PROJECT UPDATES – JANUARY 2025

Title: Efficacy of electric fences in mitigating human-elephant conflicts along the northern boundary of Murchison Falls National Park, Uganda

Prepared by: William Luwaga (Project leader)

Activity 1: Stakeholder engagement (October – 2024)

This activity was not conducted because the project obtained research permits from the Uganda Wildlife Authority and the Research Ethics Committee of Makerere University, which were sufficient to carry out the project.

Activity 2: Field assessments (November – 2024)

In November 2024, the project team conducted community surveys to assess the efficacy of electric/solar fences in mitigating human-elephant conflicts along the northern boundary of Murchison Falls National Park (Figure 1). Through use of printed questionnaires, a total of 100 project people participated in the survey, evenly split between 50 women and 50 men.

Figure 1. Community interviews gathering information on the history of HECs. Photo credit (William Luwaga).

The project people were distributed across six villages, with variations in sampling reflecting differences in household numbers and population sizes. Among the villages, Bombay recorded the highest number of respondents, while Pajengo-Lolim had the lowest, illustrating the demographic diversity of the surveyed areas (Figure 2).

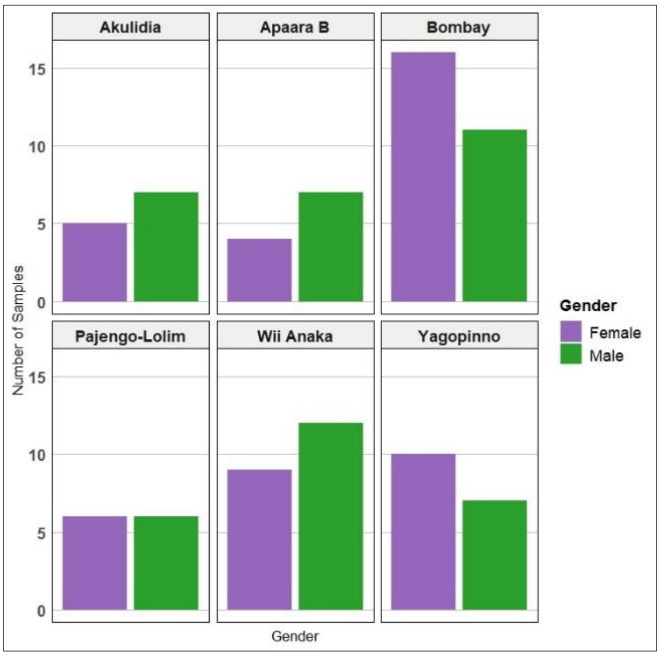

Figure 2. Number of surveyed project respondents across the project sites.

Outcome 1: Frequency of human-elephant conflicts

The findings revealed a history of significantly high frequencies of human-elephant conflicts across the surveyed villages before the installation of the electric fence. Notably, the majority of project people reported experiencing human-elephant conflicts more than five times during critical agricultural periods, particularly between planting and harvesting (Figure 3). This indicates a persistent and recurrent challenge for local communities that rely heavily on agriculture for their livelihoods. Among the villages, Bombay and Wii Anaka emerged as the hotspots for human-elephant conflicts, experiencing the highest number of incidents. In contrast, Apara B and Pajengo-Lolim reported comparatively fewer conflicts (Figure 3).

