

# Human-Wildlife Interactions in the Selous: Causes, Impacts, and Management Approaches in Rufiji District

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## Abstract

*This paper investigated human-wildlife interactions in the Selous Game Reserve (now Nyerere National Park) employing mixed research methodologies. Three villages, Mloka, Ngarambe, and Tawi, were purposely chosen within two Wildlife Management Areas (WMAs). The data collection methods comprised ten key informant interviews, two focus group discussions in each village, a household survey of 120 participants, and a literature review. The enforcement of conservation regulations, infrastructure development, population growth, and wildlife conservation has led to a surge in wildlife in the communities, resulting in significant agricultural damage, injuries, and insecurity. The governmental agencies and investors were the primary decision-makers regarding conflict management measures, whereas the WMA actors held comparatively little influence in the decision-making process. The study identified multiple adverse effects of these interactions, including reduced access to natural resources for communities, absence of compensating mechanisms, and changes in regulations and rules. This paper advocates for more comprehensive conservation strategies that include the requirements of local communities and wildlife within the Selous Game Reserve (now Nyerere National Park).*

**Keywords:** Human-wildlife interactions, Wildlife Management Areas, human wildlife conflicts, Selous Game Reserve, Rufiji District

## 1.0 INTRODUCTION

Interactions between humans and wildlife have become an increasingly critical issue in Africa's wildlife reserves, such as the Selous Game Reserve in Tanzania, which is now known as Nyerere National Park. Selous Game Reserve is an essential location for the conservation of a wide variety of wildlife species, including rhinoceroses, lions, and elephants, due to the fact that it encompasses a broad area and contains an unmatched variety of mammalian species (Gillingham, & Lee, 1999; Baldus *et al.*, 2003; Meloka & Haller, 2008; Mambo & Makunga, 2017). On the other hand, the local communities that are located in the surrounding area, particularly in the Rufiji District, are located in close proximity to the reserve's boundary, which raises ongoing worries regarding interactions between humans and wildlife. These kinds of interactions lead to conflicts that are detrimental to groups of people as well as species of wildlife.

Human-wildlife conflicts (HWC) pose substantial problems to conservation efforts, especially as global biodiversity declines, the need to develop effective

conservation measures that balance human and wildlife coexistence has never been greater. Despite the success of diverse actors' conservation efforts, most scientific findings on biodiversity conservation are unfavourable (Buscher & Fletcher 2019). According to the Living Planet Report 2020, an average of 68% of all natural creatures disappeared between 1970 and 2016 (WWF, 2020). Numerous studies (WWF, 2016; WWF, 2018; WWF 2020) have shown that biodiversity is critical to human survival on Earth.

Several factors are the key contributors to the conflicts that arise between humans and wildlife near this protected area (Swalehe and Yanda 2023; Gayo & Ngonyoka, 2025). There are a number of factors that contribute to wildlife that walks into human settlements. These factors include the destruction of habitat for agricultural land, the expansion of human settlements, and the infrastructure development. Poaching and land clearance are two examples of human-induced activities that bring these wild animals closer to humans. These activities are carried out for a variety of reasons, including the purpose of benefiting from natural resources. Manifestations of conflict include crop damage caused by animals, the slaughter of livestock, the destruction of property, and, in certain situations, the harm or death of human beings.

According to the World Wildlife Fund (WWF), mankind is destroying ecosystems and biodiversity at an unprecedented rate (WWF, 2020). This problem is a clear indication of massive socio-ecological reconfigurations of the Earth's surface known as the Anthropocene period (Buscher & Fletcher, 2019). These alterations have sparked debate in the conservation field, notably regarding biodiversity and species extinction. Resolving these conflicts requires a thorough understanding of socio-ecological systems, which has resulted in the establishment of numerous biodiversity management approaches (Buscher & Fletcher, 2019). Furthermore, these approaches reject colonial-era human-wildlife separation approaches to conservation in favour of more fair and participative ones that recognise the value of both human and ecological well-being.

The goal of this paper was to investigate the anthropogenic variables that influence human-wildlife interactions in the Rufiji District, determine their effects on communities and ecosystems, and assess the current management frameworks. It is therefore necessary to determine the causes, impacts, and management measures that can grow or decrease human-wildlife conflicts through the following questions: (i) What are the key causes of human-wildlife conflicts? (ii) How do human activities and land use changes influence the occurrence of conflicts between people and wildlife? (iii) What are the environmental, social, and economic consequences of these disagreements for local residents and wildlife populations? (iv) How do different sorts of conflicts (e.g., crop raiding, livestock predation, property destruction) differ in their origins and consequences? Understanding these characteristics can help to

facilitate the creation of solutions that will improve conflict resolution efforts in the Rufiji District and increase stakeholder participation.

