is not compatible with conservation science, nor is it supported by hard scientific evidence (Terborgh, 2004). However, there are changing systems of thinking wherein the two divergent values could potentially meet halfway.

Social science disciplines are key to conservation science efforts because they have the ability to study and analyze human behavior, which provides critical insights into wildlife conservation conflicts over resource use and the exploitation of biodiversity by human beings. These disciplines can both hold objective truth about species in one hand and recognize the subjective realities driving relationships, conflicts, and potentials for conservation success in the other. WWF and other conservation agencies support the work of conservation biology because designing and planning efficient systems, establishing national parks and nature reserves, informing government policies on human population, and managing forests are essential (Soule, 1985). Cultural diversity is closely tied to non-humans and to biodiversity. There is a close link between the fields of biodiversity, nature, language, and culture; contrastingly, economic policies do not take into account human reliance on biodiversity (Miller et al., 2014).

It is important to understand how different experts and stakeholders approach wildlife conservation and harmonize their approaches toward common goals, even if they hold different values. We need to understand why people decide to conserve nature and analyze the dissonance between those who argue for nature to be protected for its intrinsic value and those who argue that nature should be protected for its instrumental value to humans (Tallis & Lubchenco, 2014). It is becoming evident that ecological dynamics cannot be separated from human dynamics, and therefore, it is crucial for conservation scientists to consider this development in their daily practices (Kareiva & Marvier, 2012).

One of the many benefits of biodiversity is that it strengthens national identity and has tremendous economic value to people. Planning for the preservation of biodiverse spaces should be done by a multitude of stakeholders who all have a stake in preserving these resources (Baldwin et al., 2018). The people and nature framing of conservation emphasizes the importance of cultural structures and institutions in building sustainable and resilient systems for both people and the natural environment (Mace, 2014). Conservation science has played a key role in shaping the quality of the environment, but now ecological scientists need to involve citizens and all other stakeholders in environmental politics and decision-making if they wish to accomplish their goals (Robertson & Hull, 2001).

The government agencies and NGOs outlined above have various approaches to conservation but employ similar tactics. They are collectively moving toward a middle position about the preservation of nature, while also creating avenues for people to access

its benefits. Scientists should not disregard the idea of creating parks and involving others in their management problems as a viable means to save nature, as mastering science is the most critical aspect to conserving biodiversity (Terborgh, 2004). A structured, systematic conservation approach is necessary to demarcate natural reserves and natural resource preservation areas. This is important in order to protect biodiversity, ensure its continued existence, and preserve recreational and scenic spaces for human use (Margules & Pressey, 2000). It is difficult to measure conservation success when considering people and nature together because the ways nature contributes to human well-being are difficult to conceptualize and measure (Mace, 2014). Systematic conservation planning is a collaborative process that considers conservation actions and benefits, as well as locating, configuring, and implementing these conservation actions in an attempt to identify their natural outputs and actual benefits (McIntosh et al., 2017).

Conservation needs to be approached with a more pragmatic understanding and shared vision in order to have all experts and stakeholders represented and to share knowledge across a broad spectrum of genders, cultures, values, power, and ages (Tallis & Lubchenco, 2014). There are six instrumental stages in systematic conservation planning, and these include, in no particular order: compiling data on biodiversity of the area, identifying conservation goals, reviewing existing areas, selecting new areas, implementing conservation actions, and identifying the required conservation values of these areas (Margules & Pressey, 2000).

In spite of the continued element of crises, today's conservationists can rely more on systematically collected evidence to inform decisions at many scales and guide best

practices in conservation (Kareiva & Marvier, 2012). Biologists and ecologists need to get more actively involved in decision-making and systematic conservation planning, in order to aptly identity. Whereas conservation scientists often spell doom about the extinction of biodiversity, nature can often be resilient and rebound, as has been illustrated by marine ecosystems that recovered from oil spills (Kareiva & Marvier, 2012). The various conservation framings have implications for ecosystems management. In the people and nature thinking, science has moved away from simply looking at species and protected areas to considering how humans share a natural environment with wildlife (Mace, 2014). The poaching crisis is one problem that can have many frames and solutions, taking place at multiple scales.

It is imperative to include conservation social science in conservation policy, as it is critical to expert and stakeholder participation and because conservation is inherently a human endeavour. According to the International Union for Conservation of Nature (IUCN) report on protected and conserved areas, the priority is to conserve biodiversity, address climate change, and enhance social equity. This will, in turn, reduce the risks of disasters, improve human needs like food and water security, boost human health, and foster cooperation and peace (IUCN, 2016). It is important to study the human connection to conservation in order to understand how people have been affected by it, especially those who have been unjustly displaced in order to gazette protected areas (Kareiva & Marvier, 2012).

Recent ecology studies show that nature is both chaotic and constantly evolving and that landscapes are dynamic at all scales of time and space (Robertson & Hull, 2001).

Conservation scientists can play an activist role and participate more in political events where key conservation decisions are made in order to accomplish their goal of science with a mission (Terborgh, 2004). Anthropological studies can also provide valuable information and understanding of how decisions are made regarding the use of resources, enforcement of systems, resolution of developmentally critical conflicts, and implementation of workable solutions to conservation problems globally (Mascia et al., 2003).

As much as conservationists would like to restore nature to its original undisturbed state, in reality, that is not possible given the magnitude of human impacts and change. Conservation can look to the future by involving human beings in the protection of natural habitats, while benefiting from the extraction of natural resources. Many of these organizations started out biocentric and have evolved into anthropocentric, although they still have tendencies to be biocentric, as many of their priority projects focus mostly on biodiversity preservation. According to Kareiva & Marvier (2012), conservation science that has a sole focus on biology is likely to be misleading today and therefore should use an integrative approach to conservation that includes human beings. The biocentric/anthropocentric continuum is constantly shifting for all parties involved in wildlife conservation. Overall, conservation organizations are better suited to evolve with the changing dimensions of conservation and complement each other with overlapping values from both the biocentric and anthropocentric approaches.

Current Conservation Challenges in Uganda

The African Wildlife Foundation noted the challenges Uganda faces regarding conservation efforts for wildlife as four-fold (AWF.org). These are 1) Human Wildlife conflicts often driven by wildlife encroachment on human settlements and "retaliatory killings, 2) Poverty and lack of schooling and literacy in the country, especially for young girls, 3) rhinos were abundant and no longer found in many parks they once were found, 4) bushmeat poaching is "rampant in parks", and local poaching increased during the pandemic in 2020 when there were not many tourists in parks (Green, 2023).

The history of wildlife protection in Uganda is one of a reversal of the dire news for many species in the 1980s. According to a March 30, 2023 article in The New African, The Tourism and Wildlife Minister noted the Elephants have gone from 2,000 in 1983 to 8,000 today. Giraffes have gone from 350 to 2,000 and most amazing is the buffalo rebound from 25,000 to 44,000. Uganda is also home to half of the mountain gorillas. Other species, according to the Minister, including the many species of birds are also on the rise. Some of this is due to the wildlife protection and some to the time of relative peace in the country.

The largest National Park, Murchison Falls, the site for this research, served as a safe haven for fighters for many of the country's conflicts. This includes Idi Amin's troops in 1979 to the most recent, Joseph Kony. This was not good for the wildlife, relied on for bushmeat and ivory was sold to raise money for troops (Ojulu, 2023). The Uganda Wildlife Authority (UWA) was established by the Ugandan government in 1996 as the designated agency responsible for wildlife protection. They oversee a diverse range of protected areas, encompassing various sizes and classifications, including National Parks

(10), Wildlife Reserves (12), Community Wildlife Management Areas (5), and Wildlife

Sanctuaries (13).

Figure 1.1. Murchison Falls in Murchison Falls National Park. Photography by Musiime Muramura

Figure 1.2. A Uganda kob in Murchison Falls National Park.
Photography by Musiime Muramura.

Figure 1.3. A buffalo in Murchison Falls National Park. Photography by Musiime
Muramura

Figure 1.4. A shoebill stork in Murchison Falls National Park. Photography by Musiime Muramura

Figure 1.5. Nubian giraffes (formerly known as Rothschild giraffes) in Murchison Falls National Park. Photography by Ingrid Nyonza Nyakabwa

Figure 1.6. Nubian giraffes in Murchison Falls National Park.
Photography by Musiime Muramura

Figure 1.7. A herd of African elephants in Murchison Falls National Park.
Photography by Musiime Muramura

CHAPTER TWO
LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In order to effectively reduce poaching and illegal wildlife trade, it is crucial to understand the criminal networks involved in the trade, which include individuals, syndicates, gangs, and various cohorts of poachers (Ayling, 2013). Poaching of wildlife can result in a myriad of negative consequences which include among others, changes in the diversity of wildlife species, the extinction of wildlife species, population suppression, the natural function of ecosystems, and the numerous services these resources provide to people (Kahler & Gore, 2012). It is important to consider the system as a whole when dealing with systems of humans and nature because the two are interconnected, and one cannot be dealt with in isolation of the other (Walker & Salt, 2012). Hence, studying the intricate issue of poaching, it becomes essential to address the drivers of commercial poaching holistically. This requires a comprehensive examination of both the demand and supply aspects of illegal wildlife trade, as they are interconnected and contribute to the persistence of this complex problem. Social science disciplines are critical to conservation science because they have the ability to study and analyze human behavior, which is critical in providing insights to wildlife conservation across all scales, be they local, regional, or international (Mascia et al., 2003).

The large-scale militarization of conservation efforts in a bid to curb poaching poses a threat to innocent bystanders caught in the crossfire and increases the value of rhino horn in the demand markets, creating a situation that suggests that a viable solution would be to deal with the demand side by legalizing ivory trade to some extent

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(Lunstrum, 2014). The advancement in technology and communication have also affected and transformed poaching and is believed to have increased illegal access to wildlife. By understanding how and why the systems are changing as a whole, we are better placed to build a capacity that can withstand change and adapt to it (Walker & Salt, 2012).

Interpol revealed that poaching and wildlife trafficking is the second largest form of black market right behind drugs smuggling and ahead of illegal arms, and it not only threatens species extinction, but is a key security threat to regional stability in East and Central Africa where Sudanese and Somali operators are involved in terrorism (Warchol, et al., 2001). Kruger National Park in South Africa has become the world's hot spot of commercial poaching with intensifying militarization between poachers and anti-poaching law enforcement forces, which in many ways is transforming conservation practices (Lunstrum, 2014). The rapid rise of rhino poaching, especially in South Africa, has been exponentially increased by a combination of the illegal demand and high black market for rhino horn in the Asian markets, particularly China and Vietnam (Ferreira et al., 2014).

Given the risks and potential irreversible outcomes for people and wildlife associated with poaching, additional insight about how to manage poaching risks is critical for more effective crime control and conservation (Duffy, 1999; Kahler & Gore, 2012; Lemieux & Clarke, 2009). Cultural diversity relies on biodiversity, and there is a close link between the fields of biodiversity, nature, language, and culture, but economic policies do not take into account human reliance on biodiversity (Miller et al., 2014). It is becoming increasingly evident that ecological dynamics cannot be separated from human

dynamics, and therefore, it is crucial for conservation scientists to consider this development in their daily practices (Kareiva & Marvier, 2012). One of the many benefits of biodiversity is that it strengthens national identity and has tremendous economic value to people, and therefore planning for its preservation should be done by a multitude of stakeholders who all have a stake in preserving these resources (Baldwin et al., 2018). Conservation needs to be approached with a more pragmatic understanding and shared vision in order to have all stakeholder represented, and stakeholders should value sharing knowledge across a broader spectrum of genders, cultures, values, and ages (Tallis & Lubchenco, 2014).

According to the International Union for Conservation of Nature (IUCN) report on protected and conserved areas, their priority is to conserve biodiversity, address climate change, and enhance social equity, which will in turn reduce the risks of disasters, improve human needs like food and water security as well as boost human health and foster cooperation and peace (IUCN, 2016). It is important to study the connection of human beings to conservation in order to understand how people have been affected by conservation, especially those living in and around protected areas who have been unjustly displaced in order to gazette these protected areas (Kareiva & Marvier, 2012). Anthropological studies can also help provide valuable information and understanding of how decision-making is done for the use of resources, enforcement of systems, and conflict resolution that are critical in the development and implementation of workable solutions to conservation problems globally (Mascia et al., 2003).

Social-Ecological Systems And The Poaching Problem

Recognizing and understanding the conceptual knowledge system that one needs to analyze a linked social-ecological systems (SES) at multiple spatial scales helps to give clarity of issues and to reduce tensions of advocates of a single method of studying the SESs (Ostrom, 2007). A scale is a range of spatial and temporal frequencies; species that operate at the same scale interact strongly with one another, but the organization and context of interactions are determined by the cross-scale organization of the ecosystem (Peterson et al., 1998). Resources and biophysical processes exist over a range of different scales that vary in their frequency and extent in space and time, and with protected areas in particular, the scale of social economic processes heavily rely on the scale of the social-economic and political organization, as well as international interest in that particular protected area (Cumming et al., 2015). Despite interventions like the Convention on International Trade in Engendered Species of Wild Flora and Fauna (CITES) that aims to ensure the international trade in specimens of wild trade in animals and plants does not threaten their survival, illegal wildlife trade continues to flourish and threaten survival of many wildlife species (Ayling, 2013).

Change reveals the complex nature of how an ecosystem can shift over time, and how these shifts are driven by processes that work at different scales and in time and space (Walker & Salt, 2012). South Africa has suffered most of the negative impacts attributed to the presence of military forces in conservation in terms of biodiversity, social justice, and human rights violation, and therefore, South African National Parks

(SANParks) has a difficult relationship with the local communities who were forced off their land (Annecke & Masubelele, 2016).

The history of poaching has evolved along the changing times and social-economic environment. Who are the people involved with poaching at the different scales and how are they involved? One should start to identify the resource system, the users, the resource units produced by the system, and the governance system, all of which jointly affect the interactions and outcomes in a given time and place (Ostrom, 2007). The actors within poaching matter, and it is important to understand the borders they exist and operate within. Are they local or international, or connected both on the ground to the communities as well as with links abroad? What facilitates these poachers, and what are their drivers for poaching? What are the dynamics of poaching, for instance, why do they poach certain species more than others? Are there non-profit organizations involved in anti-poaching, and are they on a local, regional, or international scale? System problems tend to be non-linear in nature, cross-scale in time and space, and tend to evolve (Baldwin and Judd, 2011). As such, they are complex and, therefore, we need to identify the ecological variables that affect actors and their actions within a system (Ostrom, 2007). It is important to identify conceptual tiers and variables that make up a SES in order to successfully analyze it and improve its performance.

Different scales of operation can lead to different scales of value, placing higher value on those working at national and international scales before the local level (Zia et. al., 2011). The idea of examining the scales and identifying values and different measures of success has been used by the Nature Conservancy, and there is now a focus on the

work of scale bridges operating in a system (Guerrero et al., 2015). Scales can also be temporal, where concepts like cultural memory play a role in relationships and the ability to build these scale bridges, as well as cultural (Berkes, 2002). Schwartz (2006) measured cultural value orientations of 173 countries, and Uganda's rating is very different than western countries, whose models and approaches to anti-poaching efforts may be driving the actions on the ground. Interviews and then sharing the synthesis of the interviews will invite participants to engage with the different scales in a way that may make similarities and differences more pronounced.

Resilience Thinking

Resilience is a multi-faceted field of research in various disciplines like ecology, psychology, engineering, and sociology that explores how systems respond to change; it is the system's ability to withstand and respond to change (Bec et al., 2016). We are part of a system, and resilience thinking is about seeing the entire system, it is a SES that is interlinked, and all actors are playing in this same system (Walker & Salt, 2012). SESs are complex and require in-depth examination because their problems of overuse and misuse of ecological systems are rarely attributed to a single cause (Ostrom, 2007). The social-ecological aspects of resilience theory offer concepts to underpin a theoretically driven management framework that can guide community programs to long-term structural change and offer proactive responses that aim to enhance a community's ability to anticipate and prepare for change in order to manage it (Bec et al., 2016). Resilience thinking emphasizes the interplay of gradual change with sudden disturbances, feedbacks,

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alternative stable states, regime shifts, cross scale relationships, and adaptive cycles (Fischer et al., 2009). Resilience thinking is appealing because it offers a dynamic and forward-looking approach to environmental change, and it provides a holistic perspective and emphasis on change and complexity across all scales (Cote & Nightingale, 2012).

A system that can evolve can survive almost anything by re-inventing itself, and therefore, if a system can evolve and manage to self-organize itself, then it stands a high likelihood of surviving (Meadows, 2007). Community resilience is the existence of, development, and engagement of community resources to thrive in an environment characterized by change, uncertainty, and unpredictability and adapt to it (Bec et al., 2016). Despite the massive military interventions from the South African government with the support of the international community, poaching is continuing, and the negative social and economic costs of the military anti-poaching operations in Kruger National Park are significant and will be unsustainable in the long run (Annecke & Masubelele, 2016).

Evolving political, social, and environmental contexts may mean that protected areas will need to be managed in a different way, and therefore, various decisions and courses of action will continuously need to be taken whenever meaningful changes need to be made (Venter et al., 2008). Rhino horn trafficking that is linked from Kruger to China and Vietnam is fueled by extraordinarily high prices and a high demand for ivory which is used for medicinal and ornamental purposes (Ayling, 2013).

A conceptual framework guides what is out there that you plan to study and acts a tentative theory of the phenomena that you are investigating, and it identifies something

that is going on in the world that is itself problematic and that has consequences that are problematic (Maxwell, 2013). Poaching has dramatically increased because of the increased demand for ivory horn and rhino horn in Asia, and therefore in order curb poaching, there is a critical need to understand the demand side of poaching. Differences in values amongst different societal groups and changes in values over time creates uncertainties about which specific management strategies best meet the expected societal goals (Biggs et al., 2015). To combat poaching effectively, it is crucial to explore methods of transforming the mindsets of those seeking ivory, fostering an appreciation and reverence for these remarkable species. Equally important is determining how Murchison Falls National Park's management can address species loss and ensure the continued existence of its iconic wildlife. Identifying the barriers impeding efforts to combat poaching and devising potent strategies to overcome them are vital steps in safeguarding the diverse wildlife populations within the park.

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Feedback loops and thresholds

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Feedback loops are not always direct; the goal and the feedback connections are not always visible in the system (Meadows, 2007). Within SESs, fundamentally human-environmental relations are not conceived as separate systems with conflicting objectives, but rather emphasis is placed on how feedback dynamics between social and ecological systems are interconnected. Human systems are a part of, and also shape and impact, ecological systems (Cote & Nightingale, 2012). In the case of Kruger National Park, there is ongoing feedback providing information about the status of poaching events

through provision of information about potential violations of the desired state of safety of species biodiversity and their habitat. Managers can no longer ignore the feedbacks between their decisions and the environment, which conditions the choices they will have to face tomorrow and in the years to come (Senge & Sterman, 1992). The internal dynamics of a system cycle go through phases of an evolving system, and these are rapid growth, conservation, collapse, and re-organization (Holling, 1996).

A system has properties that make it function as a whole, and what makes some systems complex is the relationships and interactions involved which are interlinked, and therefore a little change in one aspect may have a major effect on another component (McCool et al., 2015). Thresholds are levels in controlling variables where feedbacks to the rest of the system change, that is the crossing points that have the potential to alter the future of many of the systems that depend upon them, and once a threshold has been crossed then it is usually difficult to cross back (Walker & Salt, 2012). Thresholds and adaptive cycles are both integral to resilience thinking. Adaptive cycles describe how resilience varies according to the phase the system is in. This study aims to explore how various players are involved in dealing with poaching and what their interactions may imply for management interventions to counter poaching and the actual actions that can be taken at various levels based on feedbacks.

Adaptive management

Managing for resilience is all about understanding a SES, and therefore, the capacity of the actors in the system to manage resilience is what is known as adaptability

(Walker & Salt, 2012). Illegal wildlife trade is driven by a criminal network of organizations, gangs, syndicates, and other collectives who are highly organized, especially in South Africa and Namibia, and who are involved in trafficking the South African rhino horn to Vietnam and China (Ayling, 2013). These networks are resilient and difficult to disrupt and now pose a serious threat to most rhino species. Promoting the involvement of local people and supporting adoptive learning are both very crucial aspects of managing the resilience of SESs through building knowledge, coordination, and involving the locals, which in the long run leads to growth of capacity to respond to issues (Walker & Salt, 2012). However, if there is a delay in the system, it can make it difficult to adapt and have major effects on the system.

Public participation is now a critical and overarching objective of management of the Kruger Park (Venter et al., 2008). One of the key features of the transition to adaptive management in the Kruger National Park was a strong emphasis on the flow of information between scientists and managers, and this is fundamental in connecting science, monitoring and management to facilitate structured co-learning from research and management (Biggs et al., 2015). South Africa has suffered many of the negative impacts attributed to the presence of military forces in conservation in terms of biodiversity, social justice and human rights violation, and therefore, SANParks has a difficult relationship with the local communities who were forced off their land (Annecke & Masubelele, 2016). The last few years have seen the emergence in Southern Africa of Transboundary Natural Resource Management (TBNRM) which have been supported by a number of donors, inter-governmental agreements signed and a host of other dynamic

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situations like groupings of biodiversity and economic philosophies in a bid to promote transboundary conservation initiatives (Wolmer, 2003). Organizational learning processes are most effective when they help managers develop a more systematic and dynamic approach to management (Senge & Sterman, 1992).

The concerns of local communities in and around parks in Uganda cannot be ignored, and conservation cannot be sustained without their involvement and support. Therefore, there is a need to refocus conservation policies regarding land ownership, community benefits and the development of inclusive management structure on a national scale (Ramutsindela, 2003). It is not easy to break up the rural poaching networks. While these systems may seem relatively unsophisticated, they have their support and connections with the local communities which makes it hard to uproot them (Ayling, 2013).

Engaging experts and stakeholders with different perspectives and interests is integral to developing trust, mutual interests, and developing a more widely shared understanding of management problems and the systems in which they are rooted (Biggs et al., 2015). This increases chances of reaching and implementing joint decisions that serve the purposes of all parties involved. The study aims to analyse the effectiveness of anti-poaching interventions both at the park management and community levels. It seeks to identify successful measures and their impact on curbing poaching activities, as well as examine the unsuccessful ones too.

Leverage points

Leverage points are places within a complex system, for instance an ecosystem or park, where a small shift in one thing can lead to a big change in everything (Meadows, 2007). The goal of the system is to have a leverage point superior even to the self-organizing ability of the system, and as such, the survival, resilience, differentiation, and evolution of a system are system-level goals (Meadows, 2007). The nature of a particular problem and its social-ecological context will determine which strategy or mix of strategies is most appropriate in dealing with that particular situation (Biggs et al., 2015). In relation to wildlife poaching in MFNP park, there are a number of places to intervene in the system and these may include the community level, communications level through the masses, conservation managers, and NGO's that operate in Uganda.

