

HIPPO CONSERVATION IN WEST AFRICA: CONFLICTS, CO – EXISTENCE AND RURAL COMMUNITIES' EMPOWERMENT

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Abstract

Hippopotamus (Hippopotamus amphibius) conservation reports have been characterized by prevalence of human–wildlife conflicts to such large extents. This subject is receiving increasing attention from conservation biologists, as well as contributing to poverty levels of rural communities in West Africa. In this study we assessed hippo-human relationship and resultant impact on the livelihoods of rural communities in Dadin Kowa, Nigeria and Wechiau in Ghana. We used informal and formal town hall meetings involving stakeholders: Fishermen; Farmers; Miyetti Allah -Herder's Association; Wildlife and Forestry Ministry officials; Project Manager of Upper Benue River Basin Development Authority and his team; and JAVS Environmental Care Ltd'; to gain a clear understanding of causes of the conflicts in Dadin Kowa, Nigeria. We used round table discussion involving adults male and female in two rural communities to gather information in Wechiau, Ghana. The findings suggest there is high prevalence of human–wildlife conflict in Nigeria. The case in Ghana is of human – wildlife co-existence and economic empowerment as a result of advanced community conservation initiatives. Lessons learned from Ghana and the model used can be adopted to tackle the conflicts in Nigeria, and improve rural community livelihoods through education, skill acquisition and capacity building.

Keywords: *wildlife, farmers, crop raids, sustainability, conservation, conflicts, stakeholders*

INTRODUCTION

Human-wildlife conflict (HWC) is a common phenomenon in Africa, which arises from the interaction between humans and wildlife where their needs overlap. Several studies on human-wildlife conflict in Africa, including reports from Mozambique (Dunham et al., 2010), Zambia (Chomba, 2012), Kenya (Mukeka et al., 2019), Ethiopia (Megaze et al., 2017), Zimbabwe (Marowa & Matanzima, 2021), and Nigeria (Radda, 2015; Baker et al., 2020, 2022) revealed that various wildlife species such as hippopotamuses, crocodiles, elephants, lions, buffalos, Burchell's zebras, leopards, and spotted hyenas have caused human fatalities, livestock predation, and crop raiding. In Mozambique, Dunham et al. (2010), reported that wildlife, particularly crocodile, lion, elephant, and hippopotamus, caused 265 human deaths from 2006 to 2008. Similarly, in Zambia, Chomba (2012) reported that five species of wildlife, including crocodile, elephant, hippopotamus, lion, and buffalo, caused 347 human fatalities or 49 people killed annually and 305 livestock predation incidents from

2002 to 2008. In Kenya, HWC varied across multiple wildlife species and regions, with elephants, buffalos, Burchell's zebra, leopard, and spotted hyenas being the top species involved in conflicts, according to Mukeka et al. (2019). To develop effective human-wildlife conflict mitigation strategies, it is essential to understand the conflict patterns, species involved, and attitudes of local people living along protected area boundaries (Megaze et al., 2017).

Megaze et al. (2017) reported that in Ethiopia, human–wildlife conflicts were mainly in the form of crop raiding, livestock predation, increased risk of livestock diseases, and direct threats to human life. The authors found that close proximity of the villages to the parks and seasons influenced livestock predation intensity with highest predation in the wet season (56.0%). Despite this,, most respondents had positive attitudes towards the conservation of wildlife. Marowa & Matanzima (2021) investigated the nature of HWCs emerging between humans and the African hippopotamus as well as between humans and the Nile crocodile in Lake Kariba, Zimbabwe. The authors found that hippos and crocodiles

negatively affected humans through deaths, injuries, instilling fear, and destruction of sources of livelihood for fishermen such as fishing nets and boats. In retaliation, humans have implemented lethal methods to remove problem animals. Therefore, an understanding of the conflict patterns, species involved, and attitudes of local people has become imperative for effective mitigation strategies

