

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
<b>Your name</b>	Letro Darlo
<b>Project title</b>	Status and Distribution of Himalayan Black Bear and the Status of Human-Bear Conflict in Jigme Singye Wangchuck National Park
<b>RSG reference</b>	18527-1
<b>Reporting period</b>	April 1st 2016 to March 31st 2017
<b>Amount of grant</b>	£5000
<b>Your email address</b>	fr.lethro81@gmail.com
<b>Date of this report</b>	April 4, 2017

**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
Ecological Distribution of Himalayan Black Bear				With the funding support from RSG, I could conduct a thorough field evidence survey for the presence of Himalayan black bear throughout the national park. I also used the camera traps in certain location to get photographic evidences. I also sought additional data on distribution from the past studies, thus presenting a holistic picture on the distribution of Himalayan black bear in JSWNP. There is a contagious distribution of Himalayan black bear in JSWNP.
Assessment of Human-Bear Conflict in the National Park				Earlier, there was no reporting of human-bear conflict to the park management as there was no compensation measure in place. Through semi-structured questionnaire interview, we could assess the prevalence of human-bear conflict in all the villages in JSWNP. We found that certain degree of human-bear conflict is prevalent in all the villages, either through crop raiding or depredation of cattle calves. There is no recent incidence of human mauling by bear in JSWNP.
Community awareness programme				The awareness meeting was held park range wise and engaged all the villages in the national park. Within each park range, small cluster household were called on during the meeting to deliver conservation education. We urged the people to report any sort of human-wildlife conflict so that park can plan better mitigation measures.
Information sharing through different media and seminar				The posters and brochures were printed and supplied to schools and villages. Such materials helped

			<p>people remind about the need for conservation. Based on the findings of the study, a presentation was also conducted to the park management and report is being submitted. We also have agreed to address the issue of human-bear conflict by incorporating mitigation measures in the plans.</p>
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**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

I am glad to report that we didn't face major unforeseen difficulties during the implementation of the project. However, there is little deviation in timing for implementing the field works from the proposed plan. This was done exclusively to suit the situation and for proper utilisation of human resources from the park. For conducting the questionnaire survey and awareness meeting in the villages, we took longer than anticipated. Work began as early as May 2016 but could complete only in August 2016. However, the good part is we could cover all the villages for conservation awareness.

It is also worth mentioning here that we have visited the villages twice in two park ranges, as recommended by the proposal review team. For the second time however, we met with the local leaders for dissemination of information materials like brochures and posters. We also visited the schools in the park to share the information with the students.

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

**1. Distribution map of Himalayan Black bear in JSWNP.**

We could produce the distribution map of Himalayan black bear in JSWNP, which will serve a good purpose for proper planning of conservation works including patrolling. We have found that bear are found almost equally in the core zone and multiple use zone of the national park. Bears are found at the elevation as high as 4086 m asl. However they are more confined in the warm broadleaved forests and cool broadleaved forests with lesser occurrence in conifer forests and alpine scrublands.