National parks and conservation areas all over the world are facing increasingly complex challenges in conserving their natural resources, and this is a time for extraordinary change for them (Venter et al., 2008). The great Lipompo Transfrontier Park was a South African driven process which drew its momentum from the Peace Parks Foundation and aimed to market Kruger National Park as a tourism magnet and, therefore, targeted the TRBNM for its potential economic benefits (Wolmer, 2003). The mission of SANparks is to develop, expand, manage, and promote a system of sustainable national parks that represents biodiversity and heritage assets through innovation and best practices for the just and equitable benefit of current and future generations (SANParks, 2018).

The creation of nature reserves and national parks affected human relations in many parts of Africa whereby white settlers depended on the Africans' support for game hunting, but this later changed to African landowners being denied hunting rights, which caused resentment for wildlife conservation (Ramutsindela, 2003). Wildlife conservation in Africa should give careful consideration to historical forces, the environment, and biodiversity. These are clearly not static resources, and the nature of their fluidity is linked to policy and politics (Jones, 2006). Political ecology provides a valuable approach for reviewing changes in wildlife conservation in Africa, particularly in regards to paying attention to historical factors, social construction of the environment, and power relations in shaping environmental change (Jones, 2006).

Systems are characterized by causes and effects; multiple causes can lead to the same effect, slow feedback times and these could be interlinked over time and space (McCool et al., 2015). Within the SES is the ecological subsystem that has biophysical units operating at varying spatial scales, and also have the social subsystem that consists of human relationships which develop at varying spatial and social scales (McCool et al., 2015).

CHAPTER THREE
RESEARCH DESIGN AND RESEARCH METHODS

Approach to Research

It is useful to provide a reminder of the purpose of this research found in Chapter 1 of this dissertation. The purpose is three-fold. First, to examine the complexity of wildlife protection efforts, especially those aimed at poaching, and how that has and continues to change. Second, to examine how people working on wildlife protection in different sectors adapt these and other changes. Lastly, this research is designed to give voice to people in country by incorporating their experience with dignity as participants in the knowledge creation of this research. This was done by collecting the bulk of the data in Uganda, often in person, sometimes with a translator with experts and local community members engaged in and contributing to anti-poaching efforts in Uganda. The setting is a country with much success in wildlife protection, Uganda, and more specifically focused, when possible, in and around Murchison Falls National Park, the largest national park in Uganda.

The approach, therefore, is a qualitative study, done in Uganda, by talking to people engaged in the protection of wildlife all the time. This is because *"qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive material practices that make the world visible. These practices transform the world. ...this means qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena, in terms of the meanings people bring to them"* (Denzin and Lincoln, 2011). The qualitative approach

used by this study is based on three practices: 1) Ethnographic Fieldwork, 2) Interviews, and 3) Analysis of interaction. Taken together these offer the researcher an in-depth examination with the aim of reconceptualizing a topic or phenomenon, with the goal of understanding the constitution of that thing (Packer, 2018).

This research examined anti-poaching efforts as described by local wildlife officers working on the front lines, as well as local community leaders and NGO representatives that rely on conservation activities and research. Information rich sampling was applied; these specific participants were identified and interviewed for their expert opinion in order to meet the objectives of this study (Maxwell, 2012). Experts are people able to understand the perspective and influence of many groups, as opposed to stakeholders, who typically are focused on a narrow perspective in regards to problem solving. Throughout the research process, participants had the opportunity to engage with comments from each other, which allowed for a result that was more collaborative in nature than merely interpretive. This design allowed for an elucidation of historical and current anti-poaching efforts as a complex system, and it also provided insight on trends that support and hinder success of anti-poaching strategies. The use of experts as data sources allowed insight into how poaching is changing in Uganda, specifically in MFNP. The researcher focused on the park to examine the research purpose and questions but was also open to experts with larger scale anti-poaching influence or information. This study collected three primary types of data: 1) Semi-structured interviews with conservation officials from UWA, staff of key NGOs working closely with these conservation authorities, and community leaders who live adjacent to and are impacted

by poaching; 2) Documents were collected and reviewed by the researcher from an existing catalogue of records, including periodic reports, park management plans, etc.; 3) Participant observation and field notes were taken during the data collection process, including notes from informal conversations with stakeholders, personal reflections while conducting interviews, and photos that were taken at the sites.

This research required permission from the relevant authorities, including institutions, college review boards, and the necessary officials to ease the collection of data (Creswell, 2012). Thus, the researcher obtained a research permit from the UWA to conduct interviews in MFNP and gain access to the parks. In addition, the researcher obtained an Institutional Review Board (IRB) certification from Clemson University, allowing her to conduct the research.

Study Site
Uganda and Murchison Falls National Park

In Uganda (Figure 3.1), the UWA manages all national parks, which includes leading safaris, boat tours, and birding expeditions. They manage research in and around the parks while managing visitors, managing wildlife, and mitigating wildlife/human conflicts with surrounding communities and visitors. According to their website (ugandawildlife.org), the UWA has been working on a variety of issues relating to wildlife protection and management. One issue they have worked on during the fall of 2018 is the decimation of an entire pride of lions near a fishing village adjacent to Queen Elizabeth National Park. Over the past 18 months, one leading ranger has helped with the prosecution of over 720 suspects in wildlife crime resulting in 620 convictions, and the

successful efforts of wildlife trap removal has led to a reduction in elephants trapped

from three per day to three per month. In August 2020, the Ugandan Wildlife Authority

worked with the Giraffe Conservation Foundation to "establish a viable population of

free-roaming Rothschild's (Nubian) giraffe in Murchison Falls National Park"

(ugandawildlife.org).

Figure 3.1. Map of Uganda and surrounding countries. Source: UWA (2019).

Murchison Falls National Park is the largest national park in Uganda (Figure 3.2.),

located in the north-western part of the country. It is a savanna ecosystem that is home to

over 75 species of mammals, over 450 bird species, 51 reptile species, and 28 amphibian

species. MFNP is bisected by the Victoria Nile, with the park containing the spectacular

falls where the waters of the Nile flow through a gorge (UWA, 2018). It has tremendous

conservation value for both natural and cultural heritage to the people of Uganda and

beyond. It is rich in species and biodiversity and contains many endemic and threatened

plant species. Murchison Falls National Park plays a pivotal role in Uganda's tourism

industry by offering a wide range of experiences that cater to diverse interests. Its

contribution to the tourism sector includes generating revenue, creating employment

opportunities, and fostering conservation efforts. The park's beauty, wildlife encounters

and the iconic Murchison Falls combine to make it a must-visit destination that

showcases Uganda's natural splendor. Oil has been discovered in this park, which makes

it even more vulnerable as a conservation area to be managed critically, given its rich

biodiversity and threatened species.

Figure 3.2. Map of Murchison Falls National Park. Source: UWA (2019).

Semi-Structured Interviewing

According to Kvale & Brinkmann (2007), semi-structured interviews are

conducted to obtain first-hand data on the lived experiences of the interviewee in order to

understand the meaning of the described phenomena. Such interviewing necessitates that

researchers establish contact with potential participants who may inform their research topics, including those they may have never met (Seidman, 2013). The resulting interviews provide an in-depth understanding of the research topic because they allow for follow-up questions to further enhance the rich data already provided by the interviewee. The researcher interviewed conservation managers as experts, members of conservation NGOs working closely with the park authorities, community leaders and key members. Purposeful sampling was used as a criteria in choosing these respondents. One of the goals of using the purposeful sampling was to select participants who could provide the best data in light of the research questions explored (Maxwell, 2012).

Interview participants were recruited through the UWA and nonprofits working on anti-poaching efforts, which included the African Wildlife Foundation, WWF, Wildlife Conservation Society, and Uganda Conservation Foundation. From these organizations, the researcher sought recommendations for other information-rich sources to interview. The goal was to focus on experts and decision-making leaders able to understand the problem of poaching at many scales, including but not limited to historical, cultural, spatial, social, ecological, and political.

With the exception of one interview, all interviews that were conducted were recorded using an audio recorder after the participants had granted permission for the interview to be recorded. According to Creswell (2012), researchers should use adequate recording procedures when conducting interviews, and the use of suitable equipment is recommended. When such interviews are transcribed, they become the concrete empirical data of both the entire interview process and the study (Kvale & Brinkmann, 2007).

Among the many advantages of audio recording interviews is the fact that the researchers are able to keep the data intact, meaning they can refer to the original information in the words of the participants as needed (Seidman, 2013). The researcher constantly referred to the transcriptions, which were vital in developing codes and themes throughout the study.

In order to emphasize the depth of responses and the substance of thoughts and ideas, transcripts have been refined for enhanced readability. Given that participants may express themselves differently, particularly when English often isn't their first language, potential communication barriers have been addressed. This research doesn't revolve around the precise way participants articulated their answers; instead, the concentration lies in them meaning and substance of their ideas. This rationale guided the editing process.

Data Analysis

Except for one interview upon request, all interviews were recorded to ensure accurate data capture. Some interviews were conducted in local languages such as Runyoro Kitara and Luo and later translated into English before being transcribed. The transcriptions underwent a manual data analysis process using Excel. During the analysis, the researcher compiled relevant and meaningful quotes from the interviews, organizing them in an Excel format. These quotes were then carefully categorized, coded, and thematic patterns were identified. The analysis process included a close reference to these interviews and the insights provided by the participants. To further validate and enhance the findings, a few follow-up interviews were conducted in 2023. These follow-up

interviews served the purpose of clarifying certain data points and served as a verification strategy to strengthen the reliability and accuracy of the research conclusions. The combination of recorded interviews, translation, transcription, and meticulous data analysis using Excel facilitated a comprehensive understanding of the research topic. By giving close attention to the participants' quotes and conducting follow-up interviews, the researcher ensured the robustness and credibility of the study's findings.

The researcher used the above process to examine repeated patterns and common topic areas to develop themes and sub-themes which then informed details of the results and discussion section of this dissertation. The researcher diligently examined and paid particular attention to various aspects of the transcription related to the functioning of organizations, including their scale of operations, communication and funding mechanisms, power dynamics, and decision-making processes. Coding is a categorization strategy for data and the process involves carefully reviewing the data, identifying recurring ideas, concepts, or themes, and then assigning appropriate codes to represent these elements (Maxwell, 2012).

Field Notes

Throughout the data collection process, the researcher diligently took field notes, paying particular attention to their time at MFNP and during interactions with members of the local community. In addition, the researcher also took descriptive notes during some of the interviews and while engaging in tourism activities within the park. Notes were also taken all through the visit to the armory and particularly during engagement

with the law enforcement personnel. These notes were used to further validate or to

challenge theme development.

Purpose

R

Conceptual framework

Research questions

Methods

Participants

Figure 3.3 Research Design Framework

Theoretical Framework	Questions	Participants (Experts and Opinion Leaders)
*Scale—a range of spatial and temporal frequencies. Scales show what shifts may have taken place over time and space. In this study, scales can be applied to the extent to which poaching may have been spread over a number of years.	*How is poaching changing in Uganda, and how can we understand the contribution of responses at multiple scales? *How do experts characterize a summary of responses to anti-poaching efforts?	*Conservation managers *NGO staff *Community leaders and key members.
*Resilience—seeing the entire system, with various actors that are interlinked. Evolving social, political, and environmental changes will require a change in courses of actions, different approaches to managing protected areas in order to adapt, and tackling the evolving trends of poaching, in particular.	*How is poaching characterized in different locations and by different people involved in poaching? *What is the involvement of NGOs in financial support for anti-poaching, and how do trends in anti-poaching finances influence the strategies and tactics that are used on the ground? *How are local communities involved in the management of efforts to curb poaching?	*Conservation managers *NGO staff *Community leaders and key members.
*Leverage points—points within the system where a change in an anti-poaching effort can lead to a substantial change in everything.	* How has technology and communication changed poaching in Africa, and how can technology be used to help poaching issues, human/wildlife conflict, and tourist experiences? * What is the involvement of NGOs in financial support for anti-poaching, and how do trends in anti-poaching finances influence the strategies and tactics that are used on the ground?	*Conservation managers *NGO staff *Community leaders and key members.
*Adaptive management—the ability of the actors involved in anti-poaching to manage the rapid change in poaching and build capacity to minimize it.	* What are the facilitators for anti-poaching efforts at multiple scales? *What are the barriers to anti-poaching efforts at multiple scales?	*Conservation managers *NGO staff *Community leaders and key members.

Table 3.1. Operationalizing the conceptual framework.

Verification Strategies

Trustworthiness

Credibility and trustworthiness are achieved through such techniques as prolonged engagement in the field and the triangulation of data sources, methods, and investigators (Creswell, 2012). This study used various data sources to provide corroborating evidence from a wide perspective, including interviews, documents, observation notes, and field notes. Triangulation involves using various methods during data collection for corroboration of the information obtained and the resulting conclusions reached (Maxwell, 2012).

Reliability in qualitative research is enriched through thorough field notes and high-quality audio recordings of interviews coupled with a subsequent careful transcription of them (Creswell, 2012). For this study, all interviews were carefully recorded and transcribed, and the researcher read the transcriptions with the help of another researcher to ensure accuracy. The researcher also supplied the synthesis of the interviews to the research participants so that they could engage with the first level of analysis as a form of member checking. In addition, the researcher took field notes on observations, including the email addresses of participants and pieces of related information shared by various experts and stakeholders.

Validity was addressed by developing detailed codes and themes. Field research appears to provide greater validity than survey and experimental measures because the actual presence of the researcher plays a significant role in analyzing and understanding

the complexity of the human experience (Babbie, 2013). One of the validity issues in this study is that the researcher worked with the UWA in the past. Therefore, triangulation was used to minimize researcher bias. Being aware of potential researcher bias and clarifying how it was addressed in the study are important for ensuring the validity of the research (Creswell, 2012). More specifically, in this study, the data obtained from documents and field notes were used to triangulate and corroborate the information obtained from the interviews.

Reflexivity and positionality

Reflexivity and positionality are essential elements in any research project, especially when conducting research in sensitive areas like Murchison Falls National Park. Reflexivity refers to the researcher's awareness of their own biases, assumptions, and experiences that may influence the research process and findings. Positionality, on the other hand, refers to the researcher's standpoint in relation to the subject being studied and the potential impacts of their background and identity on the research.

As I embarked on this research, my perspective on poaching and species extinction was influenced by my prior experiences with the Uganda Wildlife Authority. Having firsthand knowledge as a former employee of the challenges faced in wildlife conservation in Uganda and the pressures the organization endured to manage the parks, I entered the study with a preconceived mentality. Furthermore, the issue of wildlife trafficking was prominent at the time, with Kenya's impactful act of burning ivory as a statement against the demand for illegal wildlife products. This situation led me to view wildlife poaching and illegal wildlife trafficking as a crisis, and I held the belief that

anyone involved in such activities needed to be apprehended. As I immersed myself

deeper into my research project, particularly on the subject of the communities around

Murchison Falls National Park, I encountered enlightening and somewhat surprising

findings. I discovered that their perspective on poaching, or what they considered as

hunting, was deeply rooted in their cultural context. For them, it was more than just an

illegal activity; but also a way of life. The communities' expectation of access to the

park's resources was a significant factor contributing to their engagement in poaching.

When faced with restrictions and limitations, they found it challenging to simply change

their attitudes overnight. It became evident that their understanding of hunting was

closely intertwined with their cultural heritage and traditions. This realization shed light

on the complexity of the issue and the need for a more nuanced approach to address

poaching and conservation challenges in the area. It highlighted the importance of

considering cultural perspectives and engaging with local communities to find sustainable

solutions that respect their way of life while safeguarding the park's wildlife.

Before embarking on fieldwork, I underestimated the significance of tribal or

ethnic affiliations within the local community in relation to poaching patterns. It became

evident that different tribes held distinct and often times unique cultural attachments to

the wildlife, and these perspectives varied depending on the location around the park. The

norms and beliefs of people living in the southern region were not necessarily identical to

those in the northern bank of the park. This cultural diversity played a crucial role in

shaping attitudes towards poaching. Additionally, I discovered a surprising connection

between weather seasonality and poaching activities. Weather patterns seemed to

influence certain aspects of poaching behavior specific to this region, adding another layer of complexity to the research.

While I anticipated that my contacts would be helpful, I underestimated the extent of their support during the data collection process. As a former employee of the Uganda Wildlife Authority, my professional and social networks proved invaluable in facilitating access to wildlife experts and identifying suitable participants from other NGOs and local communities. Conducting interviews with various individuals while traversing Murchison Falls Park in under two weeks during the scorching months of January and February was no small feat, but these contacts and networks provided much-needed assistance and sped up the data collection process. However, the involvement of my previous professional contacts in the research did introduce an element of bias. Some participants seemed more guarded in their responses, possibly due to their knowledge of my association with the Uganda Wildlife Authority. It appeared that they might have felt more at ease sharing information with an entirely unknown researcher rather than someone with whom they had a prior professional relationship or had not entirely heard of.

Before beginning my fieldwork, I was aware of the sensitivity surrounding the issue of poaching and wildlife trafficking. However, I was surprised by the extent of the sensitivity and the number of people who preferred to remain anonymous and declined to be recorded initially. It was only after assuring them that the recordings would be kept confidential and secure that they felt more comfortable sharing their insights. Additionally, I encountered situations where some crucial data and reports that were not readily shared, contrary to my initial assumption that they would be publicly available for

researchers. This restricted access to certain information, making the research process more challenging. There were aspects of my identity, however, that worked in my favor during the fieldwork. Being a Clemson University student and an independent researcher helped allay fears that I was there in an authoritative capacity as a wildlife manager. This distinction allowed me to approach the research from an academic standpoint, emphasizing my intent to contribute to a deeper understanding of the issue rather than taking any official enforcement role. The sensitivity of the topic turned out to be more pronounced than I had anticipated, leading some participants to prefer anonymity and limited sharing of certain information. Nonetheless, my status as a Clemson student and independent researcher helped establish a more collaborative and non-threatening atmosphere, facilitating the collection of valuable data for the study.

To my surprise, the revelation of oil discovery and mining plans in Murchison Falls National Park appeared to present a far greater issue and threat than poaching and wildlife trafficking. While I had prior knowledge of the oil situation, it was only when I arrived in the field and witnessed the scale of ongoing activities and the level of development since my last visit that I fully grasped the magnitude of this economic undertaking. Observing the bustling activities, numerous vehicles, and presence of oil company staff within the park, especially during the morning and evening ferry crossings, I couldn't help but take note of the intriguing interplay between conservation efforts and oil mining activities. The contrast between the natural beauty of the park, the relaxed tourists and the hustle and bustle of oil-related operations left me contemplating the delicate balance between preserving the park's ecological integrity and pursuing

economic development. The experience shed light on the complexities of conservation and the need for sustainable practices in the face of potential economic gains from the oil industry. Witnessing the ongoing activities underscored the complicated relationship between conservation and economic development and prompted me to further explore the intricate interplay of these forces in the context of the park's future.

I rarely perceive myself as disadvantaged or particularly reminded of my gender unless situations arise that make it evident that I stand out in some way. Unfortunately, the conservation field in Uganda is heavily male-dominated, and this becomes painfully apparent whenever I go into the field. During my research on poaching, I noticed that there are significantly fewer female working in this field compared to their male counterparts. This underrepresentation is mirrored in the number of female participants I encountered during my study. In all three categories of participants, women constituted less than a quarter of the overall number, primarily due to the male-dominated nature of the conservation domain. Ironically, I observed that in the local community and traditional settings, many women are the ones responsible for managing households. They play crucial roles in running homesteads and making important decisions for their families. However, when it comes to conservation efforts, their involvement is often overlooked and less recognized. This disparity highlights the need for greater gender diversity and inclusivity in the conservation field. Recognizing and involving women in conservation initiatives can bring unique perspectives and approaches to address the challenges of poaching and wildlife trafficking. It is essential to break the barriers that

hinder women's participation in conservation and create an environment that values and encourages their contributions.

The research process triggered powerful and lasting emotions within me as a researcher, and on a human level. Unexpectedly, I experienced a sense of sadness and helplessness that deeply impacted me. It became evident that some of the communities surrounding the parks had been extensively surveyed on the topic of poaching, leading to a feeling of exhaustion and frustration among them regarding research that, in their opinion, seemingly offered no immediate solutions at the household level. During my interactions with the local community members, one particular appeal touched me profoundly. A community member implored me to take action and do something to help them. This heartfelt plea left me with a profound sense of responsibility and urgency to go beyond simply studying the topic. While I had anticipated getting involved in some capacity in the future, this experience heightened my understanding of the challenges faced by these local communities. It reinforced my commitment to making a tangible and positive impact on their lives, beyond academic research. The emotional response I felt during the research process served as a powerful catalyst for driving meaningful action. It compelled me to seek practical ways to address the pressing issues affecting the communities around the parks and to explore avenues for actively contributing to positive change that would make a genuine difference in their lives.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

This chapter presents the results of the conducted research, with a primary focus on addressing three key research questions: (1) What are the barriers hindering anti-poaching and wildlife protection initiatives across different levels? (2) What factors contribute to the success of anti-poaching and wildlife protection efforts at multiple scales? (3) How do individuals involved in or impacted by anti-poaching and wildlife protection efforts assess the overall responses to anti-poaching measures at multiple scales, along with their respective achievements? The data analyzed to answer the above questions comes from within information rich sources, the semi-structured interview participants possessed substantial expertise in the field or valuable personal experiences related to the questions. The selected participants were best positioned to provide valuable insights into the specified research inquiries. Through this method, the research aimed to gain detailed and nuanced information that could shed light on the barriers and facilitators of anti-poaching and wildlife protection efforts, as well as the overall perceptions and effectiveness of these initiatives at varying scales.

This data was collected between January and February 2019, and follow-up phone interviews were conducted in July 2023. A total of 26 people were interviewed (N=26), and these included experts in wildlife conservation managers, members of Non-Governmental Organizations working closely with the park authorities of Murchison Falls National Park, and key conservation and local community leaders and key members residing adjacent to the national park. There are three districts bordering Murchison Falls

National Park on the southern bank: Buliisa, Masindi, and Kiryandongo, and there are three districts bordering the park on the northern bank: Nwoya, Oryam, and Packwach districts. All the local community leaders and key members were interviewed in the areas they reside: Latoro, Layelle, Lagagaji, and Paraa in Nwoya district, and Muvule and Mubako villages in Buliisa district. Members of Non-Governmental Organizations were interviewed in Pakwach district and Kampala city. The wildlife conservation managers were interviewed in Kampala city and the park in Buliisa district. The identity of these participants will be protected due to the sensitive nature of this research subject as well as their requests to remain anonymous when interviewed.

Recruitment of participants and data analysis process

The recruitment of participants for this study utilized purposive sampling, a method carefully chosen to select the most critical key informants and gather in-depth data. By employing purposive sampling and selecting participants based on these specific criteria, the study aimed to ensure a diverse and knowledgeable group of informants, ultimately contributing to a deeper and more nuanced exploration of the research topic. The selection criteria were based on the following key categories:

(1) Wildlife Park Management Experts: This category comprised employees of the Uganda Wildlife Authority, the organization entrusted with managing all of Uganda's national parks, including Murchison Falls National Park. These experts were chosen for their extensive knowledge and insights into park management.

