

## Final Evaluation Report

---

Your Details	
<b>Full Name</b>	Sima Khanal
<b>Project Title</b>	Integrating field surveys with citizen awareness initiative to understand population and distribution status of hornbills in Bardiya National Park, Nepal
<b>Application ID</b>	30542-1
<b>Grant Amount</b>	£6000
<b>Email Address</b>	<a href="mailto:sima@roarforconservation.org">sima@roarforconservation.org</a>
<b>Date of this Report</b>	28 <sup>th</sup> February 2022

**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
Conduct field survey to access the distribution of hornbill species in Bardiya National Park				Occupancy surveys along forest trails, riverbanks covering the potential habitats of hornbills within sampling grids was conducted. Grids were surveyed to estimate density and abundance of hornbills Point Centred Quarters method was adopted to collect data of tree density and basal area to estimate tree density and basal area.
Empower locals guides as citizen scientists to conduct surveys and disseminate the essence of hornbill conservation				Four local bird watchers and naturalists were trained with skills and knowledge on conducting line transect survey and PCQs surveys.
Conduct meetings with stakeholders (Park officials, guides, locals) to share the ecological importance and status of hornbill species				The project initially aimed in conducting "in-person" gathering with all the stakeholders to disseminate the knowledge and ideas about hornbill conservation in the study area. However separate small gatherings were conducted with various stakeholders including park officials, local guides and NTNC officials.
Conduct school awareness programs to ensure increased awareness amongst students				Three schools in periphery around the national park were chosen where drawing competition and interactive talk programmes were conducted. To encourage the school students, awards were given. It is anticipated that the programme has helped spread conservation importance of hornbills amongst the students. The positive feedback received from the schools assured that the objective was ticked.

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.**

The major obstacle during our project period was the COVID pandemic which directly hampered our timescale. It was a real challenge to conduct few of the activities with increased operation cost due to restrictions brought about by the chaotic situation.

- The project aimed to organise a combined stakeholder meeting (locals, park officials, nature guides, bird watchers) with comprehensive discussion opting for additional information on temporal distribution of the species, real field scenario, challenges and way forwards of hornbill conservation. The unforeseen circumstances brought about by COVID compelled the team to reach out to each one of the key informants separately. Although this helped gather pronounced information with personal detailed conversation, reaching to each one of them independently was more time and budget consuming, exceeding what was estimated.
- The project team had plan to take a group of students from a local school for bird watching safari to Bardiya National Park, but since the national park was closed for tourism and other recreational activities due to the COVID restrictions, it couldn't be performed.

The other obstacle that arose during our project period were the deaths of local residents by tigers in Bardiya National Park. During the field survey of our project, locals were killed by tigers at regular intervals due to which a notice restricting jungle walk was released. Since the survey demanded intensive jungle walk, the field work was ceased for more than 15 days. Upon request to the park authority, the project team got permission to conduct our survey however, for safety concerns employing additional team members (nature guides) was important. Although the budget in this title estimated only limited field guides, the project team didn't compromise in this regard as safety concern is crux of any successful project.

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

Below mentioned are the summarised highlights of the major outcomes of the project:

- Increased awareness among the school students with the conduction of campaigns and interactive programmes in schools the project conducted drawing competition, essay writing, interactive programmes targeting more than 500 students in three schools in the peripheral area of the park. The major talking topic was importance of hornbill for a healthy forest ecosystem. Valuable insights were also shared with the local birders and naturalists of Bardiya National Park.



Figure 1: Students participating in essay writing competition. Figure 2: Prize distribution to the winners.



Figure 3: Student drawing Hornbill. Figure 4: Prizes for students.

