HUMAN-WILDLIFE CONFLICT AND COEXISTENCE IN MLELE DISTRICT, KATAVI REGION

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ABBREVIATIONS AND ACRONYMS

Abbreviation	Full name
ADAP	Association for the Development of Protected Areas
CBFM	Community-Based Forest Management
DGO	District Game Officer
FDG	Focus Group Discussion
HWC	Human-Wildlife Conflict
JFM	Joint Forest Management
KII	Key Informant Interview
MoF	Ministry of Finance
MNRT	Ministry of Natural Resources and Tourism
NGO	Non-Governmental Organization
PFM	Participatory Forest Management
PLUM	Participatory Land Use Management
PAC	Problem Animal Control
TAWA	Tanzania Wildlife Authority
TAWIRI	Tanzania Wildlife Research Institute
TFS	Tanzania Forest Services
VLFR	Village Land Forest Reserves
VGS	Village Game Scout
WASIMA	Watu Simba na Mazingira
WMA	Wildlife Management Area

EXECUTIVE SUMMARY

This study provides a preliminary assessment of human-wildlife conflict (HWC) in Mlele District, Katavi Region in Tanzania. Conducted in March 2025, the study aimed to enhance understanding of HWC, propose mitigation strategies, and explore initiatives that could support coexistence in the area. Fieldwork was conducted across twelve villages in six wards, using Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and a review of secondary data to capture diverse perspectives from local communities, government officials, and NGOs. While the sampling was limited in scale, the findings offer a foundation for more comprehensive studies and targeted interventions in the future. It is important to note that reported conflict incidents were not systematically cross-verified with official TAWA or DGO records, which represents one of the limitations of the study.

The results revealed that human-wildlife conflict is an uneven challenge across the district. In terms of frequency, 92% of respondents described incidents as rare, occurring once a month or less, while 8% reported more frequent occurrences, such as once a week or more. Villages like Kamsisi, Kaulolo, and Mtakuja experienced higher conflict levels, particularly during crop maturation periods and the dry season when wildlife movements intensify around farms and water points. The types of conflict reported varied, with crop damage emerging as the most reported issue. Greater kudu accounted for 21% of crop damage incidents, followed by bushpigs at 19% and elephants at 16%, while vervet monkeys, baboons, and hippos contributed 9% each. Livestock predation was also reported, with lions and hyenas each responsible for 37.84% of reported cases, and leopards implicated in 18.92%. Although less common, threats to human safety included attacks and injuries attributed to lions and leopards, with the psychological impact often extending far beyond the actual frequency of events.

Respondents identified a range of factors contributing to HWC in Mlele. The most reported drivers included increased human settlement near wildlife habitats, reported by 94.12% of respondents, and encroachment into protected areas, climate change, deforestation, and limited community awareness of conservation policies, each mentioned by 88.24%. Poaching and illegal hunting were also a concern (82.35%), while habitat loss and inadequate consolation payments also contributed to HWC. All together these conflicts had economic, social, and psychological impacts to the studied communities.

Despite these challenges, community perceptions of wildlife were mixed and complex. While many respondents voiced negative sentiments driven by economic losses and safety concerns, others emphasized the cultural, ecological, and potential economic value of wildlife. In several villages, lion skins were historically used in blessings and ceremonial practices, and elephant dung was reported as a traditional treatment for childhood convulsions. Spiritual taboos continue to influence behavior in some clans, and while traditional deterrent practices such as burning dung with chili or drumming remain in use, many respondents acknowledged their declining effectiveness over time.

To address these multifaceted issues, communities and stakeholders proposed a suite of

mitigation strategies. These included expanding education and awareness campaigns, strengthening land use planning to prevent further encroachment, installing affordable physical barriers, enhancing early warning systems, and improving access to consolation payments for affected communities. Many respondents also stressed the importance of integrating traditional knowledge into modern conservation measures and increasing the role of local communities in decision-making and monitoring. While many of these measures are consistent with national and regional best practices, their feasibility will depend on a sustainable funding system and long-term institutional support. On benefit sharing, proposals centered on enhancing community participation in decision-making, offering education and training opportunities, creating jobs linked to conservation and trophy hunting, and access to alternative sources of livelihoods.

The study recommends establishing dedicated conflict response teams and prioritizing mitigation efforts in the most affected hotspots. Expanding community education, strengthening early warning systems, and updating village land use plans are essential to reduce conflict drivers. Support for community-led monitoring and clearer access to consolation payments will help build accountability and trust. Integrating traditional knowledge with modern conservation practices is also encouraged. These measures, combined with stronger collaboration among authorities and communities, will lay the groundwork for more effective and sustainable human-wildlife coexistence in Mlele District.

Overall, the findings underscore that human-wildlife conflict in Mlele District is shaped by a combination of ecological pressures, institutional gaps, and socio-economic challenges. While communities expressed frustration over the limited tangible benefits of wildlife presence, there was also recognition of the potential for coexistence if solutions are designed inclusively, adequately resourced, and implemented with sustained commitment. The report concludes that a balanced approach, combining stronger enforcement of land use regulations, more equitable benefit-sharing, and meaningful community engagement, will be essential for reducing conflict and fostering long-term coexistence. Importantly, Joint Forest Management (JFM), which is already a legal mechanism under the Forest Act for National Forest Reserves, offers a concrete opportunity to strengthen local participation and benefit-sharing. For Game Reserves, piloting community-inclusive models in collaboration with TAWA could serve as a starting point for more formalized engagement. These strategies, supported by policy and sustained investment, offer a pathway toward improved coexistence between people and wildlife in Mlele District and beyond.

Figure 1: Community members participating in a Focus Group Discussion.

Figure 2: Facilitator leading a Focus Group Discussion with local community members.

Figure 3: Tobacco farming and cattle rearing in traditional wooden bomas as common land uses. (Cattle Photo by N. Rochat, ADAP).

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1. INTRODUCTION

1.1 Background

Human-wildlife conflict (HWC) is a pressing global issue that poses serious threats to both biodiversity and human livelihoods. It arises in areas where humans and wildlife coexist and compete for space and resources, often leading to adverse impacts on conservation efforts, human safety, food security, and sustainable development. HWC typically occurs when wildlife behavior or presence is perceived as a threat to human interests such as crop damage, livestock predation, or risks to human life which can provoke retaliation and deepen tensions within and between communities. If not effectively managed, these conflicts can result in significant harm to both people and wildlife populations, undermining coexistence and long-term ecological and social resilience (IUCN, 2020).

As human populations grow and expand into previously unoccupied and undisturbed areas, interactions between humans and wildlife are expected to increase. The rising demand for essential resources such as water, land, and food further intensifies these conflicts. Africa, in particular, is projected to experience some of the most severe HWC due to its rapidly growing population and expanding human settlements (Storch et al., 2025).

Key contributors of HWC include habitat loss and fragmentation due to urbanization and agricultural expansion, which force wildlife to encroach upon human settlements in search of food and shelter. Climate change exacerbates these interactions by altering ecosystems and resource availability, prompting species to move into new areas (Abrahams et al., 2023; Abrahams 2021). Additionally, human activities such as deforestation and infrastructure development disrupt natural habitats, increasing the likelihood of encounters between humans and wildlife. Socio-economic factors, including poverty and land-use practices, also play a role, as communities may depend on natural resources that wildlife also utilize or rely on, leading to competition and conflict (Dickman 2010). Understanding these multifaceted causes is essential for developing effective strategies to mitigate HWC and promote coexistence.

Tanzania possesses abundant wildlife resources, with approximately 36% of its total land area designated as protected areas (PAs) (Gizachew et al., 2020). According to Mmbaga (2024), the majority of these areas including National Parks, Game Reserves, Wildlife Management Areas, and Forest Reserves prohibit permanent human settlement and agriculture, although encroachment occurs in some locations. Few protected area categories, such as Game Controlled Areas and the Ngorongoro Conservation Area, allow regulated human settlement. Despite these designations, the interaction between humans and wildlife remains high, leading to occurrence of HWC.

The communities living in Mlele district, located in the Katavi Region of western Tanzania, are particularly affected by HWC. According to the 2022 Population and Housing Census, the population of Katavi region increased significantly from 564,604 in 2012 to 1,152,958 in 2022, reflecting an annual growth rate of 7.1% and more than 2X population increase in 10 years. The Mlele District Council's strategic plan (2016) had already projected infrastructure challenges due

to this rapid population expansion. As a result, villages have expanded, and human settlements have increasingly encroached into protected areas. Illegal settlements have been established within reserved lands, and mbugas (seasonal wetlands) have been converted into rice fields. Illegal settlements established in Inyonga FR were subsequently legalized when the government decided to degazette 200,000 Ha of land to accommodate this growing population.

Previous study by Runyoro et al., (2019) indicate that, at the national level, local communities in Tanzania often hold predominantly negative attitudes toward wildlife, especially carnivores. Crop damage is frequently reported, with herbivores such as greater kudu (*Tragelaphus strepsiceros*), hippos (*Hippopotamus amphibius*), and warthogs (*Phacochoerus africanus*) causing destruction to farmlands. Additionally, studies from northern regions of Tanzania, have documented carnivores including lions (*Panthera leo*), leopards (*Panthera pardus*), and hyenas (*Crocuta crocuta*), as responsible for recurrent livestock attacks, exacerbating human-wildlife conflict (Mkonyi 2022). While this pattern may not be uniform across all landscapes, the perception of carnivores as threats to livelihoods is widespread among agro-pastoral communities.

Furthermore, a significant lack of awareness exists regarding the status and changes in local wildlife populations, as demonstrated by community perceptions. This negative sentiment stems from direct experiences of human-wildlife conflict, including crop losses and livestock predation, with minimal or no perceived benefits from wildlife conservation. This situation poses a serious threat to the livelihoods of local communities while also undermining conservation efforts led by the government, private entities, and organizations such as Association for the Development of Protected Areas (ADAP) in Mlele District's game and forest reserves. However, research on the full scope, causes, and challenges of human-wildlife coexistence for communities living near protected areas remains limited. This knowledge gap hinders the development of effective conflict management strategies. Therefore, this study aims to enhance the understanding of human-wildlife conflict, propose mitigation strategies, and investigate which initiatives could be developed to support coexistence in Mlele District, Katavi Region.

The presence and frequency of wildlife encounters, particularly with large carnivores such as lions, varied considerably between villages in Mlele District. While some communities such as Ibelamafipa, Kalovya, and Ilunde reported recent incidents of lions killing livestock (e.g., 3 lions killing 3 cattle in Ibelamafipa in 2024; 4 cattle killed in Kalovya in 2024; cattle attacked in Ilunde during the 2024–2025 dry season), other villages such as Mgombe, Masigo, Mtakuja, Kaulolo, Mapili, and Kamsisi described such events as occasional or historical. Overall, the study found that lion attacks occurred sporadically, contrasting with regions such as Tunduru District, where attacks on humans have been much more frequent and severe (Packer et al., 2005). However, even rare or indirect encounters in Mlele contribute to fear and perceptions of danger in affected communities.

It is also important to recognize that the scope of this study was exploratory in nature. While it aimed to provide an indicative understanding of human-wildlife conflict and community perceptions in Mlele District, the sampling was limited in scale and time frame. As such, the findings should be interpreted as indicative rather than exhaustive, and further research would be required to quantify conflict frequency and impacts across the district.

1.2 Objectives

The overall objective of this study is to evaluate the nature and importance of human wildlife conflicts in the Mlele District, with a particular focus on identifying the wildlife species of concern and extent of conflicts. The study aims to propose coexistence strategies and benefit-sharing models by achieving the following specific objectives;

i. To identify, compare, and analyze human-wildlife conflicts in Mlele District. This involves comprehensively assessing the types, species involved, frequency, and severity of human-wildlife conflicts affecting local communities.

ii. To develop and propose practical and context-specific wildlife conflict mitigation strategies for minimizing human-wildlife conflicts.

iii. To explore initiatives that incentivize community participation in wildlife conservation efforts (existing legal framework for compensation, CBNRM, reward for each camera trap, pictures of threatened species, biodiversity credits, etc.).

1.3 Laws and Regulations Governing Wildlife Management

Wildlife management in Tanzania is governed by a robust legal and policy framework that emphasizes conservation, sustainable use, and the mitigation of human-wildlife conflict (HWC). At the core is the **Wildlife Policy of Tanzania (1998)**, which set the foundation for addressing human-wildlife conflicts through government-led and community-based initiatives. Section 3.3.12 of the policy outlines conflict mitigation strategies such as the use of non-lethal deterrents, integrating problem animals into hunting quotas, and sharing revenues from conservation activities with affected communities. Section 3.3.9 recognizes that rural communities, district councils, wildlife authorities, central government, and the private sector all have stakes in wildlife conservation and provides for the relative distribution of revenue and benefits among these stakeholders. Under the Wildlife Conservation Act (Cap. 283) and its regulations, District Game Officers and TAWA are responsible for verifying damage reports and processing consolation payments, based on formal assessments and availability of funds from government allocations. The policy also supports the progressive devolution of problem animal control responsibilities to rural communities engaged in Community-Based Conservation (CBC).

Building on these principles, the **Wildlife Policy of Tanzania (2007)** reinforced community participation, improved governance, and addressed the rising intensity of HWC by encouraging integrated land-use planning and improved management strategies. The policy revisions also aimed to better align national efforts with international conservation standards.

The **Wildlife Conservation Act (Cap. 283, Revised Edition 2022)** provides the primary legal framework for wildlife management in the country. It supports the establishment of protected areas and WMAs (Section 20), regulates hunting and wildlife trade (Sections 38–43), and enforces strict penalties against illegal activities (Section 86). Of particular relevance is Part VIII, which directly addresses HWC: Section 69 authorizes officers to control problem animals, Section 70 classifies dangerous species, and Section 71 introduces consolation payments for loss of life, crops or injury caused by dangerous animals. damage or loss caused by wildlife. The Ministry of

Natural Resources and Tourism (MNRT), in consultation with the Ministry of Finance (MoF), may issue regulations specifying the amounts to be paid as consolation to individuals who suffer loss of life, injury, or damage caused by dangerous animals. These payments are funded through government budget allocations.

Complementing these laws is the **National Human-Wildlife Conflict Management Strategy (2020–2024)**, which provides a structured, multi-sectoral response to HWC. It addresses root causes such as habitat encroachment and unplanned land use, and promotes solutions including deterrent technologies, fortified livestock enclosures, community-led tourism, and compensation schemes like insurance and microfinance. The establishment of regional Human-Wildlife Conflict Response Teams and free hotline systems underscores the strategy's commitment to timely and community-centered responses.

Finally, the **IUCN SSC Guidelines on Human-Wildlife Conflict and Coexistence (2023)** provide a global perspective, stressing that effective conflict resolution must address underlying social, political, and economic issues. These guidelines encourage inclusive, science-based, and collaborative approaches, while promoting long-term, landscape-scale solutions that ensure both human wellbeing and biodiversity conservation.

Together, these laws and policies reflect Tanzania's commitment to balancing wildlife conservation with the needs and safety of its people. However, challenges in implementation, such as inadequate funding, weak enforcement, and inconsistent benefit distribution, continue to hinder the full realization of these frameworks in conflict-prone areas like Mlele District.

1.4 Study Area

Mlele District is one of the five districts in Katavi Region, located in the western part of Tanzania with an area of 15,539 km^2. The district was officially established in 2012 following the administrative restructuring that created the Katavi Region from the larger Rukwa Region. It is among the least densely populated districts in the country, with vast tracts of forest and grasslands that serve as important habitats for diverse wildlife.

Geographically, Mlele District covers a substantial area characterized by miombo woodland ecosystems, seasonally flooded open grassland (mbuga), and riverine environments, with more extensive savanna landscapes occurring predominantly within Katavi National Park as part of the part of the greater Katavi-Rukwa ecosystem. The district borders Katavi National Park, one of Tanzania's most remote and biodiverse parks, and is also adjacent to Rungwa, Ugalla, and Inyonga Game Reserves, as well as Forest Reserves such as Mlele Hills and Rungwa River, where many key species including elephants, buffaloes, hippopotamus, lions, and leopards are resident. This ecological diversity contributes to the range of occurrence of human-wildlife interactions reported by communities. The proximity of many villages to the park boundaries and wildlife corridors makes communities particularly vulnerable to crop raiding, livestock predation, and occasionally, threats to human safety.

Mlele District experiences a tropical savanna climate, characterized by distinct wet and dry seasons. The climate plays a significant role in shaping the region's ecosystem and ecological patterns, agricultural activities, and human-wildlife interactions. The rainy season typically begins in November and lasts until April, with the peak of rainfall occurring between December and March. The dry season extends from May to October, during which time rainfall is minimal, and temperatures can become high, with maximum temperatures occasionally exceeding 30 °C.

According to the National Population Census 2022 Mlele District has a population of 118,818. The population is distributed across six wards in which the study was conducted (Table 1). The study area includes key stakeholder groups such as farmers, pastoralists, Village Game Scouts (VGS), wildlife officers from the Tanzania Wildlife Authority (TAWA), and local authorities, who play a crucial role in conflict mitigation and conservation efforts. Understanding the social, economic, and ecological dynamics of Mlele will be essential in designing effective strategies for reducing human-wildlife conflicts and fostering long-term coexistence.

Table 1: Population of Wards in the Mlele District According to the National Population Census 2022.

S/No	**Ward**	**Village**	**Population Size**
1.	Utende	Mgombe and Wachawaseme	24,740
2.	Nsenkwa	Mtakuja and Kaulolo	9,528
3.	Ilela	Masigo and Mapili	16,387
4.	Kamsisi	Songambele and Kamsisi	18,219
5.	Inyonga	Kamalampaka and Kalovya	25,187
6.	Ilunde	Ilunde and Ibelamafipa	24,757
	Total		**118,818**

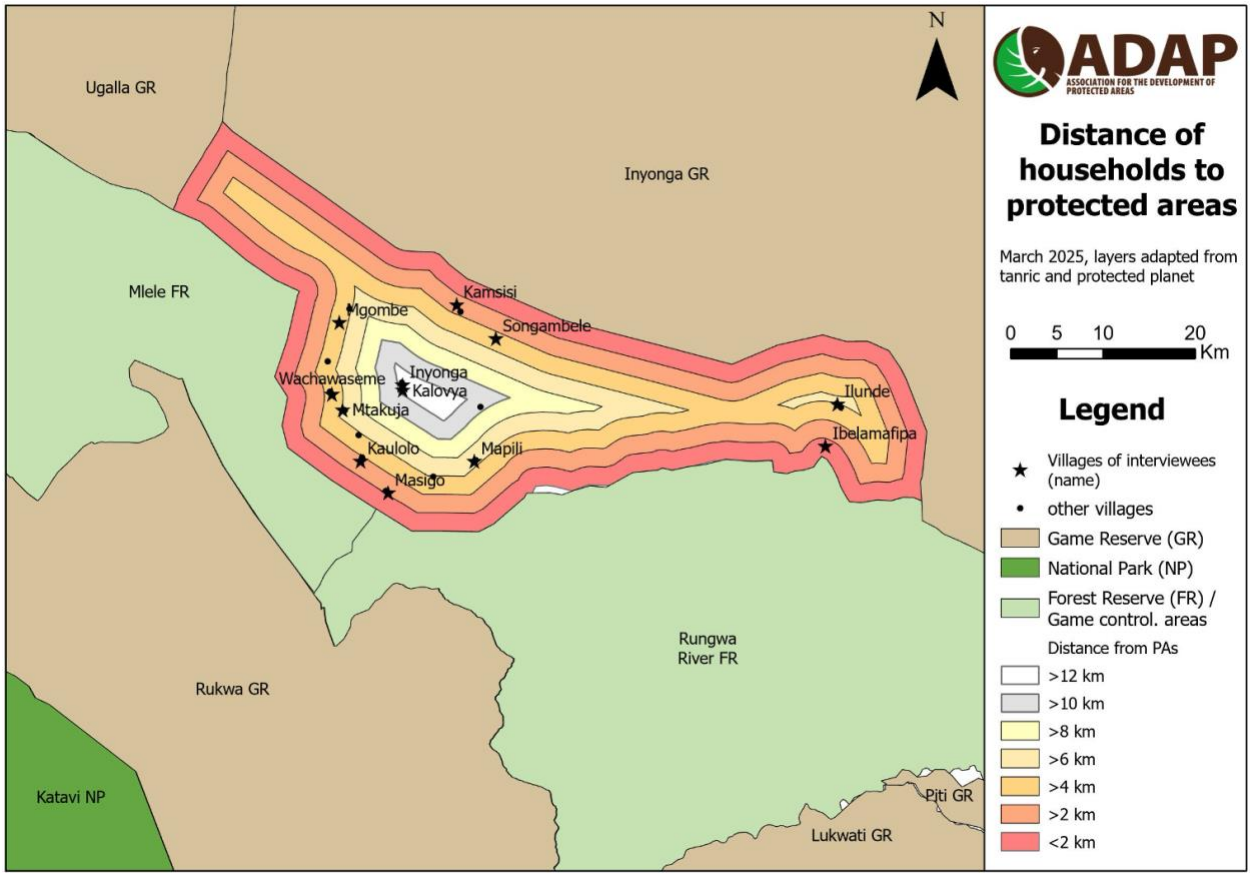

Figure 6: A map of the study area, Mlele District with the study villages. Source: ADAP, 2025.