Human-wildlife conflict is a pervasive problem in the conservation of hippopotamus populations in West Africa, and it can have a profound impact on rural communities (Baker et al., 2020). The common Hippopotamus (*Hippopotamus amphibius*), classified as globally Vulnerable by the IUCN due to habitat loss, hunting, and negative interactions with humans in particular, have been implicated in HWC in Nigeria. The species is crucial for maintaining the health of freshwater ecosystems and are also an important cultural symbol and a source of income for rural communities through tourism. However, as human populations continue to expand into previously wild areas, conflicts between humans and hippos have become increasingly common (Sillero-Zubiri & Switzer, 2001). The negative impact of these conflicts on rural communities cannot be understated, as they often rely heavily on natural resources for their livelihoods (Nyhus, 2016). Crop damage can lead to food insecurity and economic losses. Human injuries and fatalities can also have long-lasting psychological and economic impacts on affected communities. Therefore, effective strategies for managing human-wildlife conflicts must be developed and implemented to ensure that conservation efforts are successful and sustainable. Nigeria, which has the highest human population in Africa, has a comparatively low count of hippos, approximated to be 300 individuals (Radda, 2015). Radda (2015) and Baker et al. (2022) found that local people had negative perceptions and attitudes toward hippos due to crop damage, disruption of fishing, and

threats to human life. Although most residents were aware of laws against killing hippos, few saw benefits of their presence. In another study, Baker et al. (2020) conducted a census of the hippopotamus population in Kiri Dam reservoir, north-eastern Nigeria, and found that the reservoir's hippo population is currently the largest recorded in Nigeria with a minimum of 56 hippos, which exceeds individual populations in official protected areas (PAs), highlighting the importance and need of protecting Hippos outside PAs. These findings also highlight the need for research and conservation efforts to better ascertain the status of hippos in Nigeria and to protect key sites and increase connectivity among populations.

Hippos may be killed as a form of revenge for human fatalities and damage to crops, in cases where they are not adequately protected. In 2015, soldiers killed a notorious hippopotamus in Gombe Dam, Nigeria because it had killed people and destroyed property in the area (Umar, 2015). Human-wildlife conflict is complex, requiring comprehensive approaches that consider social factors underlying the conflicts (Dickman, 2010). Therefore, this study focuses on a case study of hippo existence and human-hippo coexistence in Dadin Kowa, Nigeria, and Wechiau, Ghana, respectively. Through informal and formal meetings involving all stakeholders, the study aimed to gain a clearer understanding of the causes of conflicts in Dadin Kowa, Nigeria and Wechiau in Ghana. The major findings suggest that while human-wildlife conflict involving hippos is highly prevalent in Nigeria, compared to Ghana where there is human-wildlife coexistence and economic empowerment as a result of advanced community conservation initiatives. It is recommended that lessons can be learned from Ghana, and the model used can be adopted to tackle conflicts in Nigeria and improve rural community livelihoods through education, skill acquisition, and capacity building.

MATERIALS AND METHODS

Study Area

Dadin Kowa, Nigeria

Dadin Kowa is a rural community located in Gombe State, Nigeria (Figure. 1), where conflicts between hippos and humans have been prevalent for several years. Hippos have been attacking and killing people, as well as destroying crops and fishing equipment in the area. The conflicts have resulted in loss of lives and property, which has caused tension and anxiety among community members. For example, in 2015, soldiers killed a “notorious” hippopotamus in Gombe Dam, Nigeria. According to the permanent secretary of the state Ministry of Environment and Forest Resources, Adamu Pukuma, the animal was killed

because it had killed people and destroyed property in the area (Umar, 2015). However, this action raised concerns among conservation groups such as Bangor Conservation Group and Society for Conservation Biology, who were worried about the extinction of the species. To tackle the problem, JAVS Environmental Care Ltd., collaborated with the Ministry of Environment and Forest Resources, the Upper Benue River Basin Development Authority, and other stakeholders including the local community members to find a lasting solution to the human-hippo conflict in Dadin Kowa (Plate 1).

