Final Evaluation Report

Your Details	
Full Name	Thomas Nyaranga Odeyo
Project Title	Promoting community Awareness in Conservation of the endangered Usambara soft-horned chameleon (*Kinyongia tenuis)* and Banded Shovel-Snout (*Prosymna semifasciata)* in Shimba Hills
Application ID	41542-1
Date of this Report	5/5/2025

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To establish the taxonomic status of the Usambara Flap-nosed Chameleon population in Simba Hills.				A review of existing taxonomic classification sowed that the observed species re similar to the past records of Kinyongia species. My earlier statement that the species' taxonomic status was "confirmed" referred specifically to morphological identification based on comparisons with reference material housed in the Herpetology Section of the National Museums of Kenya. However, given the high morphological similarity among *Kinyongia* species and the possibility of cryptic diversity, there is a need for further phylogenetic analysis to accurately confirm the species identity, even extending to Tanzania. Therefore, future genetic studies would definitively resolve its taxonomic status. Most importantly, confirming whether the population inside the reserve is the same as the population outside the reserve. I collected one specimen from Shimba Hills lodge gate. We made one record from the Makadara forest but did not collect it. This is the same place it is hypothesized that we could get undescribed pygmy chameleon, with only one

				specimen found at the National Museums, collected in the 1980s. To sum up, to my knowledge no phylogenetic has been done to ascertain that the population insider the reserve is the same as the population outside the reserve.
To establish the population size, and abundance of the target species in the unprotected areas within Shimba hills				The survey recorded a low number of Usambara Flap-nosed Chameleons, which made it difficult to estimate the population size and abundance quantitatively. However, observation during the field survey suggest the species is rare and patchily distributed, highlighting the need for further monitoring techniques such as Environmental DNA (eDNA). We conducted survey in the month of April and May, conducted morning and evening sampling daily from 7.AM-11 AM, 5PM-9PM. Here, we combined time limited searches in selected transect, together with visual encounter surveys. In addition to the survey, we educated the rangers on the identity of the species, and any observation of the species after the actual field survey still ongoing and they report whenever they see observe the species. This is done through WhatsApp. We did more field days, 60 days, instead of the 56 planned days, and I expect to go back before the end of the year 2025 as well. So far we have not been able to record any species of **Prosymna semifasciata. However, we recorded 7 individuals of** Kinyongia **tenuis.** We managed to

				obtained photographic evidence of the species. I have created a map of the locations, which I will share as part of thesis after it is published. We also collected environmental variables, that will help immensely in providing better analysis now and in the near future.
To conduct community awareness and information dissemination on the presence of the two species and their conservation importance				The community workshops played a key role in the success of the project. Getting first-hand information from the resource users around the reserve provided key insights on what can be done in the future to protect wildlife in general. We produced 200 brochures and five posters. We conducted 4 workshops. Here, we met participants from multiple villages. I came up with four major locations where participants from the surrounding villages congregated. The rangers together with their community liaison office are the link between us scientific and the community. Their daily interaction with the community makes them an ideal team to be knowledgeable about reptiles' identification and handling. Here, besides the workshop we had, we have created a forum where they send us images and help in the identification of the reptiles both inside and outside the reserve. This was very instrumental since some of them have since been able to spot Kinyongia tenuis and

				other endemic reptiles and amphibians in Shimba Hills. We have trained them to also take the coordinates of every species share the coordinates and image with us at the National Museums of Kenya. They are also our ambassadors on reptile kills. Shimba Hills is one of the places with the highest biodiversity of reptiles and amphibians in Kenya, it was sad when I was informed by one of the officers that not a day passes without a report of a snake being killed. We hope that by training the rangers, they can also be passing the message on the usefulness of reptiles in our ecosystem when they are going for other community activities.

2. Describe the three most important outcomes of your project.

a) We made a new location record of *Kinyongia tenuis* during a night sampling.

b) Human-wildlife conflict was identified as a major challenge to reptile conservation in general, in particular animosity created by elephants and baboons to adjacent farms around the reserve. While these conflicts are not directly caused by reptiles, the resulting hostility often leads to broader negative perceptions of all wildlife. For example, to quote one of the ranger's response to me when I inquired further, "not a week passes without hearing a case of a snake kill". For farmers clearing the vegetation is one of the ways they could keep away the elephants, yet,such action reduces critical microhabitats for chameleons and other forest-dependent reptiles. In addition, forest fires, often set intentionally to clear vegetation for cultivation or to drive away crop-raiding wildlife pose a major threat to reptile conservation. For the slow-moving reptiles such as chameleons, which are less able to escape rapidly advancing fires. The resulting habitat loss and increased mortality can contribute to local population declines and undermine conservation efforts in the area.