2. METHODOLOGY

2.1 Sampling Strategy and Participants Selection

This study was conducted across twelve selected villages in Mlele District (see Table 1, Section 1.4 of this report). These villages were selected in consultation with ADAP based on their geographic proximity to Ugalla, Inyonga, and Rukwa Game Reserves and the Mlele Hills and Rungwa River Forest Reserves, as well as their relevance to community-based conservation efforts and human-wildlife interactions.

With support from ADAP staff, FGD participants were recruited in collaboration with local leaders to reflect key livelihood groups within communities. The study stakeholders comprised farmers (42.25%), pastoralists (21.13%), beekeepers (7.04%), and VGS (9.86%). Efforts were made to ensure gender representation, with women accounting for 23% of FGD participants (16 out of 71).

Key Informants were selected based on their roles in wildlife management, conservation, and community leadership. Of the 19 participants, 26.32% were government officials from relevant institutions, 5.26% represented local conservation NGOs, and 68.42% were community-based informants, including Village Game Scouts, local leaders, and other knowledgeable individuals.

It should be noted that although Key Informant Interviews included TAWA, DGO, TFS officials, and community members, incidents and experiences reported by community participants were not systematically cross-verified with official records maintained by the District Game Officer or TAWA. This introduces a limitation regarding the triangulation of qualitative and administrative data.

2.2 Stakeholders Mapping

To inform the development of conflict mitigation strategies, the study assessed the causes, extent, frequency, and impacts of HWC by engaging stakeholders directly or indirectly affected by HWC or involved in wildlife management and conservation. Prior to fieldwork, the research team conducted a stakeholder mapping exercise in collaboration with ADAP. This mapping aimed to identify and categorize key actors based on their roles, influence, knowledge, and level of engagement in wildlife conservation, natural resource governance, and community development within Mlele District. The process ensured the inclusion of diverse perspectives critical for shaping practical and inclusive HWC mitigation strategies.

Each stakeholder group was engaged using customised data collection tools specifically designed to reflect their respective roles and responsibilities. This approach enabled the research team to capture a broad range of views, experiences, challenges, and suggestions relevant to both HWC mitigation and benefit-sharing frameworks. A summary of the stakeholder groups identified and their relevance to the study is presented in Table 2. The following stakeholders were identified.

2.2.1 Local Communities

Local communities that directly depend on natural resources within or adjacent to game and forest reserves were a primary focus of this study. These communities were identified across 12 villages located in 6 wards (see Table 1, Section 1.4 of this report). The mapping considered a wide range of community-level actors who interact with wildlife and conservation efforts on a daily basis. Key stakeholder groups included farmers, pastoralists, beekeepers, VGS, and motorcycle riders (commonly known as *bodaboda*), all of whom offered critical perspectives on the causes and consequences of HWC.

2.2.2 Government Entities

At the village level, Village Chairpersons were included for their administrative functions and influence on local awareness and compliance. At the district level, the study engaged officials from the Tanzania Forest Services (TFS), Tanzania Wildlife Authority (TAWA), and the District Council. Specifically:

- The Forest Officer represented TFS.
- The Commanding Officer for Inyonga Game Reserve, Wildlife Officer, and Outreach Officer were from TAWA.
- The Acting Wildlife Officer at Mlele District Council served as the District Game Officer (DGO).

These actors are responsible for implementing national conservation policies, enforcing regulations, and facilitating community involvement in conservation initiatives.

2.2.3 Non-Governmental Organizations (NGOs)

The stakeholder mapping also captured the role of NGOs. Notably, Watu Simba na Mazingira (WASIMA) was included due to its active engagement in community education, awareness-raising, financial, and technical support for local conservation efforts. As a grassroots NGO, WASIMA brings valuable experience and insights into participatory conservation and conflict mitigation processes.

Table 2: Stakeholders Mapping in the Mlele District

Stakeholders Group	**Role in Wildlife Management**	**Interest Level**	**Influence / Power**	**Remarks**
Farmers	Experience crop destruction from wildlife; their practices influence habitat encroachment and wildlife movement	High	Medium	Key affected group; their support is crucial for implementing mitigation strategies
Pastoralists	Experience livestock	High	Medium	Often in conflict with

	predation; rely on grazing lands that often overlap with wildlife habitats			conservation due to livestock-wildlife competition; need targeted awareness and conflict resolution mechanisms
Bee keepers	Both beneficiaries and conservation allies; bee hives serve as deterrents to elephants and support forest conservation	High	Low	Can play a dual role; improve livelihoods and contribute to natural deterrents systems like beehive fences
Village Game Scouts	Frontline defenders of community-based conservation and key in conflict reporting and response	High	Medium to High	Their presence is vital for early warning, rapid responses and trust-building in communities
Village Leaders	Local administrators who influence community decisions, participation in projects, and local enforcement of regulations	High	High	Their endorsement or resistance can shape the success of any HWC mitigation and benefit-sharing model
Wildlife Officer (TAWA)	Oversees enforcement of wildlife laws, responses to HWC incidents, and liaison with communities and conservation partners	High	High	Plays a central role in coordination and ensuring compliance; vital for response mechanisms and strategic planning
Forest Officer (TFS)	Manages forest reserves adjacent to wildlife areas, oversees logging, and supports conservation education	Medium	Medium to High	Their influence intersects with habitat preservation, anti-encroachment efforts, and sustainable resource use
Outreach Officer (TAWA)	Engages with communities to promote conservation awareness and human-wildlife coexistence	High	Medium	Key players in building trust and facilitating two-way communication between conservation authorities and communities
District Game Officer (DGO)	Coordinates district-level wildlife management, oversees problem animal reporting,	High	High	Central authority for HWC coordination, reporting, and integrating mitigation and benefit-

	supports policy implementation, and liaises with TAWA and communities			sharing initiatives
NGOs (WASIMA)	Provide financial, technical, and educational support for HWC mitigation, community development, and conservation programs	High	Medium	Act as facilitators and enablers; can bring innovation, funding, and training programs

2.3 Data Collection Methods

The study employed qualitative research techniques to collect in-depth information on HWC and community coexistence with wildlife. The main data collection methods included: Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and the review of secondary data. These methods were selected to capture a wide range of stakeholder perspectives, contextual experiences, and institutional insights. The data collection process was guided by five key thematic areas:

i. Awareness and perception of HWC
ii. Understanding of the causes, frequency, and impacts of HWC
iii. Existing policies and interventions addressing HWC
iv. Community engagement and collaboration in wildlife management
v. Locally relevant mitigation strategies and benefit-sharing models

Each data collection activity followed a standardised introductory protocol. The researcher introduced the study, explained its objectives, and obtained informed consent from all participants. The rights of participants were clearly communicated, including voluntary participation and guarantees of confidentiality.

2.3.1 Key Informant Interviews (KIIs)

Key Informant Interviews were conducted with stakeholders directly involved in wildlife management, conservation, and local governance. Participants included government officials such as the Wildlife Officer, Forest Officer, Outreach Officer, Commanding Officer for Inyonga Game Reserve, and the District Game Officer from Mlele District Council. At the village level, interviews involved Village Chairpersons, VGS, and Village Chiefs, as well as a representative from the NGO WASIMA. The KIIs explored causes and impacts of Human-Wildlife Conflict, existing responses and policies, mitigation strategies, and recommendations for fostering coexistence. Each interview followed a tailored guide to ensure relevance to the informant's role and context.

2.3.2 Focus Group Discussions (FDGs)

Focus Group Discussions were conducted in 12 villages across 6 wards to explore community-level perspectives, beliefs, and practices related to HWC. The discussions aimed to understand the community's connection with wildlife, traditional knowledge and practices, types of HWC encountered, and local recommendations for promoting coexistence. Each session was held in Kiswahili and guided by structured questions to ensure focused and inclusive dialogue. A total of 77 participants took part, including men, women, and youth, with each group comprising 5 to 8 individuals. Participants represented a cross-section of local stakeholder farmers, pastoralists, beekeepers, Village Chairpersons, and VGS. Discussions typically lasted between 3 to 4 hours and provided rich insights into grassroots experiences with wildlife and conflict mitigation.

2.3.3 Secondary Data Review

To complement the primary data, a comprehensive review of secondary sources was conducted prior to fieldwork. This review informed the development of data collection tools and guided the focus of field investigations. Key documents examined included but not limited to peer-reviewed articles and technical reports on human-wildlife conflict in Tanzania (e.g., Abrahms et al. 2023; Dickman 2010; Runyoro et al. 2019; TAWIRI 2021), research studies on wildlife conservation, and national policy frameworks such as the Wildlife Policy of Tanzania, Wildlife Conservation Act, National Human-Wildlife Conflict Management Strategy, and the National Wildlife Management Areas Strategy. Furthermore, international guidance such as the IUCN SSC Guidelines on Human-Wildlife Conflict and Coexistence was reviewed. These sources provided baseline knowledge and shaped interview and discussion questions.

2.4 Data Analysis

2.4.1 Ethical Consideration

The HWC assessment and coexistence study followed ethical guidelines for informed and consented participation in the focus group discussions and key informant interviews. The facilitator informed all participants about the study's objectives, explained how the information collected would support the development of conflict mitigation strategies and benefit-sharing models to reduce HWC in the Mlele district. All responses were recorded in transcripts without audio to ensure the safety and anonymity of respondents.

2.4.2 The Approach

The analysis of data collected through Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) employed a complementary, mixed-method approach to generate both qualitative depth and quantitative clarity, aligned with the study's core objectives. FGDs were analyzed using thematic analysis, a rigorous qualitative method that identifies, analyzes, and reports patterns within data. This process was conducted using *ATLAS.ti 25*, enabling systematic coding and categorization of recurring ideas into coherent themes and sub-themes, closely linked to the specific objectives of the study. Discussions from study villages revealed insights into the nature of human-wildlife conflict, socio-cultural perceptions of wildlife, policy limitations, and

community-based mitigation strategies. The inclusion of rich, illustrative quotes grounded the findings in real community voices, enhancing the interpretation with authenticity and depth.

In parallel, KII data was collected using KoBo Toolbox, a reliable digital platform for structured field data collection, which streamlined the process and ensured data quality. The exported datasets were then analyzed using *STATA (version 17)*, allowing for descriptive statistical analysis, generation of charts, graphs, and thematic summaries that visually represented the quantitative trends emerging from key informant perspectives. This dual-analytic approach, combining qualitative themes from FGDs with quantitative trends from KIIs, aimed to provide a broader perspective on the dynamics of human-wildlife interactions. These complementary methods captured diverse experiences and perceptions across the study area. Note on interpretation of bar charts: Throughout this report, percentages shown in bar charts represent the proportion of respondents who mentioned each issue or response. Because participants could identify multiple responses, the percentages in each chart do not add up to 100%.

3. RESULTS AND DISCUSSION

3.1 Frequency of Occurrence of Human-Wildlife Conflicts in Mlele District

Human-wildlife conflicts in Mlele District occur with varying frequency across surveyed villages. According to respondents, most communities experience incidents rarely, with 92% of respondents reporting conflicts once a month or less and 8% describing events occurring weekly or more often meaning once a week or more, particularly during peak agricultural periods or the dry season. For example, villages such as Kaulolo, Mtakuja, and Kamsisi reported that wildlife come into their farms more often, particularly during the maize and rice maturation period (typically between October and January) and in the height of the dry season (July–September), when wildlife concentrate near farms. One farmer in Mtakuja explained, *"Vervet monkeys and baboons come almost every day during maize ripening,"* highlighting this seasonal concentration of incidents. In contrast, respondents in Ibelamafipa and Ilunde described conflicts as less common and mostly linked to seasonal wildlife movements toward essential resources such as water sources and farmland during the dry months, rather than occurring regularly. This pattern can be partly explained by the varying distances of villages from protected areas. For example, Kaulolo and Kamsisi are located less than 4 km from the Mlele forest reserve and Inyonga game reserve, respectively, which increases the likelihood of wildlife venturing into farms. The type of wild animals and their diet/food preference also influences the frequency of incidents, as more mobile animals like vervet monkeys can easily access farms in search of food. However, this does not apply uniformly to all villages; other factors, such as the settlement history or cultural background of a village, may influence how widely traditional mitigation knowledge is known and practiced.

3.2 Types of Human-Wildlife Conflicts in Mlele District

The findings reveal several distinct types of human-wildlife conflicts affecting communities across Mlele District, with crop destruction, livestock predation, and threats to human life being the most commonly reported issues.

I. Crop Damage

Crop destruction emerged as the most widespread and economically disruptive form of human-wildlife conflict reported across the study villages. Communities and KII respondents described damage affecting a range of crops, including both cash crops such as tobacco, rice, and groundnuts and subsistence crops like maize, and cassava.

Figure 7: Elephants and hippopotamus highlighted in this report as species associated with crop raiding. (Photos by N. Rochat and Yves, ADAP)

Table 3: Detailed overview of the affected crops, wildlife species involved, timing, and frequency as reported by community members in each village.

Village	**Wildlife Involved**	**Affected Crop(s)**	**Frequency**	**Timing/Notes**
Mgombe	bushpigs, mongooses, hippos	Sweet potatoes, maize, cassava, sugarcane	Seasonal (rainy season)	Hippos killed by TAWA in 2024 after crop raids
Wachawas eme	bushpigs, greater kudu, vervet monkeys, baboons, elephants, hippos, mongooses	Tobacco, maize, groundnuts, rice, sunflower, cassava, sweet potatoes	Recurrent	No additional details reported
Mtakuja	Elephants (7 individuals), vervet monkeys, baboons, bushpigs, warthogs, greater kudu	Rice, maize, groundnuts, cassava, sugarcane	Vervet monkeys & bushpigs frequent; elephants rare	Elephants damaged 1 hectare rice in 2024; greater kudu raid tobacco during farming season (January–March)
Kaulolo	Elephants, greater kudu, baboons, vervet	Maize, rice, groundnuts,	Recurrent during farming	No additional details reported

	monkeys, bushpigs, hippos, warthogs, mongooses	tobacco, cassava, sunflower, sweet potatoes	season	
Masigo	bushpigs, greater kudu, vervet monkeys, mongooses, hippos,	Maize, rice, groundnuts, tobacco, cassava	Recurrent	No additional details reported
Mapili	Elephants, bushpigs, greater kudu, baboons, hippos	Tobacco, groundnuts, rice, cassava, sunflower, sweet potatoes, maize	bushpigs & greater kudu frequent; elephants rare	No additional details reported
Songambele	Elephants, baboons, vervet monkeys, bushpigs, hippos	Rice, maize, sweet potatoes	Annual raids by elephants	Elephants consume ~300kg crops/day during raids depending how much they are hungry
Kamsisi	Vervet monkeys, baboons, bushpigs, greater kudu	Maize, cassava, tobacco, groundnuts	Frequent during farming season	Mostly nocturnal except monkeys during day
Kalovya	bushpigs, vervet monkeys	Maize, rice, cassava, sugarcane, groundnuts	Recurrent	Bushpigs damage is reported but no compensation received
Ilunde	Elephants, bushpigs	Rice, maize, groundnuts	Elephants occasional, pigs recurrent	March 2025: 3 hectares maize & groundnuts were destroyed by bushpigs, 2024: elephants damaged rice fields owned by villagers
Ibelamafipa	Elephants (4 individuals), greater kudu (8–12 individuals),	Maize, rice, groundnuts, cassava	Very recurrent	2024: Elephants destroyed 3 ha rice; greater

	bushpigs, vervet monkeys, baboons, warthogs			kudu raided tobacco daily January–March; bushpigs repeatedly every farming season

Reports highlighted that large herbivores like elephants and hippos can inflict severe losses in single events. For example, in Mtakuja in 2024, seven elephants destroyed an entire hectare of rice. In Ibelamafipa, four elephants raided three hectares of rice the same year. Farmers emphasized that elephants, while less frequent, cause the most devastating single incidents. Smaller, more agile species including vervet monkeys, baboons, and bushpigs were reported to damage crops repeatedly. In Kaulolo, communities explained that vervet monkeys and baboons raid maize and groundnuts almost daily during the harvest season. In Ibelamafipa, farmers stated that greater kudus move from field to field during January to March, feeding heavily on tobacco. Respondents consistently linked the timing of damage to crop maturation and the dry season, when wildlife concentrate near farms and water points. As a farmer in Songambele described, *"Elephants can eat up to 300 kilograms of maize and rice per day when they come depending on their hunger."* Communities also expressed frustration that many of these incidents remain unreported or uncompensated, despite significant losses.

The proportional contribution of different wildlife species to crop damage across all surveyed villages is summarized in Figure 8.

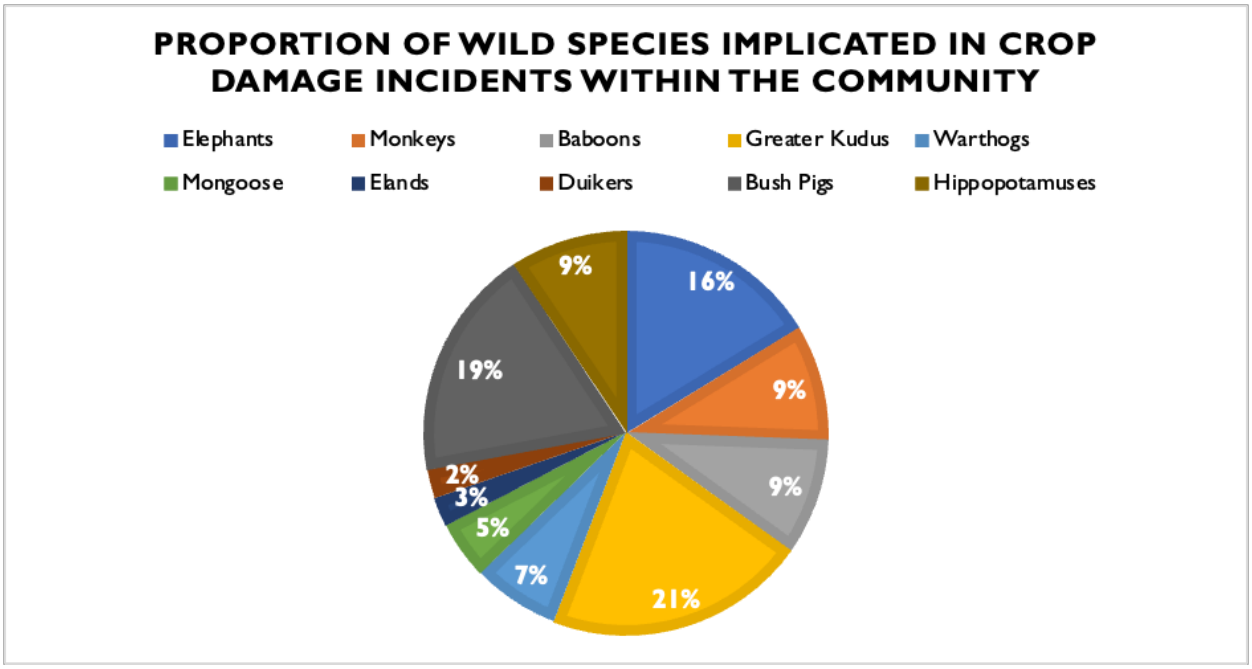

Figure 8: Proportion of wildlife species implicated in crop damage incidents within the community

As shown on figure 8 above, greater kudu accounted for the largest share of reported incidents (21%), followed by bushpigs (19%), and elephants (16%). Vervet monkeys, baboons, and hippopotamuses contributed 9% each. Other species including warthogs (7%), mongooses (5%), duikers (3%), and elands (2%) were reported less frequently.