(2) Non-Governmental Organizations (NGOs) involved in Conservation: Participants from NGOs actively engaged in the conservation of Murchison Falls national

park and working closely with the local community were selected. Their involvement ensured a comprehensive understanding of conservation efforts and community engagement.

(3) Local Community Leaders and Key Members: This category encompassed leaders from the communities residing around Murchison Falls National Park, as well as key community members with significant experiences and knowledge. Including their perspectives provided valuable insights into the local community's relationship with the park and its conservation.

Data analysis

Qualitative data analysis was used for this research, the primary data source consisted of semi-structured interviews, which were transcribed for analysis. Some interviews were conducted in local languages like Acholi and Runyoro, later translated into English and transcribed to ensure inclusivity and capture diverse perspectives. The transcribed data was organized in an Excel sheet and underwent manual analysis. Categories were developed based on the responses of key stakeholders, including Non-Governmental Organizations (NGOs) members, Park management staff, local community leaders, and other key community individuals who were interviewed. Through this process, themes emerged from the interviews, and appropriate codes were applied to categorize and make sense of the information.

Additionally, the researcher documented field notes during interviews with various individuals in and around Murchison Falls national park. These notes provided valuable context and supplementary insights to enrich the qualitative data. The researcher

gathered field notes during interviews around Murchison Falls national park. Documents

from the Uganda Wildlife Authority, NGOs, and online sources, informing wildlife

poaching and protection, were collected. Additionally, photographs of park locations,

attractions, wildlife, and poachers' traps were taken, adding visual context to the research.

Number of respondents	Category of respondents	Gender
7	Conservation managers/ experts	5 males 2 females
8	Non- Governmental Organizations (NGOs)	7 males 1 female
9	Community leaders and key community members	9 males
2	Tour operators	1 male 1 female

Table 4.1. A breakdown of the participants of the interviews.

Theme	Description
1. Reasons for Poaching	Poaching is driven by factors like poverty and unemployment in neighboring areas of the park.
2. Cultural Values of Local Communities	Local communities consider the park a vital part of their cultural heritage, passing down generations.
3. Shift from Subsistence to Commercial Poaching	Wildlife poaching has evolved from subsistence-based to more commercial activities.
4. Technological Impact on Poaching and Law Enforcement	Advances in communication and technology have influenced how poachers operate and law enforcement is conducted within the park.
5. Oil Discovery's Influence on Conservation Management	The discovery of oil in the protected area has led to the need for adaptive conservation management that balances economic development and livelihood needs.
6. Tourism Revenue Generation	The park serves as a key tourism destination, generating revenue for conservation management and the local economy.
7. Challenges and Adaptation	Being Uganda's oldest and largest park, it faces numerous challenges, necessitating continuous adaptation.
8. Importance of Local Community Involvement	Engaging local communities is increasingly vital for effective conservation management of the park.
9. Impact of Insecurity and Insurgency	Past security issues have negatively affected both wildlife populations and the park's conservation, requiring recovery efforts.
10. NGO Support	Non-Governmental Organizations (NGOs) offer support for community engagement, anti-poaching strategies, and law enforcement reinforcement.

Table 4.2. A table representing the themes generated from the interviews.

The themes are now discussed below while answering the questions related to the findings. The themes are presented as answers to the sub-questions that support the overarching question.

Reasons for wildlife poaching in Murchison Falls National Park

Theme One: There various reasons why people poach wildlife: poverty, unemployment, human-wildlife conflict, illegal wildlife trade, and cultural norms rank high in the areas adjacent to this park.

The primary drivers of poaching include poverty, leading some individuals to engage in a vicious cycle of poaching and selling meat for immediate gains; human-wildlife conflicts, where communities retaliate against animals that harm them; the cultural preference for meat, with hunting being a sport or tradition in certain regions; and the lucrative ivory trade, driven by external factors and attracting individuals willing to take risks in hunting elephants for significant financial gain. The insights gathered from the interviewees explicitly emphasize poverty as a significant catalyst for poaching around Murchison Falls National Park.

The neighboring communities hold a prevailing perception that the park should serve as a provider for their essential necessities, including sustenance derived from food, medicinal plants, and firewood. In their eyes, the park's abundant wildlife represents an intrinsic part of their livelihood, and they feel entitled to benefit directly from these valuable resources. This profound sense of ownership and entitlement is rooted in the economic hardships faced by many local inhabitants. For the impoverished communities, the allure of the park's natural wealth becomes even more compelling, as it presents an opportunity to alleviate their daily struggles and meet their basic needs. One participant during the interviews eloquently voiced this sentiment, shedding light on the deep-rooted connection between poverty and poaching in the region:

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"Poverty remains an underlying issue, but what deeply concerns me is the prevailing mindset among the community. Many here firmly believe that God bestowed these animals for their sustenance, leading to an insatiable craving for wild meat. Even those who seem educated can't resist asking park employees for meat when they visit the community, underscoring the gravity of this problem. To tackle this challenge, we must focus on reshaping this mindset. It's crucial to educate people about the stark reality that, despite the appearance of abundant wildlife in Murchison, their populations have drastically declined compared to the past. Once, animals freely roamed far and wide, even venturing as far as Kampala (the capital city of Uganda). However, with the burgeoning human population, the animal numbers have significantly dwindled, and they now exist only in specific locations within the park, akin to isolated islands. The relentless pressure exerted on them, coupled with the menace of diseases, climate change, and other adverse factors, places their survival in jeopardy. Moreover, the situation has become even more precarious due to the disruption of wildlife corridors. These vital corridors allow animals to move and intermingle genes, promoting a healthier population. Without them, we face a grim prospect of roaming problems in the future, effectively transforming the park into something resembling a zoo. This transition is underscored by the increasing need for professions like veterinarians in the park management. Once deemed unnecessary, these experts are now an integral part of wildlife conservation efforts, reflecting the shifting dynamics and urgent challenges we face. To secure a sustainable future for these magnificent creatures, concerted efforts must be made to alter the prevailing mindset and foster a profound appreciation for the

delicate balance between human needs and wildlife preservation. By nurturing such awareness, we can work together towards coexistence that safeguards the longevity of these animals for generations to come.”

Cultural factors also exert considerable influence, as the cultural preference for meat in the various tribal societies around the park creates a demand for wildlife resources. In some communities, hunting is seen as a sport or an integral part of their cultural heritage, reinforcing the tendency towards poaching. Certain regions believe that consuming specific animal meat can enhance fertility, leading to illegal hunting practices driven by such beliefs. Additionally, elephant poaching involves external influences, with individuals from outside Uganda seeking contacts within the country to facilitate the illicit trade of ivory. The lure of substantial profits acts as a strong incentive for people to engage in the risky act of shooting and killing elephants to obtain valuable ivory. These diverse and interrelated drivers underscore the need for comprehensive and multifaceted strategies to effectively combat poaching and protect wildlife populations. These issues are all interwoven as explained by one of the participants:

“Poaching is driven by various factors, with poverty being a significant influence. Many individuals turn to poaching to earn money by selling animal meat, yet they remain caught in a cycle of poverty, perpetuating illegal activity. Additionally, human-wildlife conflicts contribute to poaching when wild animals cause harm to communities, leading to retaliatory killings. Cultural factors also play a role, as the preference for meat in

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African societies fosters demand for wildlife resources. Some communities view hunting as a sport or cultural tradition, reinforcing the inclination towards poaching. For instance, beliefs about consuming specific animal meat for fertility purposes drive illegal hunting in certain regions. On a larger scale, elephant poaching involves external influences, with individuals from outside Uganda seeking contacts within the country to facilitate the illicit trade of ivory. The lure of significant profits incentivizes people to take risks in shooting and killing elephants to obtain valuable ivory. These multifaceted drivers necessitate comprehensive strategies to combat poaching effectively."

Human-wildlife conflict arises from the competition for resources between wild animals and local communities living near protected areas. As human settlements expand into traditional wildlife habitats, encounters between people and animals become more frequent, leading to crop depredation and property damage. Such incidents can create feelings of anger, frustration, and loss among the affected communities, triggering a desire for retaliation or self-protection. Crocodiles have been known to end up on community land near the park and kill people. Elephants are particularly very destructive and cause so much damage to people's gardens in a short amount of time. In response to the damage caused, some individuals resort to poaching to strike back at the wildlife that has caused them harm. This form of conflict-driven poaching poses a serious challenge to wildlife protection efforts, as it not only endangers vulnerable animal populations but also intensifies tensions between conservation authorities and residents. Addressing human-wildlife conflict and its associated poaching requires a multifaceted approach:

"*Poverty stands out as one of the primary drivers of poaching in the area, especially for those living near the parks. With limited income-generating activities and a lack of business opportunities, many resort to poaching to survive and provide for their families. Ignorance about the benefits of wildlife resources also contributes to the problem, as some individuals are unaware of the positive impact that conservation can bring to their communities. Frustration resulting from human-wildlife conflicts plays a significant role in driving poaching incidents. When animals from the park destroy crops and livelihoods, it leads some to retaliate by engaging in illegal hunting. Additionally, some communities feel marginalized and excluded from the benefits of the park, such as gate revenue sharing, leading to further frustration and resorting to poaching as a form of protest. The belief that game meat is delicious, particularly from the local area, further fuels the demand for poaching. Coupled with the high cost of living, where families struggle to afford basic necessities, poaching becomes an appealing option to obtain meat. These multifaceted issues pose serious challenges to the communities living near the parks, necessitating comprehensive efforts to address poverty, improve awareness, and foster sustainable conservation practices.*"

Nature of Conflict	Description	Most Destructive Animals
Crop Damage	Wildlife damaging crops and agricultural fields.	Elephants, Hippos, Baboons
Human Injury	Instances where humans are injured by wildlife.	Elephants, Lions, Crocodiles
Human Death	Fatal interactions between humans and wildlife.	Lions, Crocodiles, Elephants, Buffalos
Livestock Death	Wildlife causing the death of domesticated animals.	Lions, Hyenas, Crocodiles
Destroying Water Dam	Damage to water infrastructure by wildlife.	Elephants, Hippos, Buffalos
Human Threat	Wildlife posing a threat to human safety.	Lions, Crocodiles, Elephants
Property Damage	Wildlife causing damage to buildings or property.	Elephants, Baboons

Table 4.3. Types of human-wildlife conflicts in Murchison Falls National Park

Another driver that fuels the relentless poaching of elephants and the illegal trade
in wildlife products is the insatiable market demand for ivory, particularly in China and
Vietnam, and there are middlemen who use people from the local communities to kill the
elephants to get ivory and it ends up on the market. This external demand has created a
profitable and sinister industry that perpetuates the cruel and unsustainable practice of
killing elephants for their tusks. At the heart of this illicit trade are the middlemen, who

act as intermediaries between the local communities where elephants roam and the global market. These middlemen often exploit vulnerable individuals within the local communities, coercing or enticing them into carrying out the brutal act of poaching. Poverty, lack of alternative livelihoods, and minimal economic opportunities force some members of these communities to resort to such illicit activities, further perpetuating the cycle of poaching. The killing of elephants for their ivory tusks is not only a devastating loss for the individual animals but also for the entire ecosystem. Elephants play a crucial role in maintaining biodiversity and ecological balance, and their loss has far-reaching consequences for other species and the environment as a whole.

Efforts to combat this crisis encompass a multifaceted approach. On one hand, it is essential to address the demand side, targeting consumers in China and other regions where ivory products hold cultural or perceived status value. Awareness campaigns, educational initiatives, and stricter law enforcement are critical to changing attitudes and reducing demand for ivory. On the other hand, addressing the supply side involves working closely with local communities to create sustainable livelihood opportunities that do not rely on illegal wildlife trade. Encouraging ecotourism, supporting community-based conservation efforts, and implementing alternative income-generating projects can help curb the involvement of community members in poaching activities. Moreover, international cooperation and collaboration between governments, law enforcement agencies, and conservation organizations are essential to dismantling the criminal networks that facilitate the illegal wildlife trade. Strict border controls, rigorous monitoring, and effective prosecution of traffickers are vital components of this

approach. At its core, combating the ivory trade and protecting wildlife and especially iconic species like elephants and rhinos requires a combination of long-term conservation strategies, socio-economic development, and a collective commitment from the global community.

Oil Discovery in the Park

Theme two: The discovery of Oil in this vast protected area is novel in Uganda and has created changes in how conservation management must adapt to new economic development and livelihood needs.

Uganda is one of the countries in East Africa with significant oil potential, and the discovery of commercially viable oil reserves was made in the Albertine Rift region along the western border with the Democratic Republic of the Congo. The region is known to hold substantial oil reserves, and a joint venture of international oil companies and Uganda's National Oil Company are developing these resources. A final investment decision on the Tilenga, Kingfisher and East African Crude Oil Pipeline projects was taken in February 2022 by the joint venture partners and the Government of Uganda. Part of the Tilenga project is in Murchison Falls National Park. Located in northern-western Uganda, the park is one of the country's most prominent national parks, renowned for its diverse wildlife and breath-taking landscapes, with the iconic Murchison Falls at the heart of the park. The falls mark the spot where the Nile River squeezes through a narrow gorge and dramatically plunges down, making it a popular tourist destination.

The ecological significance of Murchison Falls National Park and the potential impacts of oil exploration and development on its environment and wildlife have sparked extensive debate and concern. Environmentalists and conservationists fear that oil

activities in the area could result in habitat destruction, water pollution, and disruption of the delicate ecosystem. Adding to these worries is the fact that Uganda has never conducted oil mining in a protected area before. The Uganda government faces a challenging dilemma, striving to strike a delicate balance between promoting economic development through oil production – which could substantially boost the country's economy, create employment opportunities, and foster infrastructure growth – and safeguarding the park's precious natural habitats and wildlife.

The decision regarding whether to proceed with oil exploration within the park was a contentious and complex issue. Exploration has already been done and the decision to move to development and then production was made in February 2022. The park, known for its ecological importance and diverse wildlife, had been a subject of debate and concern regarding the potential impacts of oil exploration in the area. Due to the delicate ecosystem and the potential risks of habitat destruction, water pollution, and harm to wildlife, environmentalists and conservationists expressed worries about the possibility of oil activities within the park. The Ugandan government faced a challenging balance between economic development and environmental conservation. Tilenga and Kingfisher projects have moved from exploration to development stage although some other exploration work is going on and plans are even underway to build an oil pipeline connecting these oil pads. One of the participants expressed their views about the discovery of oil and what potential implications it has on the park:

"The discovery of oil has elicited a range of reactions from the people, with some embracing a pessimistic view, considering it a curse, while others remain optimistic about its potential benefits. In the realm of conservation, however, it is evident that oil activities have indeed impacted the natural environment. The development of oil sites, roads, pads, and camps has necessitated the clearance of substantial areas of land, depleting valuable natural resources and leaving once lush lands barren. This has raised concerns about the negative implications for conservation efforts. On the other hand, certain community members have found opportunities amid the oil developments. Realizing the impending road grading, some have strategically erected small houses along the routes, aiming to secure compensation or financial gains from the government. Nevertheless, overall, the discovery of oil has led to a depreciation of conservation endeavors. The extensive clearing of ground cover by the oil activities has had severe consequences on the environment, disrupting delicate ecosystems and unsettling animal habitats. Consequently, some wildlife species have been forced to migrate to new areas, causing a shift in their natural habitats. The conservation community has been particularly mindful of the adverse effects of oil operations, seeking to address and mitigate these challenges. The coexistence of oil development and conservation poses complex and multifaceted challenges, necessitating thorough consideration and careful planning to strike a sustainable balance between economic opportunities and the preservation of the environment and its precious biodiversity."

The introduction of funds from oil exploration activities which include oil personnel and vehicle entry fees in Murchison Falls National Park has also yielded several positive outcomes. Notably, it has enabled the monitoring of previously inaccessible areas within the park due to the construction of new roads to facilitate oil exploration activities. Moreover, the revenues generated from mining operations have directly contributed to the park's financial resources, bolstering its capacity for effective protection and preservation of its diverse ecosystem. As noted in the previous quote, the development of oil infrastructure has sparked substantive concerns regarding oil development and the potential negative impact on the park's wildlife. The establishment of new roads and fenced-off areas might disrupt animal migratory patterns, hindering their natural movements and potentially leading to habitat fragmentation. As a result, it becomes crucial to implement well-thought-out mitigation measures to safeguard essential wildlife corridors and ensure unimpeded access for animals to vital resources such as water and food.

The coexistence of oil exploration and wildlife conservation presents complex challenges that require careful planning and management. While the financial support from oil activities has had its advantages, the Uganda government must find it essential to devise means to strike a balance between economic development and environmental preservation. A thorough assessment of the potential ecological consequences and the adoption of sustainable practices are imperative to safeguard the unique biodiversity of Murchison Falls National Park for future generations to cherish and enjoy. This was explained by one of the research participants who has a good understanding of this topic:

"The discovery of oil in the Murchison Falls National Park has generated both positive and negative implications, warranting a comprehensive evaluation of its impact on the delicate ecosystem and wildlife. On the positive side, the oil discovery has led to increased awareness and funding for conservation efforts. The influx of funds has enabled the monitoring of previously inaccessible areas within the park, as new roads have been constructed to facilitate oil exploration. Additionally, revenues from mining activities have directly contributed to the park's financial resources, bolstering its capacity for protection and preservation. However, the development of oil infrastructure has raised concerns about its potential adverse effects on the park's wildlife. Newly established roads and fenced-off areas may disrupt animal migratory patterns and hinder their natural movements. Consequently, mitigation measures must be implemented to safeguard wildlife corridors and ensure their unimpeded access to essential resources. One major challenge posed by oil exploration is excessive lighting, which creates artificial brightness within the park at night. This artificial illumination can interfere with the breeding behaviors of certain animals that rely on natural darkness for their reproductive cycles. Some areas have already been affected by this lighting, and careful assessment and adjustments are necessary to minimize the impact on wildlife. Moreover, a death of an animal within the park was possibly linked to oil contamination in the water it consumed. While investigations were inconclusive, this incident underscores the need for further studies to ascertain the potential consequences of oil activities on the park's ecosystem and wildlife. Overall, the compatibility of oil exploration with wildlife

preservation remains a critical concern. While the positive aspects of increased funding and awareness are undeniable, it is imperative to approach oil activities in the park with caution and meticulous attention to environmental impact. Further research, monitoring, and understanding are essential to assess the long-term effects of oil development on Murchison National Park's unique biodiversity. With responsible practices and sustainable measures, a delicate balance can be achieved to safeguard both Uganda's economic interests and its invaluable natural heritage."

The government faces a critical dilemma between prioritizing revenue from tourism or oil exploration, both of which have significant implications for the country's future. Uganda is internationally known for its diverse wildlife and breath-taking green landscapes, which serve as major attractions for tourism, especially in its iconic national parks like Murchison Falls. As the highest foreign exchange earner in the country, tourism plays a pivotal role in supporting Uganda's economy and promoting its natural attractions to the world. Tourism is vital for the long-term conservation of natural resources and plays an integral role in sustaining vital ecosystems and wildlife. However, the allure of immediate and substantial income from oil exploration presents an appealing alternative, with faster financial returns. Balancing these competing interests is paramount, considering Uganda's status as a developing nation with pressing economic and environmental needs. While oil revenues may offer short-term financial gains, the sustainability of the tourism industry, which heavily relies on wildlife attractions, is at stake. Tourism remains a leading contributor to Uganda's economy, especially through

renowned sites like Murchison Falls National Park. The revenue generated from tourism

aids in the preservation of natural habitats and wildlife, ensuring the continued existence

of diverse ecosystems. Despite the allure of oil, it is essential to weigh its long-term

benefits against those of tourism and the overall environmental impact. Careful planning

and mitigation strategies are crucial to safeguard the delicate balance between economic

development and environmental sustainability. While measures are already in place to

mitigate potential threats, it is essential to recognize that tourism is likely to be affected

by competing interests.

Numerous stakeholders involved in the conservation of the park emphasize the

need for the government to adopt a comprehensive approach. They assert that while

immediate financial gains from oil production may seem appealing, careful consideration

of the long-term consequences is imperative. The impact on wildlife preservation, the

overall economy, and the well-being of local communities should all be taken into

account. This sentiment highlights the importance of balancing short-term gains with

sustainable practices that ensure the protection of the environment and the prosperity of

both the wildlife and the communities that rely on it.

"*The government faces a crucial decision between prioritizing revenue from*

tourism or oil exploration. While tourism sustains the long-term conservation of natural

resources, the immediate income from oil seems more lucrative and frequent. The trade-

off is evident, as tourism is susceptible to seasonal fluctuations, while oil revenues offer a

faster and more substantial influx of funds. As a developing country with numerous

pressing needs, funding is essential for both wildlife preservation and overall livelihood improvement. The government must strike a delicate balance, considering the nation's economic requirements and environmental sustainability. Plans are already in motion to mitigate potential threats to the best of their ability, ensuring the preservation of vital ecosystems. Nonetheless, it is crucial to recognize that despite these mitigation efforts, tourism is likely to be impacted by competing interests. The allure of oil revenue may seem attractive in the short run, but it risks compromising the long-term viability of the tourism industry and the protection of natural habitats. The challenge lies in making an informed and responsible decision that not only addresses immediate financial needs but also ensures the welfare of the environment and the communities that rely on tourism. Careful consideration, foresight, and strategic planning are vital to safeguard both economic prosperity and ecological sustainability in the face of this critical choice."

In response to the discovery of oil in Uganda and plans to mine it even in protected areas, Uganda took significant steps to manage and regulate the industry effectively. To oversee and govern the oil sector, the government established new authorities, namely the National Oil Company and the Petroleum Authority of Uganda. The National Oil Company is a wholly owned government company that holds the government's commercial interests in the petroleum sub-sector. It is a 15% joint venture partner in Tilenga. The Petroleum Authority of Uganda is the regulator of the petroleum sector. These bodies were tasked with ensuring the responsible exploration, extraction, and management of oil resources in the country. Uganda became a partner in the East

African Crude Oil Pipeline Project (EACOP), a crucial infrastructure development aimed at transporting oil from Uganda's Lake Albert oilfields to the port of Tanga in Tanzania for international export.