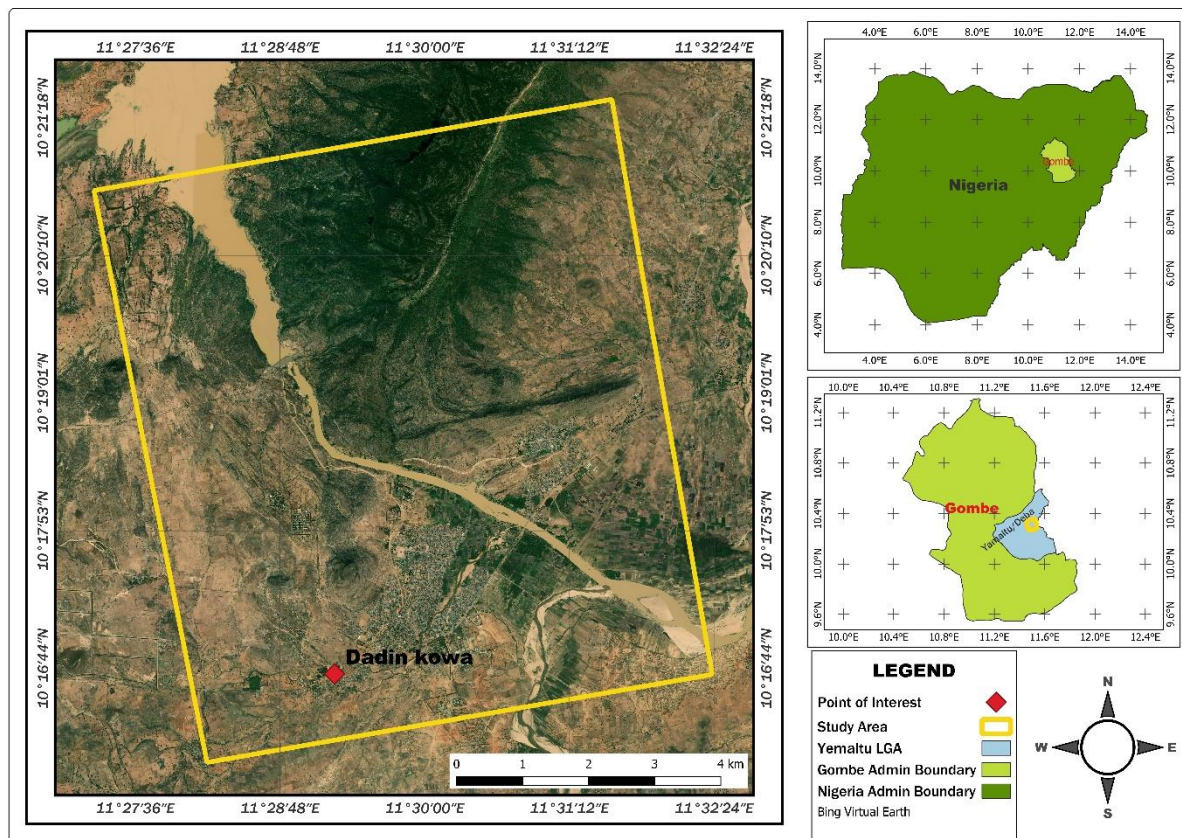


Figure 1: Nigeria showing Gombe State, Gombe State, showing Dadin Kowa; Dadin Kowa.
Source: GIS Lab, University of Jos.