These results illustrate the complexity and diversity of crop damage patterns in Mlele District. While elephants and hippos cause large-scale destruction in isolated events, smaller species exert continuous pressure over time. The timing of raids is closely linked to seasonal crop availability and dry season resource scarcity, reinforcing the need for adaptive, multi-species mitigation strategies.

II. Livestock Predation

Livestock predation was identified as one of the major sources of conflicts and concern for households in the study area, though the frequency, severity, and species involved varied substantially between villages. Respondents attributed livestock attacks primarily to hyenas, leopards, and lions, with occasional mentions of wild dogs and wild cats. However, reported incidents/cases are based on community testimonies and were not systematically cross-checked with official records from the Tanzania Wildlife Authority (TAWA) or District Game Office (DGO). Overall, the pattern of predation reflects a mix of rare but impactful events and more regular incursions. For example, in Mgombe, residents explained that while lion attacks on cattle were more common about a decade ago occurring almost daily they are now rare, though still impactful when they happen. In 2017, a lion killed two cattle without any compensation provided. Hyenas, in contrast, remain an active problem, with daily incidents encountered. They prey on goats, sheep, dogs, chickens, and even consume items like plastics smelling of milk or meat. One participant noted that hyenas often begin approaching homesteads around 7:00 PM. A respondent said: *"There are so many hyenas. They can open livestock pen doors, destroy enclosures, and hunt our animals at night. You might even greet one, thinking it's your neighbor."* It was reported cases involving hyenas often go unreported, revealing gaps in the documentation of wildlife-related incidents. Residents also described how a lack of designated grazing areas forces them to feed livestock in farmers' fields, creating tension between herders and farmers. In February 2025, a herder was fined over TZS 20 million, with a charge of 150,000 TZS per head of livestock for grazing in the protected area. In Ilunde, a Sukuma herder reported that twelve goats were killed by hyenas in March 2025, while in Ibelamafipa, respondents recounted that three lions killed cattle in 2024 and a group of twelve lions entered the village in 2023 to attack livestock. In Kaulolo, a participant noted that leopards attacked goats in 2024. Mapili respondents cited multiple events spanning over a decade. In December 2024, a leopard injured three goats, which later died. Earlier incidents included a hyena killing ten goats in 2012 and hyena and lion attacks on livestock. In most cases, incidents were described as occurring one to three times per year or sporadically during the rainy season, when wildlife disperses more widely and hunting wild prey becomes more difficult. Hyenas were often characterized as the most persistent predators, approaching livestock enclosures at night and, in some villages, being described as a near-daily nuisance. In Mtakuja village, participants described hyenas and lions damaging houses and

livestock enclosures during night-time incursions. While such incidents were less commonly mentioned compared to livestock losses, they nonetheless contributed to the overall sense of insecurity among affected households. Figure 10 shows the proportion of different predators involved in livestock predation according to community reports. Lions and hyenas each accounted for (37.84%) of mentions, followed by leopards at 18.92%.

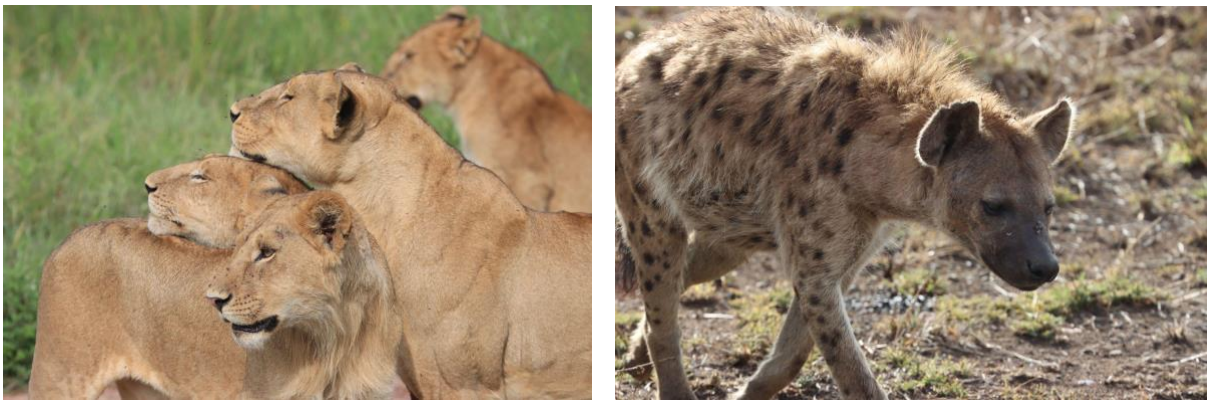

Figure 9: Lions and hyenas reported as predator species involved in livestock predation and human attacks. (Photos by N. Rochat, ADAP)

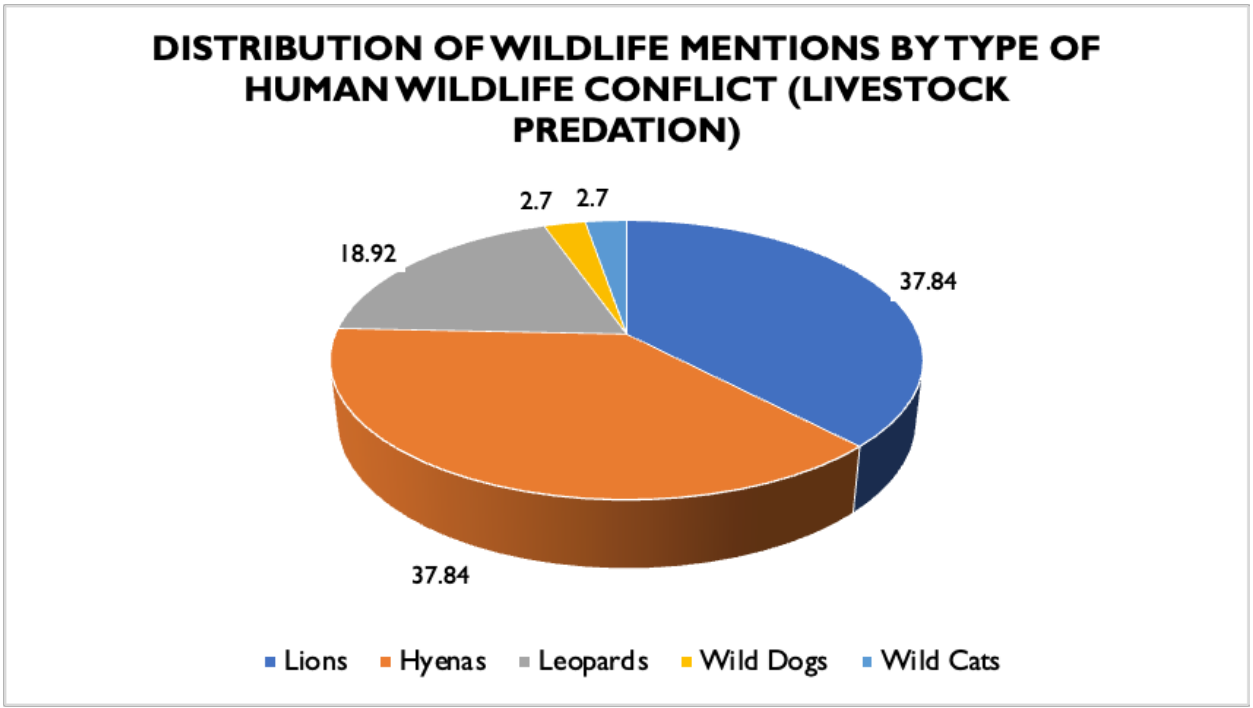

Figure 10: Wildlife species involved in livestock predation in the study area.

Table 4: Summary of Livestock Predation Events by Village

Village	Year(s) Reported	Wildlife Involved	Livestock Affected	Frequency & Notes
Mgombe	2017–2024	Lions, hyenas, leopards	Cattle, goats, sheep, dogs, poultry	Hyenas described as persistent, daily at times; lion attacks rare in recent years
Wachawasem e	2017–2024	Hyenas, wild dogs, lions, leopards	Goats, calves	Hyenas killed 4 goats (6–7 years ago); wild dogs killed 2 calves in 2024
Mtakuja	Recent years	Lions, leopards, hyenas	Cattle, goats, sheep, poultry	2–3 incidents per year; hyenas Recurring; lions occasional
Kaulolo	2024	Leopards, lions, hyenas, wild cats	Goats, sheep, cattle, poultry	Leopards attacked goats in 2024; hyenas recurring
Masigo	Not specified	Hyenas, lions, leopards	Cattle, goats, sheep	Hyenas recurring; lions occasional
Mapili	2011–2024	Hyenas, lions, leopards	Goats, cattle, sheep, poultry	Leopard killed 3 goats in Dec 2024; historical hyena attacks on goats and people
Songambele	2024	Hyenas, lions, leopards	Sheep, cattle	Hyenas killed 4 sheep and 1 cow in 2024
Kamsisi	~5–30 years ago	Lions, hyenas	Cattle, goats	Lion killed >10

				cattle 5 years ago; historical hyena attack on livestock
Kalovya	2024	Lions	Cattle, goats, sheep	Lion killed 4 cattle in 2024
Ilunde	2024–2025	Hyena, lions	Goats, cattle	Hyenas killed 12 goats in March 2025; lions attacked cattle during dry season
Ibelamafipa	2023–2024	Lions, hyenas, leopards	Cattle, goats, sheep	3 lions killed 3 cattle in 2024; 12 lions entered village in 2023

III. Risks to Human Safety from Wildlife

Human safety threats from wildlife were reported in almost all surveyed villages, although the frequency and severity varied considerably. While many incidents occurred several years ago, communities continue to live in fear of encounters, particularly during the rainy season or when walking near wildlife habitats.

Figure 11: Leopard implicated in human attacks and lion killed during Problem Animal Control operation in Mapili village, 2020. (Photos by N. Rochat and Yves, ADAP)

Table 5 below summarizes human-wildlife conflict incidents involving injuries and fatalities as reported by community members during the field assessment. A follow-up verification was made with the District Game Officer to confirm the reported cases. The “Confirmation from DGO” column reflects feedback received, indicating whether each incident was known to or recorded by the DGO.

Table 5: Reported Human Injuries and Fatalities by Village

Village	**Year(s) Reported**	**Wildlife Involved**	**Incident Description**	**Confirmation from DGO**
Mgombe	2024	Leopard	A villager was nearly killed near the district hospital; the leopard was killed with an axe and reported to TAWA.	The incident occurred in Inyonga village, Uwanja wa Ndege hamlet, not Mgombe.
Wachawa seme	~2004 (20 years ago)	Lions, leopards	Rare incidents of attacks on humans have been reported, but none in recent years.	Confirmed according to local reports.
Mtakuja	Not specified	Hippopota mus	Hippos attack humans during the rainy season when water levels rise.	Rare incidents occur during the rainy season.
Kaulolo	~2016 (8 years ago)	Lion	One person was attacked by a lion in the village, but didn’t die.	Not reported in DGO records.
Mapili	2024	Leopard	Villager injured on the head in Majengo hamlet.	Confirmed
	2011	Hyena, lion	Beekeeper was injured by hyena (hands), then later injured by lion.	Confirmed according to local reports.
	2024	Buffalo	A student was injured near Mlele District Hospital; buffalo was not killed.	The incident occurred in 2021 in Imalauduki village, not Mapili.
Songamb ele	2023, 2024	Lion, leopard	Villager attacked by lion in 2023; villager injured by leopard in 2024 (leopard killed).	2023: Confirmed (soldiers were also attacked). 2024: Confirmed.
Kamsisi	~2018 (6 years ago)	Lion	A villager was bitten by a lion in the field but survived.	Confirmed according to local reports.

	30 years ago	Hyena	30 years ago: A woman was killed by a hyena.	Confirmed according to local reports.
Kalovya	2023	Lion	Lion injured a person; the lion was killed by wildlife authorities.	Not true, not reported in DGO records.
Ilunde	2021, 2025	Lion	2021: Child fatally attacked while sleeping near livestock enclosure. 2025: Person injured by lion on road to Ilunde. The Lion fled into the forest.	2021: Not reported. 2025: Not reported.
Ibelamafipa	2016, 2022, ~2019	Lions, Hippopotamus	2016: A child killed by a lion. 2022: Adult killed by lion. ~2019: Person killed by hippo in a well while attempting to butcher it.	2016: Confirmed. 2022: Confirmed. 2019: Confirmed, but it occurred in 2020.

Although incidents of human attacks are relatively rare compared to crop and livestock losses, they carry psychological impacts. In villages such as Ibelamafipa, Ilunde, and Mapili, participants described fatalities and serious injuries attributed to lions and hippopotamuses. For instance, in Ibelamafipa, a child was killed by a lion in 2016, followed by an adult in 2022. Another case involved a villager entering a well to butcher a hippopotamus and being fatally injured. In Ilunde, a child was killed by a lion in 2021 while sleeping near a livestock enclosure. In Mgombe, the 2024 incident in which a leopard attacked a villager near the district hospital illustrates that occasional dangerous encounters still occur. Seasonal patterns were also reported, such as hippo attacks in Mtakuja during the rainy season when flooding brings humans and wildlife into closer contact.

Fear of such events has lasting effects on daily life, including children sometimes avoiding school or residents refraining from evening activities. While the events could not be verified with official records, they illustrate perceptions of risk, which influence attitudes toward wildlife and tolerance for conservation initiatives. These reports are based on community narratives and were not systematically cross-verified with TAWA or District Game Office records, which make interpretations based on community responses. Figure 12 shows the proportion of different wildlife species involved in human injuries and insecurity according to community reports. Lions and hyenas each accounted for (36.84%) of mentions, followed by leopards at 18.42%, with snakes and buffalo mentioned least frequently

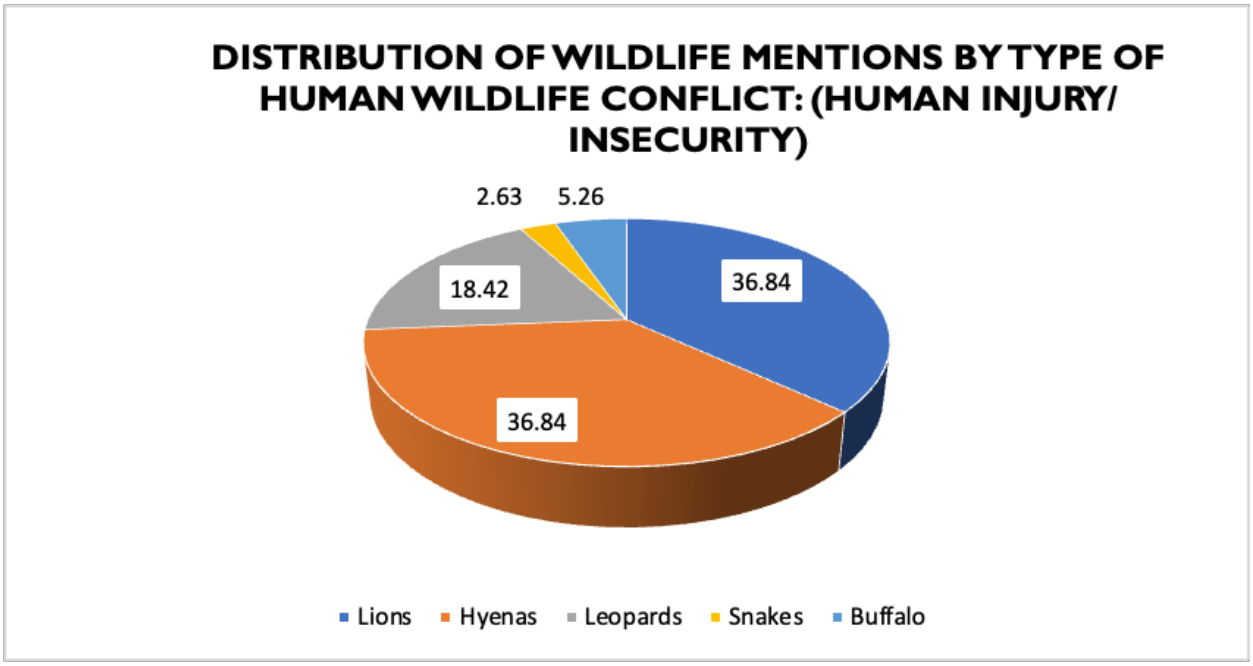

Figure 12: Wildlife species involved in human injuries and insecurity in the study area.

3.4 Wildlife Species Involved in Human-Wildlife Conflict

Findings from both government officials and community key informant interviews identified a range of wild animal species responsible for conflicts affecting crops, livestock, property, and human safety. The most frequently mentioned species were lions (*Panthera leo*) and bushpigs (*Potamochoerus larvatus*) (76.47% each), followed by elephants (*Loxodonta africana*) and hyenas (*Crocuta crocuta*) (70.59% each), and hippos (*Hippopotamus amphibius)*, vervet monkeys, and snakes (58.82% each). Other species noted by smaller proportions of respondents included leopards (*Panthera pardus*) (52.94%) and greater kudu *(Tragelaphus strepsiceros)* (52.94%).

These findings demonstrate that human-wildlife conflict in Mlele District is driven by a diverse set of animals, each with distinct behavior patterns and risk profiles. Figure 13 below shows the proportion of respondents from both community and government perspectives who identified each species as contributing to conflicts in their areas.

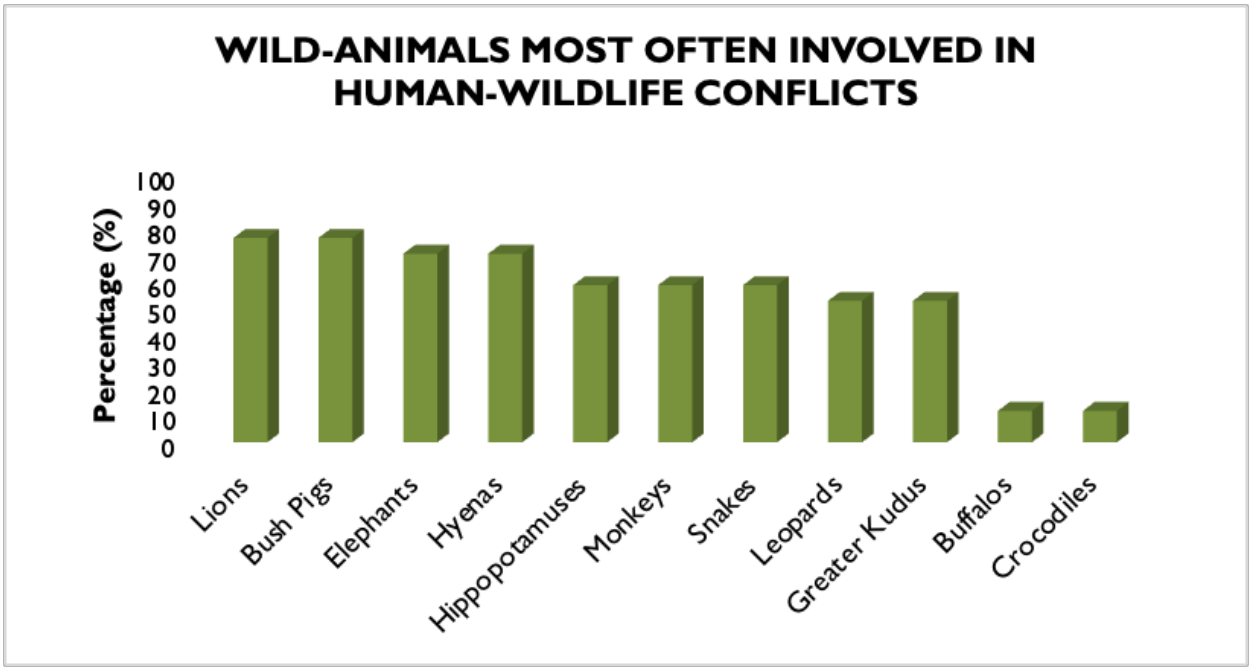

Figure 13: Wild animals most often involved in human-wildlife conflicts in the study area

3.5 Causes of Human-Wildlife Conflicts in Mlele District

Human-wildlife conflicts in Mlele District are driven by a complex interplay of ecological pressures, land use changes, and institutional factors. One of the primary causes is the expansion of agriculture and settlements into former wildlife habitats and traditional movement corridors. In villages such as Mapili and Kalovya, respondents highlighted that farmland now occupies old wildlife migration routes. As one participant in Mtakuja explained, *"The elephants follow their old paths, but now those are farms. That is why they destroy crops"* emphasizing the historical continuity of wildlife movements and the new spatial overlaps with human activities. Additionally, the rapid growth of livestock herds sometimes exceeding the ecological carrying capacity is a significant factor. Large herds drive pasture depletion and contribute to overgrazing, prompting herders to encroach further into protected areas.