Plans for the construction of the pipeline are currently underway, with extensive planning to address environmental concerns. The pipeline will be buried, and measures will be taken for the reinstallation of topsoil and vegetation to restore the landscape's ecological balance. This approach is designed to enable unrestricted movement for both local communities and wildlife, allowing them to coexist harmoniously with the infrastructure. By establishing these Authorities and participating in the EACOP project, Uganda aims to navigate the complex dynamics between economic development and conservation while striving for sustainable practices that minimize ecological impacts. The endeavor seeks to strike a delicate balance between utilizing natural resources for economic growth and safeguarding the country's unique biodiversity and natural heritage for future generations. However, despite these efforts, there are ongoing debates and considerations regarding the potential impact of the pipeline and oil activities on the park's environment and wildlife. Mitigation measures and strict monitoring will be crucial to ensure minimal disruption to the sensitive ecosystem and maintain the park's ecological integrity. One of the participants of this study with inside knowledge of the complex issues regarding oil mining in Uganda shared their perspective:

"The topic of oil in protected areas is undoubtedly complex, and public discussions surrounding it are relatively limited among authoritative figures. In Uganda,

the discovery of oil brought forth a challenge as it seemed to clash with conservation objectives. However, the management authority for these areas decided to pursue a win-win situation by collaborating with the oil companies, relevant ministries, and newly established authorities responsible for oil, such as the National Oil Company and the Petroleum Authority of Uganda. The ultimate goal was to explore the possibility of spurring development while preserving the delicate balance of conservation. Recognizing the need for co-existence, efforts were made to ensure that oil development contributes positively to conservation without compromising the integrity of the protected areas. Given that Uganda lacked an oil policy or law at the time of discovery, the opportunity was seized to integrate conservation principles into oil policies and practices. Consequently, the National Oil and Gas policy in Uganda was formulated, emphasizing environmental management as its primary objective. This policy led to the identification of oil reserves within ecologically sensitive areas. To safeguard the environment, strategies were devised to extract oil from these reservoirs responsibly. It was established that the polluter must bear the responsibility for environmental clean-up. Additionally, the policy empowered protected area managers to negotiate specific conditions with oil companies to protect the conservation interests. Presently, several comprehensive documents have been developed to manage the impact of oil operations within protected areas. These include guidelines for oil companies operating in such regions, detailed mapping of sensitive ecological areas, breeding grounds, wallows, watering points, and sensitivity atlases. The collaboration between the conservation and oil sectors, along with the implementation of these policies and guidelines, seeks to strike a balance

between the economic potential of oil and the imperative to safeguard the invaluable

natural treasures preserved within the protected areas."

Culture and its influence on poaching and conservation

Theme three: Throughout generations the local communities residing around the park have deeply ingrained various cultural values in their perception of it, considering the park a part and parcel of their cultural heritage.

The cultural significance of Murchison Falls National Park to the local

communities and tribes living around the park encompasses rich and deeply intertwined

traditions, diverse tapestry of beliefs, practices, and values held by the local communities.

The park holds profound cultural significance for the neighboring communities and

tribes, whereby deep-rooted connection to the park is evident in the diverse traditional

attachments they hold to it. The table below summarizes the cultural values attached to

the park:

Aspect of Cultural Significance	Description
Spiritual Significance	Considered sacred land, inhabited by spirits or gods and ancestors; rituals and ceremonies are conducted for blessings and protection.
Traditional Practices and customs	The park is integral to traditional hunting and gathering practices of local communities for food and resources.
Medicinal Uses	Plants and wildlife in the park have medicinal properties, and traditional healers use them for herbal remedies.
Economic Value	Historically and traditionally provided livelihood opportunities through activities like fishing and resource gathering.
Cultural Conservation	Preserving cultural heritage and knowledge related to the park for identity and continuity, fostering stewardship and sustainable practices.

Table 4.4. A table summarizing some aspects of the cultural significance in Murchison Falls National Park.

Cultural significance

Traditionally, the connection of the land for the local community people living around Murchison Falls National Park was deeply rooted in their history, culture, and livelihoods. For generations, the local communities surrounding the park relied on the land for sustenance, cultural practices, and economic activities. The land provided them with essential resources for their daily needs, and their traditional way of life revolved around its abundant wildlife. The park holds immense spiritual, historical, and economic

value for these communities, shaping their cultural identity and way of life. Cultural significance in Murchison Falls National Park is deeply intertwined with the traditions and beliefs of local communities living in its vicinity.

1. Spiritual Significance: For many communities, Murchison Falls National Park is regarded as sacred land, inhabited by spirits or deities. Rituals and ceremonies are conducted to pay homage to these spirits and seek blessings for favourable outcomes in various aspects of life, such as fertility, harvest, or protection from harm.

2. Traditional Practices: The park plays a vital role in traditional hunting and gathering practices of some local communities. Hunting for food and resources has been a cultural tradition passed down through generations, and certain animals hold symbolic importance in their culture.

3. Medicinal Uses: Various plants and wildlife found within the park have medicinal properties. Traditional healers from these communities rely on the park's resources for herbal remedies to treat various ailments.

4. Economic Value: Historically, the park has provided livelihood opportunities through activities like fishing and gathering various resources. However, increasing population pressures and resource depletion have challenged these traditional economic activities.

5. Cultural Conservation: The preservation of cultural heritage and knowledge related to the park is crucial for maintaining a sense of identity and continuity for these communities. Cultural pride and heritage play a vital role in fostering

stewardship and sustainable practices, encouraging a respectful coexistence among the local communities with the park's wildlife. A local community leader explained the significance of wildlife to the culture of the tribes around:

"The significance of preserving culture cannot be understated, especially for the communities living near the park, as they share a deep connection with it. Some kingdoms rely on the park's resources for their cultural activities, showcasing the intertwined relationship between culture, conservation, and poaching. On certain ceremonial occasions, such as a Luo king's coronation, specific animal hides like lion skins are essential. This has led to instances where the youth are encouraged to engage in serious poaching to obtain these hides for the ceremony. Similarly, various cultures have sacred places like big trees, anthills, and other significant locations used for worship. These places hold immense cultural value and importance, prompting people to protect them from poaching or destructive actions. For instance, the Bantu community highly values bark cloth which is made from the Mutuba tree (Ficus natalensis), and they take measures to safeguard, conserve, and even cultivate the necessary resources to ensure continuous access. In essence, culture plays a crucial role in supporting conservation efforts and fostering a sense of responsibility toward preserving wildlife and their habitats. The link between culture and conservation highlights the need for a balanced approach that respects cultural practices while safeguarding the environment for future generations."

Cultural attachment to wildlife

In the traditional African culture and local tribes of Murchison Falls National Park, wildlife has long held profound importance, shaping the very fabric of their cultural practices. Hunting, once a sustainable practice, was carried out with foresight and careful consideration of the ecosystem's balance. Tribes hunted selectively, sparing females and young animals to ensure the continuity of the species. This responsible approach to hunting reflected their deep understanding of the interconnectedness of nature and their reliance on these animals for sustenance. As time passed, hunting shifted from subsistence to commercial motives, driven by the pursuit of profit. Unfortunately, this change brought about the non-selective killing of all encountered animals, disrupting the delicate ecological equilibrium, and threatening many species' survival.

Despite this shift, animals continue to hold significant cultural value for the communities. Some tribes regard specific animals as totems, representing their ancestral connections and spiritual beliefs. In certain cultures, the association of kings with animal skins was rooted in a tradition of conservation rather than the current practices. In traditional dances and ceremonies, animal skins were esteemed, signifying a deeper respect and reverence for wildlife within African communities.

Wildlife holds deep cultural significance for the people living around Murchison Falls National Park, forming a crucial part of their identity. However, modern challenges demand a renewed focus on sustainable conservation and ethical coexistence to preserve this cultural heritage while also protecting the park's biodiversity. One of the residents of the community commented about the culture of hunting as follows:

"In traditional African culture and our local tribes here, hunting was a sustainable practice where tribes hunted with foresight, knowing they would continue to rely on these animals. Selective hunting, sparing females, and young ones was common to conserve the species. However, as hunting shifted from subsistence to commercial motives, the pursuit of profit led to the non-selective killing of all animals encountered. Despite this change, animals still hold cultural significance, with some tribes regarding them as totems, and in certain cultures, kings' association with animal skins was rooted in conservation rather than the current practices. Traditionally, animal skins were esteemed for traditional dances, reflecting a deeper respect for wildlife within African communities."

Cultural Belief	Animal/Item	Belief Effect
Hippopotamus meat increases fertility in women.	Hippopotamus	Believed to enhance female fertility and birth of healthy children.
Giraffe meat causes leprosy	Giraffe	Believed to cause leprosy when consumed in Alur culture.
Killing a lion or elephant is a rite of passage to manhood.	Lion or Elephant	Symbolizes transition into manhood and a symbol of strength.
Hunting of all wildlife is a sport African men partake in	Various wildlife e.g., antelopes, bush pig, etc.	Viewed as a traditional sport for African men to enjoy and indulge in.
Ceremonial clothing & protection.	Inner bark of the Mutuba tree (Ficas natalensis)	Believed to possess healing properties and for making the clothes of Bantu kings in Uganda.
Leopard skin is used for coronation and ascension of kings.	Leopard	Used in coronation ceremonies and symbolizes respect for wildlife appreciation.
People appreciate these animals as totem animals	Various animals	Animals considered as totem animals hold special significance and are not consumed by that clan.
On certain ceremonial occasions, specific animal hides are essential.	Lion skins, leopards, etc.	Specific animal hides are essential for specific ceremonial occasions.
Various cultures have sacred places used for worship	Big trees, anthills, etc.	Specific locations considered sacred for worship.
Spiritual protective powers associated with some wildlife species.	Lions Leopards	Possessing lion claws provides spiritual protection. Leopard skin is in demand by witch doctors.

Table 4.5: Some cultural beliefs and their significances.

Hunting as a traditional way of life

In many African communities, hunting held immense cultural significance, serving as both a game or sport and a rite of passage for certain societies. The act of hunting specific species, such as lions or elephants, symbolized a young individual's transition into adulthood and conferred a sense of status and prowess as a man. These hunting traditions were deeply ingrained in the cultural fabric, shaping the identity and values of these societies. However, the dynamics of hunting changed as the human population grew, leading to increased pressure on wildlife habitats. In the past, animals had ample space to roam freely, and the impact of hunting on wildlife populations was relatively limited. As human settlements expanded, the establishment of protected areas became essential to conserve biodiversity and safeguard these natural habitats. With the prohibition of hunting in protected areas like Murchison Falls, a tension emerged between cultural traditions and conservation efforts. Despite the ban, the desire for hunting persisted within some communities, driven by the historical significance attached to the practice and the memories of the enjoyment it once brought. The cultural connection to hunting remains deeply ingrained, with members of these communities valuing the tradition despite its incompatibility with modern conservation principles. Finding a balance between cultural heritage and wildlife protection poses a complex challenge. This was explained by one of the participants:

"*In the context of culture, hunting used to be a significant part of African communities, serving as a game and a rite of passage for some societies. Hunting specific*

species like lions or elephants marked one's coming of age and status as a man.
However, in the past, the human population was low, and animals had ample space to
roam freely. As protected areas were established, hunting of wildlife was prohibited, yet
the desire for the sport persisted within the community. Despite the ban, some
communities still hold onto the hunting urge here in Murchison, driven by the historical
significance and the enjoyment it once brought. This cultural connection to hunting
remains ingrained, even though its practice is no longer permissible in protected areas."

Culture and poaching

Culture plays a significant role in poaching activities in Murchison Falls National
Park. In some local communities, hunting and gathering have been long-standing cultural
practices deeply rooted in their traditions. These practices were historically essential for
survival, providing food and resources. However, as modernization and development
have progressed, the significance of these practices has shifted. Despite legal protections
for wildlife, cultural beliefs and customs may still perpetuate the view of certain animal
products as valuable commodities for traditional ceremonies, medicinal purposes, or
social status. For instance, cultural beliefs surrounding the perceived medicinal or
spiritual benefits of specific animal parts may drive demand for illegal wildlife products.
Additionally, socio-economic factors can influence poaching behaviour. Poverty and
limited alternative livelihood options in communities around the park can lead
individuals to engage in illegal activities for economic gain.

In more recent years, poaching has become highly commercialized as people are driven by monetary gains. Even in cultures like Alur, where certain animals like giraffes were traditionally not consumed due to beliefs about leprosy, the cultural norms have shifted, and these animals are now hunted and eaten, leading to a rise in poaching incidents. Several key species are particularly vulnerable to poaching and require vigilant protection. Elephants are targeted for their ivory, while lions face threats due to cultural beliefs that associate spiritual protection with possessing lion claws. Leopards are hunted for their skins, often by witch doctors. Additionally, animals like buffalos and kobs are poached primarily for their meat, further exacerbating conservation challenges.

Cultural beliefs within various communities also contribute to the problem. For instance, some tribes believe that consuming that women consuming hippo meat will help with fertility and will result in a healthy child. In the Murchison region as well, certain individuals hold beliefs about specific herbs from particular trees providing healing properties, leading to interference in conservation efforts. It has proved difficult for park management authorities to change the mindsets of some of the local people when it especially comes to the consumption of game meat. One of the participants who is a local leader commented about this:

"I have been contemplating why poaching persists even today, and I have come to realize that some individuals have a deep-rooted history of hunting that is tied to their culture. For them, hunting has been a family tradition, passed down through generations, and breaking away from it seems challenging. The cultural factor is crucial here. I'm

puzzled by the idea of twenty married men spending days hunting one antelope, while the same effort in farming could yield more benefits. Pursuing traditional hunting for just one meal lacks significant monetary value, showcasing the influence of conservative cultural practices in such choices. Moreover, I have noticed that lack of awareness of wildlife rules and low levels of literacy play a significant role in driving people to poach. It appears that education can be a powerful tool in transforming individuals' perspectives and behaviours. By providing education and raising awareness about the importance of wildlife conservation, we can steer them away from poaching and towards more sustainable activities. Interestingly, some poachers claim to do it because they find bush meat to be particularly delicious. However, it's essential to highlight the risks involved and the harm caused to both wildlife populations and the environment by their actions. If they redirected their efforts towards legal and sustainable activities, they could potentially have a more significant and stable source of meat, like domestic animals."

Clash of conservation management with culture

The clash between culture and contemporary conservation in Murchison Falls National Park stems from the complex interplay of traditional beliefs, practices, and modern conservation efforts. For centuries, local communities have coexisted with wildlife, attributing spiritual, medicinal, and economic significance to various species. Hunting, once a sustainable practice, held cultural value as sport, a rite of passage and a source of livelihood. However, as human populations grew, and economic pressures

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intensified, traditional hunting transformed into unsustainable commercial poaching, endangering wildlife populations. Modern conservation initiatives, established to protect biodiversity and preserve delicate ecosystems, introduced strict hunting bans and restrictions, directly conflicting with certain cultural practices. The clash further intensifies due to competing interests. Some communities view wildlife as a valuable resource, both economically and culturally, while conservation efforts prioritize species preservation and ecosystem balance. Commercial interests, such as tourism, can exacerbate tensions as they bring additional financial benefits to the region while also influencing conservation policies.

Overcoming this clash requires delicate dialogue and collaboration. It necessitates understanding and respecting the cultural significance of wildlife in local communities while promoting sustainable practices that safeguard the park's ecological integrity. Engaging communities in conservation decisions, providing alternative livelihood opportunities, and incorporating cultural heritage into eco-tourism initiatives can foster a sense of ownership and mutual benefit. Balancing culture and contemporary conservation in Murchison Falls National Park demands creative solutions that blend tradition and modernity. By acknowledging the intricate relationship between culture and wildlife, stakeholders can work together to ensure a harmonious coexistence that protects both the unique heritage and the natural treasures of the park. A wildlife management expert shared their perspective on this:

"*In the case of northern communities residing in Murchison Falls National Park, culture plays a significant role in facilitating poaching. It instils a belief that anything is permissible, and the recent addition of monetary value to poaching activities has further complicated matters. For instance, in the past, hunting was linked to traditions of proving one's manhood by hunting lions, but now, it comes with a fee attached to it. This cultural association with poaching initially hindered community involvement in wildlife conservation efforts, as negative connotations were assigned to activities that were once integral to their hunting practices. The issue also lies in the terminology: what was once hunting is now labelled as poaching, painting the communities' traditional activities in a negative light. This creates a clash when contrasted with outsiders' ability to engage in "sport hunting" with financial means. Consequently, discussions about culture are met with negativity as foreign perspectives have deemed their cultural practices as inferior. Certain instances of poaching also stem from a sense of retaliation, where animals damage crops, and the communities cannot retaliate without being labelled as poachers. This is evident when an animal kills a person, and the communities feel compelled to act as they believe it will deter future attacks. We work with diverse landscapes, each characterized by unique cultural backgrounds, resulting in varying rates of poaching. These cultural beliefs provide a basis for various actions and addressing them requires time and increased awareness. Working with different landscapes and their unique cultural contexts could provide insights into reducing poaching rates. Recognizing and respecting cultural heritage while promoting wildlife conservation can foster a more harmonious relationship between communities and the park's fauna.*"

The impact of past insecurity on conservation of the park

Theme four: Insecurity and insurgency in the past have been a setback to the wildlife population and conservation of the park, and recovery of both the park and the local communities affected by it.

The history of insecurity in Murchison Falls National Park in Uganda is marked by a complex interplay of factors that have posed significant challenges to wildlife conservation and park management. Historically, the region faced periods of political instability and armed conflicts, leading to an increase in poaching activities and the degradation of the park's natural resources. During the 1970s, Uganda experienced a tumultuous era under the regime of President Idi Amin, characterized by lawlessness and a lack of effective governance. In this period, poaching was rampant and often sanctioned by the government itself. Soldiers would venture into the park, shooting elephants and other wildlife, and then illegally trade their ivory. This uncontrolled poaching had devastating consequences for the park's megafauna, with the elephant population drastically declining from around 20,000 in the 1970s to a mere 2,000 by the mid-1980s. One of the participants had this to comment about this era.

"*In the country's history, a dark period emerged during the 1970s, characterized by organized poaching sanctioned by the government itself. Under the regime of Idi Amin, lawlessness prevailed, and soldiers engaged in organized elephant poaching. They would leave the barracks, drive to the national parks, and mercilessly kill elephants, loading the ivory onto trucks for illegal trade. This lawlessness led to a devastating decline in Uganda's megafauna, with nearly 90% of the elephant population lost by*

1979/80. The elephant numbers plummeted from approximately 20,000 in 1970 to a mere

2,000 by 1985/6, affecting various other species as well."

Additionally, the park got caught up in the civil conflicts led by the LRA that

plagued Uganda in the 1990's to the early 2000s. Armed groups sought refuge in the

park, and sporadic violence disrupted park management efforts and conservation

activities. The insecurity not only endangered wildlife but also posed risks to the safety of

park rangers and visitors. In recent years, security challenges have also arisen due to the

spill-over effects of conflicts in neighbouring countries, with armed groups crossing

borders and encroaching into the park. This has further complicated conservation efforts

and put additional pressure on park authorities to safeguard both wildlife and visitors.

To address these issues, concerted efforts have been made to improve law

enforcement and strengthen security measures within and around the park. Enhanced

patrols, the use of technology, and community engagement initiatives have been

deployed to combat poaching and enhance overall security. While progress has been

made, the history of insecurity in Murchison Falls National Park serves as a reminder of

the need for ongoing vigilance and collaboration to protect this vital wildlife conservation

area. One of the participants commented about this insecurity issue:

"*There has been a remarkable improvement when comparing the present to the*

past in terms of wildlife conservation. Notably, the elephant population in this park has

surged from a mere 400 in 1995 to a substantial 1600-2000 at present. However, this

progress was hard-won, considering the grave poaching challenges the park faced during the 1960s, 1970s, and 1990s. At that time, rampant ivory poaching was fuelled by the availability of firearms among civilians and wrongdoers, resulting in a dire situation for the elephants. Fortunately, with the return of peace to the region, decisive action was taken to tackle the issue. The authorities embarked on confiscating firearms from poachers, leading to a significant decline in elephant poaching and a subsequent increase in their population. Many firearms that once surrounded the park were seized by dedicated Uganda Government forces, particularly from 2012 to 2014, during which around 25 guns primarily AK47s used for poaching were collected. Due to the concerted efforts, all known elephant poachers in the north were apprehended and brought to justice by the end of 2014, which further reduced poaching activities. Although some individuals may still attempt to sneak into the park and hunt elephants, the risks involved in such actions have become substantial deterrents. We remain steadfast in our commitment to safeguarding these magnificent creatures, and our vigilance paid off as we recovered three firearms related to elephant poaching towards the end of last year. Despite our continued efforts, we face challenges when neighboring countries experience insecurity, particularly from South Sudan and the Democratic Republic of Congo, as some engage in smuggling activities. Such incidents not only affect us but also pose threats to our dedicated game rangers and the elephants under our protection. Nevertheless, we persist in our mission to preserve the park's rich wildlife and secure a brighter future for these majestic creatures."

Since the Idi Amin era, Murchison Falls National Park has undergone significant transformations, particularly concerning its wildlife population. The past was marred by a devastating period of rampant poaching in Uganda, resulting in a substantial loss of wildlife within the park due to lawlessness. The consequences were severe, and the animal populations experienced a sharp decline. Moreover, the 1990s brought about another setback in the park's recovery efforts with the outbreak of the Joseph Kony war involving the Lord's Resistance Army (LRA). This conflict hindered the revival of the wildlife population that had shown signs of growth since the 1970s, pushing them further back into decline. As a consequence of these challenges, communities living around the park were displaced into internally displaced camps, disrupting their lives, livelihoods, and recovery plans. The impact on these communities was profound, as they faced hardships and struggles resulting from their displacement. The loss of access to their traditional lands and resources directly affected on their livelihoods, making it even more challenging for them to rebuild and recover from the turmoil.

The tumultuous history of war and insecurity left a lasting impact on both the wildlife conservation in Murchison Falls National Park and the well-being of neighboring communities, particularly those residing on the northern side. The repercussions of this troubled period extended far and wide, resulting in a significant reduction in the wildlife population and the involuntary displacement of local inhabitants. Consequently, the delicate ecological balance and socio-economic stability of the region were severely disrupted, prompting the need for collaborative efforts to rehabilitate and rejuvenate the area. Adding to the complexities, when these displaced individuals returned to their

villages surrounding the park, they found themselves living in areas without proper

fencing, thus making human-wildlife conflicts inevitable. This situation posed additional

challenges to an already traumatized society, which was striving to recover from the scars

of war. One of the law enforcement personnel explained:

"*The other driver in northern Uganda was a result of the Lord's Resistance Army*

(LRA) war and in western Uganda it was the Allied Democratic Forces (ADF). These

wars left a lot of small weapons within the community, some of the fighters who

surrendered came with weapons and because of the lawlessness during the war and all

that, some firearms got into the hands of the wrong people and these weapons motivated

them to go and poach."

Key challenges and threats facing Murchison Falls National Park.

Theme five: As Uganda's oldest and largest park, Murchison Falls National Park is faced
with a diverse range of challenges and threats, necessitating a constant process of
adaptation in management styles and models to survive and stay relevant.

