



Content is available at: CRDEEP Journals
Journal homepage: <http://www.crdeejournal.org/category/journals/ijes/>

International Journal of Environmental Sciences
(ISSN: 2277-1948) (Scientific Journal Impact Factor: 6.043)

UGC Approved-A Peer Reviewed Quarterly Journal



Review Paper

Human-Wildlife Conflicts in Africa: A Preliminary Review

David Oman Zumo*

M. Sc Student, Department of Environmental Science, Graphic Era University, Dehradun, Uttarakhand India

ARTICLE DETAILS

ABSTRACT

Corresponding Author:

David Oman Zumo

Key words:

Human-Wildlife,
Conflict, Interactions,
Conservation,
Deforestation, Habitat
fragmentation,

The coexistence between humans and mammals across Africa has led to Human Wildlife Conflict (HWC) especially in West Africa (Liberia) due to the competition for limited natural resources. Over the past few months, I have focused my research on conservation issues that either resulted from or induce human-wildlife conflict. Conflicts are intensified in areas where large human populations live in close proximity to nature, and where livestock holdings and crop fields form a significant part of rural livelihoods. As a result, both people and wildlife suffer tangible consequences; therefore, creating the need for stakeholder's involvement and their willingness to adopt conservation-based behaviors, as key ingredients for feasible and effective conservation counter measures. This article conducts a comprehensive review of the diverse barriers and conservation implications associated with incidents of Human-Wildlife Conflict across Africa including an overview of the causes, impacts and potential mitigation strategies associated with Man-Wildlife Conflicts in the African context. Some of these causes includes Habitat Fragmentation, Climate Change, Illegal Wildlife trade as well as the associated Impacts which includes Economics losses, Human Casualities, Conservation Concerns, Community-based conservation, and Education & Awareness. A nuanced analysis is essential for a profound understanding of the problem, laying the groundwork for future conservation initiatives. Key case studies are explored, including the decline of the charismatic forest dwelling elephants in the Sapu National Forest, Liberia. The narrative concludes by examining conflict resolution strategies implemented throughout Africa, along with recommendations put forth by the Forestry Development Authority of Liberia for the effective conservation of the world's most endangered mammals. This abstract highlight the multifaceted nature of man-wildlife conflicts in Africa and underscores the importance of integrated and sustainable approaches to address these challenges.

1. Introduction

Man-wildlife conflict refers to the ne interactions and competition between humans and wildlife, often resulting in harm or threats to both parties. These conflicts arise from the encroachment of human settlements into natural habitats, leading to increased contact and competition for resources such as land, water, and food (Torres et al., 2018). This conflict poses significant challenges for conservation efforts and human well-being in Africa, as it can lead to injury or loss of life for humans,

* Author can be contacted at: Department of Environmental Science, Graphic Era University, Dehradun, Uttarakhand, India.

Received: 01-February 2024; Sent for Review on: 06-February 2024; Draft sent to Author for corrections: 16-February 2024; Accepted on: 25-February 2024

Online Available from 27-February 2024

DOI: [10.13140/RG.2.2.34271.23202](https://doi.org/10.13140/RG.2.2.34271.23202)

IJES-9009/© 2024 CRDEEP Journals. All Rights Reserved.

damage to crops and livestock, and the depletion of wildlife populations. Efforts to mitigate man-wildlife conflict in Africa involve implementing various strategies such as the establishment of protected areas, creating wildlife corridors, implementing sustainable land use practices, promoting community-based conservation initiatives, and providing compensation for human-wildlife damage (Mayengo et al., 2017). Additionally, education and awareness campaigns are crucial in promoting coexistence and reducing conflict between humans and wildlife. Source: "Human-Wildlife Conflict in Africa: Causes, Consequences, and Solutions" - Guma et al. The impacts of man-wildlife conflict in Africa can have far-reaching consequences for both humans and wildlife. These conflicts can result in the loss of biodiversity, as certain wildlife populations may decline or become locally extinct. Furthermore, man-wildlife conflict can have significant social and economic impacts on local communities, as it disrupts livelihoods reliant on agriculture, livestock rearing, and tourism. Mitigating man-wildlife conflict in Africa requires a multi-faceted approach that addresses the root causes of conflict, promotes coexistence between humans and wildlife, and provides adequate support and resources for affected communities (Beck et al., 2019). Additionally, it is essential to involve local communities in decision-making processes, empower them to participate in conservation efforts, and provide alternative livelihood options that reduce their dependence on resources that may be in competition with wildlife (Zimmermann et al., 2020). Overall, man-wildlife conflict in Africa is a complex issue that requires holistic and sustainable solutions to ensure the well-being of both humans and wildlife. Mitigating man-wildlife conflict in Africa requires a multi-faceted approach that addresses the root causes of conflict, promotes coexistence between humans and wildlife, and provides adequate support and resources for affected communities.