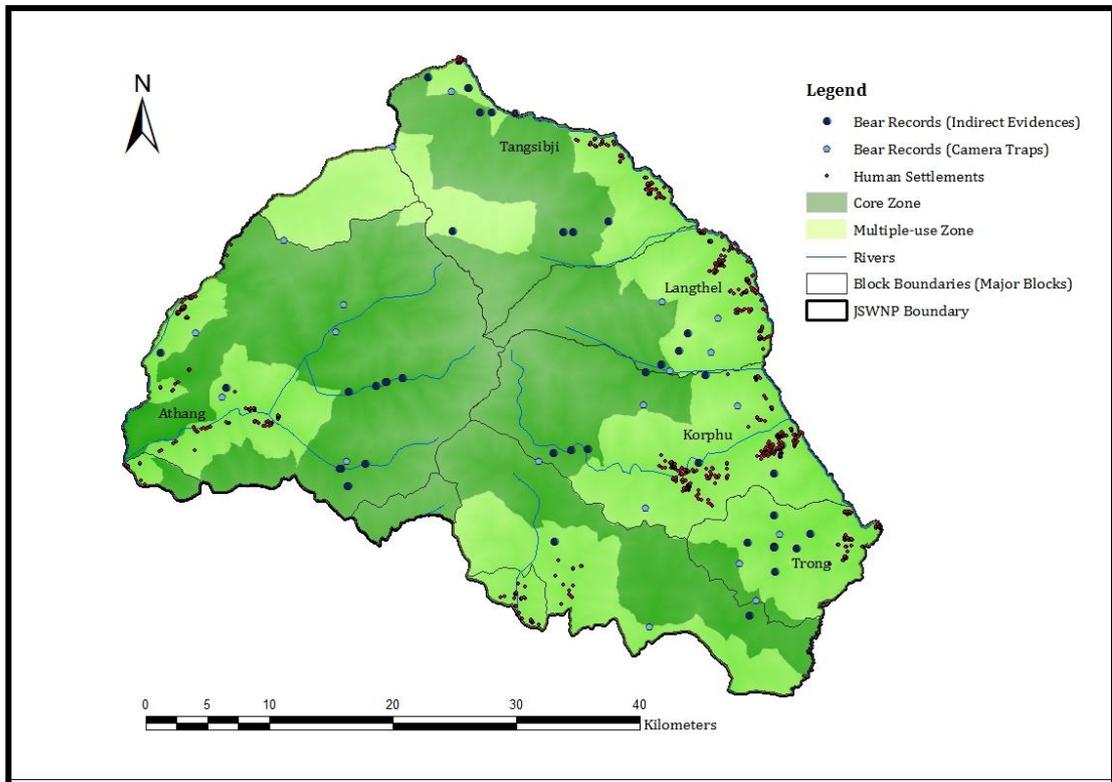


Table 1: Nature of Bear Occurrence in JSWNP.

Park Range	No. Camera Stations with Bear		No. Sites with Bear Evidences	
	Core Zone	Multiple-use Zone	Core Zone	Multiple-use Zone
Langthel	3	3	7	7
Nabji	2	4	4	5
Taksha	3	3	9	3
Tingtibi	2	2	1	6

Table 2: Distribution of bear by Habitat Type

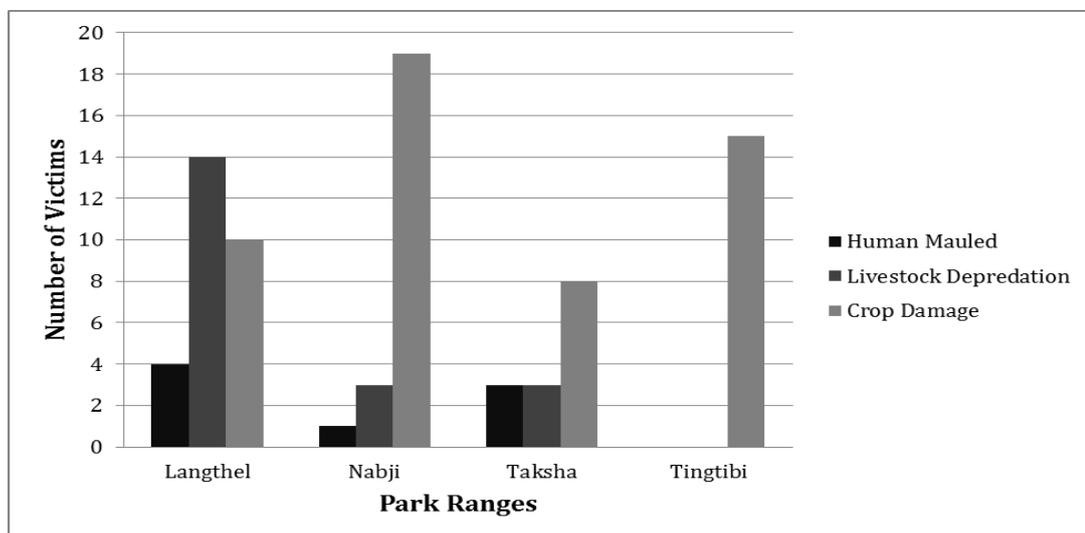
Habitat Types	Camera Trap	Evidences	Total
Broadleaved forests	12	28	40
Broadleaved and conifer	2	2	4
Chir	1	4	5
Fir	2	4	6
Mixed Conifer	4	4	8
Shrub	1	0	1
<b>Total</b>	<b>22</b>	<b>42</b>	<b>64</b>

