Final Evaluation Report

Your Details	
Full Name	Bijaya Neupane
Project Title	The price of conservation success: spatio-temporal patterns of human-wildlife conflict incidents and predicting the risk sites in the buffer zones of Terai Nepal
Application ID	39423-2
Date of this Report	26.2.2024

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
Review the registered park records and develop the incidents database			■	This original objective is fully achieved. In February 2023, we obtained research permits from BNP and CNP headquarters. During February and March 2023, we thoroughly reviewed 10 years (2013-2022) of registered cases on human-wildlife conflicts (HMCs), including human attacks, livestock depredation, crop raiding, and property damage. We extracted data from paper-based relief claim files, a method used in prior HMC studies. The information was organised into an Excel sheet with victim household/location and HMC-related variables.
Record the geographic locations and site characteristics of livestock attack sites			■	This second objective of the project is also fully achieved. In March and April 2023, we visited households within the buffer zones of Bardia and Chitwan National Parks in Nepal affected by attacks on livestock. These households were chosen from records covering 2020 to 2022, registered cases from park offices. Predators, mainly tigers and leopards, caused about 90% of these incidents, confirming earlier documented studies. We focused on attacks that occurred in livestock sheds based on previous research. We recorded details like location, associated bio-physical, and household characteristics for each

				attack. We also selected random households within 1 km (minimum 250 m) of the affected ones, which had not experienced attacks from 2020 to 2022. During the survey, we marked the GPS coordinates of all households.
Perform the community outreach activities (talk programs) on the high-risk sites				In both the original project and what I performed, the number of local communities or audiences for the community outreach activities (talk programmes) remained the same, i.e., 10 within each buffer zone area, based on the severity of wildlife attacks on humans and livestock. While I initially mentioned that the participants would be a mix of different local groups, including representatives from the buffer zone user's committee with varying livelihood strategies, and students, the talk programmes were conducted separately with these groups (six schools, four Buffer Zone User's Committees) within each buffer zone (Bardia and Chitwan National Parks). This approach facilitated discussions effectively and contributed to the efficient performance of the talk programmes, based on the characteristics of the participants or audiences.

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

a) This research project highlighted a rise in livestock depredation and crop damage incidents, while human attacks and property damage decreased. Incidents involving tigers, leopards, and rhinoceros increased, emphasising the need for targeted species-specific and site-specific management interventions to promote coexistence with these megafaunal species.

b) Regular tiger population censuses in Nepal have revealed an increasing trend. However, incidents caused by leopards in the study area are more

than double those caused by tigers. This underscores the importance of future research focusing on leopard populations dynamics and the reasons behind their increased presence in settlements and attacks.

c) The third major outcomes of the project were the successful implementation of community outreach and awareness programmes at severely affected human-wildlife conflict sites (10 in each buffer zone - Bardia and Chitwan National Parks of Nepal). Stakeholders, including school students and buffer zone user's committee members, participated in talk programmes covering megafaunal ecology and behaviour, safety precautions, and conservation measures. Additionally, distributing brochures and displaying large posters at outreach sites significantly enhanced awareness and conservation education among the local participants in affected areas.

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

Initially, the review of victims' paper-based claim files for government relief funds took longer than anticipated due to the mixing of files from different incident categories. To address this challenge, I enlisted the help of two additional team members, BSc Forestry graduates, to assist with the review process. Another difficulty arose from the risk of attacks by Indian wild elephant Makuna and resident wild elephant Dhurbe near buffer zone settlements of Chitwan National Park, posing threats to humans and property. To mitigate this risk, I maintained constant communication with park headquarters, range post officials, and staff from the elephant breeding centre to track the elephants' locations and ensure our safety during field data collection. Furthermore, some wildlife victims initially did not grasp the significance of our project and simply expected relief funds and other subsidies. However, after explaining our project's aims, objectives, and potential contributions, they became supportive partners during our fieldwork.

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

The local communities played an active role in various project stages, including data collection (through focus group discussions, key informant interviews, and household questionnaire surveys) and community outreach and awareness activities (via talk programmes). In identifying households affected by livestock depredation, we engaged local people familiar with incidents, raising their awareness of our project activities and consequences, thus contributing to finding solutions for mitigating human-wildlife conflict in the study area. Besides, the talk programmes effectively engaged the local community, disseminating information on conservation awareness and safety precautions to a broad audience in a short time

frame. Using simple local language in visual displays, photos, and text facilitated easy comprehension and learning for the local people. Additionally, local participants benefited as we thoroughly addressed queries and feedback during the outreach or talk programmes.