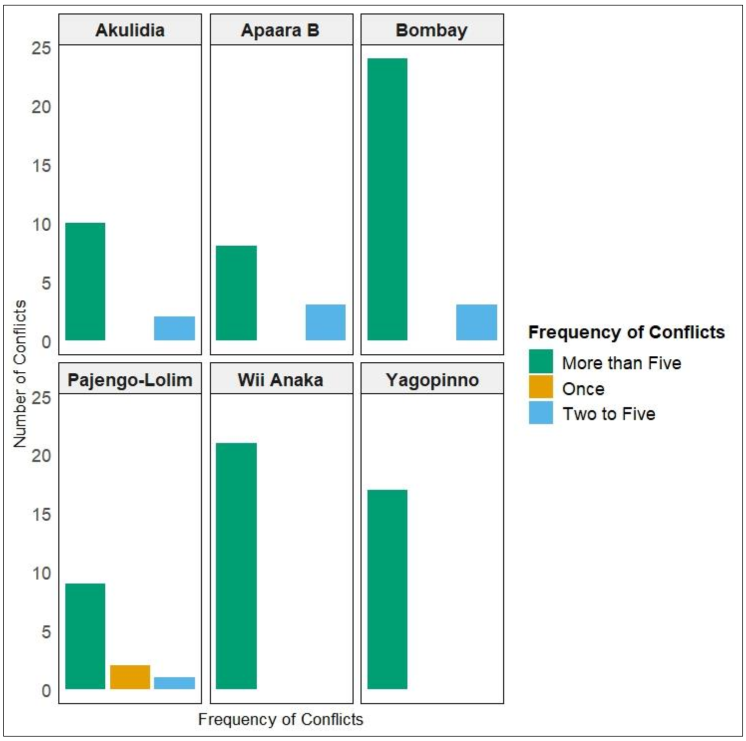

Figure 3. Frequency distribution of historical human-elephant conflicts reported across the project sites.

Outcome 2: Experienced conflicts

Crop damage was identified as the most prevalent form of human-elephant conflict across all surveyed villages, with nearly all respondents (99.9%) identifying themselves as farmers (Figure 4). This underscores the significant impact of crop depredation on community livelihoods, which poses a direct threat to food security and economic stability. Other notable forms of conflict included injuries to people and fatalities in some instances as well as property damage. These were more pronounced amongst Wii Anaka and Pajengo-Lolim, further highlighting the multifaceted challenges posed by human-elephant interactions

The overwhelming prevalence of crop damage aligns with the agricultural dependency of the local communities and the elephants' attraction to cultivated crops as a readily available food source.

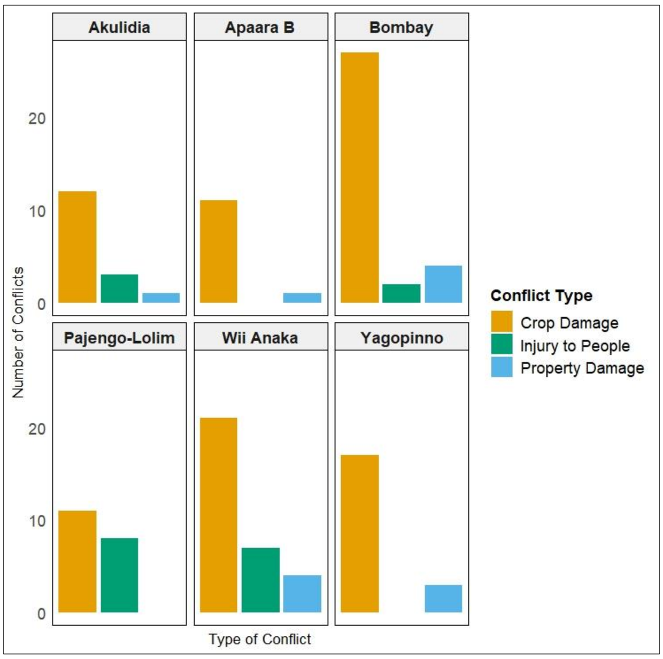

Figure 4. Frequency distribution of different historical human-elephant conflicts reported across the project sites.

