

Final Evaluation Report

Your Details	
Full Name	Bal Krishna Koirala
Project Title	Conservation of King Cobra (<i>Ophiophagus hanach</i>) and other medically significant species of snakes in Tashigang Forest Division, Eastern Bhutan
Application ID	28732-B
Grant Amount	£ 9,980
Email Address	bkgelephu@gmail.com
Date of this Report	30.04.2021

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
Creating awareness on conservation of King Cobra and other snakes among general public and educational institutions (Education outreach)				We have successfully completed creating awareness on conservation of king cobra and other snakes to the people of target location (100% achieved).
Creating education awareness to medical professionals				We successfully completed this activity by conducting education awareness in Trashigang Referral Hospital. About 60 medical professionals including 12 doctors participated the programme.
Creating awareness on conservation of King Cobra and other snakes to educational institutions				However, we could not conduct fully time awareness programme in education institutions according to our plan. We could partially achieve this objective by distributing information materials such as posters, and information brochures to educational institutions. This is mainly because of current global covid-19 pandemic
Field Inventory of King cobra and other medically significant species snakes (ecological assessment)				We have successfully achieved this objective. We successfully collected ecological information such as geo-spatial, distribution, population status, current conservation threats, of king cobra. This baseline information will be used for formulation of conservation plan for king cobra and other venomous snakes in future.
Communications of project results through scientific publication				We successfully accomplished this objective through publication following: 1. Diversity and Distribution of snakes in Trashigang Forest Division (article published). 2. Distribution, status, and nesting ecology of king cobra (article in press).

				3. National report on conservation of king cobra and other venomous snakes in Trashigang Forest Division (report produced). 4. Snakes of Trashigang Forest Division (book published).
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

The fundamental problem we faced during project period was nationwide lockdown due to Covid-19 pandemic which prevented us from achieving our project goal at optimum level. However, we were quite fortunate that we had completed majority of works including public awareness programmes before nationwide lockdown was announced. Although there was no community transmission of virus (Covid-19) in the locality, we were still restricted from conducting any programmes which involve mass gathering. Because of which, we were unable to conduct education awareness programmes in schools and colleges as per the activity schedule. To overcome this unanticipated problem, we developed information materials pertaining to our project and distributed to educational institutions. However, we continued with other field activities and successfully completed our works.

3. Briefly describe the three most important outcomes of your project.

Education awareness to rural population: We could see notable changes in people's perception on snakes after being imparted with basic knowledge on snake conservation through education outreach programmes. Large section of rural people in target locations are now started communicating and responding to us through social media, direct conversation, and telephone calls regarding species identification, seeking information on species they encounter, and their ecological services. Moreover, unnecessary killing of snakes in localities is reduced at significant level. During our project period we received more than 114 rescue calls which never used to happen before, and majority of calls were pertaining to snakes entering residential areas, kitchen gardens, livestock farms, water tanks, etc. We were able to rescue five king cobras and a lot of other medicinally significant species snakes from unsafe places and relocate them in their natural habitat with of help local people.

On several occasions, even medical doctors sought our assistance in identify the snakes, and decision making process whenever administration of anti-venom is involved particularly while dealing with snake bite patients in hospital. It was really satisfying for us to know that education is one of the major instruments in biodiversity conservation and solving the human-snake conflict. Therefore, one of the important outcomes of this project is that local people had developed positive sentiments towards snakes and are now a part of species conservation programmes.

Establishment of ecological information on King Cobra and other medically significant species of snakes: Through field investigation we recoded king cobra and other snake species from various locations of study site. Initially, we lacked basic

natural history information for king cobra and other important vital to formulating advanced study questions or generating conservation plans. However, with this project we were able to document the information on geo-spatial and elevational distribution, habitat types, and conservation threats of king cobra and other snake species. This information obtained through current project is now very vital for formulation of species management plan. Based on the study we made recommendation for the future course conservation and management of snake diversity in general, and king cobra in particular in Trashigang Forest Division and elsewhere in Bhutan. Therefore, establishment of basic ecological data through this project is one of the significant outcomes.

Communications of project results through scientific publications:

In order to disseminate our project results to larger audiences we have also completed following documents as product or outcomes of this project.

Articles

1. Koirala, B.K., K. Jamtsho, P. Wangdi, D. Tshering, R. Wangdi, L. Norbu, S. Phuntsho, S. Lhendup & T. Nidup (2021). Diversity and distribution of snakes in Trashigang Territorial Forest Division, eastern Bhutan. *Journal of Threatened Taxa* 13(1): 17455–17469. <https://doi.org/10.11609/jott.6835.13.1.17455-17469>
2. Koirala, B. K & Tshering D (In press). Distribution, Habitat use, and Nesting Behaviour of the King Cobra (*Ophiophagus hannah*) in Trashigang Forest Division, Eastern Bhutan. Article in press-(**amphibian-reptile-conservation.org**)

Book

1. Koirala, B. K (2021). Snakes Diversity of Trashigang Forest Division: A Photographic guide: Department of Forests and Park Services, Bhutan.

