

## Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF format**. We understand that projects often do not follow the predicted course, but knowledge of your experiences is valuable to us and others who may be undertaking similar work – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

**Please DO NOT fill in and submit this form until the project has been completed.**

Complete the form in English. Note that the information may be edited before posting on our website.

Please email this report to [jane@rufford.org](mailto:jane@rufford.org).

Your Details	
<b>Full Name</b>	Michael Honorati Kimaro
<b>Project Title</b>	Encounters, utilization, and illegal trade of Giant Ground and White-bellied Pangolins in the Gombe and Mahale Ecosystems
<b>Application ID</b>	46408-2
<b>Date of this Report</b>	25 <sup>th</sup> January 2026

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

All original project objectives have been successfully met as planned, as shown in the blue-shaded column in the table below. Although the original focus was on Giant ground and White-bellied pangolins, the survey was expanded to include Temminck’s pangolin as well, and to include additional community attitudes towards pangolins.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
<b>Documented Frequency and Nature of Human-Pangolin Encounters</b>				<p>The project comprehensively documented the frequency, spatial patterns, and seasonal nature of human–pangolin encounters. Ninety-three household surveys, nine Focus Group Discussions and 60 key informant interviews revealed that 80% of respondents had encountered pangolins during their lifetimes, while only 22.9% reported sightings in the previous 12 months, suggesting a likely decline in local populations. Approximately 75% of the sightings involved Temminck's pangolins, while Giant and White-bellied pangolins were regarded by local communities as rarely sighted.</p> <p>Species-specific encounter data were successfully collected for Giant Ground, White-bellied, and Temminck's pangolins, including habitat use across croplands, forests, settlements, and riverine areas. Seasonal trends were also clearly identified, with encounters occurring significantly more frequently during the wet season, particularly between November and December.</p>

			<p>Due to low security in the study area, we could not conduct surveys in a grid format as planned; instead, we collected data only through key informants and focus group discussions, so we did not produce occupancy estimates or habitat suitability maps.</p>
<p><b>Identification of Pangolin Utilization Patterns</b></p>			<p>The project achieved a detailed assessment of the structure, actors, and mechanisms of the illegal pangolin trade. The study identified a decentralized, community-embedded trade network operating primarily through face-to-face interactions and mobile phone communication (approximately 95%). Utilization of pangolins was strongly influenced by livelihood needs, cultural beliefs, and limited economic alternatives.</p> <p>Key buyer groups were identified, including traditional healers, fishermen, patients, and businessmen, who accounted for nearly 79% of reported buyers, underscoring the combined roles of cultural practices, health-seeking behavior, and commercial incentives in driving demand. Trade routes were clearly mapped, showing movement from villages to towns and cities (35.4%) and onward to neighboring countries (19.5%), confirming that the study area functions as a source zone within a broader transnational trade network. Transportation methods were predominantly low-profile, with walking and motorbikes being the most common, reflecting both limited financial capacity and as a strategy</p>

				to minimize detection while moving pangolin products through informal rural transport systems.
<b>Assessment of the Illegal Trade of Pangolins</b>				<p>The project successfully documented local and commercial trade patterns of pangolins and their derivatives. The findings demonstrated that pangolin trade is driven more by commercial demand than by subsistence, with scales accounting for 52% of all reported trade flows, followed by live trade (14.2%) and fat/oil traded for traditional medicine (10.8%).</p> <p>Multiple acquisition pathways were identified, including opportunistic encounters, targeted hunting, and purchasing, indicating a diversified supply mechanism within communities. Importantly, the study found that local use accounts for only 15% of pangolin products, while 85% are destined for external markets, highlighting the strong influence of incentives that drive illegal trade.</p>

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

**a) Generation of the First Comprehensive Evidence on Human–Pangolin Interactions in the Gombe–Mahale Landscape**

The project generated the first detailed, community-based evidence on the frequency, seasonal patterns, and habitat contexts of human–pangolin encounters in the Gombe and Mahale Ecosystems. It established that while pangolins are well known and historically common in the area, recent encounters are now rare, with less than a quarter of respondents reporting sightings in the past year. This provides strong baseline evidence of a decline in the local pangolin population. The documentation of species-specific habitat uses for Giant Ground, Temminck’s, and White-bellied pangolins has filled a critical knowledge gap in western Tanzania and provides an essential baseline for future ecological monitoring and conservation planning in and around the two national parks.