Man, wildlife conflict in Africa is a major issue that threatens both human livelihoods and the conservation of wildlife populations. Human activities, such as habitat destruction and encroachment on wildlife territories, exacerbate the conflict between humans and animals (Lamarque et al. 2009). Additionally, competition for resources such as food and water can escalate tensions and lead to direct confrontations between people and wildlife. Efforts to mitigate man-wildlife conflict in Africa should involve a combination of sustainable land use practices, community engagement, and the implementation of wildlife conservation strategies, such as wildlife corridors and fencing solutions. These efforts are essential to ensuring the coexistence of humans and wildlife, as well as safeguarding the precious biodiversity found in Africa. Additionally, increased awareness and education on the importance of wildlife conservation and the value of coexistence with animals is crucial in addressing man-wildlife conflict in Africa. Source: 1, pp. 101-107 Source: World Wide Fund for Nature–The Netherlands © Food and Agriculture Organization of the United Nations, Rome, 2009 Man-wildlife conflict in Africa poses a significant threat to both human livelihoods and wildlife conservation efforts. Over the past two decades, there has been a growing focus on understanding and addressing man-wildlife conflict in Africa. This conflict primarily occurs in areas where rural communities live next to protected wildlife areas. A comprehensive assessment of human-wildlife conflict in the Save Valley Conservancy in southern Zimbabwe revealed an increasing number of incidents. These incidents were a result of high human and wild animal interactions, including habitat destruction and encroachment on wildlife territories. Efforts to address man-wildlife conflict in Africa should focus on promoting sustainable land use practices, engaging local communities, and implementing effective wildlife conservation strategies such as wildlife corridors and fencing solutions. Furthermore, it is crucial to promote increased awareness and education among local communities about the importance of wildlife conservation and the benefits of coexisting with animals. Source: Human-wildlife conflict in Africa, particularly in areas bordering protected wildlife areas, is a significant threat to both human livelihoods and wildlife conservation efforts. The impact of man-wildlife conflicts on communities in Africa cannot be understated. These conflicts not only threaten human safety and livelihoods but also have significant ramifications for wildlife populations and ecological balance. In many rural areas bordering protected wildlife territories, communities face a daily struggle to coexist with animals that compete for limited resources such as food and water (Sillero-Zubiri 2001).

The consequences of these conflicts are far-reaching, resulting in property damage, crop destruction, and in some cases, loss of human life. Furthermore, the pressure on wildlife populations due to human encroachment and habitat destruction poses a severe threat to Africa's rich biodiversity (Riley, E,P 2005). To address these challenges, it is crucial to prioritize sustainable land use practices that minimize human-wildlife interactions. Additionally, engaging with local communities to raise awareness about the importance of wildlife conservation and the benefits of coexistence is essential. Empowering communities to implement effective wildlife conservation strategies like wildlife corridors and appropriate fencing solutions