Murchison Falls National Park is Uganda's oldest national park and spans an

impressive 3,840 square kilometers. Established in 1952, it boasts of rich biodiversity,

including iconic species like elephants, lions, and Rothschild giraffes. The park's

centerpiece is the magnificent Murchison Falls, where the Nile River dramatically

plunges through a narrow gorge. With diverse landscapes, from savannah to woodland

and wetlands, the park provides a haven for both wildlife and tourists seeking breath-

taking natural beauty. Murchison Falls National Park stands as Uganda's oldest and most

expansive conservation area, boasting a rich historical significance in the nation's efforts to preserve its natural treasures. However, the task of effectively managing this vast expanse has been beset with numerous challenges, evident even from a historical perspective. Despite the many efforts that have gone into preserving this conservation area, Murchison Falls National Park has encountered various management threats, some of which are distinct to this park, while others align with the common trend of challenges faced by other wildlife parks. For instance, the impact of population growth exerting significant pressure on the park's natural resources is a shared concern among many protected areas. Many of these threats have a lot to do with human-wildlife conflict and interaction, economic development, and extraction of resources from the park. The table below summarizes some of the key threats that are faced by the park.

Threat/Challenge	Description
Law Enforcement Challenge	Difficulties in enforcing wildlife protection laws and regulations effectively in an expansive conservation area.
Diseases as a Threat	Potential transmission of diseases between wildlife and humans or other species.
Local Community Poverty	Poverty in the neighboring communities leading to unsustainable resource exploitation.
Population Growth and Economic Development Pressure	Increasing human population and economic activities impacting and exerting pressure on the park's resources.
Human-Wildlife Conflict	Conflicts arising from interactions between wildlife and local communities.
Wildlife Poaching	Illegal hunting and trade of protected species and products, threatening wildlife populations.
Murchison as a Conduit of Illegal Trafficking	The park being used as a pathway for illegal wildlife and other trafficking activities.
Oil Mining and Extraction in the Park	Potential environmental degradation and habitat destruction from oil activities.
COVID- 19	Increased poaching activities in the park and led to the loss of tourism revenues.

Table 4.6. *A Table summarizing key threats and challenges faced by Murchison Falls National Park*

Murchison Falls National Park is faced with a complex web of threats that have to simultaneously be managed. This research outlines the critical parameters of these challenges, each posing a unique risk to the park's survival and ecological balance. First, the exponential growth of human population exerts immense pressure on the park's natural resources, leading to habitat degradation and loss. Secondly, the encroachment of local communities driven by poverty further strains the delicate ecosystem. Thirdly, the persistent menace of wildlife poaching, and illegal trafficking threatens iconic species' existence. Additionally, the expansion of economic activities, including oil mining, threatens the park's ecological integrity. Understanding these parameters is crucial in formulating comprehensive strategies to safeguard this invaluable natural treasure. One of the park management participants summarized the key threats as follows:

"When considering wildlife protection, the primary focus lies in assessing various parameters. Foremost among them is identifying the threats impacting wildlife, which are then linked to key species. In the case of Murchison Falls, these key species include elephants and pangolins, acting as flagship representatives of the wildlife we endeavour to safeguard. The key threats that demand attention are as follows: Poaching: This illegal practice poses a significant danger to wildlife populations and must be addressed urgently. Illegal trade targeting elephants for ivory: The illicit trade in ivory poses a grave risk to the survival of elephants, necessitating stringent measures against it. Petroleum and gas exploration and exploitation: The activities related to the exploration and exploitation of these resources can have adverse effects on wildlife habitats and must

be carefully managed to minimize ecological harm. By addressing these critical threats and implementing effective protective measures, we can enhance the preservation of our valuable wildlife and their habitats for the benefit of future generations."

Safeguarding Murchison Falls National Park from illegal wildlife trafficking presents a formidable challenge due to its extensive and porous borders, making it vulnerable to illicit activities. The park's size and remoteness create a challenging terrain for effective surveillance and patrolling, enabling traffickers to exploit the vast wilderness for their unlawful trade. Additionally, the park's proximity to neighbouring countries further complicates law enforcement efforts, as traffickers can easily transport their illicit goods across international boundaries, taking advantage of weak cross-border cooperation and limited resources. To combat illegal wildlife trafficking, robust law enforcement efforts are crucial. However, the park faces significant obstacles in tackling poaching activities. Insufficient funding and resources hamper the recruitment and training of a dedicated team to combat the highly organized and well-equipped poaching networks. Moreover, the dangers posed to rangers by armed poachers dissuade potential recruits from taking up this challenging task. The remoteness of the park also affects communication and coordination between law enforcement agencies, leading to information gaps and delays in response times. Inadequate technological infrastructure, such as communication systems and surveillance equipment, further hinders monitoring and tracking efforts.

To tackle these challenges, a comprehensive strategy is being implemented, fostering partnerships between the Uganda Wildlife Authority and NGOs like African Wildlife Foundation and Uganda Conservation Foundation. The strengthened collaboration aims to address both cross-border wildlife trafficking, domestic poaching, and capacity building for rangers. Notably, a canine unit has been deployed for border patrols, including at Entebbe International Airport, bolstering detection capabilities. Additionally, increased financial support and capacity-building initiatives are enhancing law enforcement efforts within the park. Embracing innovative technologies, such as drone surveillance and remote sensing, enhances monitoring and early detection of illicit activities. This multi-pronged approach aims to safeguard Murchison Falls National Park's wildlife and ensure its preservation. This was further explained by one of the participants from the law enforcement personnel:

"*Uganda has been serving as a transit area for wildlife products, originating from distant regions such as Central Africa, South Sudan, and the Congo. The Northern parts of the country, particularly the West Nile and Nimule National Park areas from Sudan, have posed challenges due to relatively porous routes and borders, facilitating the illegal passage of wildlife products. Nebbi acts as a key point along this path, and from there, these products must pass through Murchison Falls National Park. Unfortunately, Murchison Falls has been a target for poaching and trafficking more than any other parks in Uganda. Its accessibility, coupled with porous borders, has made it an attractive location for such illegal activities. To address this issue, the law enforcement unit in*

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Murchison Falls plays a crucial role in intercepting traffickers attempting to bring wildlife products into the park. The traffickers' routes usually involve passing through Packwach, Nebbi, Gulu, Masindi, and finally Murchison on their way to Kampala. In response, efforts are being made to establish mobile ranger units along these routes, effectively creating interception points that hinder traffickers' progress. Comprehensive tracking strategies are being implemented, both along the trafficking routes leading to the park and within the park itself. To enhance these efforts, a canine unit with specially trained dogs has been deployed to assist in the tracking process. These dogs play a vital role in identifying potential threats, tracing potential threats along the trafficking routes leading to the park, detecting intruders within the park's boundaries, bolstering the conservation efforts to protect the wildlife in Murchison Falls National Park."

The rising population growth and the impact of diseases have forged a complex and delicate interaction between wildlife and humans in Murchison Falls National Park. As nearby human settlements expand and encroach upon the park's boundaries, the natural habitats of wildlife are increasingly disturbed, leading to heightened instances of human-wildlife conflicts. The competition for resources, such as water and grazing land, intensifies as both humans and animals struggle to coexist in a shrinking ecosystem. The convergence of humans and wildlife in such proximity elevates the risk of disease transmission. Zoonotic diseases, like Anthrax, Ebola and other infectious agents, pose a serious threat as humans come into direct contact with wildlife. These outbreaks not only

endanger human health but also lead to devastating consequences for the park's biodiversity, as susceptible animal populations suffer severe losses. The increasing proximity between an increasing human population and wildlife in Murchison Falls National Park heightens the risk of disease transmission. For instance, diseases like anthrax can leap across species boundaries, posing significant risks as domesticated cows graze within the park's boundaries. These outbreaks not only jeopardize human and animal lives but also set off a catastrophic chain reaction, disrupting the delicate balance of the park's biodiversity and imperiling its natural harmony. The struggle for limited resources amplifies as both humans and animals vie for water sources and grazing lands in the decreasing ecosystem.

This encroachment disrupts the natural habitats of the park's diverse fauna, creating an environment where human-wildlife conflicts become increasingly frequent and intense. As a result, disease surveillance and management initiatives are being diligently implemented to safeguard human, domestic, and wild animal populations from zoonotic threats. Veterinary expertise assumes a pivotal role in close monitoring and effectively mitigating disease transmission, striving to protect the wildlife and prevent it from becoming a conduit for disaster as history has previously shown. This was explained by one of the participants as follows:

"*For instance, in 2004, Queen Elizabeth National Park experienced a severe anthrax outbreak that tragically claimed the lives of over 3000 Hippos. Since that devastating event, the park has been susceptible to cyclical anthrax outbreaks, although*

not as intense as the one in 2004. Handling anthrax in this area requires the expertise of

veterinarians because it is a cross-cutting disease that affects humans, wildlife, and

domestic animals, forming a dangerous triad of transmission from humans to domestic

animals, and then to wild animals. A wildlife component/veterinarian is essential in

addressing this complex challenge, and the use of chemicals and drugs becomes crucial

in combating the disease. Currently, the region faces the pressing issue of population

pressure and a spike in population growth, which exacerbates the conflicts arising from

human-wildlife interactions. The conflict stems from conflicting land use, where domestic

animals encroach upon the park's territory, leading to potential interactions with wild

animals infected with diseases like brucellosis caused by Brucella bacteria. The mode of

transmission from domestic animals to humans is through contamination, often resulting

in miscarriages in domestic animals. For instance, a wild animal like a kob might abort

on the grazing grounds, leaving behind infectious agents that can be picked up by

domestic animals when they graze in the same area. Humans can also contract the

disease through contaminated milk when milking infected cows. As local communities

continue to progress and develop, the management of wildlife becomes increasingly

complex. Finding sustainable solutions to address human-wildlife conflicts, infectious

diseases, and the ecological impact of population growth remains crucial for the well-

being of both the people and the wildlife in the region."

The discovery of oil in Murchison Falls poses a substantial threat to conservation

efforts in this biodiverse region. Environmentalists, conservationists, and local

communities express deep concern about the potential impacts of oil exploration and extraction on the delicate ecosystem and diverse wildlife. Among many other iconic species like elephants and lions, notably, this protected area boasts the highest number of Rothschild giraffes in the wild globally, making its preservation paramount. Some of the wildlife has been translocated, as a means to protecting them and also increasing the population in other parks, in order to reduce pressure on Murchison. The challenges presented by oil mining are significant, as it necessitates addressing the disruption caused by mining cavities, increased human movements, heavy vehicles, drilling equipment, and camps, all of which may negatively impact the park's pristine environment. Moreover, the surge in human activities related to oil exploration raises the specter of human-wildlife conflicts. As people flock to the area for work and settlement, encounters with wildlife become more likely, potentially leading to human injuries, fatalities, and retaliatory actions against perceived threats.

Despite the considerable challenges, the joint commitment of environmental stakeholders and the adoption of responsible oil exploration practices offer hope for a harmonious coexistence between economic development and conservation in Murchison Falls. Key to this endeavor is the implementation of plans to share the benefits from oil revenues and tourism with local communities. By involving these communities in the oil, tourism and conservation efforts and offering tangible incentives, their dedication to protecting the environment and wildlife is likely to be significantly enhanced. This symbiotic relationship ensures that the preservation of Murchison Falls' biodiversity goes

hand in hand with the region's sustainable economic growth. One of the participants of this study elaborated on these efforts:

"*Regarding oil exploration, we are using different strategies to manage wildlife in Murchison bearing in mind that parts of the park will have oil mining activities, to prepare for any eventuality and to ensure conservation is sustainable. Translocation of the Rothschild giraffe: incidentally with this species, the largest population of this giraffe in the wild, worldwide is in Murchison. We are talking of a total count of over 1500 individuals. Due to oil exploration in the northern part of the park, giraffes have never crossed the Nile because they do not know how to swim. Therefore, we decided to translocate the giraffes to the south which is about 2/3 the size of the national park, making it a bigger space to host the giraffes. This expands the habitat and prepares for the impact of oil mining.-Other species such as Uganda kobs have been relocated to Kidepo National Park. Moreover, more giraffes may be relocated. An important factor in expanding the habitat involves boosting tourism especially in parks like Kidepo where large animal concentrations are thriving. Animals like buffalos, lions, etc. are concentrated in certain spaces in Kidepo due to the presence of water sources being limited to particular areas unlike Murchison where the river Nile traverses through the national park for about 150 kilometers. However, tourism in Kidepo has been somewhat restricted. The abundance of lions in the area, coupled with limited prey, has posed challenges. Buffalos, being the primary prey available, have been under considerable pressure from the high number of lions preying on them. To address this situation and*

promote a healthier ecosystem, efforts have been made to relocate kobs to Kidepo, with the expectation that their population will multiply rapidly and consequently provide an increased food source for the lion population. By relocating species to suitable habitats and ensuring that any potentially harmful activities, like oil mining, are conducted outside the park's delicate ecosystem, we aim to safeguard the park and its inhabitants for the long term. Efforts have also been made to create alternative animal tracks in Murchison Falls to allow wildlife to bypass construction zones and oil pipelines safely. Through rigorous monitoring protocols, we can swiftly identify any potential impacts, detect early warning signs, and promptly initiate appropriate mitigation measures. For this purpose, we have invested in training our dedicated staff, with many rangers specializing in oil monitoring techniques. During their patrols, rangers are equipped with essential tools like thermometers and water control kits to directly assess factors such as pH levels. This simple yet effective equipment enables them to closely monitor the environmental conditions and swiftly address any emerging issues."

Given the changes happening with the landscape and the local communities, including population growth, oil exploration activities, and the mounting pressure on park resources in Murchison Falls National Park, adaptive management becomes imperative. Law enforcement in itself will not be enough to deter threats to the park. The traditional methods of patrolling, though essential, are proving insufficient to address the scale of these changes effectively. As a result, a shift towards adaptive management is essential to tackle the multifaceted issues arising from these dynamics. Adaptive management entails a flexible and responsive approach, where conservation strategies are continuously

revaluated and adjusted based on emerging challenges and changing conditions.

Engaging with local communities becomes a fundamental aspect of this adaptive

approach. Fostering dialogue and raising awareness about the importance of conservation

can foster a sense of ownership and shared responsibility for protecting the park's

invaluable resources. While law enforcement has made significant progress in patrolling

and managing human-wildlife conflicts, it has become increasingly clear that more

extensive efforts are required to engage local communities, foster dialogue, raise

awareness, and encourage their active participation in the sustainable conservation of the

park.

Traditional methods of patrolling are proving inadequate due to population

growth, escalating encroachments, and the consequent rise in human-wildlife conflicts.

Despite a substantial portion of their budget being dedicated to anti-poaching and law

enforcement, it is now evident that addressing other human and community-related issues

is equally crucial to effectively managing the park and maintaining the support of local

communities. This was further explained by one of the participants:

"*A significant portion of our budget is allocated to anti-poaching efforts, covering*

various aspects like ranger houses, salaries, and essential equipment. However, we

recognize that a fundamental shift in strategy is necessary to address the root cause of

poaching effectively. Our new approach centres around intensifying community

education, awareness, and development activities. By actively engaging with local

communities, we aim to foster a sense of ownership and understanding of conservation

principles. Encouraging their active involvement in safeguarding the wildlife and

habitats will help curb poaching. Yet, changing human attitudes is a formidable

challenge and a lifelong endeavour. Community conservation efforts have been ongoing

since the 1990s, but the impact hasn't been as significant as desired. Altering people's

perceptions and attitudes is an intricate process, requiring sustained dedication and

patience. While shifting away from the traditional "command and control" policing

approach has proven beneficial, it alone has not deterred poaching effectively. Hence, we

recognize the need for multiple intervention strategies. Government intervention is

crucial in addressing the issue at hand. While formal education may draw people away

from poaching, the absence of educational opportunities may perpetuate the problem.

Encouraging strategies that promote formal education, as well as vocational training for

potential employment opportunities, can dissuade idlers from engaging in poaching

activities. For long-term success, it is essential to target the younger generation,

educating them about the harmful consequences of poaching and nurturing a culture of

conservation. Efforts should focus on relocating individuals from sensitive areas around

protected areas while providing them with alternative means of livelihood. Emphasizing

both formal and informal education is vital in achieving these goals and deterring

poachers from their activities. In the past, anti-poaching groups were formed, but they

lacked sustainability, with some members merely denouncing poaching in words while

secretly pursuing it for financial gain. To ensure effective change, a well-constituted and

committed approach is necessary, aiming to eradicate poaching at its roots and foster a

harmonious coexistence between people and wildlife within protected areas like Queen

Elizabeth and Murchison."

COVID-19 Impact

According to the World Health Organization (WHO, 2019), COVID-19, also

known as the Coronavirus disease, is an infectious respiratory ailment originating from

the SARS-CoV-2 virus. This virus triggered a worldwide pandemic, inducing significant

societal and economic upheavals that led to extensive shutdowns across numerous

regions of the globe. Covid-19 caused completely changed the wildlife tourism landscape

in Murchison Falls National Park and all other parks in Uganda during the pandemic as

no tourists could visit the park during those lockdowns. During the Covid-19 pandemic,

the implementation of Standard Operating Procedures (SOPs) curtailed movement, even

impacting community conservation and law enforcement rangers. A substantial

proportion of their efforts had previously been directed towards internal park patrols,

leaving fewer resources available for community response due to these limitations.

However, the efforts were later ramped up due to the increasing acts of poaching in the

park. This was further explained by one of the law enforcement participants:

"During that specific time frame, tourism was significantly impacted, resulting in

a complete cessation of visitors to the park and a complete absence of generated revenue.

As part of the community conservation team, we encountered numerous instances of wire

snares within the park. This surge was attributed to people's idleness and needs, as they

resorted to poaching bushmeat for personal consumption. These snares were primarily set to target antelopes and other ungulates; however, the detrimental consequences extended to various other animals. As creatures moved about, they unknowingly stepped into these snares, leading to tissue damage. Tragically, one lion fell victim to these snares, succumbing during the second Covid lockdown in early 2021. The impact of snares was not limited to smaller animals; even elephants suffered extensively. The snares inflicted severe wounds and tissue damage to their trunks, necessitating the intervention of veterinary units. This damage disrupted their feeding habits, browsing patterns, and reproductive behaviors. Likewise, giraffes faced similar consequences, enduring grievous wounds and sometimes fatal injuries due to snares. These injuries disrupted their breeding and feeding patterns as well. Amidst the Covid pandemic, patrols underwent a significant ramp-up, with certain personnel, such as tour guides, being incorporated into law enforcement roles to bolster the unit. In a mere span of one day, within an approximately 5-square-mile area, we managed to confiscate approximately 67 active wire snares primed to ensnare wildlife. In addition, the count of successful wildlife rescues notably escalated during this period."

As global travel restrictions took hold and tourism ground to a halt, the financial strain on local communities surrounding the park escalated. Many individuals who relied on tourism-related jobs were left without income, leading to heightened vulnerability. In these circumstances, poaching emerged as an unfortunate alternative source of livelihood, as the closure of legal economic avenues prompted some to turn to the illegal wildlife

trade. Amid the global COVID-19 pandemic, poaching for subsistence purposes

witnessed a general uptick. Poaching trends, however, exhibited variability among

different countries. Scarce resources allocated for conservation, anti-poaching, and anti-

trafficking efforts during this period led to challenges, protected areas and conservation

initiatives experienced substantial revenue declines due to heightened poaching activities

(Lucas, 2022). The pandemic's economic toll, coupled with limited law enforcement

resources and restricted tourism activities, created a challenging environment that

opportunistic poachers exploited. some of the local community members escalated their

tactics of poaching for bushmeat using various tools. An increased number of snares,

traps, and other weapons for poaching were found inside the park. One of the participants

detailed how these illegal activities were carried out:

> *"Concealed traps are set by burying them underground and covering them with*
>
> *soil, ensuring their discreet placement. These traps employ an open-jaw*
>
> *mechanism, held in position with a stick, and when an animal steps onto the soil,*
>
> *the trap is triggered, ensnaring the animal, usually a buffalo or another creature.*
>
> *Subsequently, hunters approach wielding spears to dispatch the animal,*
>
> *capitalizing on its weakened state due to the pain. These traps are predominantly*
>
> *utilized for poaching warthogs, antelopes, and occasionally buffalos. Among the*
>
> *most frequently poached species are antelopes and other ungulates, notably*
>
> *including kobs, Jackson's hartebeests, waterbucks, bushbucks, reedbucks, and*
>
> *oribi. Regrettably, there are instances where unintended victims, such as*

elephants, lions, leopards, and giraffes, also become entangled in these traps,

highlighting the unfortunate collateral impact."

Figure 4.7. Assorted poaching traps that were confiscated by UWA from the park.
Photography by Ingrid Nyonza Nyakabwa.

Figure 4.8. Snares used for poaching confiscated from the park by UWA. Photography by Ingrid Nyonza Nyakabwa

Figure 4.9. Spears, traps and other assorted weapons used for poaching. Photography by Ingrid Nyonza Nyakabwa.

Impact of advancement in communication and technology.

Theme six: Advancements in communication and technology have impacted the tactics poachers use to operate and transformed law enforcement strategies and operations within the park.

In Murchison Falls National Park, foot soldier rangers continue to play a vital role due to their presence and necessity. However, advanced technology significantly facilitates and amplifies their efforts, guiding them in the right direction and maximizing the impact of their conservation work. Despite the essential role of foot soldier rangers, the integration of modern technology proves to be a game-changer in their operations. With the aid of cutting-edge tools, these rangers can enhance their effectiveness and efficiency in protecting the park's wildlife. Data-driven insights from technology play a vital role in ranger decision-making. Through sophisticated analytics, foot soldier rangers can prioritize patrol areas based on historical data and patterns, optimizing their resources and focusing on critical zones that require immediate attention. Furthermore, advanced technology enhances the safety and security of foot soldier rangers themselves. Wearable devices equipped with emergency response features can summon aid in case of dangerous encounters or accidents, ensuring their well-being while working in challenging and sometimes perilous environments. Through the implementation of remote tracking devices, such as GPS collars on elephants and lions, conservationists can closely monitor the movements and behavior of these magnificent animals. By distinguishing between human activities and natural movements, these intelligent systems promptly alert park authorities to any suspicious incidents, facilitating rapid intervention and protecting vulnerable wildlife from harm. Advanced technology serves as a crucial asset,

significantly bolstering law enforcement and patrol efforts while playing a pivotal role in the protection of biodiversity, particularly for endangered species like lions and elephants:

"Communication and technology play crucial roles in both facilitating poaching and enhancing anti-poaching efforts. Within the national parks, rangers and poachers alike possess phones, making communication convenient for both parties. Poachers strategically position someone near the park gates with a phone, ensuring they are alerted whenever rangers approach their location. Unfortunately, sometimes corruption within wildlife staff poses an additional challenge, as some individuals lack the passion for conservation and may collude with poachers, providing them with insider information in exchange for financial gain. Others may have familial ties to poachers in nearby communities, leading them to favor leniency or aid these illegal activities. However, technology has also proven invaluable in the fight against poaching. Smartphones have become essential tools for data collection in wildlife management. In Queen Elizabeth National Park, lions have been equipped with satellite collars that transmit signals and monitor their movements. This technology enables real-time tracking, allowing for swift responses when lions approach human settlements. Similarly, elephants in Murchison Park have been collared to track their behavior and movement patterns. Collaboration with companies such as TotalEnergies EP Uganda (TEPU) has further leveraged technology to mitigate the impact of oil mining on wildlife. TEPU's support facilitated the collaring exercise, enabling the monitoring of animal behavior during the oil

exploration phase. Additionally, smart technology aids in planning and deploying

patrols, optimizing efforts to combat poaching effectively. While technology has become

a double-edged sword, enabling poachers and anti-poaching teams alike, it is the

responsible and innovative use of these advancements that will ultimately determine the

fate of our wildlife and the success of conservation efforts."