In pursuit of understanding for the causes of the conflicts, a team of experts from JAVS Environmental Care Ltd. collaborated with the Ministry of Environment and Forest Resources, the UBRBDA, and other stakeholders conducted a thorough assessment of the situation. The team interacted with the locals, visited the affected areas, and held town hall meetings with community members, fishermen, farmers, and Miyetti Allah. The team also had meetings with stakeholders, including top Government officials on Hippo conservation, and the emir of Yamaltu Dadinkowa. In addition, the team conducted research to identify the factors contributing to the conflicts, such as habitat loss and degradation, and human activities such as fishing and farming. By gaining a clear understanding of the causes of the conflicts, the team was able to develop effective strategies to mitigate the human-hippo conflicts in Dadin Kowa learning from success stories in Wechiau, Ghana

Wechiau, Ghana

The Wechiau Community Hippo Sanctuary (WCHS) is a 180 km², lying between 9° 52.530' N, 2° 45.460' W and 9° 38.501' N, 2° 44.733' W (Figure 2) in the Upper West Region of Ghana (Sheppard et al., 2010). WCHS is an example of successful community-based

conservation initiative. It was established to protect hippos, biodiversity, and alleviate poverty, using traditional taboos against killing hippos. The initiative resulted in improved livelihoods, reduced threats to biodiversity, and stable hippopotamus populations. The initiative's success can be attributed to improved social capital, empowerment, equitable distribution of benefits, ecological awareness, and community support. The initiative's experience can inform future community-based conservation initiatives (Sheppard et al., 2010).

Wechiau has one of the last remaining two populations of Hippos in Ghana. These hippos inhabit the Black Volta River and its surrounding wetlands, which also serve as a critical habitat for several other wildlife species. However, due to the increasing human population and the expansion of agricultural activities, the hippos frequently come into contact with humans, leading to conflicts that threaten the survival of both humans and hippos (Sheppard et al. 2010; Amoako-Atta, 2020). To address the conflict between humans and hippos, the WCHS was established in 1998 through a collaborative effort between the local communities including the Chief of the Wechiau Traditional Area and other chiefs, the Ghana Wildlife Division, and the Wildlife Fund (Asase et al. 2006).