can also help mitigate conflicts and promote peaceful coexistence. By working together with local communities, conservation organizations, and government authorities, it is possible to develop comprehensive solutions that protect both human livelihoods and wildlife populations in Africa. Source: "Human-wildlife conflict in and around the Simien Mountains national park, pp. 283-292," Integrating natural resources and environmental management, 2012 The source suggests that the primary source of conflict between pastoralists and agriculturalists in Africa is human-wildlife conflict, particularly in areas bordering protected wildlife areas. To solve the conflict between pastoralists and agriculturalists, it is important to implement measures that address human-wildlife conflicts. These measures may include the establishment of effective buffer zones, the promotion of sustainable agriculture practices, and the development of alternative livelihood options for local communities. Additionally, implementing strategies such as building sturdy and wildlife-proof fences, implementing early warning systems, and providing compensation for loss or damage caused by wildlife can help minimize the conflicts between pastoralists and agriculturalists. Conflicts between pastoralists and agriculturalists in Africa are often fueled by competition over diminishing resources such as water, pasture, and food with wildlife. This competition for resources often leads to confrontations and despair among communities (Falanta & Bengesi, 2018). Therefore, it is crucial to promote sustainable land management practices and implement conservation strategies that address the root causes of human-wildlife conflict, such as habitat degradation, resource scarcity, and encroachment on wildlife habitats (Esilaba et al., 2007). In summary, addressing man-wildlife conflict in Africa requires an interdisciplinary approach that involves working with local communities to raise awareness, implementing effective wildlife conservation strategies. Crops damage caused by primates is one of the most wide spread and common examples of human-primate conflicts in area where local people are mainly substance farmers(Hills, 1998), conflicts between humans and wildlife are on the increase as human encroach into human wildlife habitats for livelihoods which are detrimental to sustainable wildlife management (Sherman, 2013), According to the IUCN Primate specialist Group, conflicts between humans and great apes as well as monkey have been intensifying, often due to competition over resources such as food and water or attacks on humans by species involved (Hockings and Humble, 2009). Monkey conflict in Zanzibar, lion conflict in Zimbabwe and Kenya are few examples of human-wildlife conflicts (Distefano, 2005), species most exposed to conflicts are also shown to be more prone to extinction (Ogada et al. 2003) because of injury and death caused by humans.

The study of human-wildlife conflicts in Africa holds significant importance due to various reasons:

1. *Biodiversity Conservation*
2. *Livelihoods and Agriculture*
3. *Human Safety*
4. *Policy and conservation strategies*
5. *Climate change implications.*

The significance of studying human wildlife conflicts in Africa lies in the interconnectedness of ecological, social, economic, and cultural factors. Effective management and mitigation strategies can only be developed through comprehensive understanding of the causes and consequences of these conflicts. Man-wildlife conflict is a pressing issue in Africa, with major challenges faced in effectively managing and mitigating the conflict. However, there is a research gap in understanding the socio-economic factors that contribute to the occurrence and intensity of man-wildlife conflict in different regions of Africa. This gap in knowledge hampers effective wildlife conservation strategies and the development of appropriate policies for mitigating man-wildlife conflicts. The existing literature mainly focuses on the ecological aspects of man-wildlife conflict, such as habitat destruction and competition for resources.

There is a need for research that explores the economic and social drivers of man-wildlife conflict, including factors such as agricultural practices, land use change, and socio-cultural dynamics. This gap also extends to the lack of comprehensive studies on the impacts of man-wildlife conflict on local communities, including their livelihoods, socio-economic well-being, and overall resilience.

The objectives of the study on man-wildlife conflicts in Africa are as follows:

1. *To assess the extent and nature of man-wildlife conflicts in Africa.*
2. *To identify the factors contributing to man-wildlife conflicts in Africa.*

3. To understand the impacts of man-wildlife conflicts on both human and wildlife populations.
4. To develop strategies and interventions to mitigate man-wildlife conflicts and promote peaceful coexistence.

2. Materials & Methods

Human-Wildlife conflicts in Africa involves a multidisciplinary approach, incorporating ecological, social, and economic perspectives. The materials and methods used in this study depend on specific species involved and the goal of the research. Some materials include Literature Review, Ecological Data, Human Dimension Data, Conflict Incident Data and Crop and Livestock Damage Assessment.

3. Brief insight of the Study Area

The study area of man-wildlife conflicts in Africa involves investigating the interactions and tensions between human populations and wildlife, with a focus on the challenges arising from cohabitation. Africa is renowned for its rich biodiversity, hosting a diverse range of species, including large mammals like elephants, lions, and rhinoceroses. The coexistence of humans and wildlife in this region often leads to conflicts due to competition for resources, habitat loss, and human-wildlife encounters.

