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The Rufford Foundation
Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other 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. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Kalpana Bisht
Project title	Understanding Ecology and Enhancing Conservation Status of Blue bull in Nepal: A Case study of Suklaphanta Wildlife Reserve.
RSG reference	14221-1
Reporting period	March 2014-April 2015
Amount of grant	£5933
Your email address	kalpana.env08@gmail.com
Date of this report	22nd May 2015

1. Please 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
1. To understand the ecology of blue bull and its habitat			Fully Achieved	
• Transect survey • GIS mapping • Vegetation analysis • Faecal pellet observation			Fully Achieved	
2. To understand the human-blue bull conflict			Fully Achieved	
• Participatory rural appraisal • Structured questionnaire and household survey • Focus group discussion • Training to local communities and park authorities • Interaction workshops • Review workshop for further policy formulation			Fully Achieved	
3. To conduct conservation awareness program through media and conservation education materials.			Fully Achieved	
• Poster, pamphlet and booklet production and distribution • Conservation education to school children • FM radio broadcasting for mass awareness			Fully Achieved	

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The project activities are smoothly implemented in the field. However, some of the people observed reluctant to respond the questions as they do not have exact data and record keeping system. Wherever, I do not get exact information, I tried to analyse the information using qualitative methods based on the discussion.

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

The three most important outcomes of this project are:

- The transect survey revealed the location and ecology of blue bull in Shuklaphanta Wildlife Reserve. Being the blue bull is an important prey base of tiger, the distribution and

abundance is important to understand the tiger habitat particularly prey and predator relation.

- The local communities are seldom aware about the species, while the species has a long and close relation in terms of grazing and the nature of conflicts between humans and blue bulls.
- The results of the study are useful to Shuklaphanta Wildlife Reserve authority to reform its annual planning on grassland management, wetland management and involve of local communities on blue bull conservation.

These outcomes can be explained as:

1. Ecology and habitat:

For ecology and habitat study all the habitat components including vegetation types were recorded wherever Blue bull or signs such as footprint, pellet were observed. In the case of the present study all animals were observed in sal forest, mixed forest and grassland. Also pellets (n=66) were recorded from three different vegetation types; 40 were from sal forest, 12 from riverine forest and 14 from mixed forest indicating high preference for sal forest (60.60 %) followed by mixed forest (21.21%) and riverine forest (18.18%). They were recorded feeding on the short grass dominated by *Imperata cylindrica* and *Cynodon dactylon*. The main vegetation of the study area was trees, shrubs and herbs/grass.

Observed plant species used by blue bull during study period.

Table 1: Observed plant species used by Blue bull during study period

Tree	Shrub	Ground vegetation (grass/ herb)
Mallotus philippensis	*Artemesia vulgaris*	*Cynodon dactylon*
Eugenia jambolana	*Cassia tora*	*Imperata cylindrica*
Terminalia tomentosa	*Callicarpa macrophylla*	*Equisetum* spp.
Buchanania latifolia		*Saccharum spontaneum*
Terminalia alata		*Narenga porphyrocoma*