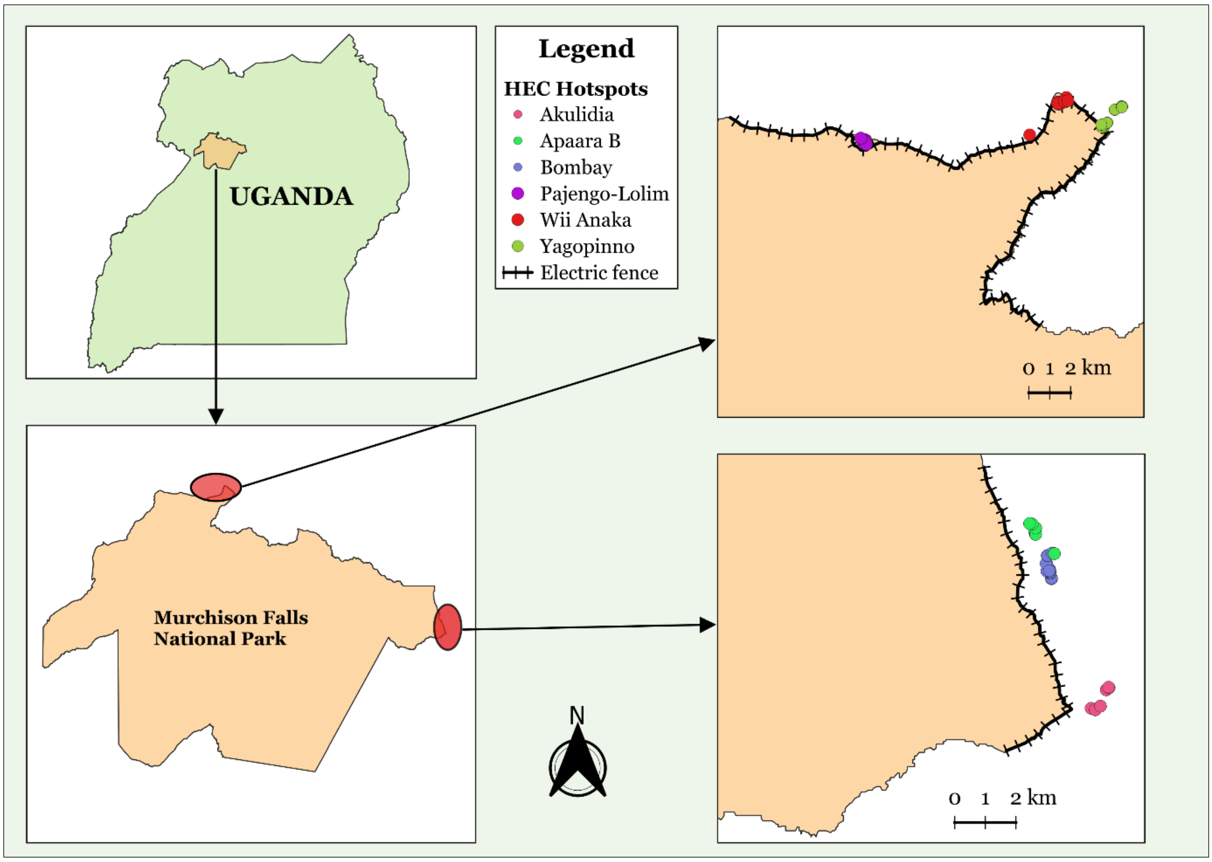

Figure 5. Map of human – elephant conflict hotspots along the northern boundary of Murchison Falls National Park

Outcome 3: Community awareness and attitudes

The survey conducted reveals significant community engagement and positive perceptions of the fence's role in addressing several local concerns. A considerable percentage of the locals and their members in the households across the project sites indicated their involvement in learning about the installation of the electric fence, reflecting a notable level of community engagement in the decision-making process (Figure 6). This highlights that community views were considered.

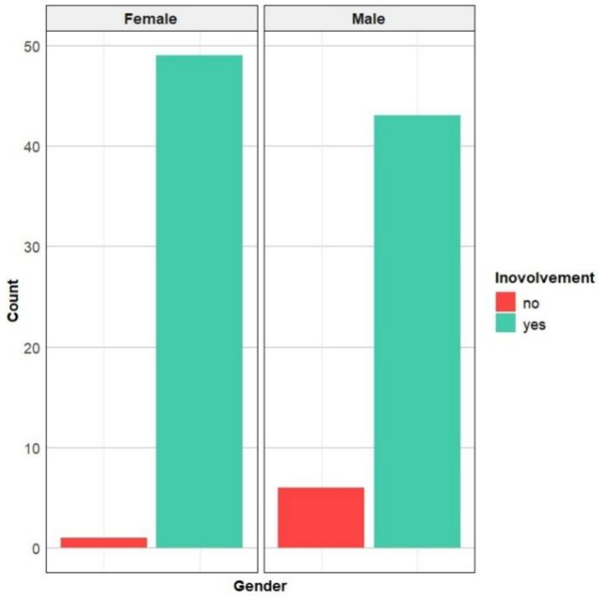

Figure 6. Number of individuals involved in the decision-making process for the electric fence installation project.

