

# **Project report**

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**Project title:** Applied Community-Based Approach and ICT  
Tool for Kahuzi Biega National Park Elephant Preservation

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## **I. Introduction**

The Democratic Republic of Congo (DRC) is home to two subspecies of elephants: Savannah elephants (*Loxodonta africana africana africana*) and forest elephants (*Loxodonta africana cyclotis*). In 2002, the forest elephant population in DRC was estimated at between 50,000 and 60,000 heads with the Kahuzi Biega National Park (KBNP) hosting a significant portion of it (Hart, cited after Blanc, et al. 2003). Over the past two decades, the population of forest elephants in DRC has drastically declined, with only an estimated 10% of the original population from 1900 remaining (Campos-Arceiz and Blake, 2011). The primary causes of this decline include civil wars, during which large numbers of elephants were illegally killed. Additionally, the expansion of human settlements leading to habitat loss, and the extensive poaching driven by the high value of forest elephant ivory, which is harder and more expensive than that of savannah elephants have also significantly contributed to the decline (Hillman-Smith et al., 2014). Despite global bans on the ivory trade, illegal ivory still reaches lucrative markets like China through extremely confusing lines of transportation (Geachm, 2002). The potential extinction of forest elephants would have severe ecological consequences, both in Africa and globally, as these elephants are vital for maintaining the structure of the African rainforest, a crucial CO<sub>2</sub> absorber (Campos-Arceiz & Blake, 2011; Sekar et al., 2015). Poaching and cross-border trafficking continue to threaten elephant populations, exacerbated by the lack of a rapid intelligence system and community-based conservation approaches. Alongside our ongoing conservation efforts in Kahuzi-Biega National Park (KBNP), including addressing conflicts between the local Pygmy community and park authorities regarding resource exploitation, characterizing KBNK habitats and assessing its species diversity and population sizes, KBNP personnel training, this project aims to significantly contribute to the protection of KBNP's biodiversity, particularly the forest elephants, an endangered species.

## **II. Executive summary**

The project's primary goals are focused on enhancing conservation efforts for forest elephants in the Kahuzi Biega National Park (KBNP), located in the eastern Democratic Republic of Congo (DRC). Forest elephants in KBNP are critically endangered, facing severe threats including habitat loss due to logging and agricultural expansion, poaching for ivory, and human-wildlife conflict. The project aims to address these challenges by enhancing data collection, community

engagement, and capacity building, thereby contributing to the long-term preservation of these vital species in DRC.

### III. Project objectives

- ❖ **Map** the current distribution of forest elephants in KBNP.
- ❖ **Develop** a community-based conservation approach.
- ❖ **Develop** a monitoring and information-sharing network on elephants.
- ❖ **Build capacity** through training, conferences, internships, and mentorship.

### IV. Progress report section: Integrated capacity building and conservation activity

This section presents the progress achieved under the project from August to end October 2025. It summarizes the activities carried out on August 22, 2025, during an integrated workshop.



**Figure 1:** Group photo of participants at the Faculty of Agronomy, UEA, symbolizing institutional collaboration and stakeholder diversity.



**Figure 2:** Photo of participants during the workshop.



**Figure 3:** Photo of participants during the workshop.

The integrated workshop combined three key project components:

- (i) development of a community-based conservation approach,
- (ii) establishment of a monitoring and information-sharing network on elephants, and
- (iii) capacity building through training, mentorship, and participatory learning.

The activity was jointly organized by the **Université Évangélique en Afrique (UEA)** and the **Kahuzi-Biega National Park (KBNP)** with the support of the **Rufford Foundation**. It took place at the Faculty of Agronomy in Bukavu and brought together **47 participants**, including community leaders, members of local communities living around Kahuzi-Biega National Park, local NGOs, park management staff, representatives from universities, and research institutions.

#### **4.1. Development of a community-based conservation approach**

The session began with a presentation on the ecological role of forest elephants (*Loxodonta cyclotis*) as keystone species that contribute to forest regeneration and biodiversity maintenance. Discussions highlighted the main conservation challenges, including poaching, habitat degradation, agricultural expansion, and human-elephant conflicts, which have led to significant population declines in and around the KBNP.

A participatory dialogue was facilitated between park representatives, local communities, and conservation partners to design practical approaches that foster coexistence. Participants emphasized the importance of inclusive decision-making, awareness creation, and alternative livelihood development to reduce anthropogenic pressures on elephant habitats.

The exchanges encouraged trust-building and promoted joint responsibility between communities and conservation institutions. This session also served as a platform to introduce the concept of Community-Based Conservation Committees (CBCCs) that would operate as liaisons between local populations and KBNP management.