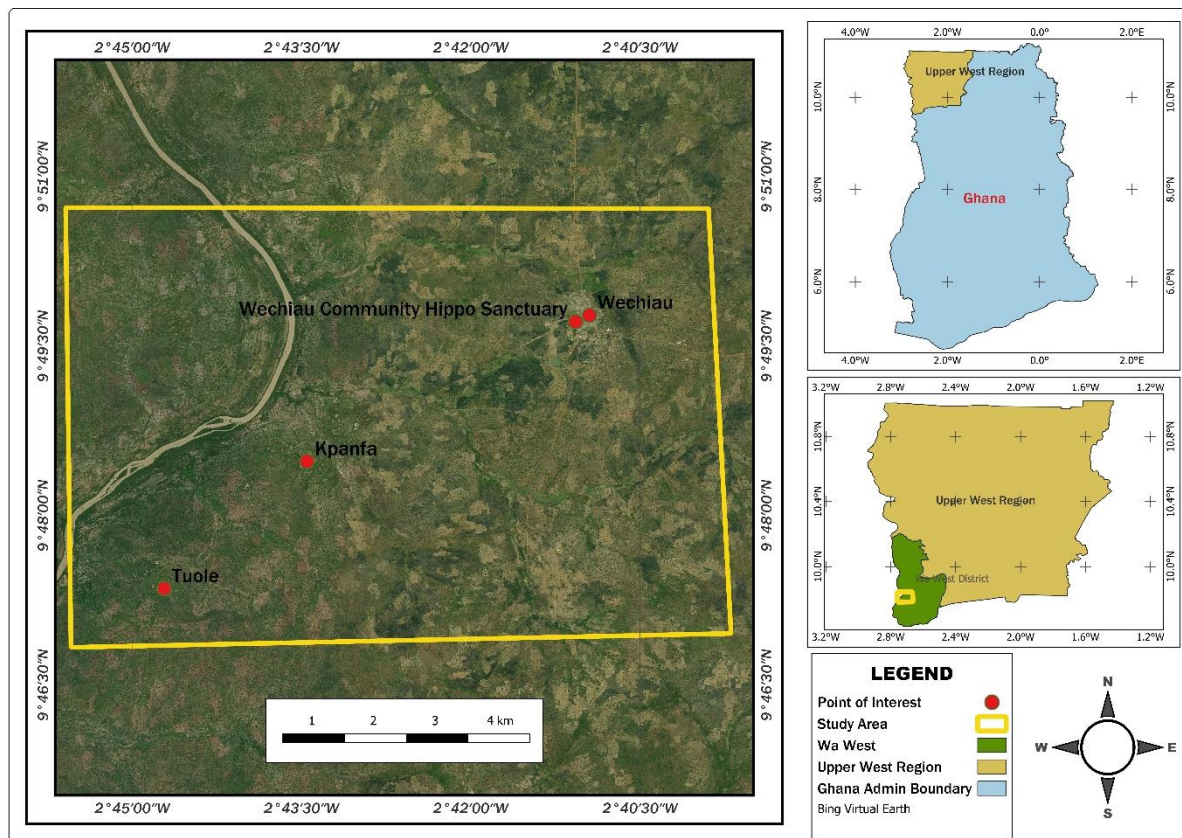


Figure 2: Ghana showing Upper West Region, Upper West Region showing Wechiau; Wechiau showing points of interest
Source: GIS Lab, University of Jos.

This study adopted a qualitative case-study research design to explore the human-hippopotamus conflict in Dadin Kowa, Gombe State, Nigeria. The approach combined field assessments, participatory stakeholder engagements, and comparative analysis with a similar case in Wechiau, Ghana. The purpose was to investigate the underlying causes of the conflict and to identify viable strategies for its resolution, with insights drawn from a successful community-based conservation initiative. Purposive sampling was employed to engage relevant stakeholders and community members directly affected by or knowledgeable about the conflict. These included local fishermen, farmers, members of the Miyetti Allah pastoral group, traditional leaders such as the Emir of Yamaltu Dadin kowa, and officials from various institutions including JAVS Environmental Care Ltd., the Ministry of Environment and Forest Resources, and the Upper Benue River Basin Development Authority (UBRBDA). These groups were selected for their critical roles in either experiencing or managing the conflict. Data collection was conducted through multiple methods. In Dadin Kowa, field assessments were carried out through visits to the affected areas to

observe the extent of human-hippopotamus interactions. Town hall meetings and community forums were organized to facilitate open discussions among residents. Key informant interviews were also held with community leaders and high-level stakeholders, including government officials and representatives from conservation organizations. These interactions provided rich qualitative insights into the socio-ecological dynamics of the conflict. To gain insights from rural communities in Wechiau, Ghana, we employed a round table discussion format that involved both male and female adults from two distinct rural communities (Plate 1). Language interpreters in Ghana were utilized to aid in data collection from these communities. In addition, we conducted a literature search using relevant keywords such as Wechiau, Hippos, and HWC to supplement our informal discussions and further investigate the human-wildlife case study in Wechiau.

The data collected were analyzed using thematic analysis. This involved identifying, categorizing, and interpreting recurring themes related to the causes of conflict, community attitudes toward hippos, conservation challenges, and opportunities for coexistence. A comparative lens was applied to draw

lessons from the Ghanaian experience that could inform the development of sustainable, community-led interventions in Nigeria.

RESULTS AND DISCUSSION

The conflicts between hippos and rural communities in Dadin Kowa can be attributed to various factors, including habitat loss and degradation, climate

change, and human activities such as fishing and farming. The construction of dams and other human activities have led to a reduction in the water supply, which has forced hippos to venture out of their natural habitat in search of food and water, bringing them into contact with humans. In addition, the expansion of farmland has also led to a reduction in the grazing areas for hippos, which has further exacerbated the human-hippo conflict.