**b) Clear Identification of Commercial Utilization and Trade Drivers Beyond Local Subsistence**

A key outcome of the project was the clear demonstration that pangolin exploitation in the study area is primarily commercially driven rather than culturally or subsistence-based. The study showed that 85% of pangolin products are traded outside local communities, with scales being the dominant product, linking local hunting directly to regional and international illegal wildlife trade networks. Importantly, the project revealed that local communities generally hold positive and protective attitudes toward pangolins, meaning that exploitation is driven not by negative beliefs or conflict but by economic incentives created by external demand. This finding is critical for designing appropriate conservation responses that move beyond awareness-raising to address livelihood and enforcement gaps.

**c) Mapping of Illegal Trade Networks and Identification of Key Actors and Pathways**

The project successfully mapped the structure, actors, and movement pathways of the illegal trade of Pangolin and pangolin derivatives. It identified key buyer groups, common communication methods, transport strategies, and trade destinations, showing a decentralized, low-profile trade system embedded within local communities. This outcome provides actionable intelligence for conservation practitioners and enforcement agencies by identifying where interventions are most likely to be effective, particularly at the village-to-town interface and among urban buyers and traders. The findings directly support the development of targeted, intelligence-led enforcement and community-based conservation strategies in the Gombe–Mahale landscape.

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

One unforeseen challenge was the sensitivity and fear associated with discussing illegal pangolin hunting and trade. Some respondents were initially reluctant to share information due to concerns about legal repercussions and community repercussions. The research team invested additional time in trust-building, clearly explaining the research and conservation purposes and assuring participants of confidentiality and anonymity. Data collection relied on key informants who completed the questionnaire themselves and participated in focus group discussions. This approach significantly improved openness and the quality of information collected.

Some study villages, particularly those bordering Mahale Mountains National Park, were difficult to access due to poor road infrastructure, long travel distances, and weather-related disruptions during the rainy season. Fieldwork schedules were adjusted to align with favourable weather windows, and local guides were engaged to facilitate access and community entry. The use of tablet-based data collection helped minimize time spent in the field while ensuring secure and accurate data capture. In addition, due to low security in the study area, we could not conduct surveys in a grid format as planned; instead, we collected data only through key

informants and focus group discussions, so we did not produce occupancy estimates or habitat suitability maps.

However, these challenges did not compromise the achievement of project objectives. Instead, they strengthened the study's methodological rigor and highlighted the real-world conservation constraints faced in pangolin research, thereby reinforcing the relevance and applicability of the project outcomes.

#### **4. Describe the involvement of local communities and how they have benefited from the project.**

Community members from 7 villages bordering Gombe National Park, 10 villages bordering Mahale Mountains National Park, and 6 villages surrounding Muyowosi Game Reserve were directly involved as key informants and focus group participants. Village leaders, traditional healers, fishermen, farmers, and experienced hunters contributed local ecological knowledge on pangolin encounters, habitat use, and historical trends. The project team worked closely with village leadership structures to obtain consent, introduce the project objectives, and facilitate community entry. All data collection was conducted in Kiswahili to ensure clarity, cultural appropriateness, and meaningful participation. Local guides and assistants were engaged during fieldwork, strengthening trust and ensuring respectful interaction with communities.