2. **Habitat Mapping:**

Around 90 blue bull were observed during the study period. The population was observed in different places inside and in buffer zone of Suklaphanta Wildlife Reserve. This shows the increasing trend with comparing the previous population. Animals were observed in grassland, sal forest and resting at river bank during study period. The semi open habitat with scattered forest patches and grasslands inside the reserve has provided good food for the blue bull population. Habitat mapping of the animal was performed on the basis of presence of animal and signs by plotting transect line.
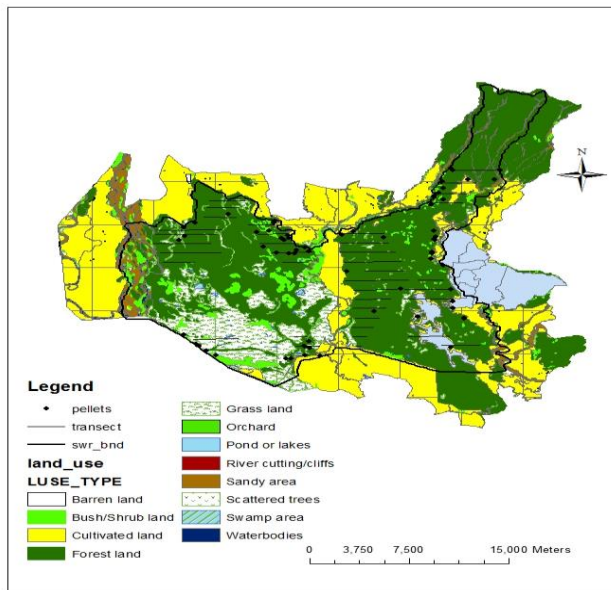
Figure 1: Map showing transect lines and pellet distribution of blue bull in the study area.
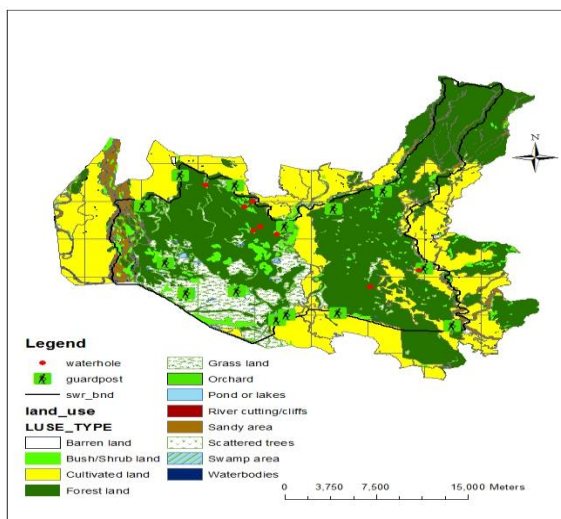

Figure 2: Map showing water whole location and guard post inside Suklaphanta Wildlife Reserve.

3. Socio-economic Status of community during study period

Following the simple random sampling the 125 households from five different locations, the area is mostly inhibited by Hindus, rarely Muslims and Christians.

3.1 Education status of respondent: More than half of respondents 53% (66) were literate, followed by illiterate 22% (28), higher secondary 22% (27) and then higher education were only 3% (4) (Graduates).
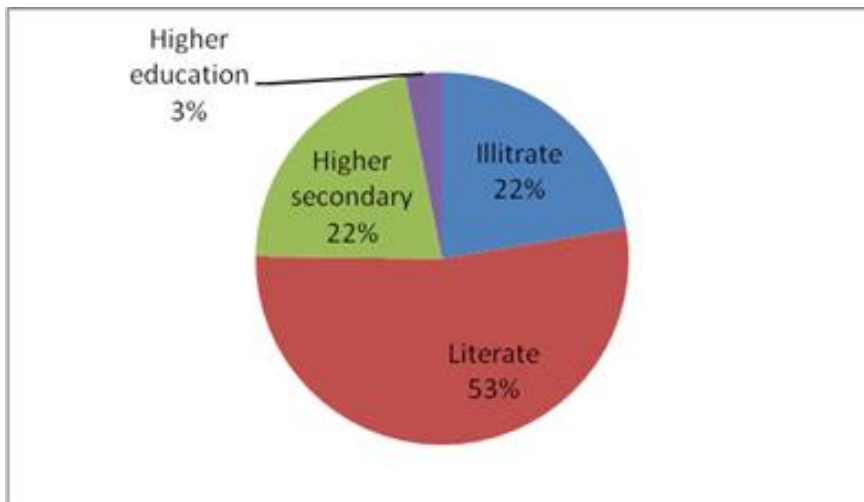