##### **4.1.1. Results**

- Improved understanding among community representatives of the ecological significance of forest elephants.

- Identification of key local strategies to mitigate human-elephant conflicts, including early-warning communication and crop-protection measures.
- Establishment of a local conservation coordination group to strengthen cooperation between communities and park authorities.
- Commitment from members of local communities living around Kahuzi-Biega National Park to participate in awareness campaigns and information dissemination within their respective villages.

During the workshop, participants agreed on the representation of a **multi-sectoral conservation committee**, comprising members from KBNP management, local leaders, conservation NGOs, academic institutions, and community representatives (including youth, and women). The committee was tasked with coordinating ongoing elephant conservation initiatives, promoting awareness, and ensuring sustained collaboration between communities and park authorities.

#### **4.2. Development of a monitoring and information-sharing network on elephants**

The practical segment of the workshop focused on establishing a structured monitoring and information-sharing network linking researchers, park staff, and community monitors. Trainers from the KBNP (Mr. Kalembu Mark and Mr. Musikami Patrick) introduced modern monitoring methodologies integrating traditional knowledge and digital technologies.

Participants were trained to use SMART Desk, KoboCollect, Google Earth Pro, and Google Earth Engine (GEE) for spatial mapping and data management.

They also conducted field simulations through the setup of 1.5 km transects, where they learned to identify indirect signs of elephant presence—such as footprints, dung, and feeding trails. Each team was equipped with GPS units to record geographic coordinates and field observations.

The collected data were then processed using ArcGIS and QGIS software, allowing participants to visualize elephant distribution patterns and potential hotspots of human-elephant interaction. This exercise provided participants with hands-on experience in the complete workflow: from field data collection to data cleaning, analysis, and visualization.



**Figure 4:** GPS parameter configuration and field equipment setup for geolocation data collection.



**Figure 5:** GPS parameter configuration and field equipment setup for geolocation data collection.



**Figure 6:** Participants conducting field simulations for data collection using GPS and transect-based sampling.

#### 4.2.1. Results

- Creation of a pilot monitoring network linking local communities, park ecologists, and research institutions.
- Training of participants in GPS-based data collection, spatial data processing, and analysis using GIS and ICT tools.
- Establishment of a shared digital workspace for information exchange and collaborative monitoring.
- Increased participant confidence in using mobile-based monitoring applications for real-time data submission.

The practical session also served as a **pilot test for the digital monitoring and information-sharing system** envisioned in the project. Data collected during the exercise were shared among participants via a shared cloud workspace, demonstrating the feasibility of collaborative data management.

This step marked the first phase in developing the project's digital platform, which will integrate field data, real-time updates, and inter-stakeholder communication on elephant sightings, threats, and conservation activities.

### 4.3. Capacity building through training, internships, and mentorship

This activity also functioned as a capacity development platform for conservation stakeholders.

The theoretical component included lectures on forest elephant ecology, population monitoring methods, and conservation policy frameworks, while the practical component focused on field-based mentoring and technical demonstrations.

Participants were guided in the use of GPS devices, data collection forms, and standardized protocols used by KBNP monitoring teams. The interactive sessions fostered knowledge exchange among professionals and students, while promoting collaboration between park authorities and local conservation organizations.

Moreover, the workshop encouraged the creation of future internship opportunities for students from Université Évangélique en Afrique (UEA) and partner institutions to gain field experience in biodiversity monitoring and conservation data management.



**Figure 7:** Training session



**Figure 8:** Participants sharing a meal during the training workshop

#### **4.3.1. Results**

- Enhanced technical and analytical skills among 47 participants, including students, rangers, community monitors, and NGO staff.
- Strengthened understanding of integrated conservation approaches combining scientific monitoring, ICT tools, and community participation.
- Establishment of mentorship links between KBNP experts and participating students for continuous capacity support.
- Positive participant feedback on the quality of content, training delivery, and relevance to their professional and academic interests.
- One **BSc student from UEA** has already benefited from continuous mentorship and thesis supervision within the framework of this project. He has successfully defended his thesis.

#### **V. Overall outcomes and impact**

The integrated training day demonstrated the synergistic relationship between science, technology, and community engagement in forest elephant conservation. It successfully laid the groundwork for long-term collaboration among stakeholders and emphasized the value of community

empowerment in achieving conservation goals. The workshop outcomes align with the project's objectives by promoting:

- Evidence-based management of forest elephants through improved monitoring systems.
- Strengthened local ownership and inclusion in conservation decision-making.
- Enhanced knowledge-sharing mechanisms between the park, academia, and communities.

This activity has therefore served as both a technical training exercise and a catalyst for community-driven conservation, creating momentum for future field missions and collaborative research within KBNP.