## 2. Peoples knowledge on Asiatic black bear

We have visited all the villages inside the park and interviewed them about their knowledge on Himalayan black bear. We found that over 85 % of the total respondents were aware of the presence of Asiatic black bear in their locality with around 74 % of them seeing the animal at least once in the in a year and around 25%% (n=267) reporting of sighting bear evidences. People are also well aware of the provisions of Forest and Nature Conservation Act 1995, which prohibits people to kill wild animals. It only shows that regular awareness education will help the peoples in better understanding the conservation needs.

## 3. Assessment of Human-bear conflict in JSWNP.

For the first time, the national park could have an overview of how prevalent the human-bear conflict is. We found that some degree of human-bear conflict is prevalent in all the park ranges. Over 25 % (n=311) of the respondents reported of having conflict with Himalayan black bear in the past five years. We could relate this to the presence of bears in the multiple-use zone where people are allowed for resource extraction and grazing. Multiple-use zones are also nearer to the human settlement. Of the various types of conflicts, we found that bears damaging agriculture crop during the harvesting season as most serious one (Figure 1). Intensity of conflict also differs from one park to another.



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

Local communities were involved during the implementation of this project. The park residents were called on a day meeting for conducting the awareness and education programme. Around 89% of the park residents were reached during the awareness and education programme. Households were sampled and interview was conducted to know the people's perception on Himalayan black bear and the

bear-human conflict. We interviewed 311 peoples from the five administrative blocks spread over four parks.

<b>Geogs</b>	<b>Total No. of HH</b>	<b>No. of HH educated</b>	<b>No. of HH interviewed</b>
<b>Tangsibji</b>	93	77	21
<b>Langthel</b>	84	69	36
<b>Korphu</b>	206	188	135
<b>Trong</b>	81	76	47
<b>Athang</b>	124	113	72
<b>Total</b>	<b>588</b>	<b>523</b>	<b>311</b>

The communities benefited in a way that they value the conservation efforts because of various indirect benefits. While people didn't have direct financial and economic benefits from the project, we educated them how conservation efforts from their end will help them with better incentives. Just for an instance, people were given many socio-economic incentives like provision of high yielding crop seeds, alternative roofing materials, eco-tourism products etc., for their efforts and sacrifices in conservation. Conservation awareness programmes are important tools to remind the people of the needs for conservation and of various indirect benefits that they gain from their cooperation with the park in conservation.

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

The works accomplished during this project have opened wider scope for the conservation of Himalayan black bear. The distribution pattern shows equal distribution of animals in both core and multiple use zones. It also came to light that some degree of human-bear conflict is prevalent throughout the national park, which poses greater threat to the bear as well and humans. Therefore, it is important that further investigation and studies are conducted for achieving bigger conservation milestones.

It is very important to know the behavioural pattern of animals to understand human-bear conflicts better. For this radio telemetry could be an important tool and we also need to know the dietary pattern of the animal and find out if bears raid crops during the lean food season in the wild. Most importantly, it is vital to replicate similar studies in the areas outside the park and in biological corridors so as to understand the landscape connectivity for larger mammals.

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

The preliminary results of the study are already being shared with the park management with conservation recommendations. The park management after reviewing the result would put forward policy recommendations to the department to curb human-bear conflict especially with regards to compensation when human are mauled by bear. Posters based on findings of the study are also designed and

distributed to relevant offices in the department. However for the farmers only pictorial posters are given as many farmer are illiterate.