Figure 3: Education status of respondents

3.2 Profession of respondent: Agriculture is the main source of livelihood of the people. About 56% (70) of the respondents were engaged in farming and then 19% (24) were jobholders (private and government job). Similarly 18% (22) of respondents were found engaged abroad to earn money and few were 7% (9) engaged in business.
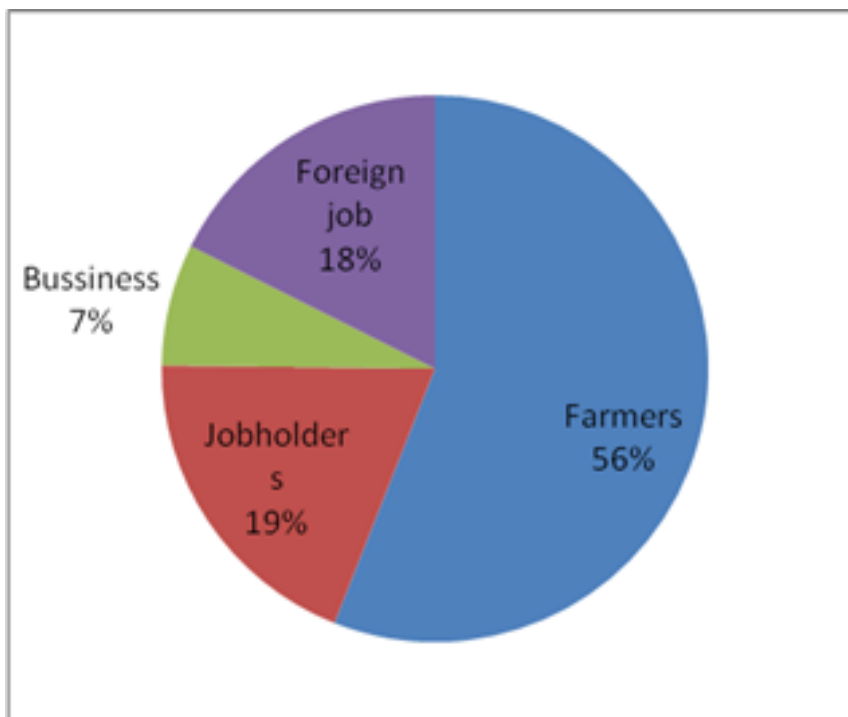
Figure 4: Profession of respondent

4. Blue bull and human conflict

To understand the conflict between the human and blue bull, study was conducted in five different places located in buffer zone of the Suklaphanta Wildlife Reserve. Based on the **p**articipatory rural appraisal, structured questionnaire and household survey, Focus group discussion the conflict between the animal and human was conducted. 125 households from five different places having conflict with the animal located inside the buffer zone of the Suklaphanta Wildlife Reserve were selected by simple random sampling.
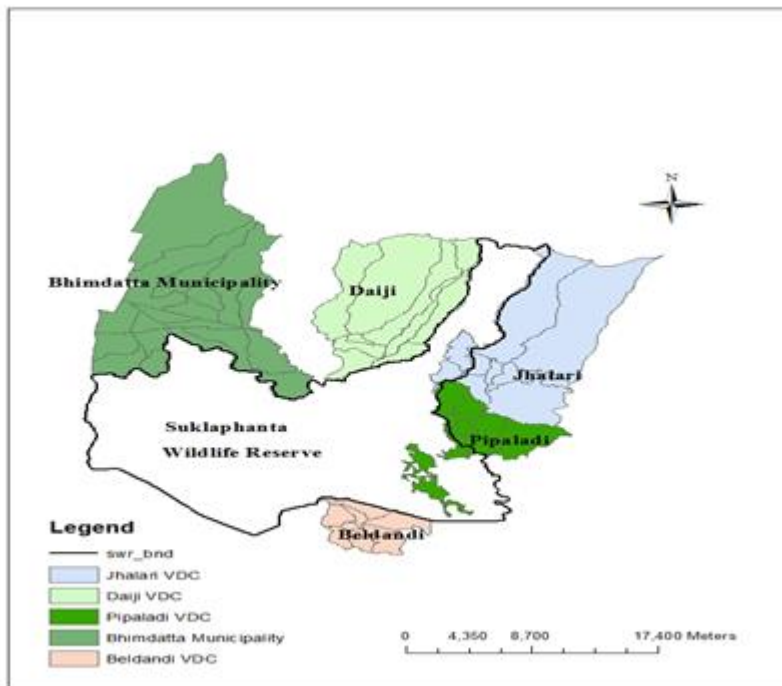
Figure 5: Map showing VDC of Blue bull-Human conflict area in buffer zone of Suklaphanta Wildlife Reserve.