Encroachment into protected areas emerged as a widespread driver of conflict. Wildlife Officers, Outreach Officers, and community members described how both grazing and farming activities have increasingly extended into reserves, intensifying interactions with wildlife. For instance, herders in Mgombe highlighted that a lack of designated grazing zones forces them to trespass:

> *"We livestock keepers have no designated grazing areas, so we feed our livestock on farmers' fields, which causes daily conflicts between farmers and herders. At times, we even graze our livestock within the protected area."*

This practice contributes not only to habitat degradation but also to predation events that often remain unreported. As one respondent in Ibelamafipa explained:

> *"These cases often go unreported to wildlife authorities because herders graze within protected areas, leading lions to follow animal tracks back to livestock enclosures at night."*

Farming within protected areas was also commonly mentioned, especially among Wasukuma communities who establish rice fields in wetlands and other fertile zones inside reserves. A participant from Songambele noted:

> *"We mostly farm illegally within the protected areas, but even when we farm in our settlements, wild animals come and destroy our crops."*

These accounts underscore that encroachment is not only a matter of occasional trespass but a structural coping mechanism driven by land and resource scarcity, as well as limited adherence to wildlife and conservation policies. These patterns contribute significantly to human-wildlife conflict in Mlele District.

Deforestation and habitat loss: According to KII respondents (Wildlife Officers, Outreach Officers, DGO, Forest Officers) deforestation and habitat loss, mainly due to charcoal production, logging, and land clearing, are among the major factors driving HWC in the study area. Rather than wildlife moving closer to people, it is primarily the expansion of settlements and farms into areas that were previously undisturbed wildlife habitats that has created new points of contact and escalated incursions into croplands.

Climate change further exacerbates these dynamics by intensifying drought cycles and reducing water and pasture availability. During the dry season, pastoralists move illegally into protected areas to graze their livestock. This behavior creates an indirect pathway for predation, as wild animals follow livestock tracks back to settlements at night incidents that might not occur if grazing remained outside wildlife habitats. According to respondents in Ilunde, wildlife species such as hippos and elephants often move into village territories during dry periods in search of water, sometimes damaging community water infrastructure. As one participant shared: *"During the dry season, elephants and hippos come to the village wells, breaking them and scaring people."* These accounts reflect direct competition for essential resources between humans and wildlife.

Limited community awareness about conservation and the absence of continuous education campaigns were repeatedly raised by both KII experts and community members. Respondents noted that many conflicts could be mitigated if communities were better informed about wildlife ecology, practical conflict prevention measures, consolation payment procedures, and the designation of grazing areas for pastoralists.

Weak institutional responses: Institutional weaknesses play a significant role in sustaining the conflict. Across almost all villages, respondents expressed frustration at the lack of timely response from wildlife authorities and lack of effective consolation payments. For instance, villagers in Kaulolo and Kalovya lamented that despite frequent reports to TAWA, no effective actions were taken. As one participant noted, *"We report to TAWA, but nothing happens. We are left to deal with the animals ourselves."* Such experiences contribute to growing bitterness and reduce community willingness to participate in conservation efforts.

These multifaceted causes are visually summarized in Figure 14, which presents the main drivers of human-wildlife conflict in the study area as reported by government officials and community members. As shown in the figure, increased human settlement near wildlife habitats (94.12%), human encroachment into protected areas, climate change, deforestation, and limited community awareness about wildlife conservation (88.24% each) were the most frequently cited drivers. Poaching and illegal hunting (82.35%) also ranked highly. Habitat loss (76.5%) and inadequate compensation (70.59%) emerged as additional important contributing factors. In contrast, the lack of adequate wildlife corridors (11.76%) and over-reliance on natural resources by local communities (5.88%) were mentioned less often. Regarding poaching and illegal hunting, respondents sometimes used the terms interchangeably. For clarity, poaching typically refers to targeting wildlife for commercial gain, such as bushmeat sales, whereas illegal hunting includes unlicensed subsistence hunting by local residents to supplement food or protect crops.

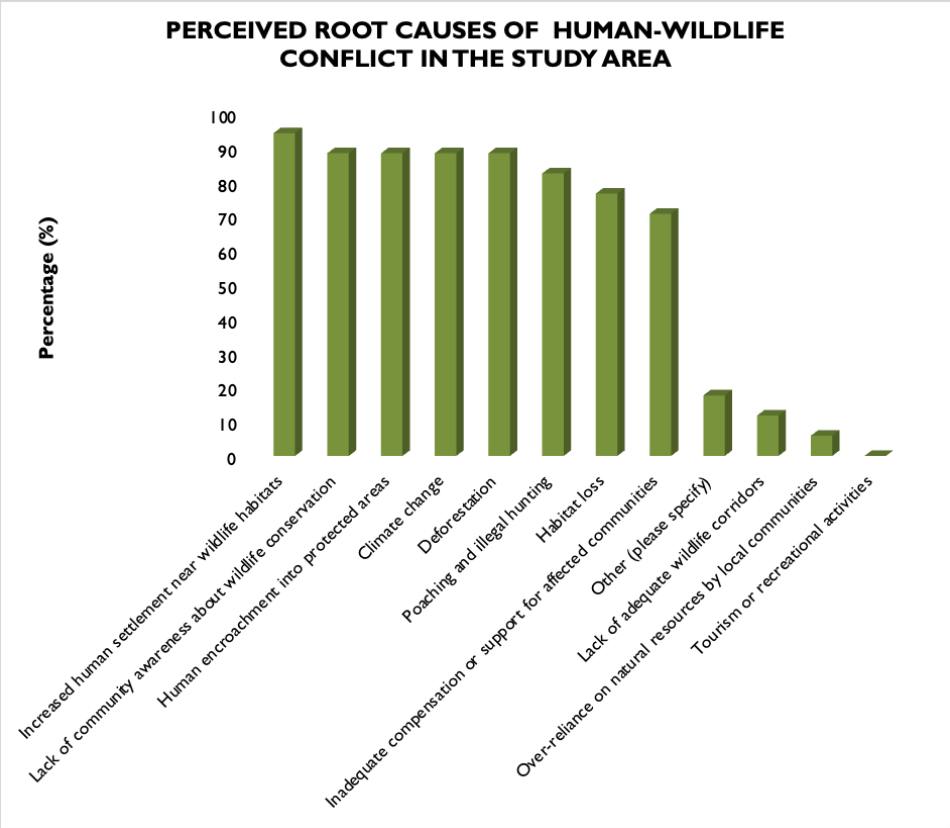

Figure 14: Perceived root causes of human-wildlife conflicts in the study area

3.6 Impacts of Human-Wildlife Conflicts in Mlele District

The impacts of HWC in Mlele District are extensive and multifaceted, significantly affecting livelihoods, safety, education, health, and local development.

I. Economic Impact

Economic losses emerged as the most commonly reported consequence across villages. Respondents described incidents of crop destruction by elephants, vervet monkeys, bushpigs, and baboons, which in some cases contributed to periods of reduced harvests or household income. The loss of livestock due to predation by lions, leopards, and hyenas further compounded these economic vulnerabilities. While many community members perceived these impacts as serious, this study did not quantify the frequency or economic value of losses at the household level.

II. Social & Psychological Impacts

Social disruptions were reflected in changes to daily routines and feelings of insecurity reported by many participants. In Mapili and Ibelamafipa, children miss school when wildlife is nearby, and women reported avoiding firewood collection due to threats from lions. A resident in Ilunde explained, *"We live in fear every day, lions come near homes, and we can't walk alone."* Such perceptions of danger contributed to reported psychological stress in several communities, particularly in Songambele and Kamsisi, where participants described *"fear and anxiety, especially toward dangerous animals like lions."* While actual incidents were described as occasional rather than frequent, these feelings might influence community attitudes and behaviors.

III. Health & Safety Impacts

Health and safety threats were also reported by communities in several villages. Participants described wildlife attacks involving lions, leopards, and snakes (black mamba, locally known as "Koboko") in areas such as Kamalampaka and Mapili. A resident from Mapili recounted that *" in 2024 a person was injured on the head by a leopard in Majengo hamlet."* In Ilunde, respondents shared that elephants and hippos damaged village wells, which they believed compromised water access and increased health risks.

IV. Developmental Setbacks

Developmental setbacks were also cited in Kalovya and Kamalampaka, where some respondents perceived that wildlife had provided occasional benefits in the past through support provided by hunting operators, but that these benefits had declined. A participant in Kalovya explained, *"Wildlife had benefits in the past… now, no benefits,"* reflecting a shift in attitudes from optimism to discouragement.

As shown in Figure 15, the most frequently mentioned impacts according TAWA, included loss of crops and livelihood (83.33%) and loss of livestock or property (83.33%), followed by concerns about human injuries or deaths (66.67%), disruption of daily activities and farming (50%), and economic hardship and increased fear and tension in communities (33.33%). Less frequently reported was the erosion of cultural and traditional practices (16.67%).

The findings suggest that while severe incidents may be relatively infrequent, the combined economic, social, and psychological effects contribute to a sense of vulnerability and tension among many residents.

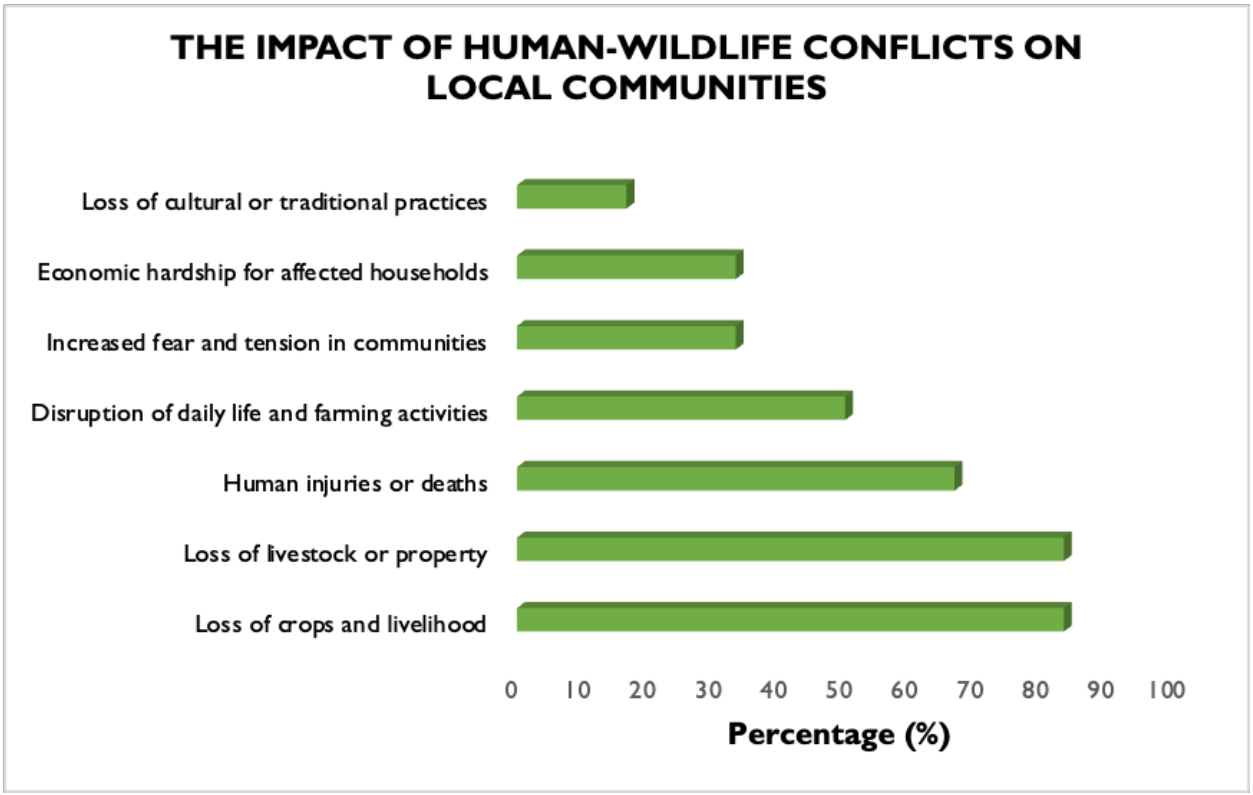

Figure 15: The impacts of human-wildlife conflicts on local communities

3.7 Community Perceptions and Cultural Significance of Wildlife

Community perceptions of wildlife in Mlele District are complex, reflecting both appreciation and resentment. On one hand, community members perceive wildlife, especially carnivores, as somewhat positive, while a larger share view them very negatively due to the threats they pose to human life and livelihoods. Despite fears of large carnivores such as lions and leopards, many communities recognize the economic, cultural, and spiritual value of wildlife. In most of the studied villages, wildlife is appreciated for its economic and cultural importance. In Songambele, wildlife is seen as a source of employment, especially for youth as Village Game Scouts. In Ilunde and Ibelamafipa, respondents explained that lion skins have historically been used in ceremonial burials and blessings by traditional chiefs, reflecting their cultural significance. However,

community members did not specify whether such skins were obtained legally (e.g., from problem animal control incidents) or through other means such as illegal killing and possession which is not permitted under current wildlife regulations. In Kalovya, wildlife was described as *"fascinating when seen in the wild,"*

Wildlife was also perceived as a source of food, with species such as greater kudu and bushpigs mentioned as bushmeat. However, all forms of hunting and bushmeat trade in the district are illegal except for regulated trophy hunting concessions, hence this indicates that limited illegal hunting is still happening. Respondents noted that meat is sometimes obtained from official distributions after problem animal control operations and illegal hunting activities. Traditional beliefs and taboos also guide community behavior. In almost all villages, elephant dung was reported to be used to treat convulsions in children (locally called *degedege*). Lion and leopard skins were cited as used in rituals and traditional medicine, and clan-based taboos such as the Mangera and Wangu clans in Kamsisi prohibit hunting or eating buffaloes and lions because of spiritual consequences. In Kamsisi and Songambele, some respondents reported that consuming giraffe meat is believed to cause skin discoloration resembling the animal's spots. While illegal possession of wildlife-related body parts is not permitted under wildlife regulations, they were mentioned in nearly half of the focus groups, they likely represent the views of specific households or cultural groups rather than the entire community, and may persist only in limited and informal ways.

Negative perceptions are also strongly tied to the destruction of livelihoods. In Kalovya and Kamalampaka, respondents voiced that *"wildlife has no benefits for our village,"* citing repeated crop destruction and lack of consolation payments. This contradiction of wildlife as both a threat and a treasure highlight the need for balanced coexistence models that harness cultural strengths while addressing practical challenges. These diverse perceptions are summarized in Figure 16, which shows the range of views reported by community interviews.

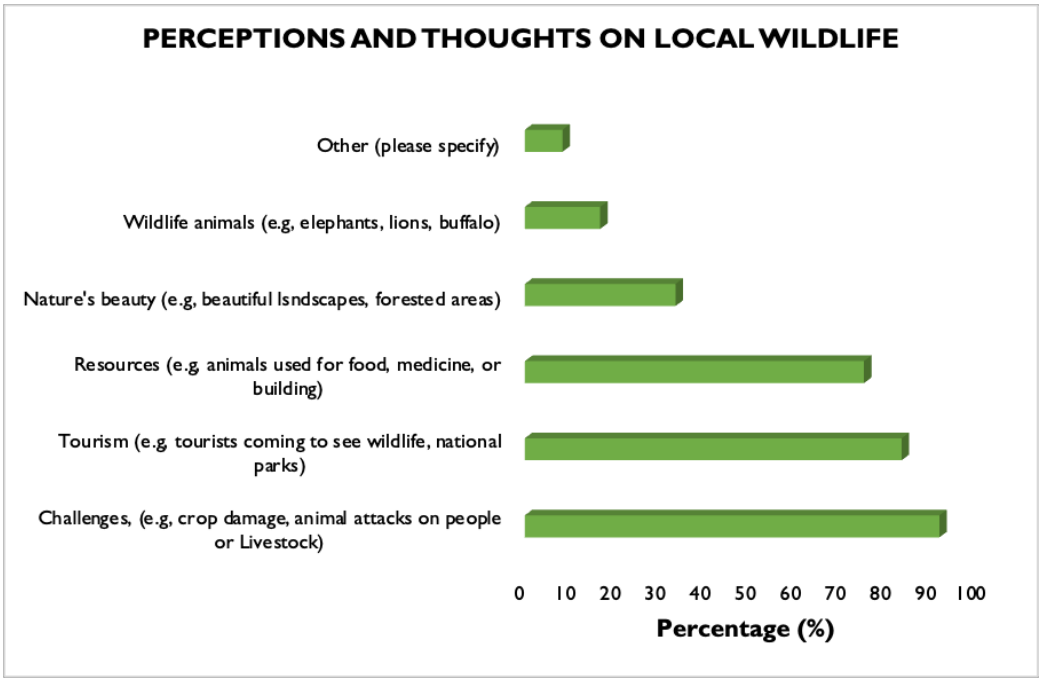

Figure 16: Perceptions and Thoughts on Local Wildlife

The various dimensions of community perceptions and cultural significance as reported by FDGs are summarized in Table 6.

Table 6: Community Perceptions and Cultural Significance of Wildlife

Aspect	**Details**	**Village (s)**
Economic value	Wildlife creates employment opportunities (e.g., VGS role, staff of hunting companies), consumption by TAWA staff who are all concentrated in Kamsisi today.	Songambele, Kalovya, Kaulolo, Ilunde, Ibelamafipa, Kamsisi, Mapili
Cultural use	Lion skins used in blessings and burials	Ilunde, Ibelamafipa
Medicine use	Elephant dung treats epilepsy in children Lion fat, claws, and skin are used in traditional medicine Leopard skin is used by traditional healers	Masigo, Mapili, Mgombe, Wachawaseme, Ibelamafipa, Kamsisi
Spiritual taboos	Clans forbid hunting giraffe/buffalo/lions; giraffe meat linked	Kamsisi, Songambele, Mgombe, Ilunde, Ibelamafipa,

	to skin conditions and spiritual consequences	Kamsisi
Tourism potential	Wildlife viewed as attraction for development	Kamalampaka, Kalovya, Mtakuja, Kaulolo, Mgombe, Ilunde, Ibelamafipa, Kamsisi, Mapili, Songambele
Negative perceptions	Wildlife seen as destructive; causes crop and livestock loss without compensation	Kalovya, Kamalampaka, Mtakuja, Kaulolo, Mgombe, Wachawaseme, Ibelamafipa, Ilunde, Kamsisi, Mapili, Songambele

3.8 Community Perception on Services and Products from Wildlife Ecosystems

Community perceptions of the services and products derived from wildlife ecosystems in Mlele District are largely positive but shaped by personal experiences and economic realities. According to Key Informant Interview data, 40% of respondents held a very positive perception, 20% were somewhat positive, 20% were neutral, and another 20% were somewhat negative toward the benefits provided by wildlife and their ecosystems. Those expressing very positive views highlighted the economic, ecological, and cultural contributions of wildlife. In villages like Songambele and Kalovya, some respondents described wildlife-related activities primarily regulated hunting activities as a potential source of income and employment, including roles as Village Game Scouts and, in some cases, trackers assisting hunting companies. A Wildlife Officer interviewed in Mlele District remarked, *“Wildlife resources are the backbone of tourism here, and without them, our communities would lose a major source of income.”* The income referred to here is the revenue generated from trophy hunting concessions and the related employment of trackers and Village Game Scouts. Somewhat positive respondents acknowledged these benefits but raised concerns about the uneven distribution of trophy hunting gains. In Ilunde and Mapili, some respondents felt that regulated hunting concessions had provided occasional opportunities, mainly through employment of the local residents as Village Game Scouts. However, many emphasized that these benefits were limited in scope and did not reach most households, contributing to perceptions of inequality. The neutral group tended to view wildlife ecosystems pragmatically. While recognizing that ecosystems provide cultural products (such as herbs, skins, and spiritual materials) and ecosystem services, they were cautious due to the frequent disruptions caused by wildlife, especially crop destruction and livestock predation. Meanwhile, the somewhat negative perceptions were rooted primarily in lived experiences of loss and conflict. Respondents from Kamalampaka and Kalovya stressed that wildlife had become more of a burden than a benefit, citing repeated damages to crops and livestock without corresponding compensation. As one local leader stated, *"Wildlife brings tourists, but we bear the losses. We feel abandoned."* These perceptions are visually presented in Figure 17, where the pie chart illustrates that while a majority recognize the potential value of wildlife ecosystems, substantial portions of the community still hold neutral or negative views. This highlights the critical need for

equitable, transparent, and community-driven benefit-sharing models to foster more consistent positive engagement with wildlife conservation efforts.