Methodologies adopted in studying man-wildlife conflicts in Africa typically include a combination of ecological, social, and economic approaches. Some brief overviews methodologies involve in this research:

1. *Ecological Surveys*: This involve the distribution and behavior of wildlife species and the tracking of animal movements, identifying critical habitats and assessing the availability of natural resources.
2. *Community Survey and Stakeholder interviews*: These methods basically involved social methods, such as survey and interviews used in gathering information on local communities' perceptions, attitudes and regarding wildlife conflicts.
3. *Conservation Strategies*: it is the strategies including the establishment of protected areas, community-based conservation technologies like electric fencing or early warning systems.

Overall, a multidisciplinary approach is essential for a comprehensive understanding of man-wildlife conservation in Africa, leading to effective conservation and co-existence strategies.

4. Overview of Man-Wildlife Conflicts in Africa

Man-wildlife conflicts in Africa are a complex and multifaceted issue that poses significant threats to both human livelihoods and wildlife conservation efforts. The conflicts often arise due to human activities such as habitat destruction, encroachment on wildlife territories, and competition for vital resources like food and water.

5. Factors Contributing to Man-Wildlife Conflicts

Numerous studies have highlighted the escalating incidents of man-wildlife conflicts in various regions of Africa, including the Save Valley Conservancy in southern Zimbabwe. The primary factors contributing to these conflicts include:

1. *Habitat destruction and encroachment on wildlife territories*
2. *Competition for resources, leading to direct confrontations*
3. *High human and wild animal interactions*

6. Mitigation Strategies

Efforts to address man-wildlife conflicts in Africa should prioritize the following key strategies:

Sustainable Land Use Practices: Promoting sustainable land use practices is crucial to minimize habitat destruction and mitigate the impact of human activities on wildlife.

Community Engagement: Engaging local communities and incorporating their traditional knowledge and practices in conservation efforts is essential for fostering coexistence between humans and wildlife. Wildlife Conservation Strategies:

Implementing effective wildlife conservation strategies, such as creating wildlife corridors and fencing solutions, can help reduce confrontations between humans and animals.

7. Importance of Awareness and Education:

Increased awareness and education about the importance of wildlife conservation and the benefits of coexisting with animals are vital components of addressing man-wildlife conflicts in Africa. Local communities need to understand the ecological significance of wildlife and the value of maintaining a balanced ecosystem. Addressing man-wildlife conflicts in Africa necessitates a comprehensive approach that integrates sustainable land use practices, community engagement, and wildlife conservation strategies. Furthermore, increasing awareness and education among local communities is crucial for fostering harmonious coexistence between humans and wildlife.

8. Causes of Man-Wildlife Conflicts

Human-wildlife conflicts are becoming more frequent, serious and widespread because of human population growth, agricultural expansion, infrastructure development, climate change and other drivers of habitat loss. Human encroachment and clearance of land for settlements and agriculture not only results in loss of habitat for wildlife, but forces wild animals into close quarters with humans. In parts of Kenya, human-wildlife conflict has overtaken poaching as the greatest threat to some of the country's most important elephant populations. As they follow their migratory routes or come to feed on crops, elephants destroy property and livelihoods. In extreme cases both people and elephants are being killed in confrontations. Having already suffered from habitat loss, coupled with a decrease in natural prey or other food sources, Africa's big cat populations are increasingly turning to livestock for an easy meal.

Retaliatory, or even pre-emptive killings have become one of their greatest threats. Whether it's with elephants, big cats, primates or rodents, human-wildlife conflict is set to grow with the growth of the human population. Finding space for both people and wildlife to co-exist is the ultimate conservation challenge. Wildlife can threaten people's safety and livelihoods, which can lead to conflicts between groups of people over how to resolve the situation; experts call this 'human-wildlife conflict'.