## **2.0 THEORETICAL FRAMEWORK**

This study uses political ecology as a framework to explain complicated relationships between humans and wildlife. Political ecology, which emerged in the 1970s, is an interdisciplinary approach that blends geography, anthropology, sociology, and environmental studies to explore how political-economic processes influence environmental concerns, with a particular emphasis on the effects on marginalised communities. It was heavily influenced by the work of scientists such as Piers Blaikie and Harold Brookfield, who studied how political-economic processes influence environmental outcomes and vulnerabilities (Walker, 2005; Roberts, 2020).

This paradigm is well-known for providing a comprehensive approach to ecological, political, economic, and social issues, emphasising power dynamics and recognising the dynamic nature of human-environment relationships. However, it faces challenges due to its complexity, lack of established methodologies, and tendency to focus on negative outcomes. Political ecology can provide valuable insights into human-wildlife management by assessing power dynamics, economic interests, and cultural perspectives in order to establish equitable and culturally sensitive management strategies. Since the 1970s, scholars have used the term to describe a variety of critical techniques for investigating the relationship between human cultures and the natural environment (Tetreault, 2017).

According to Blaikie & Brookfield (1987), the notion of 'political ecology' incorporates ecological factors into a complete political economic framework. This phenomenon includes the dynamic interplay between society and land-based resources, as well as interactions among various classes and groups within society (Blaikie & Brookfield, 1987). Political ecology can be described in a variety of ways, but it typically refers to empirical and research-based investigations that seek to understand the links between the state and the development of social and environmental systems. These investigations clearly take into account power dynamics and connections (Robbins, 2012).

Political ecology and politics approaches are appropriate for considering how both local people and conservationists create and enforce various types of human-wildlife interactions (Pooley *et al.*, 2017). However, different countries around the world have varying levels of resources and techniques to compromising and producing these types of human-wildlife interactions (Pooley *et al.*, 2017). These, in turn, have inspired a political ecology paradigm for conservation. Thus, the political ecology approach to conservation is offered as the finest techniques, battles, and conceptions for the long-term management of biodiversity.

Political ecology focusses on politics related to human-wildlife interactions while emphasising inclusive measures. Wild animals are thought to feel more protection in protected areas and near villages (John, 2021b; John, 2023). These two processes of balancing local communities' livelihoods and conservation generate political considerations about whose presence and rights are recognised in conservation, who/what is excluded by its interventions, and who or what benefits from conservation (Schreer, 2023). Furthermore, despite the inherent obstacles and negative repercussions of wild animals, local residents are legally prohibited from killing them in protected areas.

As a result, local communities try to resolve human-animal disputes by illegally killing wildlife (John, 2021b; Holmes, 2007). However, wild creatures are slaughtered without regard for meat, hides, horns, or other benefits, and their remains are allowed to decay (Holmes, 2007). This is because local communities want to convey a message, which would be considered overt resistance given the many political and economic obligations (Holmes, 2007). Although other techniques (such as community-based conservation) attempt to achieve this, friendly conservation focusses on social differences and the larger political ecology of these connections. As a result, friendly conservation is expected to provide the most effective ways for humans and wild animals to coexist.

The political ecology approach is recommended because it describes the power dynamics between local communities, the government, and other conservationists in managing natural resources in the Global South. Political ecology examines the politics and governance principles for the future of conservation. A friendly conservation approach, informed by political ecology and real-world examples of alternative methods to preserve nature, encourages the emergence of transformative seeds as a realistic and constructive basis for reconciling global conservation and development imperatives (Massarella *et al.*, 2023). Political ecology advocates for a political approach to conservation, involving movements, struggles, and ideas aimed at combating natural resource depletion and, as a result, improving local communities' standard of living.