Plate 1: Photos 1 – 3: Focus group discussions in Kpmfa and Toule, Weshaiu Ghana and Photo 4: JAVS Environmental Care Ltd Teams members attending a workshop on Dadin Kowa Hippo Conservation, Yola – Nigeria.

The establishment of the WCHS has had several positive impacts on human wildlife conflict resolution and rural community empowerment. The involvement of the local communities in the management and governance of the sanctuary has increased their sense of ownership and responsibility towards the conservation of the hippos and their habitat. Additionally, the sanctuary has become a major tourist attraction, providing economic benefits to the local communities through the sale of handicrafts, tour guiding, and other hospitality services (Bonye et al., 2022; Ernest Amoako-Atta et

al., 2020). The implementation of WCHS has led to several positive changes in the locality, including the development of better facilities, generation of job opportunities for locals, an increase in the income of residents, and the enhancement of transportation infrastructure(Sheppard et al., 2010; Bonye et al., 2022). According to the study by Bonye et al. (2022), 75.1% of those surveyed reported that the sanctuary has resulted in an increase in the desire by locals to keep the surroundings clean. Overall, the community conservation initiatives in Wechiau have been successful in promoting conflict resolution and rural community empowerment



Plate 2: Photos 1-2 meeting with community head, and in boat looking to sight some hippos – Nigeria.

The cases of Dadin Kowa, Nigeria, and Wechiau, Ghana, demonstrate the importance of involving local communities in conservation efforts. While Dadin Kowa's approach focused on extensive research and stakeholder engagement to develop effective strategies, the Wechiau initiative emphasized community ownership and responsibility. Wechiau's success can be attributed to improved social capital, empowerment, equitable distribution of benefits, ecological awareness, and community support. These lessons can inform future community-based conservation initiatives in West Africa, emphasizing the need for involving and empowering local communities, building partnerships, and promoting sustainable livelihoods while addressing the underlying drivers of environmental degradation.

Recommendations

The human-hippo conflicts in Dadin Kowa, Nigeria, can be mitigated through various strategies, including:

- a) Community-based conservation: A community-based approach as seen in III above can help build trust and cooperation between communities and conservation organizations, leading to effective HWC resolution. This approach involves empowering local communities to manage and protect natural resources, including hippos, through conservation education, training, and capacity building.
- b) Habitat management: It is crucial to manage and restore the natural habitats of hippos to reduce the chances of human-hippo interactions. This can be done through habitat restoration and enhancement projects, such as reforestation, erosion control, and conservation agriculture.
- c) Conflict resolution mechanisms: The establishment of conflict resolution mechanisms, such as early warning systems and response teams, can help prevent human-hippo conflicts from escalating. These mechanisms should involve all stakeholders,

including local communities, conservation organizations, and government agencies.

- d) Tourism development: The development of sustainable tourism activities, such as hippo watching and guided tours, can provide economic benefits to local communities and promote the conservation of hippos and their habitats. This can be done through the establishment of community-based tourism enterprises that provide employment and other benefits to the local communities.
- e) Research and monitoring: Ongoing research and monitoring of human-hippo conflicts in Dadin Kowa can provide valuable insights into the causes and dynamics of these conflicts, as well as the effectiveness of mitigation strategies. This can inform the development of evidence-based policies and interventions to reduce human-hippo conflicts and promote coexistence.

CONCLUSION

Human-hippo conflicts pose a significant threat to both humans and hippos in many parts of Africa. The cases of Dadin Kowa, Nigeria, and Wechiau, Ghana, illustrate the importance of addressing these conflicts through a combination of strategies that involve habitat management, community-based conservation, conflict resolution mechanisms, tourism development, and research and monitoring. These strategies can help promote coexistence between humans and hippos, protect biodiversity, and improve the livelihoods of local communities. However, the success of these strategies depends on the involvement and active participation of all stakeholders, including local communities, conservation organizations, and government agencies. By working together, we can create a future where humans and hippos can peacefully coexist, and both can thrive.

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