Various means were employed to disseminate details about the fence's installation, with community meetings being the primary means of communication. These meetings were crucial in the initial stages of the installation, as they allowed for direct interaction between community members, local authorities, and project implementers. Additionally, government officials, particularly from Uganda Wildlife Authority (UWA), played a key role in informing the local populations. Other media outlets, including local radio and television stations, were also instrumental in broadcasting the importance and purpose of the electric fence (Figure 7).

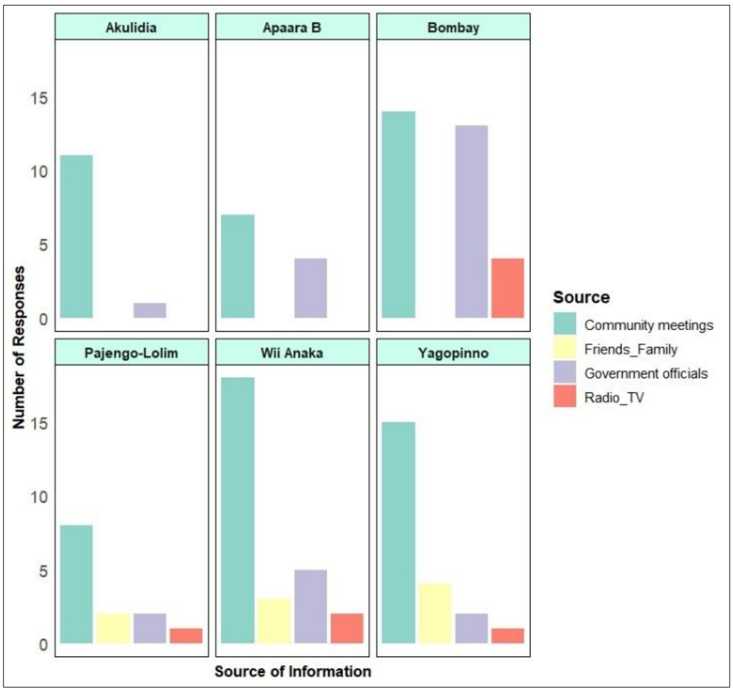

Figure 7. Frequency distribution of media channels used to disseminate information about the electric fence installation.

In terms of the local community's perception of the fence's importance, the survey results highlight that the primary belief was that the fence is serving a role of protecting their crops from elephants, safeguard human lives, and simultaneously protect the elephants within the park. The highest percentage of project people emphasized crop protection, followed by the protection of people's lives and the preservation of elephants (Figure 8).

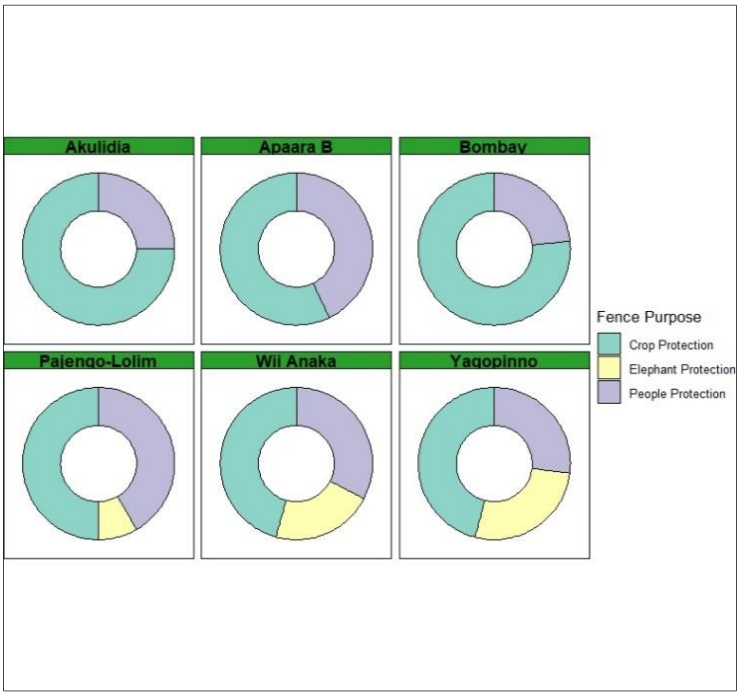

Figure 8. Percentage distribution of perceived importance of the electric fence among respondents across project sites.