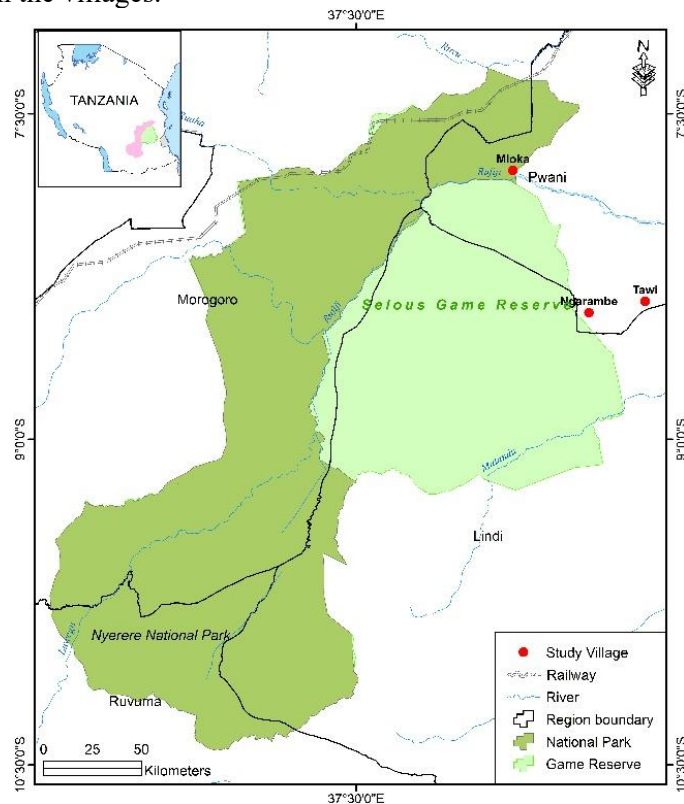
### **3.0 MATERIALS AND METHODS**

#### **3.1 Description of the Study Area**

As illustrated in Figure 1, this study was carried out in Rufiji District of the Selous Game Reserve in southern Tanzania. This reserve, established in 1982, is one of Africa's largest, spanning over 49,000 square km (Mambo & Makunga, 2017). Moreover, it was previously one of the largest wildlife reserves globally before its division into Nyerere National Park. Massawe *et al.*, (2025) state that the Selous Game Reserve was elevated to Nyerere National Park, including approximately 30,000 km<sup>2</sup>. This section was established to promote tourism and conservation. Elephants, crocodiles, and hippopotamus are just a few of the spectacular animals that can be seen in the Selous, which is home to a wide variety of species. Foya *et al.*, (2023) assert that the geography of this region

encompasses several ecosystems, including miombo woodlands, grasslands, marshes, and riverine forests, which collectively sustain a significant degree of biodiversity. Rufiji District is one of several districts adjacent to the Selous Game Reserve (John, 2021a; Gillingham & Lee, 2003).

Between 2017 and 2020, the research project New Partnership for Sustainability (NEPSUS) looked into three sectors: forests, fisheries, and wildlife. This study is based on a wildlife package conducted in the northeastern area of the old Selous Game Reserve prior to its division into Nyerere National Park. Three Selous villages were chosen for this study based on the frequency of human-wildlife encounters as identified in different studies (Mtoka *et al.*, 2014; Baldus *et al.*, 2003; Gillingham & Lee, 2003) and current studies such as (Gayo & Ngonyoka, 2025; Swalehe and Yanda, 2023; Pop *et al.*, 2023). These studies cover two WMAs: Mloka is a village that makes up (Jumuiya ya Hifadhi ya Wanyamapori, Ngorongo, Utete, and Mwaseni). Ngarambe is one of the (Muungano wa Ngarambe na Tapika) MUNGATA WMA villages, and Tawi is part of the same ecosystem but not part of the WMA, despite the fact that animals can be observed in the villages.



**Figure 1:** Map of Selous Game Reserve before it was designated to Nyerere National Park

**Source:** UDSM IRA-GIS LAB, 2025

### **3.2 Data Collection and Sampling Procedures**

In this study, the sampling process was designed to gather all local perspectives from the head of households selected. The desired sample size was chosen at 40 to 50 respondents per village based on the total number of houses and the requirement to capture a variety of perspectives. As customary done in most studies, the number of households sampled from each village was slightly adjusted to reflect household subdivision and ease of access. As a result, 120 households were identified, including 40 in Tawi, 40 in Ngarambe, and 40 in Mloka. The abundance of resources counterbalanced practical constraints, allowing for a thorough examination of community opinions and experiences regarding human-wildlife conflicts. Then the village roster book was used whereby simple random sampling method was used.

The sample was computed using a random number generator to select household heads using simple random sampling methods. The study used a structured questionnaire, face-to-face interviews, and focus group discussions. Open-ended questions were also included for more explanation. The questionnaire attempted to determine respondents' incidences of crop damage, access to resources, the influence of conservation rules, and the impact of crop damage.

Two focus group discussions were held in each village, with group sizes ranging from six to nine persons, to gather varied opinions. Key informant interviews were also done with the District Game Officer, the leaders of two WMAs, and the Village Executive Officers of each village. Other key informants were interviewed, including officials from the Wildlife Division and Tanzania Wildlife Management Authority (TAWA). The key informant interviews were conducted until there was no fresh information and it was thought to have reached saturation. Focus group discussions and key informant interviews were conducted to gather information about human-wildlife conflicts, damages, and how the state dealt with the consequences.