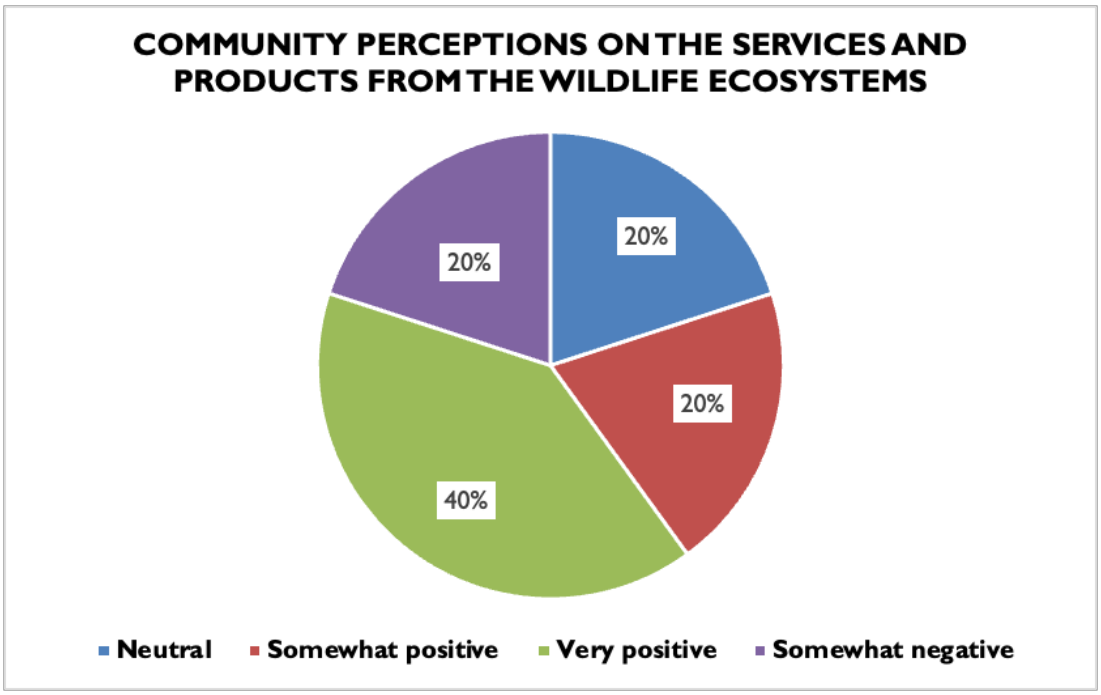

Figure 17: Community perception on the services provided by wildlife ecosystem

3.9 Community Awareness of Wildlife Policy Barriers and Opportunities

Findings from the study indicate that community awareness of wildlife-related policies in Mlele District remains limited. According to key informant interviews (Wildlife Officer, Outreach Officer, DGO), 20% of respondents were described as very well informed about existing policies and the existence of consolation mechanisms for wildlife-induced hazards, while a significant 80% are described as only somewhat informed. Although some community members know that consolation payments can be claimed for loss of life or injury caused by dangerous animals according to the Wildlife Conservation Act (Cap. 283, Revised Edition 2022, Section 71), many incidents go unreported, especially when they occur inside protected areas where people farm or graze livestock illegally. This pattern suggests that although community members recognize the existence of wildlife conservation rules and consolation payments programs, there are substantial gaps in detailed understanding. The limited comprehensive knowledge among communities acts as both a barrier and an opportunity. As a barrier, it reduces effective engagement with wildlife protection initiatives and diminishes the likelihood of communities reporting incidents or seeking redress for damages. This gap can fuel frustration, distrust toward authorities, and retaliatory attitudes against wildlife. However, it also offers an opportunity: targeted outreach, education, and participatory policy-making could significantly enhance community involvement, build trust, and strengthen local ownership of conservation strategies. Figure 18 below shows the awareness of

the community on wildlife-related policies and consolation payment procedures as reported by TAWA.

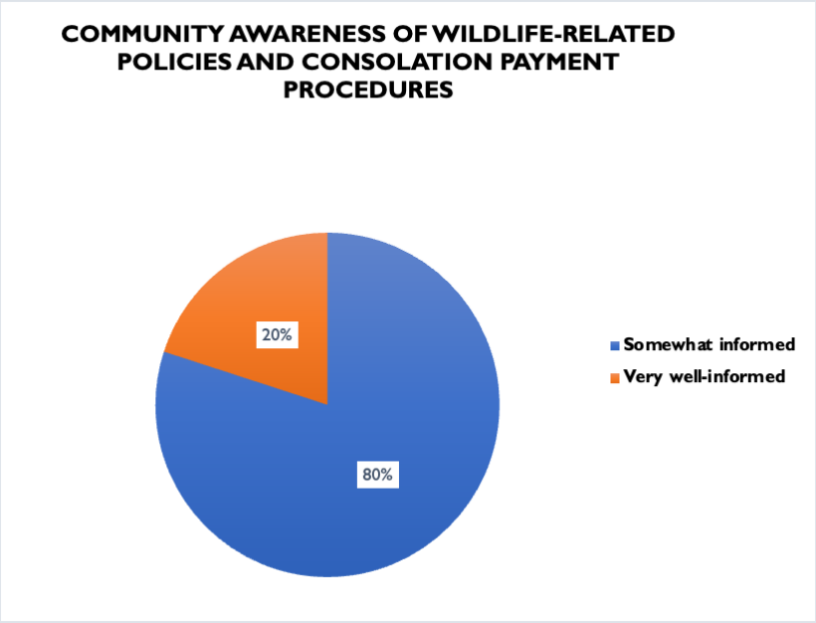

Figure 18: Community awareness of wildlife-related policies and consolation payment procedures

The range of policies and frameworks for managing human-wildlife conflicts, as mentioned by TAWA, is presented in Figure 19. The bar chart shows that human wildlife conflict response teams (83.33%), wildlife conservation education and awareness programs (66.67%), consolation payments for damages (66.67%), and collaborative wildlife management (50%) were among the most recognized strategies. Meanwhile, protected area management plans (33.33%), conflict mitigation programs (33.33%), and national wildlife conservation policies (33.33%) were considerably lower, indicating areas where further communication and sensitization efforts are urgently needed.

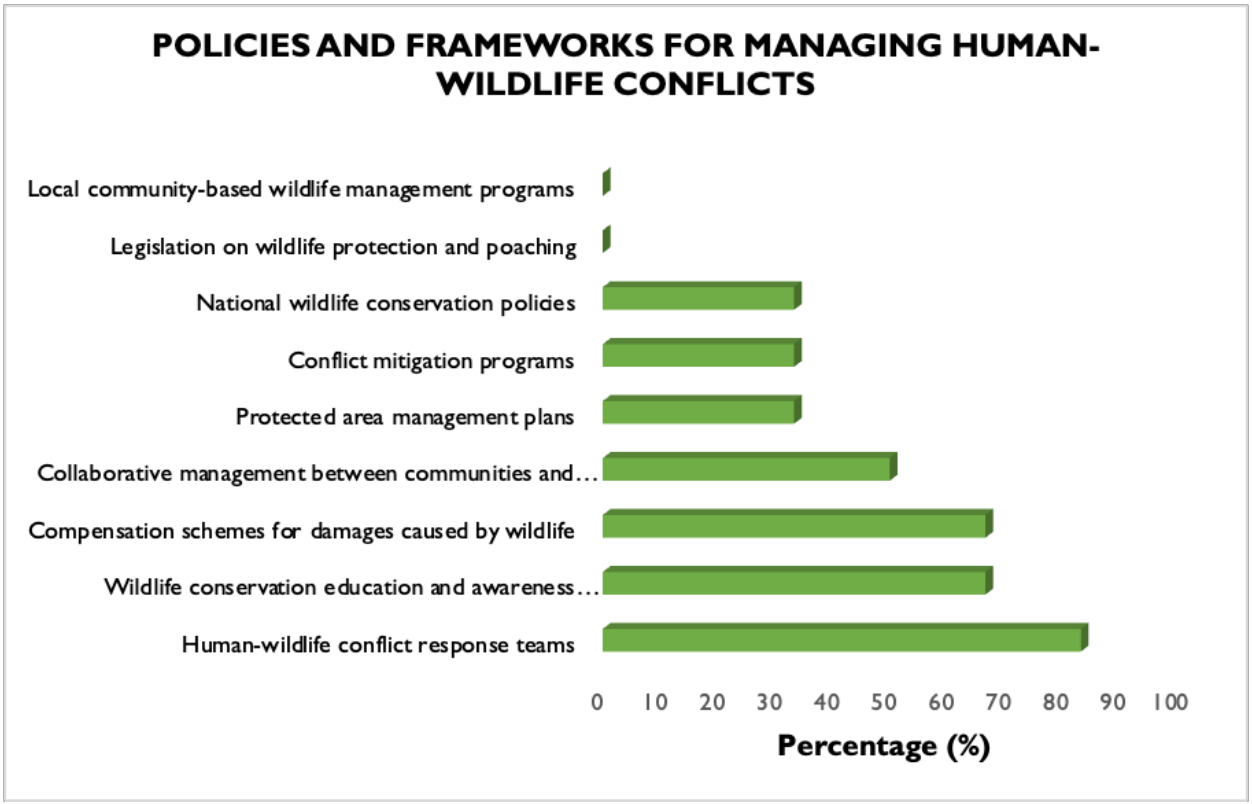

Figure 19: Policies and frameworks for managing human-wildlife conflicts in Mlele district

3.10 Traditional Knowledge and Practices for Coexistence

Traditional knowledge continues to play a vital role in how communities across Mlele District manage and coexist with wildlife. Across all twelve villages, respondents described a variety of indigenous strategies passed down through generations, reflecting deep ecological understanding and cultural values. Common deterrent methods include drumming, lighting fires, and burning elephant dung mixed with chili to repel animals, particularly elephants and vervet monkeys. In Mtakuja, a participant explained, *"We burn elephant dung with hot pepper and bang metal to scare away monkeys."* Similarly, in Ilunde and Ibelamafipa, residents reported setting night fires and sleeping within livestock enclosures to guard against predators such as hyenas and lions. Herbal and spiritual practices also remain important. In Ilela Ward, members of the Sukuma tribe described using the "Mgu" tree, believed to deter lions. In Ilunde, traditional chiefs placed protective spiritual medicine around village perimeters, as one respondent explained: *"Chiefs placed protective medicine to keep lions away."* These practices illustrate not only ecological knowledge but also a strong spiritual relationship with the surrounding wildlife. Communities have also adopted symbolic deterrents. In Kamsisi and Songambele, villagers reported crafting fences smeared with lion fat or installing bells that ring in the wind to scare away animals. While communities did not always specify the source, discussions indicated that the fat is mostly obtained through limited illegal hunting which still occurs among some Wasukuma groups who consider lion killing both a protective measure and a cultural symbol of prestige. In Kalovya, participants recalled the historical role of "askari wa lugaluga" traditional wildlife

guardians who would intervene when animals posed direct threats. While these traditional methods were historically effective, several respondents noted their declining reliability amid escalating conflicts. As one participant from Kamsisi remarked, "*We still use our traditional methods, but they no longer work like they used to. Elephants are no longer afraid*." Changes in land use, wildlife behavior, and habitat loss were cited as factors weakening the effectiveness of indigenous techniques.

3.11 Limitations of The Study

This study faced several limitations that should be considered when interpreting the findings. First, the relatively small sample size, while providing rich qualitative insights, may limit the broader representativeness and generalizability of the results across the entire Mlele District. Expanding the sample especially through more individual semi-structured interviews with community members directly affected by HWC would have provided a more comprehensive picture of local experiences.

Additionally, resource constraints restricted the geographic and demographic coverage of the study, preventing engagement with a larger number of stakeholders and systematic cross-verification of incidents. Although community narratives offer valuable depth and context, there is a potential for recall bias, selective reporting, or exaggeration, particularly when describing wildlife incidents, timelines, or benefits from conservation activities. The study did not consistently cross-check reports with TAWA or District Game Officer records, and few incidents were supported by direct sightings or formal documentation. This represents a significant limitation and highlights the need for improved coordination and joint data recording with wildlife authorities in future assessments.

The study was carried out in March, a period falling outside the main harvesting and driest months. Seasonality is a critical factor influencing the frequency and intensity of human-wildlife conflict including crop raiding and carnivore attacks which are often more severe during harvest or prolonged dry periods. Conducting research across different seasons would provide a more robust understanding of conflict dynamics throughout the year.

Gender Dynamics, while gender representation was included, a more targeted analysis of how HWC uniquely affects women and children could enrich findings, especially since fear-driven disruptions in education and firewood collection were recurring themes.

Despite these limitations, the study provides critical preliminary information that is both robust and actionable, offering a strong foundation for the design of conflict mitigation strategies and benefit-sharing models tailored to local realities in Mlele District.

4.0 MITIGATION STRATEGIES AND BENEFIT-SHARING MODELS

4.1 PROPOSED MITIGATION STRATEGIES

Effective mitigation of human-wildlife conflicts in Mlele District requires a combination of community-driven, ecological, and policy-level actions (Figure 21). The mitigation strategies must also be practical, culturally sensitive, and tailored to local realities. Based on the findings from KIIs and FDGs, the following mitigation strategies are recommended:

4.1.1 Increasing Awareness and Education on Wildlife Conservation and Conflict Mitigation

Education campaigns were identified as a key priority. Many communities requested targeted and regular awareness programs about the causes of conflict, coexistence strategies, and legal procedures for reporting wildlife damages. Community workshops, meetings, school programs, and radio messaging are suggested to ensure widespread and accessible education.

4.1.2 Increasing the Role of Local Communities in Wildlife Management and Decision-Making

Respondents emphasized the importance of involving communities directly in wildlife-related decision-making, including land use planning, resource management, and benefit-sharing. In other parts of Tanzania, studies have examined community-based wildlife and forest management models and their outcomes. For example, Nelson et al. (2007) analyze the challenges of devolving wildlife management authority to communities, noting that although policy reforms and pilot projects have aimed to increase local benefits and participation, in practice authority often remains centralized and difficult to transfer. Blomley et al. (2006) report that participatory forest management has shown promising results for improving forest condition and reducing illegal use, particularly through Community-Based Forest Management (CBFM) on village land and Joint Forest Management (JFM) in national forest reserves. On village land, the Wildlife Conservation (Wildlife Management Areas) Regulations, 2012 provide for the establishment of Wildlife Management Areas (WMAs), where communities can form Authorised Associations to manage and benefit from wildlife resources. However, creating a WMA requires sufficient unoccupied land, clear village boundaries, and thorough consultation. In Game Reserves, community management is more restricted. The Wildlife Conservation Act, Cap. 283 (Revised Edition 2022) (Sections 14-15) empowers the government to declare and regulate Game Reserves, limiting access without official permits. While co-management agreements with TAWA are theoretically possible, they remain rare in practice. Applying such approaches in Mlele District would require a comprehensive feasibility assessment, considering land scarcity, legal frameworks, and whether communities have the interest and capacity to engage effectively.

4.1.3 Land Use Planning and Improved Benefit Sharing

Communities and key informants proposed better land use planning to separate wildlife habitats from farmlands and settlements. Implement village land-use plans that demarcate wildlife

corridors, grazing areas, farming zones, and settlement boundaries, taking into account current realities such as population growth, in-migration, and expanding agriculture near protected areas. Based on the ADAP report, land use plans were supported and established in 2015 through the PLUM process in the 12 existing villages. However, these plans were often not respected or fully enforced. Poor implementation, rapid changes driven by in-migration, population growth, encroachment, and the establishment of new villages have contributed to a situation where the land use plans are now outdated. Therefore, renewed efforts should be coupled with strong local engagement, clear enforcement mechanisms, and sustained support from district authorities and conservation partners. Strengthening land use planning is essential to prevent encroachment, clarify responsibilities, and build shared accountability for reducing human-wildlife conflict.

4.1.4 Strengthening Community-Based Wildlife Management Programs

Communities emphasized the need to empower local wildlife management structures, such as Village Game Scouts and community wildlife committees. Strengthening these groups involves providing proper training, equipment, and legal authority to monitor wildlife movements, deter incursions, and respond quickly to conflict incidents. Local ownership of conservation and management responsibilities was seen as important for increasing accountability and effectiveness. However, it is important to note that while village-based staff can apply basic deterrence measures to push animals away, only government officers such as TAWA or District Game Officers are legally authorized to conduct Problem Animal Control (PAC) operations when lethal measures are required. In addition, establishing dedicated human-wildlife conflict response units comprising government authorities and VGS could be explored to improve the speed and coordination of interventions. The feasibility and appropriate scale of such units (village, ward, or district level) would require careful assessment considering resource limitations.

4.1.5 Installing Physical Barriers or Fencing to Protect Crops and Livestock

Key informants and communities stressed the need for affordable and effective barriers to protect crops and livestock. Suggested solutions included beehive fences, chili rope fences, and traditional fencing methods (Placing bells on fences), particularly against elephants, baboons, and wild pigs. FGDs emphasized combining traditional methods such as drumming, fires, and herbal repellents with modern fencing to increase effectiveness. Because fencing and barrier systems can be costly and logistically demanding over large areas, it is important to prioritize their installation in the most affected locations such as crop fields bordering protected areas, livestock enclosures with repeated predation incidents, and known wildlife corridors. In these hotspots, pilot demonstrations of low-cost fencing techniques using locally available materials (e.g., wire mesh, recycled metal, community-made chili ropes) can be implemented to test effectiveness and build local capacity. Moreover, limiting the planting of highly palatable crops (like maize) near protected area boundaries, and promoting less attractive alternatives, offers a feasible complementary strategy to reduce wildlife attraction.

Figure 20: Livestock boma used for enclosing livestock. (Photo by N. Rochat, ADAP)

4.1.6 Enhancing Early Warning Systems for Wildlife Movement

Key informants and communities in Mlele District emphasized the need for faster and more reliable responses to wildlife threats, rather than relying solely on external authorities like TAWA. One proposed solution is the establishment of Village Wildlife Response Teams, composed of trained VGS and community volunteers. While these teams cannot carry out Problem Animal Control measures such as shooting dangerous animals, which remain the legal responsibility of TAWA and District Game Officers they can apply deterrence methods to push wildlife away, monitor movements, and report incidents promptly. In addition, communities recommended developing simple, locally managed communication systems to alert residents when wildlife is sighted near farms, homes, or water points. Suggested methods include drumming, banging metal, mobile alerts, and radio messages. These culturally rooted early warning practices will enable households to take timely defensive actions, such as securing livestock, safeguarding children, and protecting crops.

4.1.7 Improving Access to Consolation Payments for Affected Communities

Respondents described the absence of effective consolation payments for damages caused by wildlife. While Tanzania's Wildlife Conservation Act (Cap. 283, Section 71) provides a legal basis for consolation payments in cases of human injury, death, and property or crop loss, most community members reported that in practice, no structured support was accessible to them. To improve this situation, respondents suggested introducing quicker, more transparent, and fair processes to provide relief for affected households. Potential improvements included simplifying claim procedures so they are easily understood by ordinary community members. However, any such changes would require clear funding sources, legal mandates, and coordination with relevant wildlife authorities to be feasible and sustainable. Strengthening consolation payments and support systems could help build trust, encourage incident reporting, and foster greater community cooperation in wildlife protection.