Local communities benefited from the project in several direct and indirect ways. Community members gained greater awareness of pangolin conservation status, legal protections, and the broader implications of the illegal wildlife trade, reinforcing existing positive attitudes toward pangolin protection and strengthening local stewardship. The local community also benefited from conservation dialogue during focus group discussions, thereby enhancing its capacity to engage in future conservation initiatives. In addition, all participants were fairly compensated for their time and resources, including reimbursement of travel costs, in line with ethical research practices. This compensation supported participation without pressure and helped reduce the economic burden associated with engaging in conservation research. Overall, the project strengthened trust between communities and conservation practitioners while laying a foundation for future community-led pangolin conservation and livelihood-support initiatives in the Gombe-Mahale landscape.

#### **5. Are there any plans to continue this work?**

Yes. The findings from this project provide a strong foundation for continued pangolin conservation work in the Gombe–Mahale landscape and beyond. The project has highlighted critical gaps that require immediate follow-up through applied conservation actions, capacity building, and expanded research.

Although we presented the findings of this project as a poster at the December 2025 TAWIRI Scientific Conference in Arusha, Tanzania, we still need to share them with

conservation practitioners and villagers in the Gombe-Mahale landscape through a workshop.

Another key observation from the project was the limited awareness among local communities and conservation practitioners of pangolin ecology and of standard operating procedures (SOPs) for the safe handling, temporary care, release, and monitoring of rescued or confiscated pangolins. In response, the Tanzania Research and Conservation Organization (TRCO) is planning to raise awareness among communities about pangolin ecology, behaviour, and interactions with humans. Also, TRCO has already developed context-specific SOP manuals for handling, short-term holding, health assessment, release, and post-release monitoring of pangolins by customizing guidelines from Namibia and Vietnam. TRCO plans to provide pangolin-carrying boxes and conduct targeted capacity-building trainings for local communities, wildlife officers, park rangers, animal quarantine officers, police, traditional healers, and other conservation practitioners to ensure that rescued pangolins are handled safely while awaiting release, thereby improving survival outcomes. In addition, the project team plans to build on the research findings by deploying camera traps, expanding community-based monitoring and reporting of pangolin encounters, and using advanced techniques (e.g., forensic tools) to combat illegal pangolin off-take.

The results will also be used to develop follow-up funding proposals focused on alternative livelihoods, community-led conservation, and pangolin rescue and monitoring programs.

Overall, this project represents a critical first step toward long-term pangolin conservation, and TRCO is committed to translating the knowledge generated into sustained, on-the-ground conservation impact.

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

The results of this project were presented at the 15th TAWIRI International Scientific Conference, held from 3rd to 5th December 2025 in Arusha, Tanzania. Likewise, the manuscript developed from this work is being prepared for submission to an international peer-reviewed journal to ensure long-term accessibility of the findings for the development of a national plan for pangolins, which is currently lacking in Tanzania. Furthermore, the results of this project will be shared through multiple channels to ensure that findings reach the stakeholders at different levels. At the local level, findings will be shared with participating communities, village leaders, and local conservation stakeholders through feedback meetings and simplified presentations in Kiswahili (local). These sessions will focus on key findings related to pangolin status, threats, and conservation actions, helping communities understand how their knowledge contributed to the study and how results can support local conservation efforts.

Likewise, the results will be shared with protected area authorities, wildlife officers, conservation organizations, and relevant government and non-governmental

institutions through technical briefings and stakeholder meetings. The findings on illegal trade pathways, key actors, and challenges in handling will inform conservation planning, enforcement strategies, and capacity-building initiatives, including the rollout of SOP manuals for rescued pangolins. Lastly, project summaries will be shared via TRCO communication platforms and conservation networks to reach a broader audience and support regional and global pangolin conservation efforts.

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

Looking ahead, the important next steps involve consolidating progress, addressing critical gaps, and ensuring the long-term sustainability of conservation efforts.

A key priority is to strengthen the capacity and awareness of local communities and conservation practitioners by conducting targeted training on the recently developed Standard Operating Procedures (SOPs) for handling, temporary care, release, and post-release monitoring of rescued or confiscated pangolins. This will help reduce mortalities linked to improper handling. Alongside training, it is essential to operationalize the SOPs on the ground by supporting their adoption among wildlife, forest, and community authorities and providing the necessary equipment to apply the guidelines effectively. However, the developed SOPs are provisional and need to be officially implemented nationwide. Additionally, building strong partnerships with government agencies, protected area authorities, and other NGOs will help harmonize rescue and enforcement efforts and ensure that SOP-informed practices are reflected in district and national conservation frameworks.