### **3.3 Ethical Considerations**

Before going to the communities to collect data, we needed to obtain the appropriate research clearance. Then, we notified the village leaders about the objectives and methodology of our research and requested their approval. The Tanzania Wildlife Management Authority (TAWA), Pwani Region Administrative Office, Rufiji District Council, and JUHIWANGUMWA and MUNGATA WMAs all granted approval for the study. We informed the respondents on the research purpose and requested permission to include them in our survey. We received verbal confirmation to proceed with our interview. We told them that their comments would remain anonymous while acknowledging the sources of information. The interviews and focus group discussions were recorded.

### **3.4 Data Analysis**

To achieve a clear clutch of the findings, the data obtained from household surveys and interviews were analysed using a blend of both qualitative and quantitative methods. Conflicts of humans and animals were quantified through the collection of relevant information which was later processed through coding and input into statistical analysis programs such as SPSS version 20 and Excel for descriptive analysis. This process included frequency, percentage, and mean calculations to reveal recurring patterns and trends among the study villages.

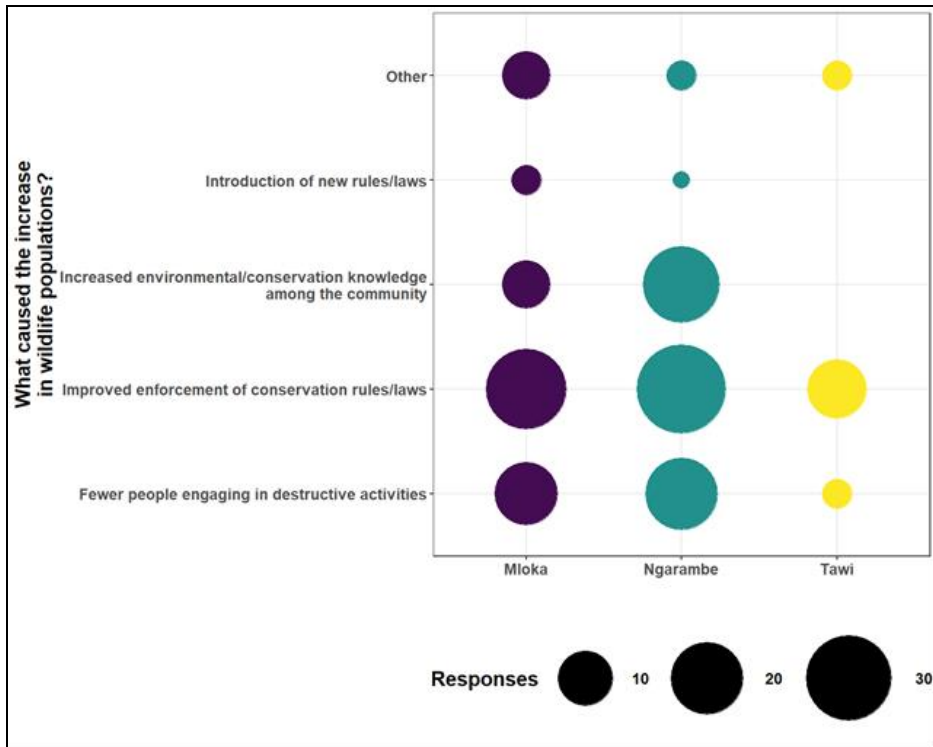
The open-ended survey responses along with the interview transcripts provided qualitative data which were thematically analysed. These processes involve extensive and systematic coding of the data to derive themes and categories that repeatedly manifest concerning the human-wildlife conflicts and their causes, impacts, and management. The analysis was primarily inductive, making it possible for themes to arise from the data without restriction and these themes were supported by relevant quotes to demonstrate the most important ideas. Multiple researchers recording codes independently and later discussing discrepancies enhanced reliability and validity. Combining quantitative summaries with qualitative thematic insights resulted in a comprehensive understanding of the community experiences and perceptions in regard to the conflicts with animals in the studied areas.

## **4.0 RESULTS**

### **4.1 Nature and Causes of Human-Wildlife conflict in the Etudy area**

In Selous Game Reserve, wildlife practices and presence have a significant impact on local ecosystems and community livelihoods. While these linkages can be helpful at times, they frequently result in substantial issues such as agricultural and livestock damage, food shortages, and economic instability. Human-wildlife conflicts in Selous Game Reserve in Rufiji district have caused crop damage, habitat loss, and deaths, harming humans, wild animals, and the environment. Therefore, the locals disliked the wildlife in and around them. This harms animal conservation greatly.

This study found that local villages' proximity to the game reserve makes them vulnerable to human-wildlife conflicts and their effects. Climate change causes water shortages, deforestation, agricultural expansion, game reserve infrastructure construction, and land use changes, which lead to human-wildlife conflicts. This study has found that increasing wildlife populations in human settlements have led to a decrease in the usage of traditional wildlife protection methods, such as making loud noises. This has resulted in a rise in confrontations between humans and wildlife over the past five years (2015-2019) (Figure 2). Various forms of wildlife-related consequences include human assaults, human fatalities, agricultural harm, habitat devastation, wild animal deaths, and several others.