4.1.8 Introducing Insurance Schemes to Protect Against Wildlife-Related Losses

During focus group discussions, community members expressed interest in exploring insurance schemes to protect households from financial losses caused by crop destruction and livestock predation. Under such models, farmers and herders would enroll with an approved insurance provider by paying small premiums, with payouts triggered by verified incidents. Respondents felt that insurance could offer a faster and more predictable safety net compared to relying solely on government consolation payments. However, the feasibility of such schemes would require further assessment. Key considerations include whether insurance companies would be willing to underwrite these risks, whether communities would be able and willing to pay regular premiums, and how verification and administration could be managed in a transparent and affordable way. While the idea holds potential as part of a diversified risk management strategy, it would need careful design, strong institutional support, and likely donor or government subsidies to be viable in this context.

4.1.9 Expanding Wildlife Corridors

Key informants and communities emphasized the importance of expanding and securing wildlife corridors to support animal movements and reduce direct conflict. While the idea of guiding wildlife away from villages, farms, and water points was raised, it is also clear that human settlement, farming expansion, illegal grazing in PAs, and seasonal water scarcity continue to attract wildlife into human-occupied areas. This underscores the need not only to restore old migration routes and designate new corridors for ecological connectivity but also to integrate land use practices that are less likely to attract wildlife. For example, during land use planning, areas adjacent to protected areas could prioritize crops less favored by elephants and other large herbivores, reducing the likelihood of raids. Communities also recommended the creation of buffer zones; open spaces with minimal human activity next to core habitats which will help clarify spatial boundaries and encourage more predictable wildlife movement. Together, these measures would balance the need for habitat connectivity with strategies to limit high-risk interactions and support coexistence across the landscape.

4.1.10 Integrating Technology for Real-Time Conflict Reporting

Leveraging mobile technology offers a promising avenue for enhancing community-led conflict mitigation efforts in Mlele District. The introduction of simple SMS-based or mobile app platforms will enable real-time reporting of human-wildlife conflict incidents. Community members could quickly alert Village Game Scouts, local leaders, or wildlife authorities about sightings, crop damage, or livestock predation. This would facilitate faster response times, improve wildlife monitoring, and support better documentation of conflict hotspots. Such a system should be developed in Kiswahili and designed to work on basic phones, ensuring accessibility across all literacy and income levels. Integrating GPS tagging or location input would help pinpoint incident sites for timely intervention. Linking the platform with existing wildlife institutions such as TAWA and TFS can enhance coordination and accountability.

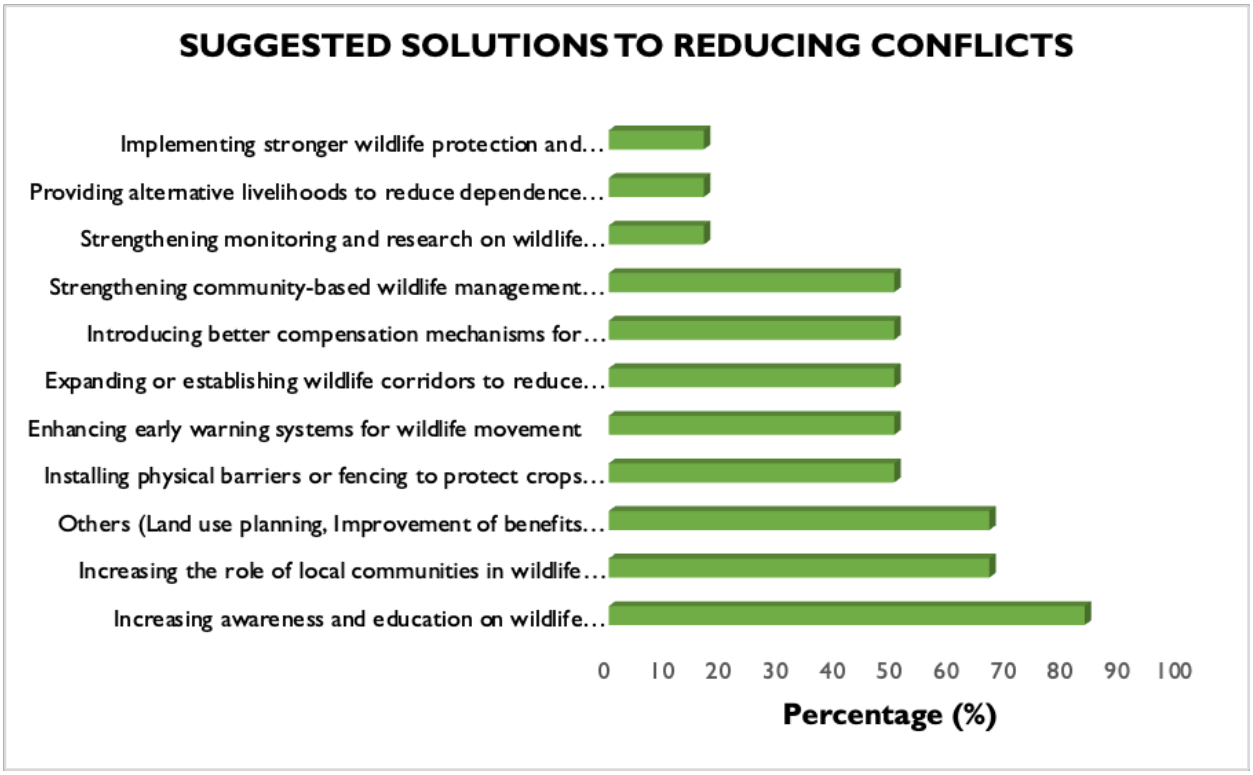

Figure 21: Suggested solutions to reducing human-wildlife conflicts in Mlele district.

4.2 PROPOSED BENEFIT-SHARING MODELS

The study identified several benefit-sharing models aimed at promoting positive human-wildlife coexistence in Mlele District while ensuring tangible returns for conservation efforts (Figure 23). The suggestions reflect both traditional experiences and aspirations for more structured and equitable systems. The following benefit-sharing models are proposed:

4.2.1 Participation in Decision-Making (83.33%)

Participants strongly emphasized that meaningful and inclusive participation in wildlife management and conservation decisions is essential for fostering coexistence. Communities proposed that decision-making processes should not merely inform them but actively involve them in shaping local conservation strategies, land-use planning, conflict mitigation measures, and benefit-sharing frameworks. Practically, this can be achieved by establishing or strengthening village-level conservation committees that include representatives from farmers, pastoralists, beekeepers, youth, women, Village Game Scouts, and elders. Regular village assembly meetings, facilitated in Kiswahili and incorporating traditional communication methods such as storytelling and communal dialogues, could serve as platforms for transparent discussions, consensus building, and collective decision-making. While this approach aligns with broader national policies encouraging community involvement, it is important to note that in Mlele District

where most wildlife areas are Game Reserves and Forest Reserves formal authority for management and decision-making remains with government agencies. Forest Reserves, however, Joint Forest Management is an existing and legally recognized framework under the Forest Act that enables collaboration between adjacent villages and government authorities. In contrast, for Game Reserves, expanding local participation beyond advisory roles would require further policy development or pilot agreements with TAWA.

4.2.2 Education and Training Opportunities (83.33%)

Education and capacity-building is another priority among community members, particularly in relation to conflict mitigation, sustainable livelihoods, and conservation awareness. Participants proposed targeted training programs focused on non-lethal wildlife deterrents, eco-tourism development, sustainable agriculture, and beekeeping as practical alternatives that align with local contexts and livelihood strategies. These educational interventions are not only essential for reducing dependence on conflict-prone activities, but also for building long-term community resilience to human-wildlife conflict. To ensure maximum participation and impact, training should be delivered in Kiswahili, using locally relevant examples, traditional ecological knowledge, and hands-on approaches. Visual learning materials such as infographics and demonstration-based workshops should be prioritized over text-heavy formats, especially in areas with limited literacy. Education delivery channels could include community meetings, village assemblies, youth and women's groups, and sessions facilitated by local conservationists, trusted local influencers or Village Game Scouts. When integrated with other benefit-sharing initiatives, such programs can foster stronger community ownership of conservation goals while supporting inclusive rural development.

4.2.3 Cash Rewards or Damage Compensation (83.33%)

To strengthen coexistence, communities proposed the establishment of structured, culturally appropriate compensation and reward systems for losses caused by wildlife. A practical model would involve setting up village-based verification committees leveraging VGS and trusted local leaders to quickly assess and validate claims. Verified cases would then be compensated promptly either through direct cash payments or livelihood support packages (e.g., provision of seeds, farming tools, or livestock). Some respondents also recommended exploring local insurance schemes as a longer-term solution to improve predictability of support. However, feasibility concerns including limited availability of insurance providers, the affordability of premiums, and the need for clear funding mechanisms would need to be carefully assessed before considering this approach further. In addition, linking conservation performance incentives (such as rewards for recording threatened species) to a community-managed fund could be another way to generate resources that communities themselves could allocate whether to compensation, development priorities, or conflict mitigation. While this idea was not raised by community members in this study, it could merit further exploration if there is interest in piloting innovative financing models.

4.2.4 Revenue Sharing from Wildlife-Based Activities

Revenue sharing from wildlife-based activities, particularly trophy hunting, was recognized by communities as a potentially important mechanism to increase the perceived value of wildlife. Respondents emphasized that revenues from regulated hunting concessions should be transparently and fairly invested back into local development. Although Tanzania's legal framework already provides for the transfer of a portion of hunting fees to district authorities (retrocession), respondents felt that the distribution and use of these funds could be more transparent and better aligned with community priorities. These priorities include building schools, improving health centers, maintaining roads, and improving village offices. Improving transparency, record-keeping, and regular communication between district councils, village governments, and relevant authorities could help build trust and ensure that benefits are aligned with community priorities.

4.2.5 Employment Creation for Local Communities

Employment opportunities linked to conservation and regulated hunting activities were strongly endorsed as a sustainable benefit-sharing model. Community members highlighted the importance of creating direct jobs including roles as Village Game Scouts, local positions supporting regulated hunting operations, and conservation outreach officers especially for youth and women, who are often marginalized from formal employment sectors. To ensure inclusivity and long-term impact, targeted training programs should accompany employment initiatives, equipping locals with the necessary skills in wildlife monitoring, conflict mitigation, and conservation education. Recruitment policies for conservation organizations, hunting operators, and protected area managers should prioritize local hiring wherever possible. By linking wildlife conservation directly to employment generation, communities will gain greater economic stakes in protecting natural resources, ultimately reducing hostility toward wildlife and strengthening local stewardship of biodiversity.

4.2.6 Access to Alternative Livelihoods and Regulated Resource Use

Although least mentioned, access to alternative livelihoods and economic opportunities (16.67%) such as wild mushroom picking and beekeeping was identified as another mitigation strategy. Expanding community-based initiatives that provide tangible alternatives to traditional subsistence farming could significantly strengthen local support for conservation. Beekeepers of fifteen villages have benefited from training and honey harvesting equipment, provided by conservation partners (ADAP). Same for mushroom pickers of twelve villages. Building on such examples, further investments in eco-enterprises could reduce communities' dependence on activities that often bring them into conflict with wildlife. In addition, maintaining and strengthening existing arrangements for regulated resource use within protected areas such as sustainable beekeeping and controlled fishing in Rukwa Game Reserve will ensure that traditional practices can continue under clear guidelines that safeguard conservation objectives.

Figure 22: Installation of beehives as a source of income for local communities supported by ADAP. (Photos by N. Rochat, ADAP)

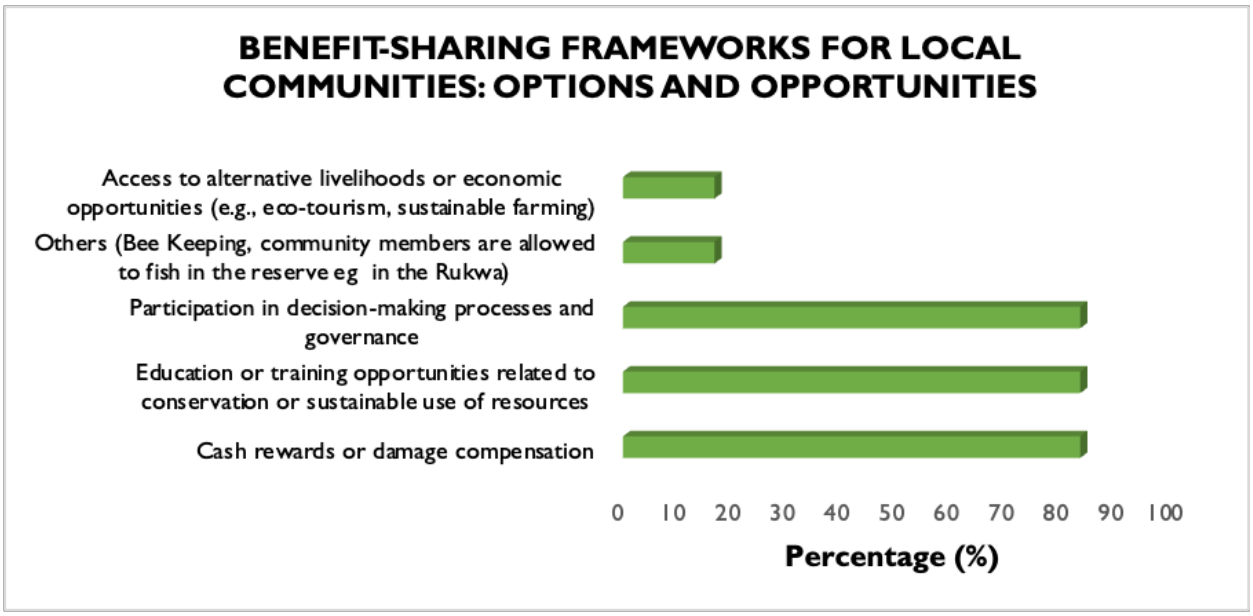

Figure 23: Proposed benefit-sharing models in Mlele District

5.0 RECOMMENDATIONS

Drawing from the findings of this study, a community-centered approach is recommended to address human-wildlife conflict and promote sustainable coexistence in Mlele District:

5.1 Establish Human-Wildlife Conflict Response Teams

To address the current lack of rapid response capacity, specialized Human-Wildlife Conflict response teams should be established at the ward or village cluster level depending on resources availability and feasibility. These teams would consist of TAWA officers, District staff, and trained Village Game Scouts, working together to respond quickly to incidents, apply deterrent measures, and verify damage reports in the field. Equipping the teams with appropriate tools, knowledge, and basic supplies will be essential to ensure they can safely and effectively manage conflict situations. Establishing clear protocols for coordination with village authorities and community members will further enhance the responsiveness and credibility of these teams.

5.2 Prioritize Conflict Hotspots for Mitigation Measures

Resources for conflict mitigation should be focused on the most affected areas to maximize impact and feasibility. Priority hotspots such as villages bordering protected areas and locations with frequent crop raiding or livestock predation should be systematically identified and mapped through collaboration between district authorities, TAWA, Village Game Scouts, and communities. In these areas, targeted measures include strengthening livestock enclosures, supporting community deterrence practices, and piloting affordable fencing options. Clear criteria for selecting intervention sites and regular monitoring of results will help ensure that limited resources are used effectively and build trust among local residents.

5.3 Expand Community Education and Awareness Campaigns

Comprehensive education and awareness campaigns should be scaled up to strengthen understanding of wildlife laws, conflict mitigation options, and community responsibilities. These campaigns should use Kiswahili materials, visual aids, and participatory approaches such as storytelling, demonstration plots, and school outreach (e.g., establishing school conservation clubs). Topics should include safe livestock husbandry practices, crop selection for farms near wildlife habitats, non-lethal deterrents, reporting procedures, and the importance of conserving wildlife habitats. Particular focus should be placed on reaching women, youth, and newer settlers such as the Wasukuma who may lack familiarity with traditional practices or legal requirements.

5.4 Enhance Community Early Warning Systems

Early warning systems should be strengthened to help communities anticipate and respond promptly to potential conflicts. These systems can combine traditional alert methods such as drumming, whistles, or communal meetings with mobile messaging or community radio announcements to share information about wildlife movements, illegal grazing or farming within reserves, or suspected poaching activities. Promoting a culture of shared awareness, where

community members look out for each other and report actions that increase the risk of conflict, will improve both safety and respect for conservation rules.

5.5 Update and Enforce Land Use Plans

Village land use plans should be revised to reflect current realities, including rapid population growth, in-migration, and expanding agriculture near protected areas. Updating these plans will help clearly define wildlife corridors, grazing zones, farming areas, and settlements to reduce overlaps and conflicts. Enforcement is equally critical: communities, village leaders, and district authorities should collaborate to ensure that agreed boundaries are respected and encroachment is addressed. Renewed land use planning must be participatory, transparent, and supported by education and monitoring to strengthen compliance and ownership.

5.6 Support Community-Led Monitoring and Evaluation

Community-led monitoring and evaluation is also a practical way to build accountability and track progress if kept simple and well-targeted. Local monitoring teams, including Village Game Scouts and trusted volunteers, can collect basic data on conflict incidents, wildlife sightings, and land use changes. These records should be consolidated quarterly to help village councils and district authorities identify trends and prioritize interventions. To reduce costs, monitoring should focus on the most affected hotspots rather than attempting district-wide coverage. Training on record-keeping, verification methods, and reporting formats should be provided, supported by periodic technical guidance from district staff or conservation partners. Gradual implementation and clear roles will help ensure this approach remains feasible with limited resources.

5.7 Improve Access to Consolation Payments

While formal compensation programs remain limited, efforts should focus on clarifying the existing provisions under the Wildlife Conservation Act (Cap. 283, Section 71) and supporting communities in reporting incidents that occur legally on village land. Any improvements should be planned in coordination with TAWA, District Game Offices, Ministry of Natural Resources and Tourism, and Ministry of Finance.

5.8 Mainstream Traditional Knowledge into Modern Conservation

Traditional practices such as herbal deterrents, symbolic barriers, and spiritual beliefs remain important in many communities and can complement scientific approaches. While their effectiveness has declined in some areas, integrating selected methods into modern conservation strategies can improve acceptance and reduce resistance. Where feasible, wildlife authorities and NGOs should document locally accepted practices, assess their safety and relevance, and provide support for their careful application alongside proven conflict mitigation techniques. For instance, a study in Botswana found that painting artificial eyespots on the rumps of cattle using bicolour circles for maximum contrast depending on the cattle coat colour significantly reduced ambush predation by lions and leopards compared to unmarked or cross-marked cattle. The technique is low-cost and non-invasive, and could be adapted for use in similar ecological settings in Tanzania (Radford et al., 2020). Encouraging respectful use of traditional knowledge, alongside innovative methods grounded in behavioural science, will strengthen cultural identity while reinforcing community ownership of conservation efforts.

Table 7 below summarizes the recommended measures, clarifying the lead responsibility, supporting stakeholders, and relative priority of each action to support practical planning, coordination, and implementation in Mlele District.

Table 7: Recommended Measures, Lead Responsibility, Supporting Stakeholders, and Priority Level

Recommendation	**Lead Responsibility**	**Supporting Stakeholder**	**Priority Level**	**Feasibility Consideration**
Establish Human-Wildlife Conflict Response Teams	TAWA, District Authorities	Village Authorities, NGOs	High	Requires formal mandate, training, and equipment; feasible if integrated into district plans with external support
Prioritize Conflict Hotspots for Mitigation Measures	TAWA, District Authorities	Village Authorities, NGOs, Community members	High	Mapping and focusing resources is feasible; success depends on coordination and clear selection criteria

Expand Community Education and Awareness Campaigns	District Authorities, NGOs	Village Leaders, Schools, Community Groups	Medium	Requires funding for materials and training; scalable through partnerships with conservation organizations
Enhance Community Early Warning Systems	Village Authorities, Village Game Scouts	TAWA, District Authorities, NGOs	Medium	Relatively low-cost if built on existing practices; feasibility increases with mobile network coverage
Update and Enforce Land Use Plans	District Authorities, Village Authorities	TAWA, NGOs, Community Members	High	Requires technical assistance and sustained follow-up; challenging but essential for long-term impact
Support Community-Led Monitoring and Evaluation	Village Authorities, Village Game Scouts	TAWA, District Authorities, NGOs	Medium	Feasible if kept simple and focused on hotspots; relies on community motivation and technical support.
Improve Access to Consolation Payments	TAWA, MNRT, MoF	District Authorities, Village Authorities	Medium	Depends on government funding and streamlined procedures; requires clarity on eligibility and reporting.
Mainstream Traditional Knowledge into Modern Conservation	TAWA, NGOs	Village Elders, Community Members	Low to Medium	Culturally appropriate but effectiveness varies; feasible as a complementary measure

In addition to the priority actions summarized in Table 7, KII respondents highlighted specific resources and collaboration approaches considered critical for success. Figures 24 and 25 below summarize these perspectives.