- Human-wildlife conflicts are becoming more frequent, serious and widespread as human populations grow and habitats are lost.
- Effectively managing human-wildlife conflicts protects communities, stops conflicts escalating, builds trust in conservation and avoids retaliation against wildlife.
- Human-wildlife conflicts have unique ecological, cultural, social, historical, physical, economic and political characteristics which strategies to manage conflicts must consider.
- Wildlife can pose a direct threat to the safety, livelihoods and wellbeing of people. For example, when elephants forage on crops, seals damage fishing nets or jaguars kill livestock, people can lose their livelihoods. Retaliation against the species blamed often ensues.
- The term human-wildlife conflict has traditionally been applied only to these negative interactions between people and wildlife, but this implies deliberate action by wildlife species and ignores the conflicts between groups of people about what should be done to resolve the situation.
- The IUCN Species Survival Commission (SSC) Human-Wildlife Conflict & Coexistence Specialist Group defines human-wildlife conflict as: *struggles that emerge when the presence or behaviors of wildlife poses an actual or perceived, direct and recurring threat to human interests or needs, leading to disagreements between groups of people and negative impacts on people and/or wildlife.*
- Human-wildlife conflicts are becoming more frequent, serious and widespread because of human population growth, agricultural expansion, infrastructure development, climate change and other drivers of habitat loss. Human-wildlife conflicts can occur wherever wildlife and human populations overlap, so any factor that forces wildlife and people into closer contact makes conflicts more likely.

- Much work to date has focused on interventions to reduce impacts on people and retaliation against wildlife such as creating barriers, deploying deterrents or moving wildlife. In the absence of consultative, collaborative processes with stakeholders, these measures often have limited success.

9. The Requirements of human development

Human-wildlife conflicts arise when there is a clash between human activities and the needs of wildlife, often leading to negative impacts on both humans and animals. In the context of human development, addressing these conflicts is essential to ensure sustainable coexistence. Several requirements for human development in the face of human-wildlife conflicts include: Awareness and Education, Land Use and Planning, and Infrastructure and development. The main cause of human-wildlife conflict worldwide is the competition between growing human populations and wildlife for the same declining living spaces and resources. The transformation of forest, savannah and other ecosystems into agrarian areas or urban agglomerates as a consequence of the increasing demand for land, food production, energy and raw materials, has led to dramatic decrease in wildlife habitats. Under these conditions, conflicts between wildlife and local communities has inevitably increased (Slex and Struchsaker, 1999, Muruthi, 2005, T)aronda, 2007), this is a perfectly illustrated by the conflict between human and elephants.

10. Driving forces of Human Wildlife Conflicts:

Addressing the driving forces of human-wildlife conflicts. Identifying the driving forces behind these conflicts is essential for developing comprehensive and sustainable solutions. Several key driving forces contribute to human-wildlife conflicts in Africa. One significant factor is habitat destruction and encroachment on wildlife territories, driven by human activities such as agricultural expansion, logging, and infrastructure development. As human populations grow and seek to expand their agricultural and settlement areas, they encroach upon wildlife habitats, leading to increased interactions and conflicts between humans and animals. Competition for limited resources, including food, water, and grazing land, also plays a pivotal role in escalating tensions and conflicts between humans, wildlife, and domestic livestock. In many cases, communities living in close proximity to wildlife areas face competition over these essential resources, leading to confrontations and challenges in coexisting with wildlife. Furthermore, the degradation and fragmentation of natural habitats due to human activities further exacerbate the conflicts, as wildlife populations are forced to seek alternative sources of food and shelter, often encroaching upon human-inhabited areas. Addressing these driving forces of human-wildlife conflicts necessitates a multi-faceted approach. Sustainable land use practices, including the establishment of buffer zones and wildlife corridors, can help mitigate habitat destruction and encroachment. Community engagement and education are crucial in promoting the understanding of wildlife conservation and the importance of coexistence with animals. Additionally, the development of alternative livelihood options for local communities can reduce the reliance on limited natural resources, thereby lessening the competition and conflicts with wildlife. By understanding and addressing the driving forces behind human-wildlife conflicts, it is possible to develop effective and sustainable solutions that prioritize the coexistence of humans and wildlife while safeguarding the rich biodiversity of Africa. In Africa, human population growth has led to encroachment into wildlife habitats, constriction of species into marginal habitats patches and direct competition with local communities (Slex and Struchsaker, 1999). Human population growth is correlated proportionally with the number of encounters and serious incidents with cougar (*Puma concolor*), black bears (*Ursus maritimus*) and grizzly bears (*Ursus arctos*) in British Colombia (Ministry of water, Land and Air Protection, British Colombia 2003)