**Figure 2:** Local perception of wildlife population status

**Source:** John, 2021a

#### 4.1.1 Crop Damage

While Selous Game Reserve has positive human-wildlife interactions, direct interactions cause conflicts because wildlife damages crops and human property. Due to population growth and the need for more space and resources to feed it, conflicts occurred. It forces humans and wildlife to live together, cross boundaries, and cause conflicts. When conflict replaced interaction, wild animals were banned from human land for interfering with human activities and damaging crops and properties. During FGDs and interviews, most respondents complained that game reserve wildlife raided cultivated land. Ngarambe village's household head supports this claim:

*"An elderly woman recounted that she and other community members remained in their fields for over two months to safeguard their crops from wild animals." (Female resident, October, 2018).*

Results from interviews with the villagers indicated that not all crops in the study area were affected similarly by crop raiders. Elephants, wild pigs, warthogs, and monkeys were mentioned as significant crop raiders due to their behaviour. Elephants were the most frequently reported crop predators that caused the most damage and ranked first, followed by warthogs. They damage

crops early in the morning and late in the evening, when there are no humans nearby. Humans and wildlife have come into conflict due to the fact that agricultural crops are an abundant food source for both humans and wildlife as explained during the interview:

*“When I saw that, elephants had eaten my maize crops. I was anxious about relaxing, fearing that I would fall asleep and be endangered by the elephants. I, too, am concerned about the thought of confronting one, especially as a woman.” (Female inhabitant, October 2018).*

Large herbivores compete for maize and sorghum in the wild. Small wild animals, such as monkeys, strive for fruits, nuts, and cereals. According to the respondents, the commodities most susceptible to raiders were maize, rice, and sorghum. As explained by the villagers, local communities sleep in the trees to protect their crops from elephants. A great deal of effort is wasted protecting crops and putting lives at risk from other predators such as snakes. However, women and children are more vulnerable to wild animal attacks than men because they cannot defend themselves as effectively.

#### **4.1.2 Habitat disturbance**

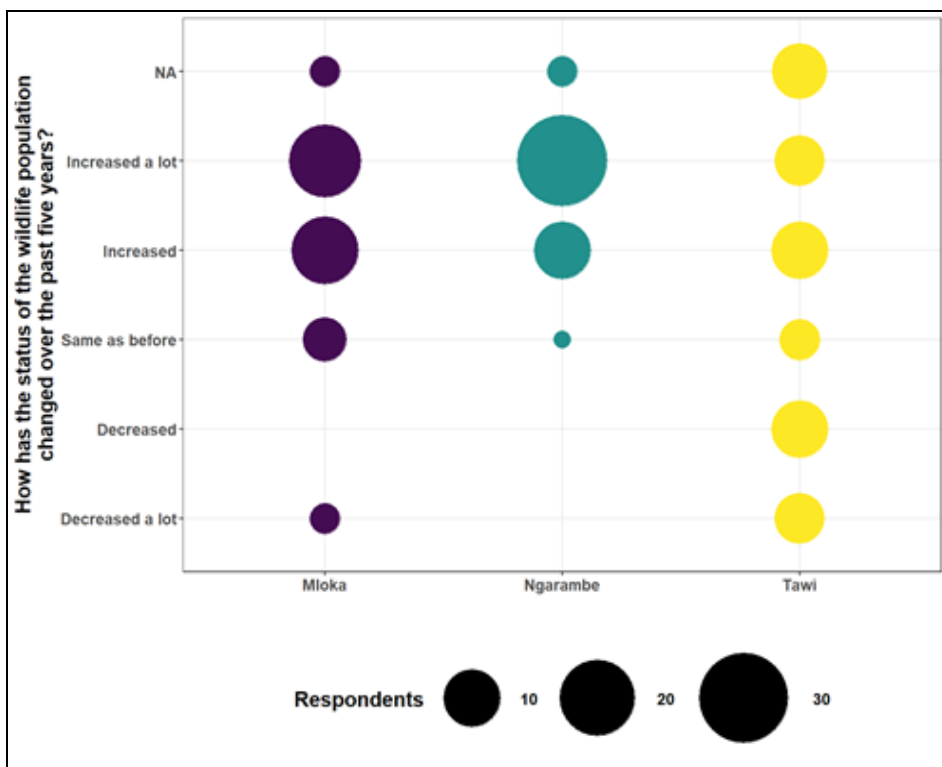
Mekonen (2020) defines habitat disturbance as the destruction of an animal's habitat by means of cutting, digging, and burning. Burning and cutting down trees in and around the game reserve constituted the majority of habitat degradation in the study area. This includes frequent fires for sesame production, tree cutting for the sale of charcoal, and the construction of shelters (field observation). In addition, tree cutting was primarily associated with a new settlement, resulting in a reduction in the area's remaining vegetation cover. This diminishes the wild animals' feeding grounds, leisure areas, and mating grounds, thereby increasing the conflict between humans and wild animals (Mekonen, 2020). Conflict can arise when wildlife intrudes into human territories in quest of resources or when human activities progressively encroach onto wildlife habitats, leading to disputes over land and resources.