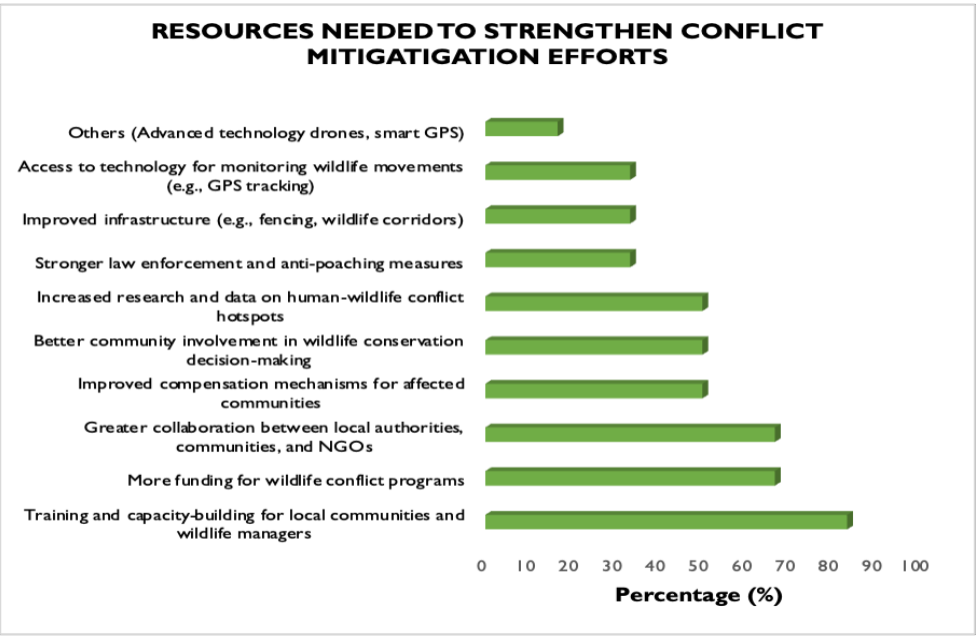

Figure 24: Resources needed to strengthen conflict mitigation efforts in Mlele District.

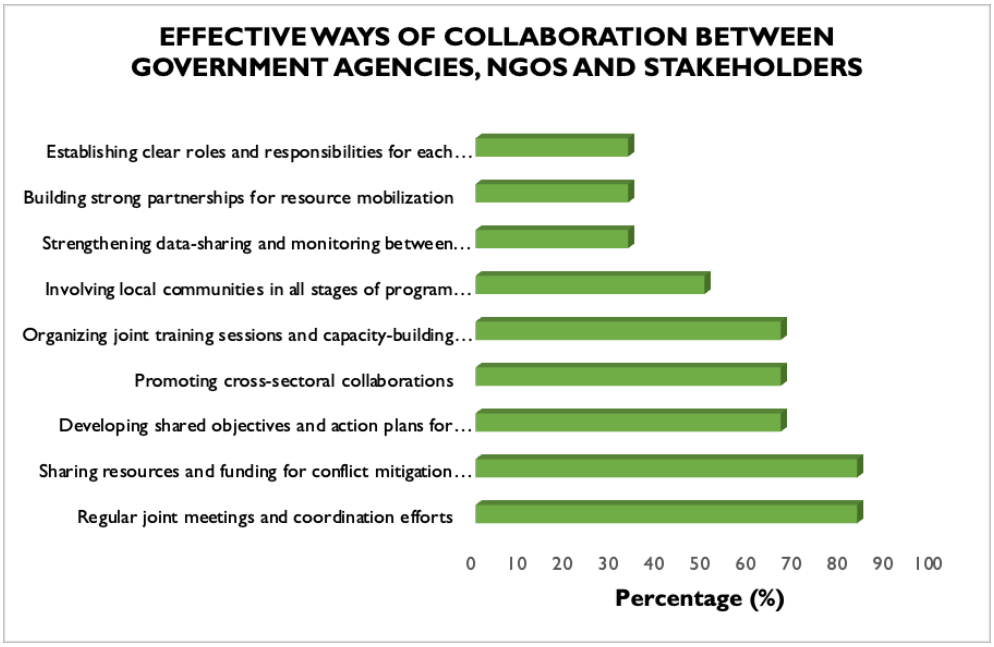

Figure 25: Effective ways of collaboration between government agencies, NGOs, and communities.

6.0 CONCLUSION

This study offers a preliminary exploration of the dynamics of human-wildlife conflict and coexistence in Mlele District, highlighting both the challenges and the opportunities associated with managing wildlife in landscapes where livelihoods and conservation interests intersect. While incidents of crop damage, livestock predation, and fear of attacks remain prominent concerns, communities also recognize the cultural and potential economic value of wildlife resources.

Findings underscore that perceptions of wildlife are shaped by a combination of lived experiences, legal and policy awareness, and the historical context of conservation interventions. However, the limited sampling scale, absence of systematic verification with official records, and seasonal timing of the fieldwork mean that these insights should be viewed as indicative rather than exhaustive.

Moving forward, any efforts to design and implement mitigation strategies or co-existence initiatives will require sustained dialogue with communities and other implementing stakeholders, clear legal frameworks, and careful assessment of feasibility and resource requirements. More studies involving larger samples, multi-seasonal monitoring, and closer integration of community reports with administrative data could help to build a more comprehensive understanding of conflict dynamics and inform more targeted, effective interventions.

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8.0 ANNEX

Annex 1: Key Informant Interview Questionnaire For Wildlife Experts and Government Officials

Section 1: General Information and Demographics

Confidentiality Statement

The purpose of this study is to evaluate the co-existence of human-wildlife in the Mlele District of the Katavi Region, focusing on assessing the wildlife and extent of conflicts and proposing mitigation strategies and benefit-sharing models. Your participation is entirely voluntary and if there are items you do not feel comfortable answering, please skip them.

If you agree to participate kindly sign …….. Thank you for your cooperation.

Date and Time of Interview:
Name of Enumerator:
Region:
District:
Ward:
Village:
Interviewee Name:

Gender

- Male
- Female
- Other

Age Group:

- 18–25
- 26–35
- 36–45
- 46–55
- 56 and above

Education Level

- Primary Education
- Secondary Education
- Certificate Level
- Diploma Level
- University Degree
- Postgraduate Degree
- No Formal Education

Job Title

- Wildlife Officer
- Environmental Conservation Officer
- Community Development Officer
- Other (Please specify): _____

How long have you been involved in wildlife management?

- Less than 1 year
- 1–3 years
- 3–5 years
- More than 5 years

How long have you lived in this area?

- Less than 1 year
- 1–3 years
- 3–5 years
- More than 5 years

Section 2: Awareness and Perception of Human-Wildlife Conflict

1. **Are you aware of the presence of human-wildlife conflicts in your area?**
- Yes
- Somewhat
- No
- I am not sure
2. **How aware are you of the causes of human-wildlife conflicts in your community?**
- Very aware
- Somewhat aware
- Not aware
- I am not sure
3. **How does the community perceive wildlife, especially carnivores?**
- Very positive
- Somewhat positive
- Neutral
- Somewhat negative
- Very negative
4. **How are wildlife ecosystems perceived in terms of their services and products?**
- Very positive
- Somewhat positive
- Neutral
- Somewhat negative
- Very negative

5. **To what extent do you think wildlife populations have changed in your area?**

- Significantly declined
- Moderately declined
- Slightly declined
- No decline observed
- I am not sure

6. **What sources of information do you rely on to learn about human-wildlife conflicts and conservation efforts? (Select all that apply)**

- Community meetings
- Local media
- Schools
- NGOs
- Social media
- Government
- Word of mouth
- Other (please specify): _____

7. **Have you participated in any awareness campaigns or educational programs on wildlife conservation or human-wildlife conflict mitigation?**

- Yes
- No
- I am not sure

8. **How well-informed is the community about wildlife-related policies and conflicts?**

- Very well-informed
- Somewhat informed
- Not informed
- I am not sure

Section 3: Understanding Human-Wildlife Conflicts

9. **What are the primary sources of livelihood or income for households in Mlele District? (Select all that apply)**

- Farming (e.g., crops like maize, beans, or vegetables)
- Livestock rearing (e.g., cows, goats, or chickens for food, milk, or selling)
- Fishing (e.g., fishing in local rivers or lakes)
- Small businesses (e.g., operating a local shop or service)
- Employment (e.g., Working for a company, government, or other organizations)
- Eco-tourism or tourism-related activities (e.g., Tour guiding or selling products related to nature and wildlife.
- Other (please specify): _____

10. **How does tourism bring economic benefits to your community?**

- Tourism creates jobs for locals (e.g., guides, hotel staff, transportation).
- Tourism generates income through the sale of local goods or services.
- Tourism attracts investment for community development (e.g., infrastructure, education).
- Tourism increases the visibility of local culture, leading to more opportunities.
- Tourism does not bring economic benefits to the community.

- Not sure.
- Other (please specify): _____

11. **How can ecotourism initiatives help reduce human-wildlife conflicts?**

- Eco-tourism can educate the community and tourists on the importance of wildlife conservation.
- Eco-tourism can promote responsible tourism practices that minimize harm to wildlife.
- Eco-tourism can create alternative livelihoods for locals, reducing dependence on activities that cause conflict with wildlife (e.g., hunting, illegal logging).
- Eco-tourism can fund conservation efforts, reducing the need for wildlife to enter human settlements.
- Eco-tourism will not significantly reduce human-wildlife conflicts.
- Not sure.
- Other (please specify): _____

12. **What measures are in place to ensure that tourists do not cause harm to wildlife or contribute to conflict?**
    - Tourists are given clear guidelines on how to behave around wildlife (e.g., no feeding, no disturbing animals).
    - There are rangers or guides who monitor and manage tourist activities.
    - Areas for tourism are designated far from sensitive wildlife zones to reduce conflict.
    - There are penalties or fines for tourists who harm wildlife or break rules.
    - There are no specific measures in place.
    - Not sure.
    - Other (please specify): _____

13. **Does living with wildlife threaten your life or livelihood?**

- Yes, significantly
- Yes, but manageable with precautions
- No, it does not threaten my life or livelihood
- I am not sure

11. **What are the threats of living with wild animals in your community? (Select all that apply)**

- Crop damage (e.g Wild animals eating or destroying crops)
- Livestock predation (e.g., Wild animals killing or injuring livestock like cows, goats, or chickens)
- Property damage (e.g., Animals breaking fences, houses, or other property)
- Human injury or death
- Loss of personal safety (e.g., Fear of wild animals near homes or during daily activities)
- Disease transmission (e.g., Wild animals carrying diseases that can be passed to humans or livestock)
- Other (please specify): _____

12. **What are the most common human-wildlife conflicts reported in this area? (Select all that apply)**

- Crop damage (e.g., elephants, monkeys)
- Livestock predation (e.g., lions, hyenas)

- Property damage (e.g., wildlife entering homes or farms)
- Human injury or death (e.g., snake bites, elephant attacks)
- Fishing conflicts (e.g., competition with wildlife for fish)
- Wildlife attacks on people (e.g., buffalo, crocodile)
- Deforestation or habitat destruction due to human activities
- Disease transmission
- Other (please specify): _____

13. **Which wild animals are most involved in these conflicts? (Select all that apply)**

- Elephants
- Lions
- Hyenas
- Greater Kudus
- Monkeys
- Hippopotamuses
- Buffalos
- Giraffes
- Crocodiles
- Other (please specify): _____

14. **How frequently are human-wildlife conflicts reported in your area?**

- Very frequently (almost every day)
- Frequently (once a week or more)
- Occasionally (a few times a month)
- Rarely (once a month or less)
- Never

15. **What are the primary causes of human-wildlife conflicts in the Mlele district? (Select all that apply)**

- Habitat loss (e.g., forests and grasslands cleared for farming)
- Increased human settlement near wildlife habitats (e.g., People building homes or farms near parks)
- Poaching and illegal hunting (e.g., hunting animals for food or to sell their body parts)
- Tourism or recreational activities (e.g., Tourists entering protected areas, stressing wildlife)
- Deforestation (e.g., Cutting down trees for wood or land for farming)
- Climate change (e.g., drought, changing water sources)
- Human encroachment into protected areas (e.g., People moving into national parks or wildlife reserves)
- Lack of adequate wildlife corridors (e.g., Animals that cannot travel safely between habitats might enter villages or farmlands in search of food or shelter)
- Inadequate compensation or support for affected communities (e.g., When wildlife damages crops or property)
- Over-reliance on natural resources by local communities (e.g., People depend heavily on forests, rivers, and wildlife for their daily needs)
- Lack of community awareness about wildlife conservation (e.g., the importance of protecting wildlife or how to avoid conflicts with animals)

- Other (please specify): _____

16. **How does human-wildlife conflicts impact local communities? (Select all that apply)**

- Loss of crops and livelihood
- Economic hardship for affected households
- Loss of livestock or property
- Human injuries or deaths
- Increased fear and tension in communities
- Disruption of daily life and farming activities
- Loss of cultural or traditional practices (e.g., hunting, farming)
- Other (please specify): _____

17. **How do human-wildlife conflicts impact wildlife populations? (Select all that apply)**

- Reduced wildlife populations (e.g., Increased hunting, attacks by humans, or loss of food sources)
- Decreased biodiversity (loss of different animal and plant species)
- Habitat destruction (e.g., Clearing land for farming or building homes)
- Increased stress on wildlife (Animals becoming stressed or anxious due to threats from humans)
- Loss of key species (Some species may disappear from the area entirely)
- Other (please specify): _____

18. **What are the environmental impacts of human-wildlife conflicts? (Select all that apply)**

- Habitat destruction (e.g., Clearing forests or land for human activities)
- Fragmentation of ecosystems (Breaking up large areas of natural land into smaller pieces)
- Loss of biodiversity (disappearance of various animal and plant species)
- Soil degradation (Overgrazing by animals or clearing land for farming)
- Disruption of food chains (Killing or removing important species can disturb the balance of predators and prey in an ecosystem)
- Water pollution (Human activities that lead to waste or chemicals being released into water bodies)
- No noticeable environmental impact
- Other (please specify): _____

Section 4: Existing Policies and Interventions

19. **What policies or frameworks are in place to manage human-wildlife conflicts? (Select all that apply)**

- National wildlife conservation policies
- Local community-based wildlife management programs
- Compensation schemes for damages caused by wildlife
- Protected area management plans (e.g., game reserves, national parks)
- Conflict mitigation programs (e.g., community patrols, wildlife fencing)
- Legislation on wildlife protection and poaching

- Wildlife conservation education and awareness campaigns
- Human-wildlife conflict response teams
- Collaborative management between communities and wildlife authorities
- None
- Other (please specify): _____

20. **How effective are these policies in mitigating conflicts?**

- Very effective
- Somewhat effective
- Neutral
- Ineffective
- Very ineffective

21. **Are there any ongoing initiatives or programs addressing these conflicts? (Select all that apply)**

- Community-based wildlife management
- Human-wildlife conflict mitigation programs (e.g., relocation of wildlife, fencing)
- Conservation education and outreach programs
- Livelihood diversification programs to reduce dependence on natural resources
- Collaboration with conservation NGOs and international partners
- Ecosystem restoration or rehabilitation projects
- Compensation or insurance programs for wildlife-related damages
- Establishment of wildlife corridors or safe passages
- Research and monitoring of wildlife movement and behavior
- Other (please specify): _____

22. **What are the existing conflict mitigation strategies? (Select all that apply)**

- Physical barriers (e.g., fences, trenches)
- Use of deterrents (e.g., scarecrows, noise devices)
- Community patrols or monitoring programs
- Relocation of problematic wildlife
- Compensation programs for damages caused by wildlife
- Wildlife corridors to reduce interaction with human settlements
- Education and awareness programs on conflict prevention
- Livelihood diversification programs to reduce dependence on natural resources
- None
- Other (please specify): _____

23. **If strategies exist, how effective are they in mitigating conflicts?**

- Very effective
- Somewhat effective
- Neutral
- Ineffective
- I am not sure

24. **Are there designated zones within wildlife-protected areas?**

- Yes, there are clearly defined zones (There are specific areas for tourism, conservation, or wildlife monitoring that are clearly marked and protected)

- No, there are no designated zones (No specific areas set aside for different activities, and the entire area is used for general purpose)
- I am not sure

25. **What types of zones exist? (Select all that apply)**

- Core conservation zones (Areas that are strictly protected for wildlife conservation, with no human activities allowed)
- Buffer zones (Areas around core conservation zones where limited human activities are allowed to reduce the impact on wildlife)
- Tourism zones (Areas set aside for tourism, where people can visit to see wildlife, with rules to minimize harm to animals)
- Sustainable use zones (Areas where humans can use natural resources (e.g., for farming or harvesting) in ways that do not harm wildlife or the environment)
- Other (please specify): _____

26. **How effective is zonation in reducing human-wildlife conflicts?**

- Very effective
- Somewhat effective
- Neutral
- Ineffective
- I am not sure

27. **How does human settlement in protected areas hinder conservation efforts? (Select all that apply)**

- Encroachment leads to habitat loss and fragmentation
- Increased human-wildlife conflict due to proximity
- Difficulty in enforcing conservation laws and regulations
- Overuse of natural resources, such as firewood, water, and land
- Disruption of wildlife migration routes or corridors
- Negative impact on ecosystem health and biodiversity
- Other (please specify): _____

Section 5: Community Engagement and Collaboration

28. **How do you involve local communities in wildlife conservation and conflict mitigation? (Select all that apply)**

- Community meetings and consultations
- Training and capacity-building programs
- Establishment of local wildlife management committees
- Community-led patrols or monitoring programs
- Involvement in decision-making processes regarding wildlife conservation
- Awareness campaigns and education programs
- Joint conservation projects with NGOs and local authorities
- Involvement in the development of wildlife protection infrastructure (e.g., fencing, signage)
- Livelihood programs (e.g., eco-tourism, sustainable agriculture)
- Reward systems for reporting wildlife conflicts or illegal activities

- Other (please specify): _____

29. **What challenges do you face in engaging communities? (Select all that apply)**

- Lack of awareness or understanding of the importance of wildlife conservation
- Resistance to conservation practices or policies
- Limited financial resources to support engagement activities
- Poor communication or mistrust between authorities and communities
- Cultural practices or beliefs that conflict with conservation efforts
- Conflicting interests between conservation and local livelihoods
- Limited involvement of women or marginalized groups in conservation
- Lack of incentives or tangible benefits for communities
- Insufficient training or capacity-building for local community leaders
- Political or administrative challenges in implementing conservation policies
- Other (please specify): _____

30. **How do communities currently respond to wildlife conflicts? (Select all that apply)**

- Retaliatory killing of wildlife involved in the incident
- Setting traps or poison to prevent future incidents
- Building fences or barriers around farms or homes
- Reporting the incident to local wildlife authorities
- Organizing community patrols to monitor wildlife activity
- Abandoning affected areas (e.g., farms or grazing land)
- Relocating livestock or changing farming practices
- Seeking traditional or spiritual remedies for protection.
- Ignoring the incident due to lack of alternatives.
- Other (please specify): _____

31. **How do wildlife managers or responsible authorities respond to incidents of wildlife killing by communities? (Select all that apply)**

- Investigating the incident to determine causes and outcomes
- Imposing fines or penalties on individuals involved in the killing
- Providing education or awareness campaigns
- Strengthening patrols and monitoring in conflict-prone areas
- Offering compensation or support to affected communities
- Translocating problematic wildlife to other areas
- Collaborating with local leaders to address conflicts peacefully
- Providing alternative conflict mitigation measures
- No response from authorities
- Other (please specify): _____