Some findings during the PRA and questionnaire study are:

> **4.1 Problem from blue bull:** The animal can cross 6-7 feet high stone wall and fences, go for crop raiding in the late evening. Because of their grazing and browsing habit they devour every kind of farm species. The animal destroys crops more by trampling (encroachmement) than by eating. During the study period 85% (106) of respondents answered for crop damage and 15% (19) said only the encroachment. For these reason blue bull is a mammalian crop pest. Deficiency of preferable food species in their habitat was identified as the cause of crop raiding in the present study.
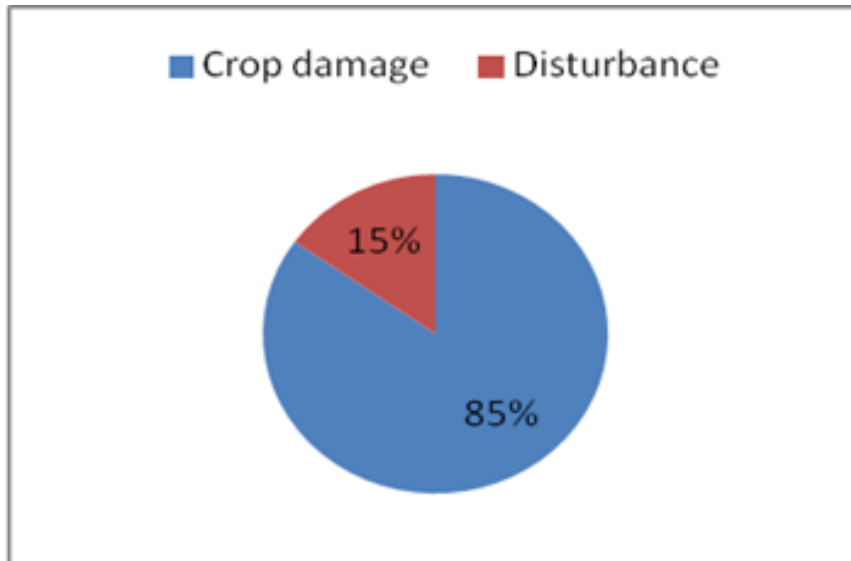
Figure 6: Types of Problems from blue bull

4.2 **Time of crop damage by blue bull:** The frequency of blue bull visiting to the farms was flexible. According to local peoples the animal visits their farms daily in the seasons and occasionaly otherwise. The winter crops wheat, mustard, lentils are the most preferreble crops of blue bull. Rice, wheat, mustard, lentils are the major crops cultivated in the study area. Loss of crop due to blue bull varied in different stages of crops. Rice was found to be damaged from early growing stage, milky grain stage being most preferred. Wheat was destroyed in growing and flowering stage. Mustard and lentil was damaged in all stage, mature stage being most preferred. In the present study about 10% (13) of repondents answered blue-bull mostly destroy crop in summer season. Similarlly 20%(25) repondents answered for monsoon season and 70% (87) answered for winter season.
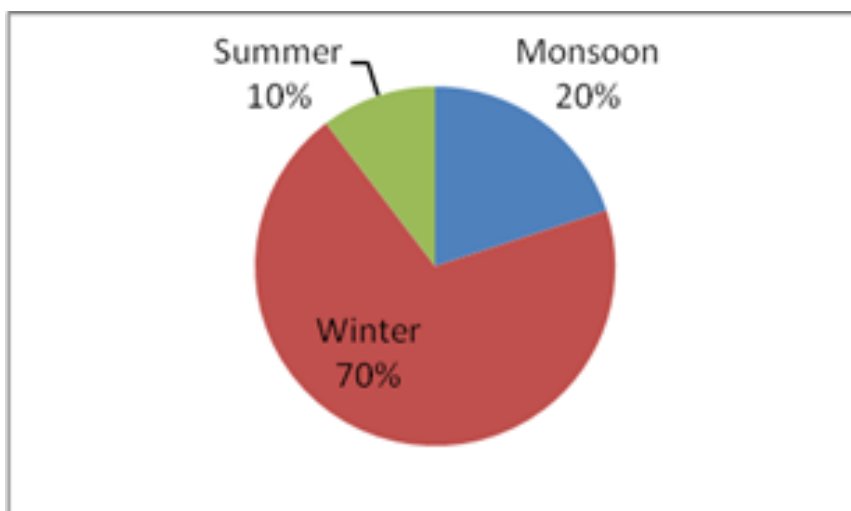
Figure 7: Time of damage from blue bull

4.3 Potential threat of Blue bull

It is not unusual to see wild animals attracted to areas with grain or other crops adjacent to their natural habitats. For example rhino (*Rhinocerous unicornis*) as the notorious crop raider of wheat and paddy, chital (*Axis axis*) on paddy and maize. Similarly, wild boar (*Sus scrofa*), elephant (*Elephas maximus*), monkey, etc. are also reported major crop raider in different part of Nepal near the protected areas.