#### **4.1.3 Human attacks**

Human attacks, lack of freedom of movement, injuries, and loss of life due to wild animals constitute a second significant hazard posed by wild animals to nearby human communities. The majority of attacks on humans occurred when victims were struggling on farms or defending them from crop raiders. Also, human attacks by wild animals occurred at night when local communities were fishing in Selous Game Reserve's oxbow lakes. Crocodiles and hippos attack the local communities in the neighbouring villages. More than ten persons were killed by elephants and other wild animals in the study villages between 2015 and 2018 (Focus group discussion, 2018).

In the village of Mloka, one of the villagers revealed that not everyone will return safely from prohibited fishing in the game reserve. They were either killed by wild animals or captured by game ranger patrols on occasion. Depending on the circumstances, they are fined, taken to court, or punished when discovered illegally fishing. Due to the danger and susceptibility of their livelihoods, local communities are fearful of wild animal attacks. Youth from the Mloka village blamed the government and the conservation NGOs for failing to compensate them when they are attacked by wild animals in their villages.

Tour operators can also appreciate wild animals in the village because it attracts tourists. In an interview, a Mloka village tourist resort manager said their facility hosted a leopard the night before. The leopard's presence worries locals, but it might harm humans. Wild animals in the village are likely to be treasured by clients, offering tour operators tremendous satisfaction. According to a household survey of the local community, wild animals have increased in the settlements, causing disturbances (Figure 3). Due to its location outside the Wildlife Management Area, Tawi village responded differently from Mloka and Ngarambe villages.



**Figure 3:** Local perception of the status of wildlife population

Source: John, 2021a

#### **4.1.4 Killings of wild animals**

The absence of compensation for agricultural damage as reported by Kimario *et al.*, (2020) and the killing of domestic animals makes local communities struggle to kill wild animals. This study discovered that crop raiding undermines food security and fosters wildlife intolerance in neighbouring communities. The crop damages and lack of compensation for the losses were complimented by the consolation from wildlife management authorities. For instance, the Wildlife Conservation (Dangerous Animals Damage Consolation) Regulation of 2011 permits consolation of Tsh 500,000 (approximately 214 USD) for human injury caused by dangerous wild animal attacks and Tsh 1,000,000 (approximately 429 USD) for human death (URT, 2011). Local communities are complaining that the consolation offered is insufficient to make up for the losses sustained. During a focus group discussion at Ngarambe, the men complained that the department responsible for providing consolation is taking excessively long to do so. As a result, the provided consolation is insufficient, prompting locals to engage in unlawful activity as a form of resistance.

As illustrated in Figure 4, local communities kill or injure wild animals because they are dissatisfied with how human-wildlife conflicts are resolved. Elephants, which cannot be killed, are the most frequently cited threat to humans. The game rangers chase elephants, but they eventually return and destroy food crops. Local communities access the game reserve for a variety of reasons, including illegal hunting and fishing on the Rufiji River and oxbow lakes such as Lake Siwandu, Lake Nzelekela, Lake Tagalala, and Lake Manze in Selous Game Reserve. These oxbow lakes are protected and no human activity is permitted, despite the presence of large fish. Consequently, game rangers and local communities are perpetually at odds over the preservation of fish stocks, as the local communities' primary objective is to get fish.

The Selous game reserve authority employs game rangers with formal training to patrol the reserve and prevent illegal activities such as poaching, fishing, and forest product collection (Haller *et al.*, 2008). The local communities, with their subsistence and increasingly cash crop and commercial activities, would like to continue their long-standing use of the area for agriculture and fisheries, but animal attacks and agricultural degradation are hindrances (Ponte *et al.*, 2022). At the Selous game reserve, several bodies of water, including Lake Nzelekela, Lake Siwandu, Lake Manze, Lake Tagalala, and Lake Mzizima, maintain a large stock of fish used for tourism. Numerous species of fish are catchable in the pristine waters of these locations where fishing tours are offered (Haller *et al.*, 2008). Consumption-related fishing is prohibited within the game reserve. Consequently, local communities continued to depend on agriculture for food. Similarly, Ngorima villagers consider themselves opponents of the park because soldiers and riot police are frequently employed to control them (Kachena & Spiegel, 2023).