- Increased information on distribution of hornbills and fruiting trees  
 The study area was divided into a total of 78 grids each with a dimension of (5km x 5km). We then conducted occupancy surveys along forest trails, riverbanks and potential habitats of hornbills within sampling grids. We conducted the occupancy survey in 33% of the total grids (26 out of 78). In each grid, three trail transects of 1.5 km each were walked. Number of birds seen to right, and left were recorded along with the distance to the sighting, angle of sighting from transects. Point Cantered Quarters method was adopted (in each 100m interval of each transect of 1.5 km) to collect data of tree density and basal area to estimate tree density and basal area. Altogether of 117 km was walked in trail transects. During the survey we found the evidence (direct sighting, calls, nests) of great hornbills in 21 transects, oriental pied hornbills in 24 transects and grey hornbills in 13 transects. We also sighted great slaty woodpecker in eight transects. Among the 78 transects we walked, 55 of them had water availability, all of them had fruiting trees preferred by hornbills and disturbance by anthropogenic activities was observed in 22 transects.



Figure 5: Field team collecting data. Figure 6: Hornbill nest found during survey.



Figure 7: PI Collecting data in the field. Figure 8: Great Hornbill sighting in the Babai valley.

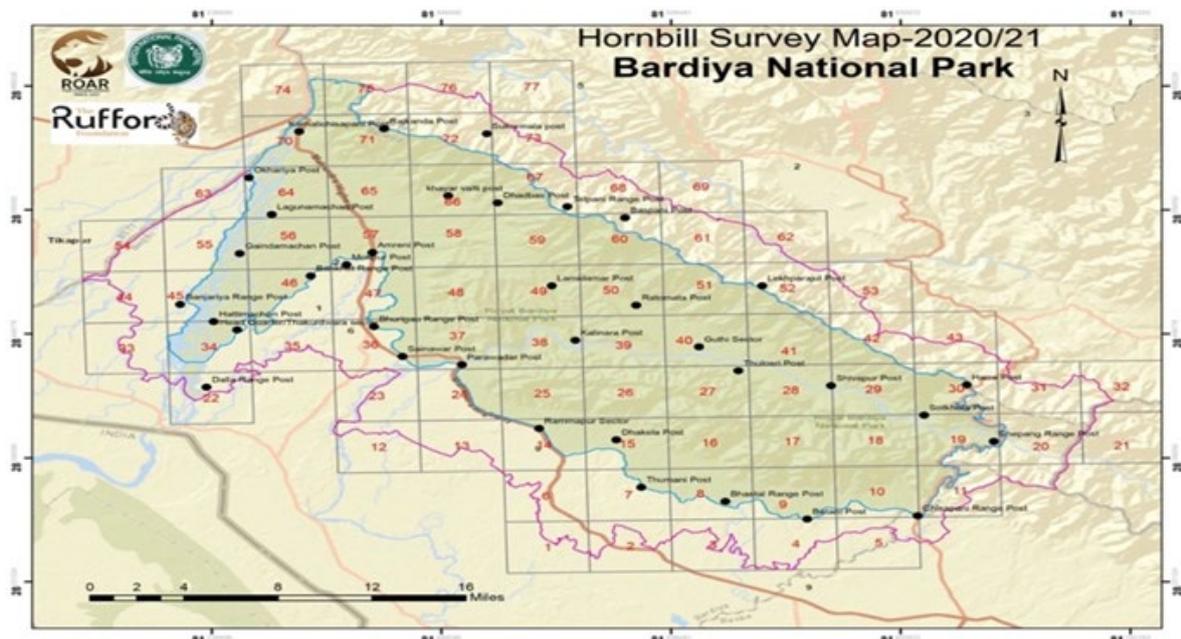


Figure 9: Grids distribution in the study area.

- Local guides trained as citizen scientists:

During our project period we trained four local guides and birdwatchers as citizen scientists. They participated in field surveys and in the meetings and discussion with various stakeholders. This helped them gather knowledge about the importance of hornbill conservation. Two of them also independently lead field surveys in the remote part of the Babai Valley of Bardiya National Park. They are now equipped with ample knowledge to lead surveys for hornbills and for other bird species physically.