The rapid changes and advancements in technology and communication have

significantly impacted how the conservation of the park is managed. This advancement

has been embraced both by law enforcement and poachers, leading to distinct

consequences for wildlife preservation. The intersection of technology and conservation

presents both opportunities and challenges. Technology has its benefits for anti-poaching

efforts and also its drawbacks**.**

While conservationists benefit from advanced tools for monitoring and

communication, poachers also exploit these innovations to their advantage. On one hand,

technology has empowered conservationists and park authorities with innovative tools for

managing the park more efficiently. Sophisticated monitoring systems, such as camera

traps, satellite imagery, and satellite collars of elephants and lions, enable real-time

tracking of wildlife movement and identification of potential threats. Systems like Spatial

Management and Reporting Tool (SMART) and Geographic Information Systems (GIS)

aid in data analysis, allowing for better-informed decision-making and the development

of targeted anti-poaching strategies. Furthermore, modern communication methods like

instant messaging, radios, and mobile apps facilitate seamless coordination among park

rangers and law enforcement agencies during anti-poaching operations. On the other hand, poachers and illegal wildlife traffickers have also capitalized on these advancements. They exploit encrypted messaging apps and social media platforms like WhatsApp to organize illegal activities, making it challenging for authorities to track their movements and plans.

"Effective communication is an essential prerequisite for the successful management of national parks and anti-poaching operations. Countries worldwide have embraced digital radio communication systems to enhance coordination and response, although Uganda still faces financial constraints in effectively adopting this technology. Digital radio communication offers real-time location tracking and allows for swift deployment of reinforcements, which is critical in combating poaching incidents. Good transport equipment, like helicopters, further facilitates rapid deployment of rangers to specific locations in need of protection. In remote areas lacking telephone communication networks, relying solely on such means can hinder anti-poaching efforts. The absence of regular communication with rangers can lead to concerns about their safety and hinder response times during critical situations. To address this, the implementation of the Spatial Management and Reporting Tool (SMART) has been beneficial. With SMART, rangers can capture photographic evidence of arrested poachers, bolstering their chances of conviction in court. On the other hand, poachers also recognize the significance of communication in evading anti-poaching efforts. They strategically deploy observation posts positioned at a considerable distance from their

poaching sites, often atop tall trees, enabling them to maintain a 360-degree view. The

use of mobile phones facilitates communication among poachers, allowing them to stay

ahead of potential threats and evade capture effectively. In the battle against poaching,

communication is a potent tool that can sway the balance in favor of either side. As

technology continues to advance, ensuring reliable and secure communication channels

will be vital to support conservation efforts and protect our wildlife from illegal

activities."

Local community involvement and engagement.

Theme Seven: Local community involvement and engagement are increasingly becoming important in managing the conservation of the park.

Involving the local community in the conservation of Murchison Falls National

Park has been a complex and challenging endeavor, particularly because some poachers

also hail from these very communities. While community engagement is essential for

successful conservation efforts, the presence of poachers within these communities adds a

layer of intricacy to the process. Addressing this issue has its numerous challenges. One

of the primary challenges is building trust and rapport with the local community.

Historically, communities living near protected areas may have faced conflicts with park

authorities or restrictions on their traditional land use. As a result, there can be deep-

seated mistrust and animosity towards conservation efforts. Engaging these communities

in a meaningful way requires establishing open channels of communication,

understanding their concerns, and involving them in decision-making processes.

Additionally, the issue of poaching stemming from within the local community

necessitates addressing underlying socio-economic factors. Poverty, lack of livelihood opportunities, and limited access to education can drive some individuals to resort to illegal activities like poaching as a means of survival. One of the participants commented on this:

"The most prominent issue I see is the perceived risk associated with involving communities in wildlife management, a novel concept that hasn't been widely practiced before in Murchison. The historical context and past associations with poaching make it challenging to bring communities to the table. Even some poachers, targeting iconic species like lions and elephants, often originate from these communities, adding to the hesitation. The lack of information and fear surrounding the consequences of involving communities in wildlife management hinders their full engagement. Authorities often resort to providing support through conservancies without genuinely involving them in decision-making. Instead, a more transparent approach would be to discuss the revenues generated from wildlife and allow communities to participate in determining how those funds can be utilized within their areas. The current revenue-sharing system lacks fairness, as the criteria for allocating funds may not be clear or equitable. By fostering trust and ensuring communities are actively involved in such matters, a positive impact can be achieved. However, the situation remains ambiguous, given the novelty of community involvement in wildlife management. With time, attitudes are expected to shift, benefiting both wildlife authorities and the communities. A clearer understanding and

collaboration between the two parties will help navigate this gray area and lead to more

effective conservation efforts in the long run."

Collaborative management in Murchison Falls National Park involves the active involvement and meaningful participation of local communities in decision-making processes and conservation efforts. This approach recognizes the importance of engaging those who live in and around the park, as they are key stakeholders and guardians of the park's resources. By incorporating the perspectives and knowledge of local communities, collaborative management aims to create a sense of ownership, promote sustainable practices, and ensure the long-term preservation of the park's biodiversity. One of the primary goals of collaborative management is to build trust and foster positive relationships between park authorities, conservation organizations, and the local communities. This is achieved through open dialogue, transparency, and active engagement. Stakeholders work together to address shared challenges, such as poaching, habitat destruction, and human-wildlife conflicts, seeking mutually beneficial solutions that take into account both conservation objectives and community needs. While it still has its immense challenges, there is an effort by the park authorities to involve more participation of local communities in restricted access to park resources and in their involvement in contribution of ideas towards conservation and decision-making. A participant from the park management explained this as follows:

"Collaborative management is employed in specific areas where Memorandum of Understanding (MOU) agreements are established with community groups, granting them access to national parks for fishing, fuel wood collection, medicinal plants, and thatching grass. In these regions, safeguarding the area from poaching is a vital condition of the MOU, leading to active community monitoring and a significant reduction in poaching incidents. Additionally, communities provide valuable intelligence to the anti-poaching team, as some poachers originate from within their ranks. Instances of reporting poachers entering the national park or those trading meat in villages are not uncommon. However, hunting is strictly prohibited within the national park boundaries. Instead, access to meat is permitted in designated areas outside the park, where hunting blocks are managed under wildlife use rights and licensed sport hunting, with meat shared among neighboring communities."

The partnership between park authorities and NGOs serves as a powerful catalyst for local community engagement in Murchison Falls National Park. By combining their respective strengths and resources, this collaboration empowers communities, fosters sustainable development, and enhances conservation efforts. Through this synergistic approach, a number of projects have been worked on involving the local communities and to their benefit. The partnership between park authorities and NGOs also facilitates the development and implementation of participatory management plans. These plans take into account the perspectives and aspirations of local communities, ensuring that their voices are heard in decision-making processes that directly impact their lives and

surroundings. By involving communities in crafting these plans, they become co-stewards of the park's resources, fostering a sense of ownership and responsibility for conservation. They are involved in sensitization and educational programs, building schools and encouraging attendance, and literacy on waste management, among other projects. One of the participants elaborated on some of the projects that have been successfully worked on:

"There are two transformative projects in Buliisa. The School Infrastructure Program conducts annual surveys in November to assess pupil-to-teacher and classroom ratios. Schools facing challenges receive additional classroom blocks or renovations to create a conducive learning environment, encouraging children to prioritize education instead of staying at home. The People and the Parks project collaborates with communities bordering the Murchison Falls conservation area. Using sensitization and training, the project addresses challenges faced by locals, such as deforestation and human-wildlife conflicts. Sensitization introduces the benefits of tree planting, while training teaches coexistence with wildlife and the use of fuel-efficient stoves to reduce park visits for resources. Both projects have yielded positive results, with improved educational experiences and heightened environmental awareness. Ongoing support and collaboration are essential to ensure the projects' sustainability. Buliisa looks forward to a brighter future, where education flourishes, and communities coexist harmoniously with their environment and wildlife. These initiatives serve as models for conservation and community development, showcasing the power of local engagement and global

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cooperation in achieving lasting change. The second approach involves waste management, enlightening them on converting waste into resources and potential business opportunities. We also raise awareness about the dangers of mismanaged waste to individuals and the environment. Through project proposals and community issue analysis, we address problems like limited income, poaching, deforestation, and poverty, seeking projects that uplift them from poverty and align with their aspirations."

In recognizing the importance of local community involvement in conservation efforts, the park management authorities in Murchison Falls National Park have realized the need to motivate and incentivize communities to actively participate and buy into conservation initiatives. This approach recognizes that offering tangible benefits to local communities can create a sense of ownership, enhance collaboration, and ensure the success and sustainability of conservation programs.

One of the primary ways park management authorities incentivize local communities is through the establishment of community-based conservation projects. These projects provide opportunities for communities to engage in eco-tourism activities, such as guided safaris or cultural experiences, which generate income for the community. The revenue generated from such initiatives can be reinvested in community development projects, education, and healthcare, enhancing the overall well-being of the community members and reducing their reliance on activities that may harm the park's resources. Moreover, park management authorities collaborate with Local Government to create benefit-sharing mechanisms. These mechanisms ensure that a portion of the revenue generated from park entry fees, tourism activities, and conservation efforts is

channeled back into the local communities. This revenue-sharing approach provides a direct link between the success of conservation efforts and the prosperity of the communities living near the park:

"To enhance collaborative park management, several steps can be taken. Firstly, establishing designated days for community access to the park, with guidance on responsibly obtaining wildlife resources, can foster a sense of ownership and conservation. Secondly, improving revenue sharing from gate collections is crucial. The current process involves multiple transfers, leading to minimal benefits for communities. Ensuring a more transparent and equitable distribution of funds can significantly impact the community's welfare and support projects aligned with their needs. Thirdly, fostering partnerships with other conservation-focused NGOs can lead to shared knowledge, resources, and coordinated planning. Working together with like-minded organizations can create a more comprehensive and effective approach to conservation. Supporting community-driven projects, such as goat rearing, can demonstrate the tangible benefits of conservation to the local population. When communities directly benefit from park resources, they are more likely to value and protect them. Additionally, strategies like allowing communities to hang beehives in the park under collaborative management can promote biodiversity and provide alternative income sources for local residents. By implementing these strategies, collaborative park management can become more impactful and successful in achieving both conservation goals and the well-being of local communities."

Changes in wildlife poaching trends

Theme Eight: The nature of wildlife poaching has evolved significantly, moving away from traditional subsistence motives to embrace more commercialized and profit-driven practices.

The history of poaching in Murchison Falls National Park is closely linked to a significant decline in wildlife during the 1970s, particularly during Idi Amin's regime. Amin's government displayed little concern for wildlife conservation, leading to uncontrolled hunting and the rampant illegal trade of ivory and game meat. Prior to that, the park was flourishing with wildlife and Uganda was a major international wildlife tourism attraction on the global stage. After Amin's regime, there were efforts to restore and protect the park's wildlife. Conservation organizations and international support contributed to improved management practices, anti-poaching measures, and the re-establishment of wildlife populations. By the 1990s, Murchison Falls National Park experienced a notable recovery, and wildlife populations began to grow again. This resurgence was a testament to the resilience of the park's ecosystems and the effectiveness of conservation efforts. To date, Murchison has experienced an upward trend and rebound of many species.

However, the early 2000s brought new challenges as the global demand for ivory surged. Increased demand for ivory, particularly from Asian markets and mainly China and Vietnam, led to a rise in elephant poaching across Africa, including within Murchison Falls National Park. Poachers once again targeted elephants for their tusks, posing a serious threat to the population's recovery. It is important to note that Murchison

Falls National Park served more as a transit route for illegal activities rather than experiencing high levels of direct poaching of elephants within the park as compared to other African parks with large populations of elephants. In the decades that followed, the commitment to conservation and the collaborative efforts of various stakeholders have contributed to the gradual recovery of Murchison Falls National Park's wildlife. Though challenges persist, the lessons learned from the dark period of poaching during the 1970s have informed and inspired ongoing conservation efforts to protect the park's wildlife. This was narrated by one of the participants:

"In the country's history, a dark period emerged during the 1970s, characterized by organized poaching sanctioned by the government itself. Under the regime of Idi Amin, lawlessness prevailed, and soldiers engaged in organized elephant poaching. They would leave the barracks, drive to the national parks, and mercilessly kill elephants, loading the ivory onto trucks for illegal trade. This lawlessness led to a devastating decline in Uganda's megafauna, with nearly 90% of the elephant population lost by 1979/80. The elephant numbers plummeted from approximately 20,000 in 1970 to a mere 2,000 by 1985/6, affecting various other species as well. However, a turning point emerged around 2010, partially attributed to technological advancements, especially in telecommunication, which significantly aided the fight against poaching. As the demand for ivory surged in Africa, poaching shifted from subsistence practices to more organized and commercial activities. Rudimentary tools gave way to high-caliber weapons and poisoning methods, leading to drastic changes in poaching trends. Ivory poaching

became rampant, resulting in a substantial decline in the elephant population, not just in Uganda but also in neighboring Tanzania, where over 60% of the elephant population was lost. This period marked a transition from simple poaching to highly organized criminal networks and cartels involved in illegal wildlife trade."

A robust law enforcement unit in Murchison Falls National Park has been instrumental in conserving the park and achieving a remarkable rebound in wildlife populations. Recognizing the crucial role of local communities in conservation efforts, the law enforcement unit actively engages and involves them in protecting the park's resources. Murchison Falls National Park has dedicated community conservation rangers, whose duties are primarily to constantly engage local community members on issues of conservation arenas and education. By building trust and rapport with the communities, the unit encourages them to be allies in the conservation process. Community members are empowered to participate in anti-poaching patrols, report suspicious activities, and contribute to conservation initiatives.

Additionally, the unit supports community-based projects that provide alternative livelihood opportunities, reducing dependency on illegal activities and promoting sustainable practices. Moreover, they have also leveraged on technology and communication developments to the benefit of the park. For instance, GPS tracking devices and wildlife monitoring systems help in tracking the movements of endangered species, enabling better protection and informed decision-making.

"Over the years, poaching has undergone profound changes, transitioning from subsistence practices to more elaborate and commercially driven activities that target larger game. Initially, poachers engaged in subsistence poaching, seeking small animals like antelopes to meet their basic nutritional needs. These animals would be hunted and carried home by the poachers. However, a noticeable shift has occurred, with poaching now being motivated by commercial interests, leading to the illegal hunting of larger game such as hippos and buffalos. This shift towards commercial poaching has prompted the formation of organized groups, as the capture and transport of large animals like buffalos necessitate the involvement of a significant number of people, often around ten, to move the meat out of national parks for sale. Economic hardships have driven poachers to exploit these larger animals, as they seek to secure income for their survival. Another significant aspect of the evolution of poaching is the adoption of modern equipment, including firearms. The choice of equipment is influenced by the size and characteristics of the target animals. While rudimentary tools like nets sufficed for capturing small animals like antelopes, the pursuit of larger game demands more sophisticated methods. The transition to firearms has allowed poachers to operate discreetly, evading detection by park management troops, which poses a greater challenge to curbing their illegal activities. An alarming and disturbing trend in elephant poaching is the use of poison as a silent killer. Instead of employing noisy automatic firearms that attract attention, poachers now resort to concealing poisonous substances within bait, like a pawpaw. The ingestion of such baits by elephants leads to a painful and tragic death, leaving no visible bullet wounds. This disturbing shift to poison

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highlights the ruthless and cruel tactics employed by poachers in their pursuit of illicit gains. Furthermore, poaching has evolved from simple, individual actions to highly organized and well-equipped operations, orchestrated by dangerous criminal syndicates involved in the smuggling of wildlife products. This transformation has presented a formidable threat to wildlife conservation efforts and necessitates comprehensive measures to combat and eradicate poaching and protect endangered species from further harm."

Poaching methods in Murchison Falls National Park and across Uganda exhibit regional variations, with different areas employing distinct techniques to trap and capture wildlife illegally. These regional variations are often influenced by factors such as local traditions, geography, and the availability of resources. In some areas of Murchison Falls and Uganda, wheel traps are a commonly used method of poaching. Wheel traps consist of circular snares made of wire or rope, set up in locations where animals frequently pass. When an animal walks through the snare, the trap tightens around its leg, causing injury or death. Wheel traps are particularly effective in catching medium to large-sized mammals like antelopes and buffalo.

In addition to wheel traps and snares, poachers in certain areas may resort to more sophisticated methods, especially in regions close to urban centers or border crossings. These methods can include using firearms to hunt high-value species like elephants or rhinos for their ivory or horns. The choice of poaching methods can also be influenced by the availability of resources and the level of organization among poachers. Some well-

funded and organized poaching networks may employ advanced technology and tactics, while smaller, more localized groups may resort to simpler methods due to limited resources. One of the participants explained this:

"Poaching methods exhibit regional variations, with certain areas employing wheel traps more frequently while others rely on snares. Notably, the use of firearms for poaching has seen a decline compared to the past when elephant carcasses often bore evidence of gunshot wounds. Based on our research in populations surrounding Murchison Falls and Queen Elizabeth national parks, we discovered that over 40% of households engaged in illicit activities within a year. These activities encompassed unauthorized firewood collection, grazing, hunting, and other infractions. Unfortunately, there is a concerning upsurge in lion poaching within Queen Elizabeth. Specific communities are targeting them for their body parts, as these parts are believed to possess medicinal properties tied to witchcraft practices. This emerging trend highlights the need for urgent and comprehensive measures to combat illegal wildlife trade, including increased community engagement, awareness campaigns, and strengthened law enforcement to safeguard this iconic wildlife."

In more recent years, there has been a noticeable shift in poaching trends, transitioning from a more subsistence level to a commercialized and organized form, primarily driven by advancements in technology and increased access to firearms. Traditionally, poaching was often carried out at a subsistence level, with individuals or

small groups hunting wildlife for immediate survival or local trade. In more recent years, there has been a noticeable shift in poaching trends, transitioning from a more subsistence level to a commercialized and organized form, primarily driven by advancements in technology and increased access to firearms.

The availability of modern technology has enabled poachers to better track and locate target species, often with greater precision and reduced risk of detection. Cell phone network and communication have allowed poachers to operate and communicate easier with their enablers, making it harder for law enforcement and park authorities to apprehend them. Furthermore, the accessibility of firearms has escalated the level of danger associated with poaching. Armed poachers pose a significant threat not only to wildlife but also to rangers and conservationists working to protect these species. This shift to commercialized poaching is also driven by the growing demand for wildlife products in illegal markets, such as ivory, rhino horns, and exotic animal parts. Organized criminal networks have become involved in poaching activities, treating it as a profitable and lucrative business:

"At the organizational level, we have implemented significant changes in our law enforcement approach. We have established specialized investigation and intelligence units within our law enforcement department, enabling us to make informed decisions based on valuable intelligence reports. In addition, we are exploring the potential of cutting-edge technology to enhance our conservation efforts. Specifically, we are piloting drones in Murchison to monitor wildlife and protect the park's integrity. Furthermore, we

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have introduced a dedicated canine section to detect individuals involved in the illegal

trafficking of wildlife products, particularly ivory. With the support of various

organizations and agencies, we have established widespread outposts across protected

areas, aided by surveillance cameras to monitor animal and human activities, ensuring

we can promptly address any illegal actions. Our commitment to improving monitoring

systems has led to the adoption of the advanced Spatial Management and Reporting Tool

(SMART), replacing the previous Management Information System (MIST). SMART

allows us to efficiently patrol areas, track unpatrolled regions, and identify patterns of

illegal activities. At the grassroots level, poverty remains a significant driving factor

behind poaching, as people hunt for sustenance due to limited resources. Additionally,

human-wildlife conflicts arise when animals venture into public land, leading to

retaliatory poaching incidents. The demand for wildlife products, such as ivory, in

international markets like China, has led to a concerning increase in poaching activities.

Middlemen recruit individuals from local communities to kill elephants and meet this

external demand. As an organization, we are dedicated to addressing these challenges

through robust law enforcement, technological advancements, community engagement,

and cooperation with international partners. Our aim is to protect this wildlife and

preserve the natural heritage for future generations."

Sustainable tourism and revenue generation.

Theme Nine: The park plays a crucial role in providing unique tourism wildlife products and services, generating much needed revenues for conservation management, bolstering the local economy, both at park, local community and at the national level.

Wildlife tourism in Uganda is a dynamic sector that attracts global tourists with its exceptional biodiversity and captivating experiences. Uganda's national parks boast a captivating array of attractions that entice tourists from around the world. The diverse landscapes, rich biodiversity, and unique wildlife experiences make these parks a magnet for nature enthusiasts, adventure seekers, and wildlife photographers. Uganda's array of attractive activities ranges from gorilla trekking in Bwindi Impenetrable National Park, to game drives in Murchison Falls National Park, and to mountaineering in Rwenzori Mountains National Park, among others. Tourism, including wildlife experiences, holds a central position in Uganda's economy, significantly contributing to its gross domestic product (GDP). The sector generates substantial revenue, provides employment for local communities, and promotes conservation efforts. Investments in infrastructure, lodges, and visitor facilities have further boosted the appeal of wildlife tourism. Among these remarkable parks, Murchison Falls National Park stands as a pivotal contributor to Uganda's tourism industry.

Sustainable tourism plays a vital role in contributing to conservation efforts and benefiting local communities in Murchison Falls National Park, Uganda. The symbiotic relationship between tourism and conservation creates a positive cycle, where the preservation of the park's natural treasures enhances tourism, and in turn, tourism supports conservation and community development. This park has been a major wildlife tourism destination for a long time due to its rich biodiversity and one of the top parks that attracts the vast majority of tourists, both domestic and international. Its importance in terms of generating revenue cannot be overstated. Moreover, revenues generated from

MFNP are used to support conservation in other parks and protected areas that do not generate as much revenue to run their own operations independently and sufficiently. Incentive for Wildlife Protection: The presence of tourists creates an incentive for local communities to protect wildlife and preserve the park's natural beauty. Wildlife sightings are a primary attraction for visitors, and ensuring the well-being of the animals becomes essential for maintaining the attraction of the park.

Financial Support for Conservation: Tourism generates revenue through park entry fees, accommodation, guided tours, and other activities. A significant portion of these proceeds is channeled back into the park's conservation efforts. The funding supports anti-poaching patrols, wildlife monitoring, habitat restoration, and educational programs, strengthening the park's capacity to protect its biodiversity. One of the participants commented on the contribution of tourism to employment locally as follows:

"Yes, local communities are actively engaged both directly and indirectly. They benefit indirectly from the 20% revenue sharing program that gives back to the community. Many community members possess craft skills, and they sell their crafts to tourists, particularly in busy centers and lodges. Additionally, they supply food crops to lodges and park staff, and they also offer entertainment as dancers for lodge guests, including Paraa Lodge."