<u>Outcome 4: Effectiveness of the electric fence at mitigating the conflicts</u>

The community surveys conducted indicated that the fence has been largely successful in reducing incidents of elephants entering villages. 98% of the project people affirmed that the electric fence has significantly decreased such incidents. Health and large expansions of different crops were observed thriving alongside the electric fence (Figure 9).

Figure 9. Corn plantation (left) and sunflower plantation (right) encountered near the electric fence in the project area. Photo credit (William Luwaga).

Regarding the perceived rate of reduction in elephant incursions, all project people reported a very significant decline in the number of elephants entering their communities due to the presence of the electric fence (Figure 10). This concerted acknowledgment of the fence's impact underscores its role as an effective barrier against human-elephant conflicts. However, a slight gender-based variation in perception was noted. While both men and women agreed on the significant reduction, differences emerged in the intensity of agreement, with men showing a marginally higher level of confidence in the fence's effectiveness (Figure 10).

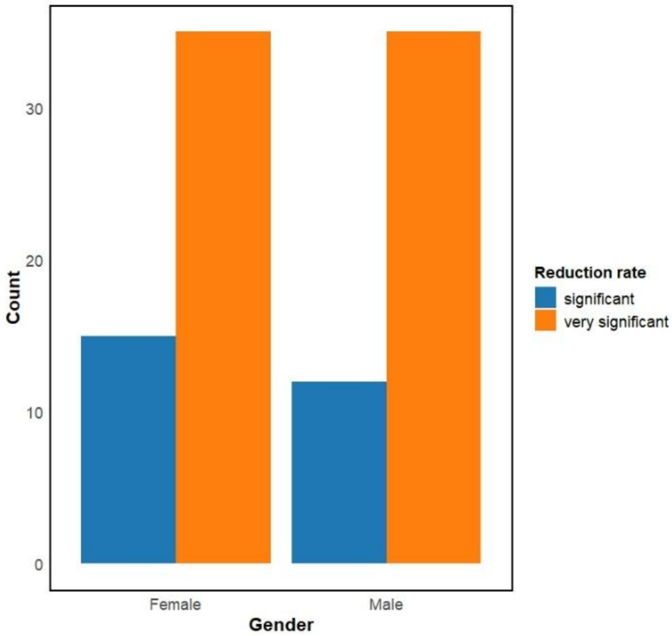

Figure 10. Frequency distribution of perceived effectiveness in reducing elephant intrusions into communities.

The survey also examined community perceptions of the electric fence as a long-term solution to mitigate human-elephant conflicts. A substantial majority of project people across most project sites viewed the electric fence as a sustainable and effective long-term measure. Men were more likely than women to express this belief, indicating potential gender differences in confidence about the fence's future reliability (Figures 11). Despite the overall positive outlook, a noteworthy percentage of respondents expressed scepticism about the fence's ability to provide a long-term solution. This trend was particularly pronounced in women where a higher proportion of project people doubted the long-term efficacy of the electric fence (Figure 11).

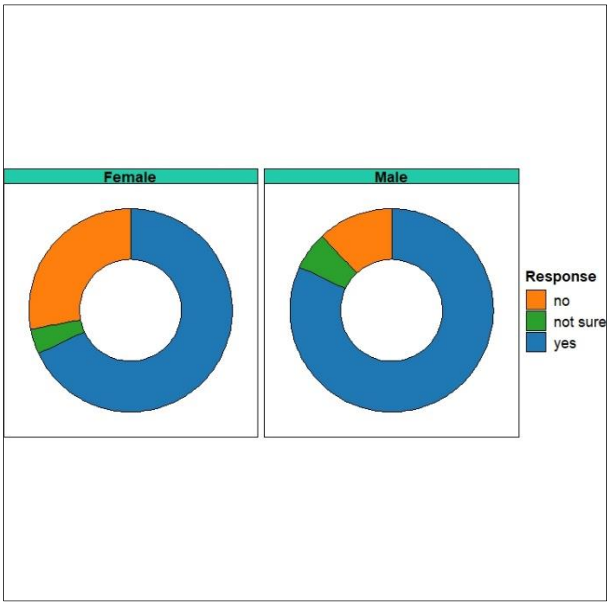

Figure 11. Percentage distribution of long-term perceptions of the electric fence's effectiveness in mitigating human-elephant conflicts, disaggregated by gender.