32. **What benefit-sharing models exist for communities? (Select all that apply)**

- Cash rewards or damage compensation
- Access to alternative livelihoods or economic opportunities (e.g., eco-tourism, sustainable farming)
- Education or training opportunities related to conservation or sustainable use of resources
- Participation in decision-making processes and governance
- No benefit-sharing models in place

- Other (please specify): _____

Section 6: Recommendations

33. **What solutions do you suggest for reducing conflicts? (Select all that apply)**
- Implementing stronger wildlife protection and management laws
- Expanding or establishing wildlife corridors to reduce human-wildlife interaction
- Introducing better compensation mechanisms for affected communities
- Strengthening community-based wildlife management programs
- Increasing awareness and education on wildlife conservation and conflict mitigation
- Providing alternative livelihoods to reduce dependence on natural resources
- Installing physical barriers or fencing to protect crops and livestock
- Enhancing early warning systems for wildlife movement
- Strengthening monitoring and research on wildlife behavior and conflict hotspots
- Increasing the role of local communities in wildlife management and decision-making
- Promoting community-led eco-tourism as an alternative income source
- Other (please specify):_____

34. **What resources are needed to strengthen conflict mitigation efforts? (Select all that apply)**
- More funding for wildlife conflict programs
- Training and capacity-building for local communities and wildlife managers
- Improved compensation mechanisms for affected communities
- Better community involvement in wildlife conservation decision-making
- Increased research and data on human-wildlife conflict hotspots
- Stronger law enforcement and anti-poaching measures
- Greater collaboration between local authorities, communities, and NGOs
- Improved infrastructure (e.g., fencing, wildlife corridors)
- Access to technology for monitoring wildlife movements (e.g., GPS tracking)
- Other (please specify): _____

35. **How do you think community awareness can be improved regarding human-wildlife conflict and conservation efforts? (Select all that apply)**
- Conducting regular community meetings to discuss human-wildlife conflicts and conservation.
- Implementing education programs in schools to teach about wildlife and ecosystems.
- Organizing awareness campaigns using local media (e.g., radio, TV).
- Distributing educational materials such as brochures, posters, and booklets.
- Engaging community leaders to spread awareness and advocate for conservation.
- Providing training sessions on wildlife-friendly practices and conflict mitigation.
- Collaborating with NGOs and conservation organizations for outreach activities.
- Utilizing social media platforms to share information and success stories.
- Establishing local wildlife committees to promote community participation in conservation.
- Other (please specify): _____

36. **How can government agencies, NGOs, and other stakeholders collaborate more effectively? (Select all that apply)**

- Regular joint meetings and coordination efforts
- Sharing resources and funding for conflict mitigation programs
- Establishing clear roles and responsibilities for each stakeholder
- Developing shared objectives and action plans for conservation and conflict mitigation
- Promoting cross-sectoral collaborations (e.g., between agriculture, wildlife, and environmental sectors)
- Involving local communities in all stages of program design and implementation
- Strengthening data-sharing and monitoring between stakeholders
- Organizing joint training sessions and capacity-building activities
- Building strong partnerships for resource mobilization (e.g., international donors, private sector)
- Enhancing advocacy for policy change and improved wildlife management
- Other (please specify): _____

Annex 2: Key Informant Interview Questionnaire for Local Communities

Demographics

Date and Time of Interview:
Name of Enumerator:
Region:
District:
Ward:
Village:

Gender

- Male
- Female
- Other

Age Group:

- 18–25
- 26–35
- 36–45
- 46–55
- 56 and above

Education Level

- Primary Education
- Secondary Education
- Certificate Level

- Diploma Level
- University Degree
- Postgraduate Degree
- No Formal Education

How long have you lived in this area?

- Less than 1 year
- 1–3 years
- 3–5 years
- More than 5 years

Section 1: General Information

1. **What is your role in the community and how do you interact with wildlife in your daily activities?**
    - Farmer
    - Fisher
    - Business owner
    - Casual labor
    - Community leader
    - Environmental or wildlife conservation volunteer
    - Tourist or visitor to wildlife areas
    - Other (please specify): _____
2. **How long have you been involved in this role or activity?**
    - Less than 1 year
    - 1–5 years
    - 6–10 years
    - More than 10 years

Section 2: Connection with Wildlife

3. **What comes to your mind when you think about the wildlife in your area? (Select all that apply)**
    - Wild animals (e.g., elephants, lions, buffaloes)
    - Nature's beauty (e.g., beautiful landscapes, forested areas)
    - Resources (e.g., animals used for food, medicine, or building materials)
    - Challenges (e.g., crop damage, animal attacks on people or livestock)
    - Tourism (e.g., tourists coming to see wildlife, national parks)
    - Other (please specify): _____
4. **Are there any wild animals that you feel are helpful or important to your community?**
    - Yes
    - No

      If yes, please specify which animals and why:

(e.g., elephants for ecosystem balance, bees for pollination, certain animals for traditional medicine)

5. **What benefits do you think wildlife brings to your community or the environment? (Select all that apply)**
    - Tourism (e.g., wildlife attracts tourists, creates jobs)
    - Attracting rain (e.g., forests or wetlands help bring rain)
    - Beauty of nature (e.g., scenic views, maintaining biodiversity)
    - Food and medicine (e.g., animals and plants used for food or healing)
    - Cultural significance (e.g., animals play a role in local traditions or rituals)
    - Economic opportunities (e.g., selling crafts or products related to wildlife)
    - Other (please specify): _____
6. **How would your life and community be affected if there were no wildlife in this area?**
    - No effect
    - Loss of cultural values (e.g., important traditions or ceremonies tied to wildlife)
    - Loss of tourism income (e.g., no tourists visiting for wildlife-related activities)
    - Negative impact on agriculture (e.g., no pollinators, decrease in soil fertility)
    - Loss of food and medicine sources (e.g., no more hunting or use of wild plants)
    - Other (please specify): _____

Section 3: Understanding Wildlife and Traditional Practices

7. **Are there any animals that your community sees as special or sacred?**
    - Yes
    - No

      If yes, please specify which animals:
      (e.g., lions, certain birds, elephants, or any animal with cultural or spiritual significance)
8. **Were there traditions in your community about how to live peacefully with wildlife?**
    - Yes
    - No

      If yes, please explain:
      (e.g., avoiding hunting sacred animals, planting trees for animals to have food)
9. **Are there any cultural taboos related to hunting or harming specific wildlife species?**
    - Yes
    - No

      If yes, please specify which species and the taboos:
      (e.g., taboos against killing elephants or other revered animals)
10. **What kinds of species were traditionally hunted by your ancestors? (Select all that apply)**

- Mammals (e.g., lions, buffalo, elephants, wild dogs)
- Birds (e.g., ostrich, guinea fowl, vultures)

- Reptiles (e.g., crocodiles, snakes)
- Fish (e.g., catfish, tilapia)
- Insects (e.g., locusts, bees)
- Other (please specify): _____

11. For what purposes were these species hunted? (Select all that apply)

- Food (e.g., hunting animals for meat)
- Medicine (e.g., using animals or plants for traditional healing)
- Rituals (e.g., using animal parts for ceremonies)
- Trade (e.g., selling animal products like skins or bones)
- Tools or materials (e.g., bones or hides used for making tools, clothing, or shelter)
- Other (please specify): _____

12. Do these beliefs influence how your community deals with human-wildlife conflicts today?

- Yes
- No

If yes, please explain:
(e.g., respect for certain animals may reduce hunting or harm)

Section 4: Positive Coexistence with Wildlife

13. How do you think wildlife contributes to making your area special or unique? (Select all that apply)

- Tourism (e.g., attracting visitors from outside the area)
- Cultural significance (e.g., animals linked to important traditions or stories)
- Natural beauty (e.g., wildlife enhances the beauty of forests, rivers, etc.)
- Economic opportunities (e.g., jobs in tourism or related industries)
- Other (please specify): _____

14. Have you ever seen visitors or tourists coming to your area because of wildlife?

- Yes
- No

If yes, how does that benefit your community?
(Select all that apply)

- Increased income from tourism (e.g., hotels, restaurants, tour guides)
- Increased awareness of the community (e.g., recognition of cultural or natural value)
- Opportunities for local businesses (e.g., selling handicrafts, food to tourists)
- Other (please specify): _____

15. Do you think wildlife can be part of creating more jobs or opportunities for your community?

- Yes
- No

If yes, in what ways?
(Select all that apply)

- Tourism-related jobs (e.g., tour guides, park rangers, hospitality services)
- Conservation efforts (e.g., working with NGOs or government to protect wildlife)

- Eco-friendly businesses (e.g., selling natural products, eco-tourism ventures)
- Education and awareness campaigns (e.g., teaching people about wildlife protection)
- Other (please specify): _____

Section 5: Experiences with Human-Wildlife Conflicts

16. Do you know about any problems between people and wild animals in your area?
- Yes
- Somewhat
- No
- I am not sure

17. What types of problems have you or others seen between people and wild animals? (Select all that apply)
- Crops being damaged by animals (e.g., elephants, monkeys eating or trampling crops)
- Animals killing or hurting livestock (e.g., lions, hyenas attacking cows or goats)
- Damage to homes or farms by animals (e.g., animals breaking into homes or eating crops)
- People getting hurt by wild animals (e.g., snake bites, elephant attacks)
- Competition for fish (e.g., animals like crocodiles taking fish or preventing fishing)
- Animals attacking people (e.g., buffalo, crocodiles attacking people)
- Deforestation or damage to nature because of human activities (e.g., cutting down trees, clearing land for farming)
- Other (please specify): _____

18. Which wildlife species are most commonly involved in these conflicts in your area? (Select all that apply)
- Elephants
- Lions
- Buffalo
- Monkeys
- Hyenas
- Crocodiles
- Snakes
- Leopards
- Hippopotamuses
- Other (please specify): _____

19. How often do such conflicts occur in your community?
- Very frequently (almost every day)
- Frequently (once a week or more)
- Occasionally (a few times a month)
- Rarely (once a month or less)
- Never

20. **Do people in your area kill lion**s?
- Yes
- No

- I am not sure

21. How do people in your area kill lions? (Select all that apply)

- Poisoning (e.g., poisoning the animal's food or water)
- Trapping (e.g., setting traps to catch the lion)
- Shooting (e.g., shooting lions with guns or arrows)
- Using dogs (e.g., chasing or cornering the lion with trained dogs)
- Other (please specify): _____

22. Why do people kill lions in your area? (Select all that apply)

- To protect livestock (e.g., lions attacking or killing livestock)
- To protect crops (e.g., lions entering farms and causing damage)
- Fear or danger to people (e.g., lions threatening or attacking people)
- For hunting or trophies (e.g., killing lions for sport or prizes)
- Retaliation (e.g., lions killing livestock or people, leading to revenge)
- Other (please specify): _____

23. What are the primary causes of human-wildlife conflicts in your area? (Select all that apply)

- Habitat loss (e.g., forests and grasslands cleared for farming)
- Increased human settlement near wildlife habitats (e.g., People building homes or farms near parks)
- Poaching and illegal hunting (e.g., hunting animals for food or to sell their body parts)
- Tourism or recreational activities (e.g., Tourists entering protected areas, stressing wildlife)
- Deforestation (e.g., Cutting down trees for wood or land for farming)
- Climate change (e.g., drought, changing water sources)
- Human encroachment into protected areas (e.g., People moving into national parks or wildlife reserves)
- Lack of adequate wildlife corridors (e.g., Animals that cannot travel safely between habitats might enter villages or farmlands in search of food or shelter)
- Inadequate compensation or support for affected communities (e.g., When wildlife damages crops or property)
- Over-reliance on natural resources by local communities (e.g., People depend heavily on forests, rivers, and wildlife for their daily needs)
- Lack of community awareness about wildlife conservation (e.g., the importance of protecting wildlife or how to avoid conflicts with animals)
- Other (please specify): _____

Section 6: Community Response to Human-Wildlife Conflicts

24. How does your community respond to incidents of wildlife damage? (Select all that apply)

- Retaliatory killing of wildlife involved in the incident
- Setting traps or poison to prevent future incidents
- Building fences or barriers around farms or homes
- Reporting the incident to local wildlife authorities

- Organizing community patrols to monitor wildlife activity
- Abandoning affected areas (e.g., farms or grazing land)
- Relocating livestock or changing farming practices
- Seeking traditional or spiritual remedies for protection
- Ignoring the incident due to lack of alternatives
- Other (please specify): _____

25. What support or assistance do you receive to address wildlife conflicts? (Select all that apply)

- Compensation for damages
- Support from government wildlife officers
- Help from NGOs or conservation groups
- Community-led solutions (e.g., patrols, shared resources)
- No support received
- Other (please specify): _____

26. Have you participated in any programs or activities to reduce human-wildlife conflicts?

- Yes
- No
- I am not sure

27. If yes, what activities or programs? (Select all that apply)

- Education or awareness programs
- Training on conflict prevention methods
- Community meetings or workshops
- Other (please specify): _____

28. What actions has your community taken to reduce human-wildlife conflicts? (Select all that apply)

- Community patrols or monitoring programs
- Physical barriers or fencing around crops or livestock
- Education and awareness campaigns on wildlife conservation
- Collaboration with local authorities or conservation organizations
- Reporting of wildlife movement or conflict incidents
- Promoting alternative livelihoods (e.g., eco-tourism, sustainable farming)
- Relocation of wildlife (e.g., moving elephants from farming areas)
- Other (please specify): _____

Section 7: Impacts of Human-Wildlife Conflict

29. How has living with wildlife affected your household? (Select all that apply)

- Loss of income or livelihood
- Increased fear or tension in the community
- Damage to property or resources
- Disruption of daily activities (e.g., farming, grazing)
- Other (please specify): _____

30. How do human beings impact wildlife populations in your area? (Select all that apply)

- Reduced wildlife populations
- Decreased biodiversity (Fewer different types of animals)
- Habitat destruction (Destruction of animal homes or spaces)
- Increased stress on wildlife
- Loss of important animal species
- Other (please specify): _____

Section 8: Recommendations and Suggestions

31. What do you think would help reduce human-wildlife conflicts in your area? (Select all that apply)

- Building better fences or barriers
- Relocating problematic wildlife
- Strengthening wildlife protection laws and enforcement
- Educating the community on wildlife behavior
- Creating more protected areas or wildlife corridors
- Providing fair compensation for damages
- Increasing community involvement in wildlife management
- Other (please specify): _____

32. What resources or support do you think your community needs to better manage human-wildlife conflicts? (Select all that apply)

- More funding for conflict prevention programs
- Access to training and education
- Improved communication with wildlife authorities
- Access to technology (e.g., alarms, GPS tracking)
- Other (please specify): _____

33. How can the government or NGOs better involve your community in wildlife conservation? (Select all that apply)

- Holding regular community meetings
- Creating benefit-sharing programs for conservation areas
- Employing locals in wildlife protection roles
- Providing more support for community-led solutions
- Joint training on conflict management and wildlife protection
- Developing joint action plans for wildlife conservation and conflict mitigation
- Establishing clearer communication channels between communities and authorities
- Other (please specify): _____

Annex 3: Focus Group Discussion Guide for Local Communities

Connection with Wildlife (Uhusiano na Wanyama Pori)

1. What comes to your mind when you think about the wildlife in your area?
   Unapofikiria kuhusu wanyama pori katika eneo lako, ni nini kinachokuja akilini mwako?

2. Are there any wild animals that you feel are helpful or important to your community? If yes, which ones and why?
   Je, kuna wanyama pori ambao unahisi ni wa msaada au muhimu kwa jamii yako? Ikiwa ndio, ni wanyama gani na kwa nini?
3. What benefits do you think wildlife brings to your community or the environment? (e.g., tourism, attracting rain, beauty of nature)
   Unadhani wanyama pori wanaleta faida gani kwa jamii yako au mazingira? (kwa mfano, utalii, mvua, uzuri wa asili)
4. How would your life and community be affected if there were no wildlife in this area?
   Je, maisha yako na jamii yako yangeathirika vipi kama kusingekuwa na wanyama pori katika eneo hili?

Understanding Wildlife and Traditional Practices (Kuelewa Wanyama Pori na Mila za Jadi)

5. Are there any animals that your community sees as special or sacred? If yes, which ones?
   Je, kuna wanyama wowote ambao jamii yako inawaona kuwa maalum au wa kiroho? Ikiwa ndio, ni wanyama gani?
6. Were there traditions in your community about how to live peacefully with wildlife? If yes, what were they?
   Je, kulikuwa na mila katika jamii yako kuhusu jinsi ya kuishi kwa amani na wanyama pori? Ikiwa ndio, zilikuwa zipi?
7. Are there any cultural taboos related to hunting or harming specific wildlife species?
   Je, kuna mila au imani za jadi zinazokataza kuwinda au kudhuru wanyama fulani wa porini?
8. What kinds of species were traditionally hunted by your ancestors, and for what purposes?
   Ni wanyama wa aina gani waliwindwa na mababu zenu hapo awali, na kwa lengo gani?
9. Do these beliefs influence how your community deals with human-wildlife conflicts today?
   Je, imani hizi zinaathiri jinsi jamii yako inavyoshughulikia migogoro kati ya binadamu na wanyama pori siku hizi?

Positive Coexistence with Wildlife (Kuishi kwa Amani na Wanyama Pori)

10. How do you think wildlife contributes to making your area special or unique?
    Unadhani wanyama pori wanachangia vipi kufanya eneo lako kuwa maalum au la kipekee?
11. Have you ever seen visitors or tourists coming to your area because of wildlife? If yes, how does that benefit your community?
    Je, umewahi kuona wageni au watalii wakija katika eneo lako kwa sababu ya wanyama pori? Ikiwa ndio, hilo linanufaisha jamii yako vipi?
12. Do you think wildlife can be part of creating more jobs or opportunities for your community? If yes, in what ways?

Je, unadhani wanyama pori wanaweza kuchangia kuunda nafasi zaidi za kazi au fursa kwa jamii yako? Ikiwa ndio, kwa njia zipi?

Exploring Human-Wildlife Conflicts (Migogoro kati ya Binadamu na Wanyama Pori)

13. How often do problems with wildlife happen in your community? (e.g., every day, once a week, or less often)
    Matatizo yanayosababishwa na wanyama pori hutokea mara ngapi katika jamii yako? (kwa mfano, kila siku, mara moja kwa wiki, au mara chache)
14. Have you experienced any challenges living close to wildlife? If yes, what kind of challenges?
    Je, umewahi kukutana na changamoto yoyote kwa kuishi karibu na wanyama pori? Ikiwa ndio, changamoto zipi?
15. What are some ways your community has tried to solve these challenges?
    Ni njia zipi ambazo jamii yako imejaribu kutumia kutatua changamoto hizi?
16. Do you think some challenges can be avoided while still protecting the wildlife? If yes, how?
    Je, unadhani changamoto zingine zinaweza kuepukwa huku mkiendelea kulinda wanyama pori? Ikiwa ndio, vipi?

Gender and Inclusion (Jinsia na Ushirikishwaji)

17. Are there challenges that women, young people, or others face because of wild animals?
    Je, kuna changamoto ambazo wanawake, vijana, au wengine wanakabiliana nazo kwa sababu ya wanyama pori?
18. How can conflict mitigation efforts ensure that women, youth, and other groups are included?
    Juhudi za kupunguza migogoro zinaweza kuhakikisha vipi kuwa wanawake, vijana, na vikundi vingine wanashirikishwa?

Recommendations for Positive Coexistence (Mapendekezo)

19. What can your community do to live peacefully with wildlife?
    Jamii yako inaweza kufanya nini kuishi kwa amani na wanyama pori?
20. How can wildlife help improve your community's future?
    Wanyama pori wanaweza kusaidia vipi kuboresha maisha ya baadaye ya jamii yako?
21. What help or support do you think your community needs to work better with wildlife?
    Unadhani jamii yako inahitaji msaada gani ili kushughulikia vizuri changamoto za wanyama pori?
22. How can the community and government or NGOs work together to solve these problems?
    Jamii, serikali, na mashirika yasiyo ya kiserikali zinaweza kushirikiana vipi kutatua matatizo haya?