Over the last 10 years, Murchison Falls National Park has consistently emerged as the most popular destination among all Ugandan national parks, attracting the highest

number of visitors. This exceptional trend underscores the park's unique appeal, diverse offerings, and its status as a favored choice for both local and international tourists. The variety of activities offered, such as game drives, boat cruises, nature walks, and birdwatching opportunities, cater to a wide range of interests and preferences, making Murchison Falls National Park a comprehensive and fulfilling destination for all types of tourists.

National Parks	2013/14	2014/15	2015/16	2016/17	2017/18
Murchison Falls	69,847	64,917	67,873	82,674	96,438
Queen Elizabeth	71,150	57,280	71,808	88,862	86,119
Lake Mburo	20,096	25,658	25,274	27,147	32,959
Bwindi Impenetrable	22,271	18,083	16,872	22,159	31,464
Kibale	12,029	10,609	10,648	13,279	17,758
Semliki	5,728	6,070	8,981	9,927	14,466
Kidepo Valley	3,653	5,189	5,926	9,628	10,668
Rwenzori Mountains	3,475	2,926	2,334	3,540	4,545
Mgahinga Gorilla	9,191	2,854	2,874	4,535	5,984
Mount Elgon	2,083	2,611	2,655	4,051	3,921
Total	**220,065**	**196,768**	**215,890**	**266,510**	**304,882**

Table 4.7. Summary of UWA visitor numbers per park: Financial year 2013- 2018

Source: (UWA, 2023).

National Parks	2018/19	2019/20	2020/21	2021/22	2022/23
Murchison Falls	104,889	81,785	36,907	117,353	145,116
Queen Elizabeth	84,752	61,687	23,507	60,835	97,814
Lake Mburo	34,589	26,534	10,983	23,074	29,881
Bwindi Impenetrable	37,234	30,660	6,817	20,653	37,361
Kibale	12,029	19,343	16,269	3,486	10,079
Semliki	5,728	20,887	14,854	11,527	17,614
Kidepo Valley	13,472	9,365	6,008	7,993	7,393
Rwenzori Mountains	5,521	4,494	811	1,659	7,542
Mgahinga Gorilla	7,270	6,526	1,918	3,996	6,194
Mount Elgon	3,589	2,031	634	1,008	1,155
Total	**332,197**	**255,711**	**103,812**	**265,539**	**382,285**

Table 4.8. Summary of UWA visitor numbers per park: Financial year 2018- 2023

Source: (UWA, 2023).

However, one of the primary challenges is the issue of equitable distribution of
benefits ensuring that the revenue sharing is distributed fairly among all members of the
local communities. Disparities in population size, economic conditions, and social
dynamics can lead to certain groups receiving more benefits than others, potentially
leading to resentment and conflicts within the community. The other challenge is revenue
generation fluctuations. The revenue generated from tourism can be unpredictable,

influenced by factors such as seasonal fluctuations, global economic conditions, and changes in tourist preferences. Such uncertainties can make it challenging to rely solely on tourism revenue for consistent community support. This causes frustrations for several people in the local communities who have grown to rely on it, and it often leads to questions about transparency of the tourism revenue sharing scheme. One of the participants with knowledge about how the revenue sharing scheme works explained this:

"The introduction of revenue sharing aimed to involve local communities in the tourism revenue chain, allocating 20% of park entrance fees through their local leaders. The intention was to fund income-generating projects as alternatives to relying on game meat, such as goat, pig, and poultry farming. However, in practice, some individuals and groups may not use the funds to benefit the broader community. Instead, they prefer cash or immediate consumption of livestock, overlooking the potential for infrastructure like roads or schools that would have lasting benefits. The challenges in benefit sharing stem from poverty and low levels of literacy within the communities. Despite these dynamics, the scheme has proven effective with the growing number of tourists leading to increased revenue shared with local governments. Though improvements are necessary to ensure equitable distribution and long-term community benefits, revenue sharing remains a positive initiative in fostering local participation in conservation efforts and tourism development."

However, this growth in visitor numbers was interrupted by COVID-19. The year 2021 saw a significant decline in tourist numbers to Murchison Falls National Park and all the national parks in Uganda, largely attributed to the global impact of the COVID-19 pandemic. The outbreak of the pandemic prompted widespread travel restrictions, health concerns, and uncertainties, all of which contributed to a notable decrease in the park's visitor arrivals. The COVID-19 pandemic led to the implementation of lockdowns, border closures, and quarantine measures in many countries, greatly inhibiting international and domestic travel. With limited mobility and increased health precautions, potential tourists were dissuaded from embarking on leisure trips, including visits to national parks like Murchison Falls. The fear of contracting the virus and the varying severity of outbreaks across different regions further deterred individuals from undertaking non-essential travel. Many travelers were reluctant to engage in activities that involved close proximity to others, as well as activities that were perceived as risky in terms of exposure to the virus.

This had a profound impact on tourism and the whole tourism value chain in Uganda. The decline in tourist numbers not only impacted the revenue generated from tourism but also had implications for conservation efforts and local communities. Reduced revenue meant that conservation initiatives and community development programs that depend on tourism-related income faced limitations in funding and resources. With the successful management of the COVID-19 pandemic and the implementation of safety protocols, the park has experienced a welcome increase in visitor numbers, indicating a strong rebound in tourism growth. The gradual relaxation of

travel restrictions and the widespread availability of vaccines have contributed to renewed confidence among travelers interested in visiting the parks in Uganda.

Proposed MFNP model based on insights from the research.

Overall, the enhanced management model takes into account the park's ecological and cultural intricacies, actively engaging local communities, and ensuring a balanced approach that fosters conservation, cultural preservation, and sustainable tourism. This approach aligns with the insights e gained and offers a comprehensive framework for Murchison Falls National Park's long-term success.

Aspect/Category	Current Murchison Falls NP Model	Insights from Research	Enhanced Murchison Falls NP Model
Conservation	Zoned activities, basic anti-poaching measures	Need for indigenous knowledge integration, holistic ecosystem approach	Integrate traditional ecological knowledge, adaptive ecosystem management
Community Engagement	Limited community involvement, sporadic consultations	Value of local collaboration, community-led initiatives	Establish co-management, involve locals in decision-making
Cultural Preservation	Limited focus on cultural aspects	Cultural significance for conservation, local knowledge	Fully incorporate cultural heritage in management plan
Tourism Development	Basic tourism facilities, guided tours	Ethical tourism practices, immersive cultural experiences	Develop sustainable cultural tourism, local guides for cultural interpretation
Research and Monitoring	Ongoing research, data collection	Indigenous knowledge, community-based monitoring	Combine traditional and scientific monitoring methods
Funding	Entrance fees, some partnerships	Potential for public-private collaborations, grants	Develop diversified funding streams for conservation and community projects
Adaptability	Some adjustments based on research	Local insights, dynamic adaptation	Regularly update strategies based on local input and changing conditions

Table 4.9. An enhanced Murchison Falls National Park model.

Conservation:

The research highlights the importance of integrating indigenous knowledge into

conservation efforts. This means collaborating closely with local communities who

possess deep insights into the park's ecosystems. For Murchison Falls National Park, this

could involve involving local experts in decision-making regarding resource management, as they understand the delicate balance of the ecosystem. Adaptive ecosystem management will allow for more informed and sustainable conservation practices.

Community Engagement:

The research underscores the significance of community collaboration. Establishing co-management approaches where local communities play an active role in decision-making, planning, and implementation is crucial. In the context of Murchison Falls National Park, this would involve regular consultations with community leaders, involving them in the design of conservation initiatives, and supporting community-led projects that align with park goals.

Cultural Preservation:

My research emphasizes the cultural significance of the park's heritage. The enhanced model should fully incorporate this aspect. For Murchison Falls National Park, it means identifying and protecting cultural sites, involving local communities in preserving and sharing their cultural heritage, and integrating traditional practices into conservation strategies. This could include designated areas for cultural rituals and interpretation centers showcasing local stories and traditions.

Tourism Development:

The research suggests promoting ethical and culturally immersive tourism experiences. For Murchison Falls National Park, this could entail creating opportunities for visitors to engage with local communities, participate in traditional activities, and

learn about the cultural significance of the park. Local guides trained in cultural interpretation could offer unique insights, enhancing visitors' understanding and appreciation of the park's heritage.

Research and Monitoring:

Integrating indigenous knowledge and community-based monitoring is key. For Murchison Falls National Park, this means partnering with local experts to gather information about wildlife behavior, weather patterns, and plant life. Combining traditional knowledge with scientific research will provide a more comprehensive understanding of the park's dynamics, allowing for effective management decisions.

Funding:

The research indicates the potential for diversified funding sources. In the case of Murchison Falls National Park, this could involve seeking public-private partnerships to support conservation efforts. These partnerships could be mutually beneficial, providing funding for conservation initiatives while offering responsible tourism development opportunities that respect the park's cultural and ecological values.

Adaptability:

This research underscores the need for continuous adaptation based on local insights. For Murchison Falls National Park, this would mean establishing a management approach that remains flexible and open to incorporating new information and perspectives. Regularly updating strategies based on local input, changing environmental conditions, and emerging research would ensure the model remains effective and relevant over time.

The provided table below depicts an integrated park management model, synthesizing elements from Murchison Falls National Park, the North American park management model, the Kruger National Park model, and the Maasai Mara National Reserve model. This comprehensive framework blends diverse strategies to enhance conservation and sustainability practices in park management across these different regions. It further highlights what the Murchison Falls National Park management can borrow from the other models to further enhance theirs, particularly in regard to community engagement and wildlife use rights.

Aspect	Murchison Falls NP Model	North American Model	Kruger NP Model	Maasai Mara NR Model
Conservation Goals	Protect biodiversity	Balance conservation and tourism	Focus on wildlife preservation	Preserve biodiversity and culture
Stakeholder Engagement	Collaborate with local communities	Invite public comment	Engage with neighboring regions	Work with Maasai communities
Ecotourism Development	Promote sustainable tourism	Well-managed eco-tourism	Controlled tourism operations	Sustainable tourism practices
Anti-Poaching Efforts	Strong anti-poaching measures	Anti-poaching legislation and enforcement	Intensive anti-poaching patrols	Community-based anti-poaching
Research and Monitoring	Regular ecological assessments	Scientific research programs	Robust monitoring of wildlife	Ecological research programs
Law Enforcement	Ranger patrols and monitoring	Enforcement agencies	Dedicated anti-poaching units	Collaborative law enforcement
Habitat Restoration	Habitat restoration initiatives	Ecosystem restoration projects	Focus on habitat management	Habitat rehabilitation projects
Technological Integration	Smart monitoring and tracking	Advanced surveillance technology	Technology-driven conservation	Use of GIS, drones, and remote sensing
Sustainable Practices	Renewable energy adoption	Sustainable practices	Green initiatives and practices	Eco-friendly operations
Cultural Preservation	Growing consideration to local cultural heritage	Growing emphasis on Indigenous culture preservation	Indigenous knowledge integration	Cultural heritage conservation

Table 4.10. An integrated Murchison Falls National Park model with elements from the North America, Kruger National Park, and the Maasai Mara National Reserve models.

The North American Model, or the US model of wildlife management, represents a complex partnership between the Federal and state governments. Involvement also extends to researchers and NGOs, although government wildlife managers usually lead. Funding comes from hunting permits and, to some extent, general tax revenue. The ownership of wildlife resides with citizens, yet its administration falls under government jurisdiction. When wildlife poses a threat, seeking assistance from a game warden is advocated over individual intervention. Historically, the early 1900s saw attempts to eliminate predators like wolves and mountain lions, resulting in mass casualties of these species. Gradually, a more scientific approach gained traction, although some regions still prioritize managing habitats for hunted species, rather than considering the entire ecosystem. The federal-level wildlife management agency, the US Fish and Wildlife Service, emphasizes ecosystem science and holistic management. However, individual states vary in their commitment to research, value, and the management of both game and non-game species. The US Forest Service is dedicated to ecosystem management and collaborates closely with conservation-oriented NGOs to formulate harvest plans and similar strategies.

This table aims to highlight the key aspects of park management in Murchison Falls National Park and how insights from the North American model can be adapted to enhance its management approach. Bearing in mind that effective implementation should consider the specific context, landscape, and challenges of Murchison Falls National Park.

Aspect	Murchison Falls NP Model	North American Model	Insights for Murchison Falls NP
Conservation Goals	Protect biodiversity	Preserve diverse ecosystems	Emphasize ecosystem preservation
Stakeholder Engagement	Collaborate with local communities	Involve public and stakeholders	Foster community participation
Ecotourism Development	Promote sustainable tourism	Develop nature-based tourism	Prioritize eco-friendly tourism
Anti-Poaching Efforts	Strong anti-poaching measures	Rigorous anti-poaching efforts	Enhance anti-poaching strategies
Research and Monitoring	Regular ecological assessments	Robust research and monitoring	Implement data-driven decisions
Law Enforcement	Ranger patrols and monitoring	Enforce regulations	Strengthen law enforcement
Habitat Restoration	Habitat restoration initiatives	Conduct habitat restoration	Implement habitat renewal plans
Technological Integration	Smart monitoring and tracking	Utilize advanced technology	Integrate technology for better control
Sustainable Practices	Promote sustainability	Renewable energy adoption	Implement eco-friendly practices
Cultural Preservation	Respect local cultural heritage	Preserve cultural heritage	Incorporate local cultural values

Table 4.11. enhanced Murchison Falls National Park model with insights from the North American model.

CHAPTER FIVE
IMPLICATIONS AND CONCLUSIONS

This research examined the changing landscape of wildlife poaching in Uganda, with a specific focus on understanding the impact and perceived effectiveness of responses to wildlife protection efforts at various scales. The study centered on Murchison Falls National Park, the oldest and largest national park in Uganda. The main objectives of the study were as follows:

(1) Identify the obstacles that hinder successful anti-poaching and wildlife protection efforts across different scales.

(2) Explore the key factors that contribute to the success of anti-poaching and wildlife protection initiatives.

(3) Evaluate how individuals affected by anti-poaching and wildlife protection efforts perceive the overall response to these measures across different scales.

To achieve these objectives, the research employed semi-structured interviews, providing rich and comprehensive insights from the participants Additionally, relevant documents were collected and analyzed to supplement the study, as well as observation, field notes, and photos taken from the field. This chapter presents a synthesis of the findings and provides a comprehensive conclusion. The implications, limitations, and recommendations for future research are also discussed, shedding light on the potential avenues for enhancing wildlife protection efforts in Uganda with a particular focus on Murchison Falls National Park. These recommendations take into consideration issues

unique and specific to this park but may provide insights for Uganda and other places facing similar challenges.

Summary of findings

This research presents valuable data that enriches our understanding and contributes to the body of knowledge that works towards a sustainable future, fostering harmonious coexistence between wildlife and human communities in Murchison Falls National Park. By examining the root causes of poaching, through interviews in Uganda, with a special focus on the park's unique local challenges, we aim to create a vision of an environment where wildlife flourishes alongside local communities, ensuring the preservation of biodiversity and the natural balance of ecosystems for generations to come. This knowledge empowers us to implement effective conservation strategies rooted in the vernacular wisdom of the place, with opportunities to strengthen the park's resilience alongside local communities and fostering a shared responsibility in safeguarding its precious resources.

Key drivers of poaching in Murchison Falls National Park

Poaching in Murchison Falls National Park is driven by several main factors. Firstly, the high demand for illegal wildlife products, such as ivory, rhino horns, and bushmeat, fuels poaching as it offers lucrative profits on the black market. Interestingly, the poaching activity in this park appears to be more focused on domestic poaching rather than on involvement in the illegal wildlife trade. The most poached species include Uganda Kobs, buffalos, hartebeests, and hippos. Poverty and lack of economic opportunities in surrounding communities also contribute to poaching, as some

individuals turn to illegal hunting as a means of survival. Secondly, the challenges of law enforcement and limited resources for park management create loopholes for poachers to exploit. Insufficient patrolling and surveillance due to the vastness of the park allow poachers to operate with reduced risk of being apprehended. Additionally, sometimes corruption within law enforcement personnel may further undermine anti-poaching efforts. Thirdly, the encroachment of human settlements and agricultural activities into the park's boundaries leads to habitat loss for wildlife, resulting in increased human-wildlife conflicts. This, in turn, may drive some locals to resort to poaching as a means of retaliation or protecting their livelihoods. Lastly, the ingrained culture of hunting among some of the communities around Murchison Falls Park sustains poaching by creating a demand for wildlife products. Traditional beliefs and practices contribute to the illegal poaching of wildlife, posing a significant threat to the park's biodiversity.

The importance of cultural practice

The findings also revealed that culture and cultural practice holds great significance to the people living around Murchison Falls National Park. Indigenous communities have deep-rooted connections with the land, wildlife, and natural resources, shaping their way of life and traditional practices. Their cultural beliefs and customs often dictate their interactions with the environment, including wildlife. The cultural importance of hunting and gathering passed down through generations, has inadvertently impacted poaching. Some traditional practices involve subsistence hunting or using wildlife products for medicinal or ritual purposes. While these practices were traditionally often sustainable and

on a small scale, an increasing human population and outside pressures have strained the delicate balance between cultural practices and wildlife preservation. Moreover, some cultural norms have perpetuated the demand for illegal wildlife products. The belief in the medicinal or spiritual powers of certain animal parts drives wildlife poaching, which poses a significant threat to the park's biodiversity. Poaching may be viewed differently by different cultural groups, with some condoning or participating in illegal activities, while others work to conserve and protect wildlife.

Human-wildlife conflict often leads to revenge killing of wildlife.

The research findings on human-wildlife conflict in Murchison Falls National Park reveal a significant and multifaceted issue. The encroachment of human settlements and agricultural activities into the park's boundaries leads to increased interactions between wildlife and local communities, resulting in conflicts. The loss of habitat, competition for resources, and damage to crops by wildlife pose challenges to both conservation efforts and the livelihoods of nearby residents. Habitat loss and fragmentation disrupt wildlife corridors, leading to human-wildlife conflicts and further endangering species. Additionally, acts of revenge killings of wildlife as a response to attacks on humans or crop damage contribute to exacerbating this issue. Moreover, illegal logging, charcoal production, and mining activities contribute to deforestation and degradation of natural habitats, adversely affecting various wildlife populations. Invasive species and diseases pose additional threats, disrupting the park's ecological balance and threatening the survival of native flora and fauna. Insufficient funding and resources for

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park management and inadequate law enforcement exacerbate the challenges of wildlife protection in Murchison Falls National Park.

Oil mining in the park brings economic benefits but increases exposure of wildlife to threats.

The oil discovery and potential mining in Murchison Falls National Park offer an opportunity for economic development in the region and financial support for conservation. If managed responsibly, revenue generated from oil resources can fund critical conservation efforts, strengthen park management, and boost eco-tourism initiatives. The increased economic activity can create job opportunities and improve infrastructure for local communities, fostering a sense of ownership and commitment to conservation. Collaborative efforts between oil companies, government, conservation organizations, and local communities are crucial to strike a balance between economic development and safeguarding the park's ecological treasures for sustainable growth and long-term protection.

The discovery of oil reserves within the park has also triggered a surge of interest from oil companies and the government, driven by the prospect of significant economic gains and energy security for the nation. Nonetheless, the pursuit of oil exploration and extraction within a protected area poses serious environmental, social, and cultural challenges. Oil mining activities can lead to habitat destruction, water pollution, air pollution, and disruption of wildlife migration patterns, endangering the unique flora and fauna that call the park home. The noise, infrastructure, and human presence associated

with oil mining may also disrupt the natural balance and tranquility of the park, affecting both wildlife and tourists.

Updated Communication and Technology must be funded for anti-poaching efforts to keep up with illegal taking of wildlife.

The findings regarding communication and technology in Murchison Falls National Park reveal a complex interplay between poaching and anti-poaching efforts. Poachers exploit modern communication tools, such as mobile phones and encrypted messaging apps like WhatsApp, to coordinate illegal activities, making it challenging for authorities to track and intercept them. Moreover, access to real-time information through technology allows poachers to identify vulnerable targets and navigate through the park's terrain with greater ease. Conversely, technology also serves as a crucial asset in anti-poaching endeavors. Conservationists and park rangers employ advanced communication systems to coordinate patrols, share intelligence, and respond swiftly to poaching incidents. GPS tracking and radio communication are utilized to monitor wildlife movements and detect potential threats in remote areas. Additionally, the use of social media and online platforms enables the dissemination of awareness campaigns, garnering public support for wildlife protection.

COVID-19 impacts

The COVID-19 pandemic significantly impacted tourist arrival rates at the park due to the suspension of tourism operations. Moreover, it heightened the challenge for park authorities in preventing certain idle local community members from exploiting the

situation for bushmeat poaching and other illegal activities. As vaccines became more

widely available and travel restrictions began to ease, there was hope for the gradual

revival of tourism in Murchison Falls National Park. This scenario underscored the

necessity for parks, such as Murchison Falls, to reconsider their heavy dependence on

tourism revenue for conservation efforts and seek alternative funding avenues in the face

of potential future crises, akin to the COVID-19 situation. It also emphasized the

importance of sustainable tourism practices that consider the well-being of both

ecosystems and local communities, while also being resilient to unexpected global

events.

Conclusion

As noted in the literature review, *one should start to identify the resource system,*

the users, the resource units produced by the system, and the governance system, all of

which jointly affect the interactions and outcomes in a given time and place (Ostrom,

2007). Understanding the parts of a working system requires that the system be examined

in all its parts and how it functions together. The interviews in this research are a way to

do this and the following diagram helps to break apart the act of poaching and examine

the possible leverage points for making a positive impact on each sector, while making

sure local people are not the villain in this conservation story. By understanding the

different actors and the leverage points, the data from this study offers insights into the

solutions for adaptive management in each part of the system of poaching. Understanding

the system at this level of detail allows for more resilience in the management of anti-

poaching efforts, and a way to locate problems and have focused feedback loops.

Interacting with poaching as a monolith is the greatest barrier to anti-poaching efforts.