11. Human-Wildlife Conflicts in Tanzania

Advocating for sustainable land use practices, As demonstrated in Tanzania, human-wildlife conflicts are prevalent, particularly in areas bordering protected wildlife territories. According to a study by IUCN Tanzania, the primary source of conflict between pastoralists and agriculturalists in Tanzania is human-wildlife conflict. The conflicts are fueled by competition over diminishing resources such as water, pasture, and food with wildlife and often lead to confrontations and despair among communities. To mitigate human-wildlife conflicts, it is imperative to establish effective buffer zones and

promote sustainable agriculture practices in Tanzania. Additionally, the implementation of alternative livelihood options for local communities, building sturdy and wildlife-proof fences, and providing compensation for loss or damage caused by wildlife can significantly minimize conflicts between pastoralists and agriculturalists in Tanzania. Furthermore, it is vital to address the root causes of human-wildlife conflict in Tanzania, such as habitat degradation, resource scarcity, and encroachment on wildlife habitats. Conservation strategies that prioritize the protection and restoration of wildlife corridors and ecosystems are crucial for promoting peaceful coexistence between humans and wildlife in Tanzania. Different types of encroachments in areas adjacent to protected areas in northeast Tanzania and other parts of the country have been widely documented. For example, (Kideghesho et al 2000) estimated the use of 650m/month of wood for charcoal burning in Mwada and Vilima Vilatu village, cultivation is also impacting wildlife corridors in northeast Tanzania. The proportion of cultivated lands in the Kwaluchinja corridor linking Tarangire and Lake Manyara National park(LMNP) as doubled since 1987, from 8% to approximately 16% of the land area (Rodgers et al 2003). In conclusion, addressing human-wildlife conflict in Tanzania requires the adoption of an interdisciplinary approach that involves collaborating with local communities, implementing effective wildlife conservation strategies, and advocating for sustainable land use practices. By prioritizing these measures, Tanzania can work towards harmonious coexistence between humans and wildlife while safeguarding the country's precious biodiversity.

12. Impacts on communities and Wildlife

Human have used land for residential infrastructure, agriculture, industries and mining, and this has had varied impacts on environment. The construction industry is detrimental to the environment as it directly involves the depletion of forests and vegetation. Flora and fauna are distributed in the land clearance and raw natural resources are exhausted during industrial and civil developments. It significantly disturbs the habitats of wild animals also causes other ecological imbalances. Hence, modern construction and development pose significant threat to wildlife and emphasize the need to take measures for their protection. The impacts of human activities on wildlife are pervasive. Urbanization is the leading cause of habitat loss for terrestrial animals because of land clearance. Due to rapid growth of human population, the incursions to the wild habitats are also increasing briskly as well. Moreover; deforestation is causing radical weather and climate changes which in turn degrades other natural habitats. Therefore, urbanization is the major factor behind the loss of habitats and shelters that wild animals need to survive. Secondly, construction and development activities often disturb the movement of fauna around which has direct negative impact on their reproduction and other survival needs. When the roads and other ancillary development skewer the geographical habitat of wild life , they are confined to smaller area that become incapable of supporting their genetic exchange .Hence , such human activities act as a barrier between different ecological strips, causing their rapid extinction, reduced diversity and declining breeding success. Thirdly, urban development is also rapidly depleting food resources. Tree-clearing makes wild species more vulnerable to food shortages. As a result, many species have a lack of food availability. They are struggling with reduced opportunity to forage. Furthermore, air and water pollution due to deforestation and the release of toxic compounds in the environment has also contaminated the food chains and compromised this animal's immune system. Therefore, not only has food shortages become a problem but the toxins in food sources are also becoming potential hazard for their survival.

11. Present specific examples of Man-wildlife conflict incident in Liberia:

In the wake of escalating Human-Wildlife conflicts in several parts of the country which have and continue to hinder farming activities, the Elephant Research and Conservation (ELRECO) has advanced a number of Human-Wildlife conflicts mitigation measures aimed at minimizing these cases. Accordingly, ELRECO has expressed the need for the empowerment of farmers as well as giving them appropriate training to enable them to cope with these situations as they arise. LRECO, which is versed in elephant research and conservation made these and a number human-wildlife conflicts mitigation strategies at a well-attended meeting with FDA staff and fellow conservation partners in the boardroom of the Forestry Development Authority (FDA) on Friday February 16, 2023. The two-hour long exhaustive presentation jointly done by Tina Vogt and Bernhard basically covered several ways and manners to professionally handle Human-Wildlife wildlife conflicts especially elephants. ELRECO, which was founded in 2017 by Tina Vogt and Bernhard Forster, is committed to the urgently needed conservation of forest elephants in West Africa. Very successfully, the two partners have been working for various internationally recognized conservation organizations in Asia and Africa for over 20 years and have been working in Liberia since 2010. The