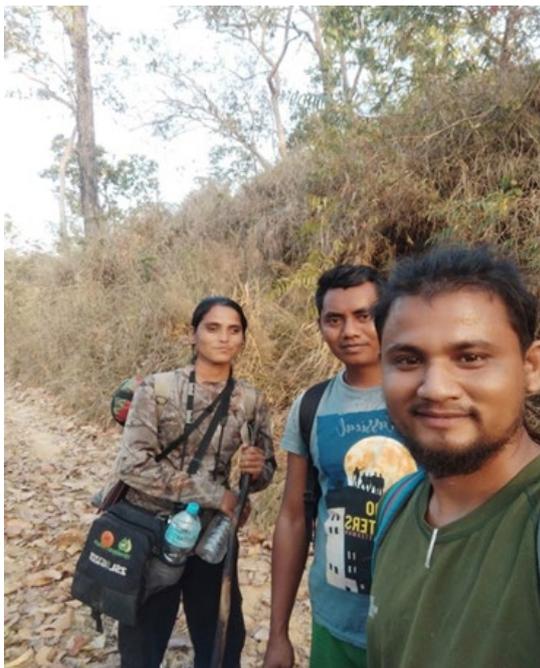


Figure 10: Left (Sushila Mahatara) Right (Deep Shahi) Citizen Scientists in the field

**4. What do you consider to be the most significant achievement of this work?**

**5. Briefly describe the involvement of local communities and how they have benefited from the project.**

One of the main objectives of this project was to create awareness among local communities and train the local guides, bird watchers to become citizen scientists. The locals were directly benefit from the project as there was direct participation of local people in each phase of the project. We provided them employment opportunities which financially aided them during the time of COVID crisis. The scientific skills that they developed to conduct surveys will help them be part of similar research projects in near future. It is worth mentioning that a female nature guide from the nearby village was given priority to become one of the team leaders to assure inclusive empowerment. The school students were directly benefited with enhanced knowledge with the help of sensitising activities which is anticipated to increase their motivation towards hornbill conservation. It is expected that the information reached even a larger audience including the parents of the children.

**6. Are there any plans to continue this work?**

Yes, we look forward to continuing our work. The findings of the research were very interesting. The great hornbill sightings and signs recorded were far better than what was expected in the beginning of our project. This finding has opened doors for further detailed investigations in the adjoining forests and corridors in the landscape. Also, the sighting of rufous necked hornbill in eastern Nepal after more than a century, has been a topic of discussion in Nepal recently. However, an immediate survey in the area is needed to create scientific evidence and access the habitat suitability.

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

The PI and team have analysed the data obtained from the field and now looking forward to developing a manuscript in a peer reviewed journal. The team have also shared the findings with the officials of National Parks and Wildlife Conservation Department. The future surveys leading towards the distributional status of the hornbill species in Nepal will facilitate towards the preparation of hornbill conservation actions as well as management plans.

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

The project was severely affected by the COVID pandemic. We were expecting to start our project in December 2019. However, the decision on the project came only in April 2020. COVID-19 was globally spread and had been causing a lot of problems at that point of time. Nepal was under strict lockdown until the near end of 2020. The fund was only received towards the end of September 2020. This resulted in the whole project being postponed by almost a year. The team gave their full efforts to meet the objective of the project on time. Once the restrictions from COVID were

lifted in Nepal, we were in the field to conduct the surveys. However, because of death of local people due to tiger attack in the park, the park was closed, and we were asked to stop our field work for 15 days.

**9. 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
Wages for field assistants for 4 months	£1050	£1300	+250	The probable man eater tiger in the jungle was increasing the risk in the jungle due to park officials suggested us to increase our team members for the safety concerns. Without second thought, we had to hire two additional locals to increase safety of everyone involved in the project in the field.
Accommodation and Food for Researcher and team during the project period	£1250	£1350	+100	The park remained closed for 15 days for all the activities during our field work (Tiger attacks) which increased our costing We had to wait until the situation was normal as the period of restriction was uncertain.
Transportation (From Kathmandu to Bardia and other local transportation in the field including hiring of motor bike for field visits)	£550	£550		The costing for transportation remained same regardless of the scenarios in the field. The project acknowledges to NTNC BCP for their support in local transportations in the study area.
Equipment to buy and rent for the project (2 units of eTrex 20X GPS, 1 unit of Nikon Monarch 7 (8*42) Binoculars, Portable Projector, Diameter Tape, Range Finder, Clinometer)	£890	£890		