Strengthening monitoring and data collection on post-release survival and rescue outcomes will also be critical for informing adaptive management and improving future interventions by fitting tracking devices to some rescued individuals to assess their survivorship and monitor their progress in the wild. Engaging communities further through awareness programs that link pangolin conservation with local livelihoods and ecosystem services will foster ownership and encourage reporting of sightings and threats.

The information on illegal trade obtained through this study relies solely on questionnaires; however, it is worth noting that advanced techniques, such as isotope analysis and specialized rats, could be used to combat the illegal off-take of pangolins. TRCO plans to collect pangolin scales to conduct isotope analysis across the country, including the Gombe-Mahale landscapes.

TRCO has already collected pangolin data across multiple ecosystems, including Nyerere-Udzungwa, Lake Manyara-Tarangire, Burigi-Minziro, Ruaha-Rungwa, Amani-Nilo, and Gombe-Mahale. In these efforts, the Tanzania Wildlife Research Institute (TAWIRI) and the Commission of Science and Technology (COSTECH) have approved TRCO to facilitate the development of a national pangolin action plan. While funding for this action plan is still pending, TRCO remains committed to advancing its development.

**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. The Rufford Foundation logo was used in project-related materials, including presentations and reports. Dissemination of the project findings to date has been limited to a presentation at the TAWIRI International Scientific Conference, where The Rufford Foundation's support was clearly acknowledged (see the attached poster). In addition, the Rufford Foundation logo is displayed on our website to acknowledge its funding support for the Tanzania Research and Conservation Organization (TRCO). We have planned follow-up feedback meetings with local communities and conservation practitioners in the study area (to be covered in the next funding application) to share and discuss the project findings. During these planned dissemination activities, the project results will be shared more widely at the local level, and the Rufford Foundation logo will be used on all relevant materials to ensure continued visibility and recognition of the Foundation's support. We have also attached a manuscript that we intend to submit to an international peer-reviewed journal. In the acknowledgements and funding statement sections, we have identified the Rufford Foundation as the funder of this project; however, inclusion of the logo is not required in the manuscript.

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

<b>Member</b>	<b>Role</b>
<b>Michael Honorati Kimaro</b>	He was a Team Lead and was responsible for Overall coordination and management of the project; study design; stakeholder engagement; supervision of field activities; data analysis; reporting; and dissemination of findings (TAWIRI and manuscript development).
<b>Nyemo Amos Chilagane</b>	Provided technical guidance on research design and methodologies, financial management, led field data collection and supervision, supported data analysis, and contributed to reporting, TAWIRI Scientific conference dissemination, and manuscript development.
<b>Elisante Azaeli Kimambo</b>	Helped in data collection, including conducting dissemination and collection of questionnaire forms administered to participants, and conducting FGDs. He was also involved in data cleaning, analysis, and report writing.

#### **10. Any other comments?**

We sincerely thank The Rufford Foundation for the financial support provided to this project, which enabled its successful implementation. The funding enabled effective fieldwork, strong engagement with local communities and conservation practitioners, and the generation of valuable data to inform pangolin conservation efforts. Overall, the project demonstrated the strong value of a participatory and multi-stakeholder approach that combined scientific research with local knowledge and institutional collaboration. Close engagement with communities, government officers, and protected area authorities not only improved data quality but also strengthened trust and local ownership of conservation actions. A key lesson learned is the importance of early and continuous capacity building, particularly in standard operating procedures for handling and releasing rescued pangolins, to reduce avoidable mortality. Moving forward, continued support for training, community feedback meetings, and integration of project findings into local and national conservation planning will be critical for sustaining impacts beyond the project period.

**ANNEX – Financial Report**  
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