organization's long-term goal is to work for the survival and protection of what may be the largest remaining population of wild forest elephants in West Africa. It will be recalled that forest elephants (*Loxodonta cyclotis*) are among the most endangered animals of all and they live exclusively in the rainforests of central and West Africa. For a long time, they were considered a subspecies of savanna elephants; only recently have they been considered a species of their own and, in light of the dramatic decline in their numbers, have been placed on the Red List by the IUCN as "Critically Endangered." Poaching and habitat loss continue to reduce and fragment populations. Studies showed a loss of more than 60% in Central Africa between 2002 and 2011 alone. The status of forest elephants in West Africa is currently unknown due to the lack of reliable population estimates from the respective countries. Liberia contains approximately 50% of the remaining intact West African rainforest. According to recent studies by ELRECO, about half of the remaining forest elephants live here (FrontPage Africa 2017). Thus, Liberia offers one of the best chances of survival for the animals. But even here, the threat of poaching as well as conflicts with humans is omnipresent. A nationwide survey of the status of forest elephants in Liberia's only two remaining forest blocks has been defined as a priority action in the "National Action Plan for Elephants in Liberia." It is also part of the long-term ELRECO forest elephant conservation project. The status survey in the northwestern forest block was conducted between December 2018 and January 2021. It included focus group interviews in villages with good knowledge of forest and wildlife, conducting field surveys to record footprints, dung heaps, feeding sites and elephant trails, and sampling dung for genetic analysis. The survey found that the local forest elephant population is still intact and reproducing (daily observer newspaper 2021). Signs of forest elephants were found in young as well as old forests, swamps, clearings, riverine forests, and croplands, among others. Age and size class distributions are consistent with the natural population structure of a long-lived and slowly reproducing species. Seven subpopulations are estimated to still live in the surveyed area, with a total estimated number of 350-450 elephants. Status surveys in the southern forest block are currently underway. While the two forest areas are not connected, it is considered proven that elephants can sometimes migrate hundreds of kilometers through farmland. Even populations that are far apart are able to communicate with each other via acoustic signals in the infrasound range. The critical factor for the survival and long-term conservation of forest elephants in Liberia is rapid implementation of conservation measures. Specifically, this means creating protected areas and safe migration routes, as well as raising awareness of the pachyderms' plight among the local population.

The ELRECO team therefore organizes awareness-raising events in local communities to present the project and provide information on the basics and the need for nature and species conservation. Local community members, students, and Forest Development Authority (FDA) staff are also offered training in field survey techniques, interview methodology, and forest elephant biology and ecology. Through this initiative, five Forest Development Agency rangers and two students have already received intensive training to conduct field surveys. In addition, 69 local community members have participated in field surveys and learned valuable conservation and wildlife skills. Supporting local communities is so crucial because human-elephant conflict is a serious challenge in Liberia. Five of the eight communities surveyed reported conflict with elephants. Mitigating these conflicts will be key to gaining the support and commitment of local communities to elephant conservation.

ELRECO is therefore planning conflict mitigation measures, including the training of Elephant Guards, with the help of which networks of people can then be formed to monitor the animals. Training farmers and communities in conflict resolution strategies for human-elephant conflicts to better protect their fields and crops. Establishing and operating a test site in one of the communities affected by human-elephant conflict to test the effectiveness of the different HEC resolution strategies under controlled conditions.

13. Conclusions

Human-wildlife conflict in Africa has been a growing concern due to the increasing encroachment of human settlements into wildlife territories. The conflicts pose a significant threat to both human livelihoods and wildlife conservation efforts.

Based on the extensive research and assessments conducted in various regions, it is evident that sustainable land use practices, community engagement, and the implementation of wildlife conservation strategies are critical in mitigating human-wildlife conflict in Africa. Efforts to develop effective buffer zones between protected wildlife areas and human settlements have shown promise in reducing confrontations and promoting peaceful coexistence.