**Figure 4:** Illegal kills of wild animals and tree-cutting  
**Source:** John, 2021b

## **4.2 Strategies for managing human wildlife conflicts**

Traditional methods of preventing human-wildlife conflicts in the communities around Selous Game Reserve in Rufiji district, such as using fire and noise to chase wildlife, have proven ineffective due to the nature of the reserve and the abundance of species. These tactics are not only temporary, but also insufficient in dealing with complex and dangerous animals like as elephants, wild dogs, and lions, which have learnt to disregard such noises. Furthermore, the increase of human activities such as farming and habitation near buffer zones around the reserve has increased tensions, causing traditional local traditions to fail to address the complex dynamics of human-wildlife conflict.

### **4.2.1 Traditional approaches**

Prior to the establishment of a WMA in the neighbourhood of the game reserve, traditional practices were reported as methods for controlling wildlife attacks. Farmers use various methods to protect their crops from elephants, including guarding, chasing, live fencing, and traps. Local communities in the villages under study have utilised containers, drums, and empty cans to produce noise, as well as flashlights, oils, and tree ashes. Local communities learn these techniques from their ancestors, and during the focus group discussion, they reported that the WWF also attempted to teach them how to use oils, tree ashes, and ropes to surround the farm and chase away elephants. However, these techniques are antiquated and local, and they are no longer applicable because they were utilised in the past. As a result, these methods no longer frighten elephants.

### **4.2.2 Chasing elephants**

The interview with the government officials disclosed that game rangers and village game scouts use the humane method of moving elephants without harm back to the game reserve. To try to control elephants in the study area, local

communities have shifted from cultivating food crops such as maize and sorghum to cultivating cash crops such as sesame and cashew nuts that are difficult to be destroyed by elephants. Sesame can be destroyed by elephants when they step on the farms because elephants do not eat sesame.

#### **4.2.3 Economic incentive**

The government uses economic incentives to persuade local communities to support and participate in animal conservation initiatives. Communities may be more likely to cherish and maintain wildlife habitats if they are offered financial incentives, such as revenues from eco-tourism or sustainable hunting. The income-sharing approach is also utilised to ensure that local community's benefit from the wildlife. According to an interview with villagers, few people work in lodges or hotels. Because of their unskilled employment, they are hired as guards, cleaners, drivers and gardeners.

#### **4.2.4 Land use planning**

Efficient land use planning involves the formulation and implementation of zoning regulations that achieve a harmonious stability between the preservation of wildlife and the expansion of agricultural and settlements areas. This may involve the establishment of buffer zones around protected areas and the designation of corridors for wildlife to safely traverse through landscapes dominated by human activity. Incorporating local people into strategic land use planning can potentially mitigate conflicts by proactively discouraging settlement in critical wildlife corridors.

#### **4.2.5 Awareness creation**

The interview, held at the WWF office and Frankfurt Zoological Society (FZS) in Dar es Salaam, revealed the need of educating communities about the benefits of animal conservation and the potential risks associated with human-wildlife conflicts. Implementing awareness campaigns can successfully modify attitudes and behaviours towards wildlife, fostering the establishment of harmonious coexistence by enhancing public knowledge through various means such as community workshops, educational efforts in schools, and media campaigns. Local leaders are actively involved in outreach efforts to ensure that messages are culturally appropriate and widely accepted.

Effective human-wildlife conflict resolution requires a many-sided approach that incorporates ecological, social, and economic considerations. Wildlife corridors are one of the most important techniques, as they facilitate safe animal migration while reducing contacts with human populations. Early warning systems and barrier methods, such as fencing or natural deterrents, can be employed to keep wildlife away of agricultural and human areas. Community engagement is vital; educating and involving local populations in animal conservation operations ensures that they understand the importance of biodiversity and are prepared to coexist with wildlife in a sustainable manner. Compensation systems for

wildlife-related losses can reduce economic pressures and boost community support for conservation efforts. However, the consolation supplied is not the same as compensation. Furthermore, using technology, such as GPS tracking for wildlife and AI-powered monitoring systems (Casazza *et al.*, 2023), can provide real-time data to help avoid potential conflicts.