c) There is need for intensified and long-term community awareness on the significance of reptile conservation. While the community awareness I did was successful, it brought up underlying issues that are not broadly addressed in reptiles' conservation. Here, the focus group discussion mentioned of possible projects that could be implemented towards reptiles' conservation. I was able to identify the type of groups to target in the future, I identify key issues, I understood local perceptions, and I was able to determine what should be mapped. Here, we discussed where they most often see reptiles, where conflicts with wildlife occur, and areas under threat, and what we

could do. From the discussion, I established that the next step from the map I have created, go back to the community for them to also mark areas on a map where they have seen chameleons, map out burnt sections of the community forest, map out elephant pathway, map priority areas and projects that could help towards reptile conservation.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

Logistics was one of the unforeseen challenges. With the large number of villages around SHNR, holding workshops to reach as large an audience as possible became unrealistic. To address this, we organized a central meeting point and invited representatives from most villages. While this approach ensured that at least a portion of the community received our intended message, it highlighted the need to improve future outreach. Considering the size area surrounding the reserve, cluster them to increase accessibility and the number of participants reached.

4. Describe the involvement of local communities and how they have benefitted from the project.

The community benefited from the workshops. They had a chance to meet the community warden of the Kenya Wildlife Service, Shimba Hills National Reserve, and had an intense but productive discussion on ways to reduce human-wildlife conflict. In some of the suggested projects mentioned in the "Any other comments sections," the community had a chance to air out their voices and propose some interventions that could be implemented. The talks were productive even though they sometimes became intense, with a major problem being the lack of compensation from the government due to the wildlife destruction of their crops, particularly elephants. To quote," Some people are living in poverty because of the wildlife conflict, where they cannot rely on agriculture because of crop destruction from monkeys and elephants." This kind of indirect impact of wildlife creates animosity even towards reptiles.

5. Are there any plans to continue this work?

Yes. At the community level, the next phase involves an intensive education and outreach program. My goal is to engage the community in identifying the most effective solutions not only for conserving wildlife in general but also for reducing animosity toward reptiles. This will be achieved by bringing together a diverse team of stakeholders to collaboratively discuss and initiate projects that provide tangible benefits to the local people.

For example, in a recent conversation with one stakeholder, I learned about their efforts to introduce beekeeping as a method to deter elephants from raiding community farms. This approach not only addresses human-wildlife conflict but could also serve as an entry point for encouraging reptile conservation—framing education and awareness as a beneficial trade-off.

Having also participated in other projects that use participatory mapping, I plan to incorporate similar approaches to help the community better understand the ecological role and interconnectedness of reptiles within their environment. The next concrete step is to develop a matrix outlining the key challenges identified by the community, along with potential solutions co-created during our engagements.

At the species level, we made a new record of *Kinyongia tenuis far away from where it is commonly observed*. Building on this finding, my next step is to establish a more accurate range for the *Kinyongia* species. I believe that incorporating high-resolution data, such as Environmental DNA (eDNA), will significantly enhance our spatial modeling efforts. This approach can provide a more detailed and accurate picture of the species' distribution—capturing data that might be missed through standard herpetofauna sampling methods.

6. How do you plan to share the results of your work with others?

I plan to share the data collected through my MSc thesis at Kenyatta University. In addition, I aim to publish in a peer-reviewed papers based on the findings. I also intend to present the results at an upcoming conference through the National Museums of Kenya, Kenyatta University, Wildlife Research and Training Institute. A publication through the Herpetological Association of Africa, African Journal of Herpetology, and The British Herpetological Society. After the thesis has been approved, the population data will be shared with the IUCN Red List unit / Species Specialist Group. I will share with the data with IUCN Save Our Species, who would in turn share it with IUCN SSC Chameleon Specialist Group.

7. Looking ahead, what do you feel are the important next steps?

 Implement community-based conservation projects specifically focused on protecting reptiles, with strong emphasis on education, coexistence, and sustainable benefits for local communities.

 Conduct a detailed study to establish the species range of the two target species (*Kinyongia tenuis* and *Prosymna semifasciata*), utilizing high-resolution techniques such as Environmental DNA (eDNA) analysis within the community forest shrine (commonly called Kaya). This method allows for a more precise assessment of biodiversity, often surpassing the detection capabilities of traditional herpetofaunal surveys. And here, we can also use this technique to predict species range.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, we used The Rufford Foundation logo on all project-related materials, including banners, posters, and presentations during community outreach sessions. The Foundation was acknowledged in every public engagement, and its support was highlighted in social media posts, reports, and during stakeholder meetings.

9. Provide a full list of all the members of your team and their role in the project.

Joash Nyamache: Senior technician- National Museums of Kenya. Accompanied the PI in the field to assist him in the data collection and community engagement.
Beryl Bwong: Head of Herpetology, National Museums of Kenya; Supervisor for the Thesis and project.

Bernard Ochieng: Resident scientist, Wildlife Research and Training Institute,Shimba Hills National Reserve. Offered the introduction to the community and in charge of planning on the community engagement workshops.

10. Any other comments?

The goal is to establish a year-round, continuous reptile education program at Shimba Hills. We have initiated this effort by training local rangers, who are now actively involved in reptile identification and monitoring. Their contributions exemplify the power of citizen science—collecting valuable ecological data even in the absence of researchers, while also fostering local ownership of conservation efforts.