Raising awareness among local communities about the importance of wildlife conservation and the benefits of coexisting with animals has also proven to be an essential component in addressing these conflicts. Empowering communities to implement wildlife conservation strategies, such as building wildlife-proof fences and establishing early warning systems, is crucial in minimizing property damage, crop destruction, and loss of human life.

In summary, addressing human-wildlife conflict in Africa requires a multi-faceted approach that involves collaboration among local communities, conservation organizations, and government authorities. By prioritizing sustainable land management practices and implementing effective conservation strategies, it is possible to protect both human livelihoods and wildlife populations in Africa.

14. Acknowledgments

The author expresses gratitude to his supervisors, Mr. Ashish Tyagi and Dr. Archana Bachetti, for their support and expertise, which enhanced the quality and credibility of their article. He acknowledges the management of their institution for providing necessary research facilities and resources. He also thank the Department of Environmental Science at Graphic Era University, Dehradun, Uttarakhand-India, for their support. The anonymous reviewers and editor provided insightful suggestions, while the author thanks his beloved father, Mr. Kessely O. Zumo, and siblings for their financial support.

Reference(s):

1. Esilaba et al., 2007, Impact on human wildlife conflict solution on wildlife conservation and socioeconomic welfare of pastoral communities.
2. Falanta & Bengesi, 2018. 41.73.194,142, Recurrent conflicts between farmers and pastoralism have brought significant impacts on both groups.
3. Forestry Development Authority (FDA) on Friday February 16, 2023.
4. Hills, C.M. (1998), Conflicting attitudes towards elephants around the Budango Forest Reserve, Uganda. *Environmental Conservation*, 26:218-228
5. Hockings, K.J. and Humble T. (2009) Best Practice Guidelines for the Prevention and Mitigation of conflict between human and great apes, Gland, Switzerland, IUCN/SSC Primate Specialist Group.
6. Kideghesho, J.R. Shombe-Hassan N. Magana S.L and Ndibalema, V, G (2000). Participatory land-use planning as an entry point in safeguarding, Tanzania, Presented at the symposium on wildlife management in new millennium, CAWM-Mweko, Tanzania.
7. Mayengo et al., 2017, G Mayengo, F Bwagalilo... - International Journal of ..., 2017 - researchgate.net
8. Ministry of water, land and air protection, British Columbia (2003) Wildlife-Human conflict Prevention Strategy. Available [http://wlapwww.gov.bc.ca/leeb/info/wildlife human interaction](http://wlapwww.gov.bc.ca/leeb/info/wildlife%20human%20interaction).
9. Ogada, M, Woodroffe, R.Oguge N, and Frank G (2003). Limiting Degradation by African Canivores: the role of livestock Husbandry conservation *Biology*. 17(6): 1521-1530.
10. Riley, E,P(2007), The human Macaque interface: conservation implication of current and future overlap and conflict in lore linclu National park, sulvaesi, Indonesia *American Anthropology* 109:473-484
11. Sherman, S (2013) Exploring the Role of conservation Education and Environmental Communication in Human-Wildlife Conflict Resolution. A workshop organized by Pan African.
12. Sillero-Zubiri, C, Switzer, D(2001) crop raiding primates searching for alternative, humane way to resolve conflict with farmers in Africa. Oxford University Press, New York.
13. Slex, K.S and Struhsaker, T. T (1999). Cololus monkeys and coconuts: a study of perceived human-wildlife conflicts .
14. Source: "Human-Wildlife Conflict in Africa: Causes, Consequences, and Solutions" - Guma et al.
15. Source: "Human-wildlife conflict in and around the Simien Mountains national park, pp. 283-292," *Integrating natural resources and environmental management*, 2012.
16. Source: 1, pp. 101-107 Source: World Wide Fund for Nature–The Netherlands © Food and Agriculture Organization of the United Nations, Rome, 2009 Man-wildlife conflict in Africa poses a significant threat to both human livelihoods and wildlife conservation efforts
17. Tjaronda.W. (2007). Namibia: Conservancies suspend compensation schmes, *New Era(Windhoek)* 6 November 2007.
18. Torres et al., 2018, AJ Munoz-Varquez, JD Sanchez-Torres