Although blue bull and livestock do not graze together, they utilise the same habitat. Thus the illegal encroachment has caused negative impacts on blue bull and increased competition with livestock.

The encroachment of local people in grazing and nesting spot of animals for the purpose of illegal fodder and fire wood collection have depleted food quantity/ quality and created habitat loss of the animal. Beside these the seasonal fire inside the reserve is also a major threat for the animal.

During the questionnaire study, 22% (28) of respondents answered livestock pressure, 29% (36) habitat degredation, 22% (27) conflict and 27% (34) forest fire as the potential threats to blue bull in the study area.

The interaction between blue bull, livestock and local people was in two ways. The impact to local people because of blue bull was due to crop depredation and impact to blue bull was due to livestock encroachment and disturbance due to fodder and firewood collection, poisioning and poaching from the side of local people as blue bull is the main agricultural pest of the given area.
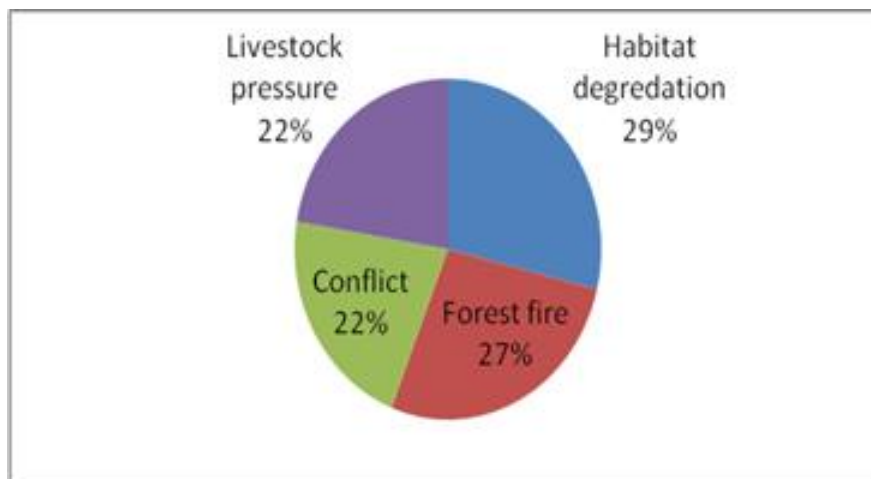
Figure 8: Threats of Bluebull

5. **Conservation Awareness Programme:**

Training to local communities and park authorities, conservation education materials poster, booklet distributed to school kids and school education classes were conducted to school of Beldadi, Daijee, Jhalari, Pipladi VDC's and Bhim datta municipality of Kanchanpur District. Similarly, the 12 episodes of "Blue bull the important ungulate" radio programme from Popular FM Radio Nagrik (104.3 MHz) was broadcasted. Also, interview in the popular FM and distribution of poster and booklets related

to blue bull were done. Training to local communities and park authorities were also conducted for awareness. The expert level interaction was done which would be helpful in further policy formulation to park authorities.

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

The project involved local communities in a number of ways. First, the awareness campaign was organized in five sites. Around 30-50 people participated at each site. Five field level assistants in order to carry out questionnaire survey for 2 months were hired. Similarly, the poster (5000) and booklet (2000) on blue bull related agendas for example species ecology, photos, maps and distribution, major nature conflicts and involvement of local communities. Similarly, the interview and radio programme was found highly effective to create awareness on blue bull and its ecology. The response from general public was incredible.