The figure below illustrates this and the components of Social-Ecological Systems that

apply to MFNP:

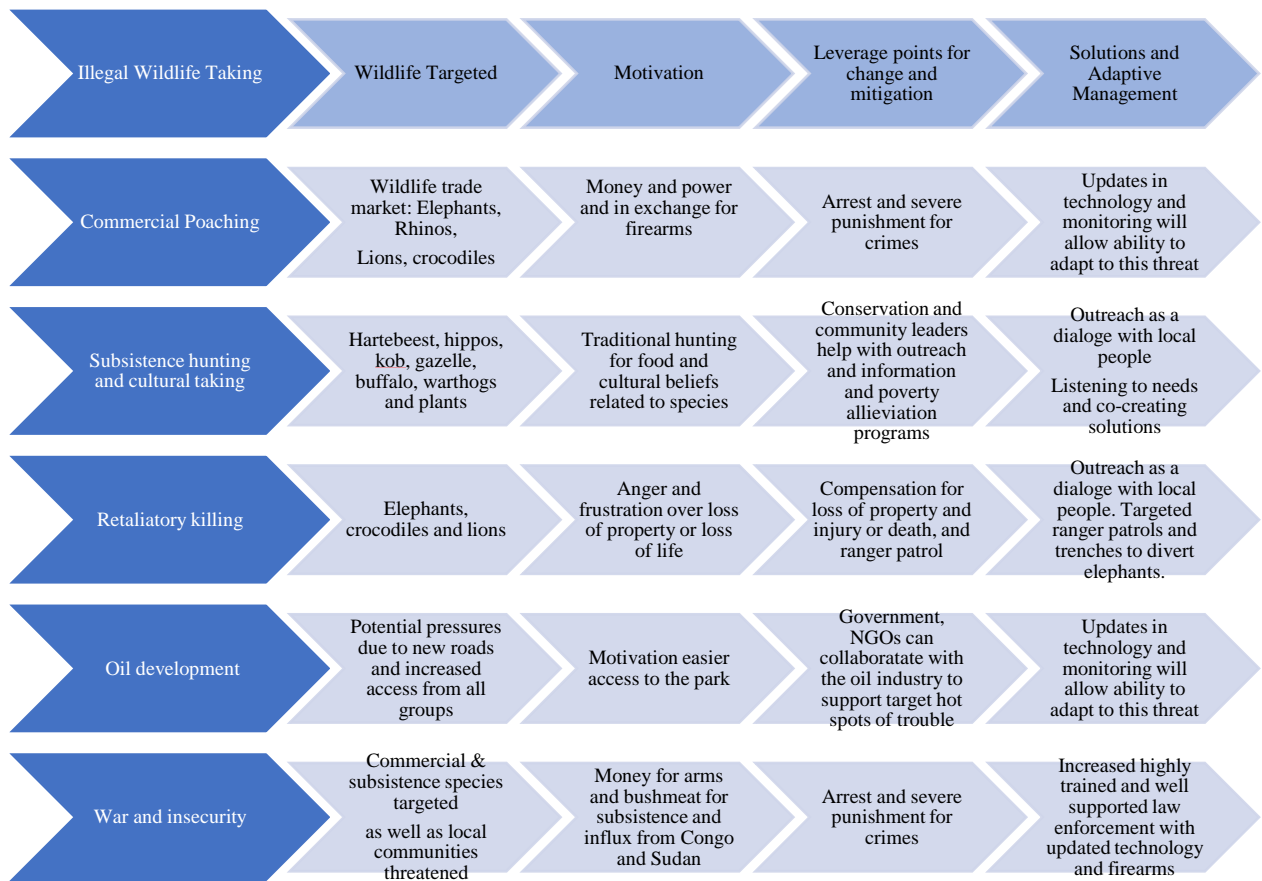| Illegal Wildlife Taking	Wildlife Targeted	Motivation	Leverage points for change and mitigation	Solutions and Adaptive Management
Commercial Poaching	Wildlife trade market: Elephants, Rhinos, Lions, crocodiles	Money and power and in exchange for firearms	Arrest and severe punishment for crimes	Updates in technology and monitoring will allow ability to adapt to this threat
Subsistence hunting and cultural taking	Hartebeest, hippos, kob, gazelle, buffalo, warthogs and plants	Traditional hunting for food and cultural beliefs related to species	Conservation and community leaders help with outreach and information and poverty allieviation programs	Outreach as a dialogue with local people. Listening to needs and co-creating solutions
Retaliatory killing	Elephants, crocodiles and lions	Anger and frustration over loss of property or loss of life	Compensation for loss of property and injury or death, and ranger patrol	Outreach as a dialogue with local people. Targeted ranger patrols and trenches to divert elephants.
Oil development	Potential pressures due to new roads and increased access from all groups	Motivation easier access to the park	Government, NGOs can collaboratate with the oil industry to support target hot spots of trouble	Updates in technology and monitoring will allow ability to adapt to this threat
War and insecurity	Commercial & subsistence species targeted as well as local communities threatened	Money for arms and bushmeat for subsistence and influx from Congo and Sudan	Arrest and severe punishment for crimes	Increased highly trained and well supported law enforcement with updated technology and firearms

Figure 5.1. Model operationalizing Social-Ecological Systems in MFNP

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This study focused on investigating the dynamics of wildlife poaching and the efficacy of wildlife protection efforts in Murchison Falls National Park, the oldest and largest national park in Uganda. The findings shed light on crucial aspects influencing the success of anti-poaching measures and the perceptions of individuals impacted by these efforts. Efforts to curb poaching in these regions must consider the broader context of post-conflict challenges, addressing not only the immediate threat posed by poachers but also the underlying social, economic, and security issues that perpetuate the practice in the areas around Murchison. Conservation strategies should involve community engagement, education, alternative livelihood opportunities, and targeted disarmament programs to ensure that these regions can recover from the scars of conflict and foster a more harmonious relationship with their natural environment, reminiscent of their heritage.

Combating poaching requires a comprehensive approach that addresses not only the immediate enforcement of laws but also socio-economic factors like poverty alleviation and community engagement which are all critical. By addressing the root causes and raising awareness about the ecological importance of wildlife, Government can work towards curbing the illegal poaching trade and preserving the rich biodiversity of the Murchison Falls Conservation Area. To effectively address the issue of poaching and protect these endangered species, it is essential to address both the commercialization of poaching and the influence of cultural beliefs on practices. Comprehensive conservation strategies should involve raising awareness, educating communities about the importance of wildlife protection, and engaging with local cultural leaders and

stakeholders to foster a deeper understanding of the ecological significance of these animals. There is a need to further bridge the gap between park management and local communities through collaboration and sensitization and work towards a more sustainable future for both the wildlife and the communities coexisting in these areas.

By empowering communities to value their cultural heritage in relationship with nature and fostering cultural pride that embraces the preservation of wildlife rather than its exploitation, a deeper understanding and respect for wildlife and its conservation can be cultivated, ultimately reducing poaching pressures on Murchison Falls National Park. Breaking the notion of being hunters, not poachers, is crucial. The outdated practice of hunting for sustenance needs to be replaced with modern and sustainable methods of livelihood. Convincing them to shift away from their traditional roles as hunters may not be easy, but it is essential for the conservation of wildlife and the preservation of this natural and cultural heritage. By offering alternatives and promoting a more enlightened approach to coexistence with nature, they can gradually bring about a positive change in their mindset and practices.

Addressing human-wildlife conflict and its associated poaching requires a multifaceted approach. Initiatives such as community-based conservation programs and sustainable livelihood projects can help mitigate conflicts and promote peaceful coexistence between humans and wildlife. Additionally, raising awareness about the importance of wildlife conservation and the benefits of preserving natural habitats can foster a deeper understanding and appreciation of wildlife's role in the ecosystem. While dealing with competing interests of economic development, community needs, and

protecting wildlife is complicated, there has to be a continuous effort to balance these issues. Oil exploration in the park makes it much more challenging because it exposes the park to many more human and economic activities. By exploring ways to manage human-wildlife conflict and fostering positive relationships between communities and wildlife, wildlife managers in Murchison Falls National Park can work towards a harmonious balance that ensures both the protection of precious biodiversity and the well-being of the people living in these shared landscapes.

The impact of oil exploration and mining on the conservation of Murchison Falls National Park (MFNP) and its biodiversity remains uncertain. This marks a novel development in the management of protected areas in Uganda, making it intriguing to observe its future outcomes. The intersecting realms of economic development driven by oil mining and wildlife protection present a unique challenge, as the park may experience heightened economic activities, increased movement of people and goods, and higher levels of exposure. The repercussions of such changes on the delicate ecosystem and wildlife within the park are yet to unfold. Balancing the pursuit of economic prosperity with the imperative of safeguarding the park's natural treasures poses a complex task. As the oil industry progresses, it will be crucial to assess how potential disturbances may impact wildlife habitats, migration patterns, and overall biodiversity. Efforts to mitigate the negative impacts on conservation will be of paramount importance, requiring collaboration between various stakeholders, including government authorities, conservationists, and oil companies. Monitoring and research will be essential in

understanding the long-term consequences and devising sustainable strategies to ensure the coexistence of economic development and wildlife protection in MFNP.

Addressing human-wildlife conflict and its associated poaching requires a multifaceted approach. Initiatives such as community-based conservation programs and sustainable livelihood projects can help mitigate conflicts and promote peaceful coexistence between humans and wildlife. Additionally, raising awareness about the importance of wildlife conservation and the benefits of preserving natural habitats can foster a deeper understanding and appreciation of wildlife's role in the ecosystem. While dealing with competing interests of economic development, community needs, and protecting wildlife is complicated, there must be a continuous effort to balance these issues. Oil exploration in the park makes it much more challenging because it exposes the park to many more human and economic activities. By exploring ways to manage human-wildlife conflict and fostering positive relationships between communities and wildlife, wildlife managers in Murchison Falls National Park can work towards a harmonious balance that ensures both the protection of precious biodiversity and the well-being of the people living in these shared landscapes.

Limitations of the study

(1). The task of accessing data, particularly statistics and reports related to poaching trends and species loss, has been an arduous undertaking when it comes to organizations like the Uganda Wildlife Authority (UWA) and other Non-Governmental Organizations (NGOs). The information they possess is of paramount importance for conservation efforts and understanding the impact of human activities on the ecosystem.

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However, gaining access to such data has proven to be quite challenging for various reasons.

Firstly, the data itself is highly sensitive. The information collected by these organizations involves critical insights into the state of wildlife populations, poaching hotspots, and trends in species decline. As poaching and species loss are pressing issues, keeping this information secure is crucial to prevent any interference with law enforcement efforts or illegal activities. Consequently, a tight control is maintained over the dissemination of such data, limiting its accessibility to the public.

Furthermore, the lack of readily available information on poaching and species loss trends adds to the difficulty. Even though these organizations gather significant data, making it widely accessible to the public is not always a priority due to the complexity of the subject matter and potential misconceptions that could arise if the data is misinterpreted. As a result, public access to these crucial datasets is often limited or made available through official channels with strict guidelines.

In addition to the challenges related to poaching and species loss data, obtaining comprehensive information about oil mining activities in Murchison Falls National Park poses its own set of obstacles. The introduction of oil mining within the park is relatively recent, and as such, the authorities overseeing these activities are still navigating the complexities of managing environmental impacts. Given the potential controversies surrounding extractive industries in ecologically sensitive areas, the authorities are cautious about the level of transparency they provide.

The sensitivity of their work and the potential repercussions from stakeholders and the public can lead to limited transparency. Consequently, crucial data on oil mining activities, such as detailed environmental impact assessments, resource usage, and mitigation efforts, might not be readily available to the public, making it challenging for concerned individuals and organizations to access comprehensive information. In conclusion, the challenges faced in accessing data even for researchers, regarding poaching trends, species loss, total revenues collected, and oil mining activities in Murchison Falls National Park stem from the sensitive nature of the information involved and the need for careful management of its release. While the information is crucial for conservation efforts and environmental protection, maintaining a balance between transparency and protection of critical data is a complex task for organizations like UWA and other NGOs involved in safeguarding the park's natural heritage.

(2). During the research data collection, the language barrier emerged as a significant challenge. Given the diversity of ethnicities around Murchison Falls National Park, I could effectively communicate only in English and Runyoro Kitara languages for conducting interviews. Consequently, the assistance of a translator became necessary for several local community interviews. However, I noticed that the translator provided a more condensed version of the interviewee's responses. It is also quite possible that part of the meaning was lost in translation. Nevertheless, I remain confident and believe I captured the gist of the interviews, especially those conducted directly in English.

(3). Murchison Falls National Park spans across three districts on its southern bank, namely Buliisa, Masindi, and Kiryandongo. On the northern bank, the park borders

Nwoya, Oryam, and Packwach districts. During the research, I conducted interviews with both individuals within and outside the park. However, due to time, funding, and budget constraints, I had to restrict the number of villages I could visit. Although I would have preferred a more extensive and diverse sample size, I am confident that the interviews I conducted are reflective of the broader community and the issues they raised. Despite the limitations, the gathered data provides valuable insights into the concerns and perspectives of the local communities, contributing to a comprehensive understanding of the park's challenges and opportunities.

Recommendations for future studies
Oil mining

Future studies on oil discovery, mining, and its interaction with conservation in Murchison Falls National Park should focus on the following recommendations. Firstly, conduct comprehensive environmental impact assessments to evaluate the potential consequences of oil and mining activities on the park's biodiversity, ecosystems, and local communities. Secondly, explore the socio-economic impacts on neighbouring communities and assess their involvement in decision-making processes. Thirdly, study successful examples of sustainable resource extraction and conservation coexistence in other regions to identify best practices. Lastly, develop strategies for effective collaboration between industry stakeholders, conservationists, and local communities to ensure responsible and sustainable resource development while safeguarding the park's unique natural heritage.

Wildlife protection

Future studies on the effectiveness of anti-poaching strategies and law enforcement efforts, as well as the involvement of the local community, particularly the idea of recruiting more wildlife scouts in Murchison Falls National Park, are crucial for conservation success. Firstly, conduct comprehensive evaluations of current anti-poaching initiatives to assess their impact on reducing poaching incidents and protecting wildlife. Investigate the challenges faced by law enforcement agencies and identify areas for improvement. Secondly, explore the benefits and drawbacks of increasing the number of wildlife scouts from local communities. Assess their effectiveness in preventing poaching, gathering intelligence, and fostering community support for conservation. A comparison between communities with wildlife scouts and those without would be intriguing to explore. Analysing the impact and effectiveness of wildlife scouts in one group and contrasting it with the outcomes in the other group could provide valuable insights into the significance of their presence in conservation efforts. Thirdly, compare the effectiveness of involving local communities through wildlife scouts with other community-based conservation approaches to determine the most successful and sustainable strategies for combating poaching in the park.

Furthermore, it is essential to carry out social surveys to gain insights into the local community's viewpoints on wildlife protection and their willingness to participate in conservation endeavours, including incorporating their own innovative ideas. Understanding the perspectives, concerns, and suggestions of the community members would help in crafting more inclusive and community-driven conservation strategies for

Murchison Falls National Park. This approach fosters a sense of ownership and collaboration, ensuring that conservation efforts align with the aspirations and values of the local people, thus enhancing the overall effectiveness and sustainability of conservation initiatives.

Cultural

Future studies in Murchison Falls National Park should aim to deepen our understanding of the much less tackled subject of the park's rich cultural heritage and its interactions with the natural environment. While the subject of wildlife poaching has been studied considerably, relatively few studies have tackled the cultural aspect of local communities around the park. Here are some recommendations for such studies:

Examine Indigenous Knowledge and Biodiversity Conservation: Investigate the connections between local communities and wildlife, plants, and natural resources, as well as their cultural heritage, rituals, and folklore. Assess how traditional practices contribute to preserving the park's ecosystem and wildlife. Conduct cultural impact assessments of tourism and conservation activities to comprehend their impact on the livelihoods, traditions, and cultural identities of local communities and indigenous groups living around in Murchison Falls National Park.

Cultural Tourism: Analyse the potential for sustainable cultural tourism in the area. Assess the interest of visitors in learning about local cultures and explore ways to promote cultural exchange while respecting the customs and traditions of the

communities. Currently, the vast majority of visitors go to Murchison primarily for wildlife attractions.

Cross-Cultural Studies: Compare cultural interactions and practices in Murchison Falls National Park with other protected areas in the region or globally. Identify similarities, differences, and potential lessons for cultural conservation and sustainable management. Given the diverse tapestry of culture in this area alone, it would be interesting to see those findings.

Gender and Cultural Dynamics: Examine gender roles and their impact on cultural practices within the park. Investigate how cultural norms influence conservation efforts and access to resources for different genders. Traditionally, the Luo community assigned domestic chores to women while reserving hunting activities predominantly for men.

Conflict Resolution and Cultural Heritage: Study how conflicts between wildlife conservation efforts and cultural practices can be addressed. Propose strategies for harmonizing conservation goals with the preservation of cultural heritage in Murchison Falls National Park.

Cultural Education and Awareness: cultural education and awareness among visitors by creating educational programs and materials. These initiatives will highlight the local tribes' traditional cultural practices and ecological preservation methods used around Murchison Falls. Emphasize the importance of cultural preservation in maintaining the park's ecological balance.

APPENDICES

Informed Consent Verbal Script

Hello,

My name is Ingrid Nyonza Nyakabwa and I am a PhD student with the department of Parks, Recreation & Tourism Management at Clemson University, South Carolina. I am conducting research about the changes in poaching, the changing profile of poachers, and how experts and local community members are engaged in and contributing to anti-poaching efforts in Uganda and South Africa.

Your part in the study will be to give us your esteemed opinion and participation about how wildlife poaching is changing in and how it can be understood at different levels that you are involved in. This research has no known risks. This research will benefit the academic community because it helps us in advancing our understanding of wildlife conservation and specifically understanding poaching behavior from the perspective of experts working at the frontlines of anti-poaching efforts. Your viewpoints will particularly be valuable additions to effectively understanding the poaching problem and working towards addressing it.

Please know that I will do everything I can to protect your privacy. Your identity or personal information will not be disclosed in any publication that may result from the study. Notes and recorded during the interview will be stored in a secure location. No information will be shared with any identifiers. Interviews will be coded, and no names or identifiers will appear in both the transcriptions and subsequent data.

Would it be all right if I audio-taped our interview? Saying no to audio recording will have no effect on this interview.

Appendix B
Semi- Structured Interview Guide

These will follow the Irving Seidman three-part method of data collection focusing on life history with the topic, description of the topic and reflections of the topic.

All participant questions.
- What is your position?

- How long have you been working on anti-poaching efforts? What other wildlife and conservation work have you done?

- How long have you lived in this area? Have you lived in other places affected by poaching?

Wildlife conservation officials
1. How is the act of poaching changing and what are the different ways managers are dealing with poaching?

2. What are the drivers for poaching?

3. What are the barriers in dealing with poaching?

4. What facilitates poachers?

5. Which species are most poached and why?

6. What are the dynamics involved in poaching?

7. What are the policies or sanctions taken against offenders?

8. How are local communities involved in deterring poaching?

9. How has law enforcement changed in relation to poaching and how has this affected management of the conservation area?

10. What are the policies or sanctions taken against offenders?

11. . How has technology and communication changed poaching in this national park?

12. What strategies do you think are most useful in combating poaching in this park?

13. How has management dealt with sustainable tourism in relationship to poaching?

14. How has the discovery of oil impacted conservation of the park?

Non- Governmental Organization (NGO) officials

1. What strategies have you put in place to manage poaching and illegal wildlife trade?

2. How are you involved with local communities in deterring poaching?

3. How are you involved with law enforcement in dealing with poachers and illegal wildlife traders?

4. What anti- poaching strategies do you support/fund?

5. In your opinion, what anti-poaching strategies are you willing to support going forward and why?

6. What would you wish to see changed in relation to management of poaching and illegal wildlife trade?

Local Community leaders

1. How are local communities involved in the management of anti-poaching efforts to curb poaching?

2. What are the motivations for the local people who participate in poaching and other wildlife crime?

3. What are the motivations for the local people to participate in conservation and anti-poaching efforts?

4. What would you like to see changed in terms of wildlife management and anti- poaching initiatives?

5. Are you involved in tourism projects and if so, how?

Appendix C
Research Application Approval (UWA)

UGANDA WILDLIFE AUTHORITY

OFFICE OF THE EXECUTIVE DIRECTOR
PLOT 7 KIRA ROAD KAMWOKYA
P. O. Box 3530, Kampala, Uganda

Our Ref: COD/96/05   18th January 2019

Ingrid Nyonza Nyakabwa
Clemson University
South Carolina
USA

RESEARCH APPLICATION APPROVAL

I am in receipt of your application dated 14th January 2019 seeking to carry out research in Murchison and Queen Elizabeth National Parks titled; *"How is poaching Changing in Uganda?"*.

This is to inform you that your research application has been approved with effect from 21st January 2019 to 15th February 2019. You are expected to submit to UWA a progress report by June 2019 and a final report of your findings by end of December 2019. In case you are unable to work within these dates, notify us in writing.

Uganda Wildlife Authority has waved off monthly research fees. However, you will be required to pay a research application fee of **UGX 20,000 (twenty thousand shillings only)** and a refundable report/ security deposit fee of **UGX 100,000 (one hundred thousand shillings only).**

Kindly, note that any researcher failing to submit reports at specified intervals will not be allowed to come back to wildlife protected areas for further research.

You are required by law to seek clearance from the Uganda National Council for Science and Technology (UNCST).

By copy of this letter, UNCST is duly informed that your research has been endorsed by UWA and approval is awaited before commencement of research.

Please, report to the respective Chief Wardens on arrival for registration and further guidance.

Conserving for generations
Yours Sincerely,

Sam Mwandha
EXECUTIVE DIRECTOR
cc   Executive Secretary, UNCST
cc   Chief Warden, MFCA, QECA

Tel: +256-41-4355000, +256-31-2355000 Fax: +256-41-4346291, E-Mail: info@ugandawildlife.org, Website: www.ugandawildlife.org

Appendix D
Research Application Approval 2 (UWA)

UGANDA WILDLIFE AUTHORITY

OFFICE OF THE EXECUTIVE DIRECTOR
PLOT 7 KIRA ROAD KAMWOKYA
P. O. Box 3530, Kampala, Uganda

Our Ref: COD/96/05

2nd February 2021

Ingrid Nyonza Nyakabwa
Penn State University
State College
USA

RESEARCH APPLICATION APPROVAL

I am in receipt of your application dated 22nd January 2021 seeking permission to undertake research in Kibale, Murchison Falls, Bwindi, Mgahinga and Kidepo Valley National Parks titled; *"The effectiveness of Community Conservation Enterprise as a tool for Improved Community Livelihoods and Sustainable Conservation of Protected Areas across the Albertine Rift"*.

This is to inform you that your research application has been approved with effect from 5th February 2021 to 30th August 2021. You are expected to submit to Uganda Wildlife Authority (UWA) a progress report by December 2021 and a final report of your findings by end of February 2022. In case you are unable to work within these dates, notify us in writing.

You are required to pay to a research application fee of **UGX 20,000 (twenty thousand shillings)**, a monthly research fee of **UGX 50,000 (fifty thousand shillings)** and a refundable report/ security deposit fee of **UGX 100,000 (one hundred thousand shillings)**.

Kindly, note that any researcher failing to submit reports at specified intervals will not be allowed to come back to wildlife protected areas for further research.

Please, report to the respective Chief Wardens on arrival for registration, payment of fees and further guidance.

Conserving for generations
Yours Sincerely,
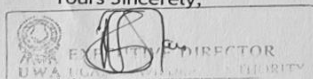
John Makombo
FOR: EXECUTIVE DIRECTOR

Copy: Chief Warden, KCA, MFCA, BMCA, KVCA
        Senior Warden in Charge, Mgahinga Gorilla National Park

Tel: +256-41-4355000, +256-31-2355000 Fax: +256-41-4346291, E-Mail: info@wildlife.go.ug, Website: www.ugandawildlife.org

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