One manuscript is under preparation to be submitted for international peer reviewed journals as such mediums will have wider coverage and weightage in delivering the messages. The manuscript would contain the aspects of distribution and human-bear conflict in the national park.

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

The project was planned to be completed in 1 year and I could complete the project within the stipulated time. However some deviations have occurred for conducting the different activities.

**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	Comments
Procurement of i7 16GB RAM Dell 1000GB Laptop.	600	600	0	
Procurement of Canon EOS &D 18 MP DSLR Camera with 28-135 mm lens.	850	755	+95	Opted a smaller (18-55mm) lens to cover up cost for Binocular
Procurement of Nikon Trailblazer Atb 10x15 Binocular	100	100	0	
Procurement of GPS(Garmin etrex 30)	200	315	-115	It was found expensive
Procurement of extension kits for field surveyors	600	600		
Stationery and other equipment (papers, pen, pencil, tapes, and batteries)	250	280	-30	More paper was required for printing questionnaires forms and higher quality batteries required in camera traps.
Printings and publications (Seminar banner, Species Conservation Pamphlets and Posters, Design and Printing of Research Reports)	400	350	+50	Research report was not printed as posters were printed. Importance given on manuscript over research report.
Vehicle rental during field surveys (Questionnaire survey and field survey)	600	750	-150	More travel incurred, as we travelled twice in some park ranges.

works)				
Daily allowances and meals for interviewees during questionnaire survey and field expenses for sign survey and camera trap works	1050	950	+100	No 100% turn out of park residents.
Seminar on Bear Conservation for park staffs (based on research findings)	350	300	+50	Cost saved as more was spent in earlier works.
Bank charge	0	5	-5	Charge deduced in fund transfer, which was not initially expected.
<b>Total</b>	<b>5000</b>	<b>5005</b>	<b>-5</b>	

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

While carrying out further conservation work like studying the behavioural pattern and dietary pattern of Himalayan bear, I feel that other national parks in Bhutan should conduct similar studies to have baseline information at national level. Owing the support rendered by Rufford Foundation, I could see some of the parks conducting similar studies but for other areas where works are not done, I look forward to help share the idea I gained through this project.

**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?**

Yes, I did use The Rufford Foundation logo in the material printouts and during the presentation works. Owing to the generous support rendered by The Rufford Foundation in diversity of fieldwork which helped us gather baseline information, the Rufford Foundation has gained much popularity, which is why our park managers and directors encourage us to put in individual efforts. The Department of Forests and Park Service, Bhutan would remain indebted to Rufford Foundation for the funding.

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

**12. Any other comments?**

The funding I got from The Rufford Small Grant Foundation has helped me execute conservation project independently, which in itself is a huge challenge and great achievement at the end. The funding also has helped us built a better information on the status of Himalayan black bear in Jigme Singye Wangchuck National Park. Besides, the Rufford funding has helped many of our colleagues conduct independent research in the field of their interests, which has helped Bhutan immensely in conserving the species and building professional conservationists.

*Questionnaire Survey to study local people's perception on Himalayan Black Bear in JSWNP.*

**I. General information**

Date of interview: ..... Interviewer: .....

Name of respondent/Respondent ID:  
.....

Gender: Male  Female

Age: .....

Education: PrimaryLSS  MSS  HSS  NFE

Village: ..... Geog: .....

Dzongkhag: .....

GPS Location: .....