5. Are there any plans to continue this work?

Definitely, I want to continue this work in the future. Blue bull migrates to India as the Shuklaphant Wildlife Reserve is located in the border of India and Nepal. It is connected with the Dudhawa National Park of India. Trans-boundary migration is another prominent issue at regional and landscape level wildlife conservation in Nepal. There are several incidents regarding human and blue bull conflicts experienced in the whole Terai Arc Landscape. It is a serious issue as there are conflicts between the farmers as the species damaged the agriculture crops and the compensation amount provided from the government is very nominal. Therefore, I am planning to continue the Geospatial study regarding to the human-blue-bull study in the adjoining areas of the current study area. The park authorities and local stakeholders also recommended for carrying out further research and finding the reality in the ground. It is also important to find the relation with other prey base and tiger as the predators.

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

The report will be presented in relevant workshops and seminars. If possible, this effort will present in Rufford Foundation grantee meeting in the future. The findings of the project will be compiled into the form of a brief report and will be distributed to the relevant stakeholders in the Department of National Parks and Wildlife Conservation, Kathmandu. The final report of the project will be developed publish in one of the relevant international journal.

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

Activities	Proposed schedule (Time in month)	Actual time it took (in month) Revision in time schedule
Checklist, questionnaire preparation and desk review	Feb 2014	March 2014
First round field visit, rapport building with local communities and park authorities	March 2014	April 2014
Ecological assessment and habitat preferences	April - June 2014	May –July 2014

with habitat assessment and GIS mapping.		
Booklet, pamphlet, poster designing, production and distribution.)	July	August
Meeting, focus group discussion with local communities and park authorities	Aug- Oct 2014	Sept- Nov 2014
Overall review of works and organization interface workshops	Nov – Dec 2014	Dec 2014 - Jan 2015
Report writing and submission.	Feb- Mar 2015	April 2015

8. Budget: Please 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.

Item	Budgeted Amount	Actual Amount	Difference
Desk review: visit to different libraries and related offices. a. Transportation b. snacks c. Communication and photocopies	350	350	0
Ecological data collection and population estimation a. GIS map consultant b. Field assistants c. Field equipment and field gears d. Field verification	1100	1150	-50
PRA with farmers associated with buffer zone management activities a. Meetings and focus group discussions b. Intergroup interaction c. Stationeries	600	585	+15
Awareness program a. Conservation class to school children b. Food and snacks c. Leaflet and Post design and distribution	800	820	-20
Workshops/Meeting with Shuklaphanta Wildlife Reserve Officers a. Local transportation b. Communication/stationeries c. Tea and Snacks	600	600	0
Meeting with Local people to collect information on conflicts and crop damages a. Communication and stationeries b. Accommodation c. Local facilitator	1300	1300	0
Discussion and consultation with multi stakeholders a. Transportation b. Communication c. Human Resource /Expertise	500	500	0

Interface-workshop with local people and government officers of SWR a. Transportation/ Communication b. Stationeries d. Facilitator	400	400	0
Allowances transportation to focus group participants	283	283	o
Total	**£** 5933	**5988**	-55

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

Blue bull is largely neglected herbivores in Nepal. Park authorities also do not have much idea compare to other species like spotted deer (*Axis axis*). Blue bull is also trans-boundary species, but there is no information on movement route and corridors. As the population is gradually increasing trend, the conflicts between blue bull and local communities is constantly increasing. Although this study had explored the basic information, the nature and extent of conflicts between human-blue bull conflicts yet to be understood. The geospatial status of blue bull and its migratory routes and habitat status as well as status of human and blue bull conflicts across the Terai Arc Landscape.

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

Yea, I used the logo of Rufford Small Grant to each activity that is conducted under this project. The logo is also used in the posters and booklets published under this project. The acknowledgement and sincere thanks was also aired in the radio programme. Before starting group discussion and interaction programme with local communities, the contribution of Rufford Small Grant was explained.

11. Any other comments?

The ecology of Terai Arc Landscape is severely affected human activities. The blue bull is a not exceptional as a part of lowland ecosystem. Human and blue bull have been in constant struggle in Nepal and some studies have been undertaken to assess the gravity of human-wildlife conflicts and recommend way forwards to mitigate such conflicts. But Nepal still lacks even basic information on blue bull migration within the country. The project team, thus, expects support from the organisation like the RSGF in its next step to prepare blue bull migration map of Terai Arc Landscape**.**