The community surveys also found out that the electric fence contributed to reducing poaching and controlling illegal resource extraction by local communities. This perspective indicates that, in addition to mitigating human-elephant conflicts, the electric fence is perceived as a tool for broader wildlife conservation efforts, including reducing illegal entry into the park for activities such as poaching and the collection of natural resources.

These findings demonstrate that the electric fence has gained recognition not only as a barrier to prevent human-elephant conflicts but also as a conservation tool that addresses broader environmental concerns. The high level of community involvement in the fence installation and the varied perceptions of its benefits suggest that the fence is seen as a significant development in the area.

Outcome 5: Identified challenges from field assessments along the electric fence

i. Some wooden fence posts were attacked by termites and decayed completely (Figure 12).
ii. Undergrowth vegetation withing the fence which was associated with short circuits (Figure 12).

iii. Elephants often enter into the communities via non-fenced sections existing along the park boundary.
iv. Cutting of the fence by poachers and illegal resource extractors.
v. Stealing of fence parts

Figure 12. Decayed wooden post (Left) and vegetation growing inside the electric fence line (right). Photo credit (William Luwaga).

Figure 13. A herd of elephants encountered in a section without an installed electric fence. Photo credit (William Luwaga).

Activity 3: Exploration of practical solutions (December – 2024)

Outcome 1: Community suggestions

From our field-based explorations together with the communities, we identified a number of ways of improving the effectiveness of the electric fence following the identification of the discrepancies at the fence. These were, need for better maintenance, increasing the height of the fence or establishing bee-hive fences along the electric fence (Figure 14). In addition, the project explored different roles communities are willing to play in maintaining the electric fence which included; reporting damages, conducting patrols along the fence and helping with repairs by the electricians.

Figure 14. Gathering practical ideas from locals living next to the fence. Photo credit (William Luwaga).

Table 1. Other practical solutions explored from field assessments of the electric fence.

Practical solution	Percentage (%)
Increasing voltage and power supply of the fence	20.5
Replacing damaged fence posts with either concrete, metallic or plastic ones	56.4
Installation of the electric fence in the gaps	23.1

Outcome 2: Tested practical measures

Figure 15. A slashed section along the fence (left), spraying undergrowth vegetation with herbicides (centre) and use of composite posts (right). Photo credit (William Luwaga).

Outcome 3: Assessing the physical condition of the electric fence prototype

Figure 16. General inspection along the electric fence prototype, installed with composite/plastic posts. Photo credit (William Luwaga).

Upcoming activities

4. **Capacity building (01st – 03rd March, 2025): the** project will conduct a workshop where five (4) UWA rangers will be trained in both theoretical and practical techniques in monitoring HEC, ground-truthing and GPS skills while five (4) enumerators from the community will be trained in collecting independent data on HEC incidents along the reinforced solar fences. This training is also aiming to build the rangers and local communities' capacity in managing HEC.

5. **The educational workshop for the conservation of elephants and coexistence (05th – 06th March, 2025):** will be conducted in two predetermined primary schools in target communities located within the project area. Prior to the workshop, the school stakeholders will be contacted and informed about the purpose of this workshop for their consent and support.

Project team

1) William Luwaga – Project leader
2) Herbert Kasozi – Supervisor
3) Richard Anywar – Research assistant
4) Christine Acio – Research assistant
5) Isma Kasule – Project driver

Partners and Supporters

MAKERERE UNIVERSITY

UWA Conserving for Generations

SNARES TO WARES INITIATIVE • INNOVATION FOR CONSERVATION

ICON INNOVATION FOR CONSERVATION