5. Are there any plans to continue this work?

Yes, I have plans to extend this project further. Through this project, I identified that hotspots of human-megafaunal conflict (HMC) incidents in two buffer zone areas often overlapped among megafaunal species. Therefore, further studies are necessary to determine if this overlap is due to increased transboundary movements of megafauna from Indian protected areas or local inhabitants' livelihood strategies, mainly focused on agriculture and livestock husbandry. Additionally, I aim to investigate the reasons behind megafaunal species entering settlement areas, such as inadequate habitat conditions inside the national park or easy access to food in the settlements. Moreover, I plan to identify how different local people within affected areas conduct their livelihood activities, making them susceptible to megafaunal attacks or damages. I will also conduct community awareness programmes and suggest appropriate livelihood activities that will both support local livelihoods and minimise damage or attacks from wildlife species. Thus, the findings brought by the extension of this recently completed project are essential for developing site-specific and community-specific management interventions to address conflicts and promote the coexistence of humans and megafaunal species in the study area.

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

Initially, I shared updates and activities of my project with conservationists and scientists worldwide through The Rufford Foundation. Subsequently, the research project's findings will be presented to the national park authorities of Bardia and Chitwan National Parks of Nepal. I will also share my results with among the faculties and bachelors' and masters' students of my affiliated academic institution (Institute of Forestry, Tribhuvan University, Nepal) through teaching and research materials that include my project's findings. Additionally, an integral aspect of disseminating my results involves publishing two research manuscripts based on this project's outputs in peer-reviewed scientific journals.

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

The next significant steps include completing the data analysis of all collected data from this project. So far, I have finished analysing the data and drafted a manuscript based on the first objective of this project, intending to submit it to a high-ranked peer-reviewed journal shortly. Similarly, I plan to analyse data and draft another

research manuscript based on the second objective of this project. Additionally, I aim to enhance teaching and research materials for my institution, where I have been employed for more than 7 years. Concurrently, I will also develop a new project crucial to my study area, building upon the extension of this recently completed project.

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?

Throughout this project, the Rufford Foundation's logo was included in all promotional materials, mainly brochures and posters, as well as in presentation materials for talk programmes. The foundation's support was acknowledged during fieldwork activities, contributing to its publicity in the study area. Additionally, photographs taken during fieldwork were actively shared on social media platforms to recognise the foundation's contribution. Further, the foundation will be gratefully acknowledged in all publications resulting from this project.

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

I have listed the names of all team members who supported me in different roles of the project:

The team members who provided me guidance and supervision for the overall design and implementation of the project are:

Edward Layman Webb, Professor of Global Forests and Land use, Department of Forest Sciences, University of Helsinki, Finland.

Thakur Silwal, Associate Professor of Wildlife Management, Institute of Forestry, Tribhuvan University, Nepal.

The team members who provided me field arrangements, coordination with local stakeholders and technical supports including park-specific research permit are:

Ganesh Prasad Tiwari, Assistant Conservation Officer, Chitwan National Park, Nepal.

Mahesh Neupane, Assistant Conservation Officer, Chitwan National Park, Nepal.

Ashish Neupane, Assistant Conservation Officer, Bardia National Park, Nepal.

Kamal Kafle, Ranger, Chitwan National Park, Nepal.

Sudarshan Regmi, Ranger, Chitwan National Park, Nepal.

The team members who have guided and will guide me further in GIS and Remote Sensing analysis works are:

Saroj Panthi, Assistant Forest Conservation Officer, Gandaki Province, Nepal.

Johanness Bin Jamaludin, Doctoral Researcher, Faculty of Agriculture and Forestry, University of Helsinki, Finland.

The team members who directly supported me during fieldwork data collection are:

Sachin Timilsina, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

Mahamad Sayab Miya, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

Shishir Ghimire, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

Durga Nanda Yadav, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

Nishan KC, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

The team members who directly supported me during community outreach and awareness activities (through talk programs) are:

Sundar Shrestha, BSc Forestry Student, Institute of Forestry, Tribhuvan University, Nepal.

Asmit Neupane, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

Sanish Neupane, BSc Forestry Graduate, Institute of Forestry, Tribhuvan University, Nepal.

In addition to these, local field assistants, representatives from different buffer zone user committees, senior game scouts, game scouts, forest guards, guides, victim households, and my colleagues, provided direct and indirect support for the successful completion of this project.

10. Any other comments?

This project is innovative as it addresses major megafaunal conflicts simultaneously in Bardia and Chitwan National Parks of Nepal, alongside community outreach programmes benefiting local communities directly. With scientific evidence indicating an increase in tiger and rhinoceros populations over the past decade, coupled with a rise in incidents caused by them as per our project findings, there is an urgent need to sustain the efforts of this project. Therefore, I express gratefulness to The Rufford Foundation for its continuous support and anticipate further assistance in future research aimed at finding evidence-based solutions to the escalating human-megafaunal conflict. Thus, the implementation of new project is crucial for their long-term survival and co-existence of human and these globally threatened and endangered species.