Project Report

1. Conservation of King Cobra (*Ophiophagus hannah*) and other Medically Significant Species of Snakes in Trashigang Forest Division

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

Since capacity building and education awareness to local people had been an integral part of this project, we involved local communities at different stages of project period. At the beginning of the project, we communicated with them through interview to develop benchmark information to evaluate degree achievement of project goals at the end of the project period. During the field survey, we engaged some interested and enthusiastic youths as local guides, helpers in carrying field equipment and languages, and providing other help at any necessary times. Furthermore, we provided opportunities for local citizens to participate in education outreach programmes and become active conservation partner.

Through this project we were able to provide some financial support to local citizens particularly to those who were involved in this project. We provided them daily wages, carrying charges, and necessary field items. Besides financial support they got from this project; the local communities of target locations were benefitted through education outreach programmes. Many local people are now able to identify snakes in their locality, distinguish between venomous and non-venomous species, distinguish king cobra from other snakes, enhanced knowledge on snake bites, first aids and its management, and importance of snake conservation.

5. Are there any plans to continue this work?

Yes. I am deeply committed and would like to continue my work particularly concerning globally threatened species (king cobra) in all places of its occurrence in Bhutan in future. My future priority would be documentation of occurrence of king cobra across the larger landscape of eastern and central Bhutan, identification of survival threats, and simultaneously educating local communities of the region.

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

We have already shared all of our results to date with the parent organisation (i.e., Management of Trashigang Forest Division), Department of Forests and Park Services, and Ugyen Wangchuk Institute for Conservation and Research (UWICER) through presentations and with copies of our research reports. We are also planning to disseminate or share our project results to scientific communities, researchers, and educators through annual research symposium conducted by UWICER and scientific publications. We share our work via social media on Facebook.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The grant was used from September 2019 to February 2021, although proposed period was from September 2019 to December 2020. The changes in time period occurred due to Covid-19, which occasionally prevented us from conducting our project activities as per the plan.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Purchase of field books, paper for data format, pens	£100	£90	-10	

and pencil and data format printing cost				
Conducting public awareness campaign, providing food and refreshment	£550	£800	+350	We could not meet expenditure form initially proposed amount
Hiring suitable vehicle during field work and seeking approval from Government	£600	£350	-250	
Purchase of sleeping bags	£400	£200	-200	We managed to buy items less than budgeted amount, as we purchased through quotation rate
Purchase rucksack bags	£320	£320		
Purchase of torch lights and batteries	£100	£80	-20	
Purchase of preservatives and Jars for preservation of specimens	£150	£80	-70	
Purchase of Snake catching Tongs	£130	£100	-30	
Providing extension kits for supporting staffs	£400	£440	+40	
Payment to local guides	£720	£620	-100	
Conducting awareness campaign to educational institutions	£750	£300	-450	We could not fully utilize budgeted amount due to Covid 19, thus balance amounted was used to meet the expenditure made in public awareness programs.
Potter charges	£720	£600	-120	
Payment for supporting field staff for field survey	£5040	£6000	+960	More number of field days were required than expected for completing field activities, thus requiring more expenditure than budgeted.
Total	£9980	£9980		Local exchange rate: £1= NU 86.92

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

The important next step ahead would be field inventory and documentation of king cobra and its potential habitats across the larger landscape in Bhutan and provide conservation/education awareness to general public and educational institutions of target locations regarding the conservation of king cobra and other important species of snakes.

10. 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 in all materials such as: Information Posters, Banner, Project Reports, Book, Power point Presentation slides, and articles.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Sl. No	Name	Designation	Role and Responsibility
1	B. K Koirala (self)	Forestry Officer	Planning, coordinating, managing overall project activities, conducting field survey, species identification, snake rescue & relocation, analysing data, writing reports, report submission to funding organisation and other relevant organizations, and presenting project results
2	Karma Jamtsho	Sr. Forester	Conducting Field survey, arranging transportation, food and lodging.
3	Phuntsho Wangdi	Sr. Forest Ranger	Conducting field survey, organizing public gathering, data compilation, and snake rescue & relocation
4	Rinchen Wangdi	Sr. Forest Ranger	Conducting field survey, organizing education awareness programs to public, species identification, and snake rescue & relocation
5	Dawa Tshering	Forest Ranger	Conducting field survey, organizing education awareness programs to public, species identification, and snake rescue & relocation

12. Any other comments?

First of all, we would like to extend our heartfelt gratitude to Rufford Foundation for providing financial support for us to successfully conduct this important conservation project where biodiversity conservation is country's top priority. We still have large work to be done on conservation of snakes particularly of some of the globally threatened species like king cobra. However, financial constrain is one of the major challenges we face today. Despite the problems we face, Rufford Foundation has remained consistent in supporting us and making our conservation work successful. Lastly, I would like to make earnest request Rufford Foundation to continue support us to make this lovely plant better place live in.