## **5.0 DISCUSSION**

Human-wildlife interactions and conflicts are common in different parts of the world. Though, damage to cultivated crops is a serious concern near protected areas (Naidoo *et al.*, 2019; Mekonen, 2020; Oduor, 2020; Gayo *et al.*, 2021; Montero-Botey *et al.*, 2021; Nchanji *et al.*, 2023). Elephants are one of the most dangerous animals that are very difficult to chase and control, so elephants and humans are always in potential conflicts over crops. Research conducted in and around the study area near Selous Game Reserve found that elephants, wild pigs, warthogs, and monkeys were identified as destructive animals, mainly feeding commonly on maize, sorghum, cassava, and vegetables. In the Maasai Mara ecosystem in Kenya, where human-wildlife conflicts have increased and led to the damage of food crops and human injury, a similar finding was observed in the recent study (Oduor, 2020). According to a study conducted at Cameroon's Campo Maan National Park, park wildlife regularly destroyed local farmers' crops without compensation (Nchanji *et al.*, 2023).

Politically, human activities are going on in Selous Game Reserve, and especially infrastructure development that could be among the reasons for wild animals moving to the nearby villages for water and food in the dry season. Also, Snyman (2012), Matema & Andersson (2015), Amaja *et al.*, (2016), and Frank (2016) noted that wild Animals within protected areas roamed freely outside park borders destroying crops and killing livestock and people in the villages. Other researchers argued that the increasing population of wildlife due to the current conservation efforts had stimulated human-wildlife conflicts, which occur when wild animals, especially elephants, threaten or kill people, damage crops, injure or kill domestic animals (Hahn *et al.*, 2017; Kiondo *et al.*, 2019; Stoldt *et al.*, 2020; Kiffner *et al.*, 2020).

The analysis of in-depth interviews, FGDs, surveys, and observation supports the view that local livelihoods are generally controlled by challenges of increasing wildlife in the villages, which causes human-wildlife conflicts, killings, injuries, and damage to crops. However, the survey's investigation revealed that agricultural activities are still the main livelihood activities for local communities in the Rufiji District. Also, Msuya *et al.*, (2018) reported that more than 70% of the local communities in Tanzania still depend on farming for their livelihoods. But other scholars argue that compared with the benefit attained from agricultural production, the income received from wildlife-related businesses in most communities living adjacent to protected areas is an added advantage (Mutanga *et al.*, 2017).

The government in East Africa is not well-equipped to deal with conflicts between humans and wildlife because it has failed to provide compensation for agricultural damage and injuries. For instance, according to a study on Kenya's protected areas by Van Wijk *et al.*, (2015), the incentives created through tourism businesses were intended to compensate for the costs of living with wildlife because government agencies were unprepared to handle compensation for damages caused by human-wildlife conflict. In addition, the article investigates how the challenges of co-existence could be employed to improve human-wildlife interactions in the global south. As a result, coexistence is expected to strengthen relationships between local communities living near protected areas and game reserve officials while concurrently regulating human-wildlife interactions.

The current study has adopted a recommended framework that provides a fresh and complete method to analysing and conducting environmental conservation programs. The notion comprises a holistic viewpoint that seeks to address the fundamental ecological, social, political, and economic challenges faced by both human populations and wildlife within protected areas at a worldwide level. The integration of indigenous knowledge into wildlife management practices, both within and beyond protected areas, will facilitate the accomplishment of this objective. Furthermore, it is imperative to engage local communities in the decision-making process in order to establish community-based conservation objectives (Ochieng *et al.*, 2023).

## **6.0 CONCLUSION AND RECOMMENDATIONS**

This study on human-animal interactions in the Selous Game Reserve illustrates how complicated and nuanced conflicts between local inhabitants and wildlife in Rufiji District are. Integrating empirical data with theoretical frameworks such as political ecology provides a key perspective for understanding these interactions. The study emphasises the need for management techniques that go beyond technical fixes, focussing on social and environmental justice, eco-sustainable governance, and fair economic development all within the framework of sustainability. It challenges established conservation paradigms that frequently ignore local perspectives by stressing how population increase and restrictive policies exacerbate conflicts, emphasising the significance of incorporating traditional knowledge and community voices into policy-making processes.

Culturally sensitive and environmentally adequate policies are critical for sustaining coexistence because they acknowledge the interdependence of social and ecological systems. Furthermore, harnessing current technologies can help improve the creation and implementation of conflict resolution solutions, improving resilience in both ecological and social domains. By critically engaging with co-existence, this study proposes for a move towards more inclusive and participatory management regimes that recognise power

imbalances and prioritise co-creation of solutions. Overall, this study contributes to conservation discussions by showing how incorporating indigenous knowledge and emphasising social justice can challenge and enrich prevailing narratives, resulting in more sustainable and equitable conservation outcomes in the Selous and Rufiji Districts.

## **6.1 Financial Disclosures**

This paper was developed as part of a research project (New Partnerships for Sustainability, NEPSUS) funded by Danish Innovation Fund's Advisory Committee for Development Research (project 16-01-CBS).

## **6.2 Declaration of Conflict of Interest**

The author declares no conflict of interest

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