Training for field assistants	£150	£150		
Conservation Outreach (Includes gifts for winners of quiz, drawing and other programs, pictorial boards, awareness classes in schools)	£1450	£1100	-350	We anticipated in having a larger audience for the awareness campaigns in the schools however because of COVID pandemic we could not conduct our programs to the larger group of students as we planned earlier. We only could take students from grade 8-9 to participate. Also, we could not conduct citizen-based panel discussion as we planned. These all caused our overall cost to decrease that what we asked for in the proposal. <i>(We still have fund kept for installing one pictorial board in the buffer zone of Bardiya National Park with the information on Hornbill Conservation. Once we prepare our manuscript and publish it, we will include all that in the information board)</i>
Knowledge dissemination meeting with Park authorities, officials, local birders, guides, and locals	£270	£100	-£170	We couldn't organize a meeting for stakeholders with all of them in a single place, we however organized multiple single meetings with different individual stakeholders. This caused our expenses to decrease by the given amount.
Communication for 12 months (Recharge Cards, Internet Charges)	£250	£250		
Miscellaneous Expenses	£140	£310	+£170	The cost under this heading increased because of the need to buy all the required kits required for keeping the team members safe from the COVID pandemic. N95 Masks, Sanitizers, Separate water bottles, COVID test before and after returning from the field.
<b>Total</b>	<b>6000</b>	<b>5860</b>	<b>-£140</b>	<b>We still have (£175) saved for the pictorial board which will be installed once our manuscript is prepared and published. The Rufford Foundation will be acknowledged on the board.</b>

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

- Create a manuscript with the data collected from the field and submit it to a peer reviewed journal.
- Plan and develop research proposal to conduct similar surveys in the other possible hornbill habitats in Nepal specially to access the habitat suitability of rufous necked hornbill in eastern Nepal.
- Interact and discuss with government bodies in working towards developing Hornbill Conservation Action Plan or Management Plan.

**11. 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?**

The logo of the Rufford Foundation was used in all the banners that were used during the project. We also had given Rufford Foundation all the credits for funding our research while getting the permission to conduct the survey from Department of National Park and Wildlife Conservation (DNPWC) and Social Welfare Council (SWC), Nepal. The Rufford Foundation will also be acknowledged as the donor of the project when we submit our research findings in a peer reviewed journal.

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

<b>Name</b>	<b>Roles</b>	<b>Responsibility</b>
Sima Khanal	Principal Investigator	Plan the project activities, develop research designs, create data collection sheets, conduct surveys, communicate with the stakeholders, organize meetings
Bhumi Prakash Chaudhary	Research Assistant	Assisting the PI with the field survey, lead one of the two teams conducting surveys in the field
Ramjan Chaudhary	Senior Naturalists/Citizen Scientist	Help with the social surveys and consultation with the stakeholders, help to identify the possible hornbill habitats, participate in the field surveys as citizen scientist
Sushila Mahatara	Citizen Scientist	Participate in the training organized to train locals, assist in conducting the field surveys
Deep Bahadur Shahi	Citizen Scientist	Participate in the training organized to train locals, assist in conducting the field surveys
Deepak Rajbanshi	Citizen Scientist	Participate in the training organized to train locals, assist in conducting

		the field surveys
Prasun Ghimire	Administrator	Keep the track of the expenses as well as co-ordinate with the officials for the smooth completion of the project
Rohit Naniwadekar	Supervisor	Support and supervise in the research and survey design

### 13. Any other comments?

This project being the first research-based project to study hornbills in Nepal has opened doors for future research on the species. There is an immediate need to conduct similar surveys in the other possible hornbill habitats along the landscape to create a baseline information about the distributional ecology as well as overall status of the hornbills in Nepal. We are very hopeful that The Rufford Foundation will support our future research work that will be aimed towards creating hornbill database in Nepal.