**II. Species information**

1. Knowledge about Himalayan Black Bear: Yes  No

2. How do you know?

- a. I've seen them:
- b. Family members has seen them:
- c. Have seen pugmarks:
- d. Have seen feeding signs and faeces:
- e. Have seen damaged property by bear:
- f. Have heard stories about it:

3. Are there bears in the vicinity of your village or cattle huts? Yes  No

4. How often do you see a bear? ..... times in the last year. How far from the village?

5. How often do you see bear signs? ..... times in the last year. How far from the village?

6. Name the places where you have seen bears last year and the numbers seen.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

7. What do you think is the relative abundance of bears in your area:

- a. Today: rare/fairly common/abundant
- b. 10 Years ago: rare/fairly common/abundant

8. Population trend: Increasing  Decreasing  Same

8.1. Reason: Habitat degradation  Poaching  Others

State if others: -----  
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**III. Habitat information**

1. Mostly seen: Open spaces  Forests  Agriculture land  Mountains

2. How? Feeding  Moving  Destroying  Hibernating

3. Time: Early morning  Afternoon  Late evening

4. Season: Summer  Winter  Autumn  Spring  All season

5. What food do they eat? Name some local tree species in order of their preference.

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**IV. Threat information**

1. What are the threats to bears:

a. Human killing them to protect:

Livestock

Property (e.g. tents, huts, houses)

Themselves

b. Human killing them for sale

c. Lack of food due to habitat degradation

Causes of habitat degradation: forest fire/excessive felling/over grazing/others

d. Extreme climate

e. Other-----  
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**V. Human-Bear Conflict**

1. Have you or your family member experienced conflict with bear in last 10 Years? Yes  No

If Yes:

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a. **Human Mauling by bear:** Yes/ No,

If Yes

a.1 Time of the day, season and year

a.2 Activity of the victim

a.3 Location

a.4 Possible reasons:

(\* A- Human moved to animal habitat, B-Lack of prey for animal, C-Negligent herding, D-Changed animal behaviours, E- specify others)

a.5 Possible sex of the bear? Any cubs accompanying him/her?

a.6 Losses suffered( in Nu)

a.7 What were your response to the conflict?

a. Retaliation

b. Reported to forest official

c. Ignored

a.8 Recommended solutions for conflicts

a. Killing of the bear

b. Guarding the crops and livestock

c. Avoiding the animal

d. Understanding animal behaviour

e. Compensation

f. Others (Traditional methods): -----  
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**b. Livestock depredation Yes/ No, If Yes.,**

- b.1 What are the domestic animals reared in the locality?  
 b.2 Which domestic animals are killed/injured by bear? List in order of frequency. Approx age of livestock  
 b.3 Time of the day, season and year  
 b.4 Location  
 b.5 Possible reasons:

(\* A- Human moved to animal habitat, B-Lack of prey for animal, C-Negligent herding, D-Changed animal behaviours, E- specify others)

- b.6 Possible sex of the bear? Any cubs accompanying him/her?  
 b.7 Losses suffered(in Nu)  
 b.8 What were your response to the conflict?

- a. Retaliation   
 b. Reported to forest official   
 c. Ignored

- b.9 Recommended solutions for conflicts

- a. Killing of the bear   
 b. Guarding the crops and livestock   
 c. Avoiding the animal   
 d. Understanding animal behaviour   
 e. Compensation   
 f. Others (Traditional methods): -----

**c. Bears destroying homes: Yes/No, If Yes,**

- c.1 Time of the day, season and year  
 c.2 Location  
 c.3 Type of house  
 c.4 Possible reasons: (\* A- Human moved to animal habitat, B-Lack of prey for animal, C-Negligent herding, D-Changed animal behaviours, E- specify others)  
 c.5 Possible sex of the bear? M/F/NA. Any cubs accompanying him/her? Yes/No  
 c.6 Losses suffered (in Nu)  
 c.7 Possible reasons:

(\* A- Human moved to animal habitat, B-Lack of prey for animal, C-Negligent herding, D-Changed animal behaviours, E- specify others)

- c.8 Losses suffered( in Nu)  
 c.9 What were your response to the conflict?

- a. Retaliation   
 b. Reported to forest official   
 c. Ignored

- c.10 Recommended solutions for conflicts

- a. Killing of the bear   
 b. Guarding the crops and livestock   
 c. Avoiding the animal   
 d. Understanding animal behaviour   
 e. Compensation

f. Others (Traditional methods): -----  
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**VI. Conservation Awareness**

1. Are you aware of Forests and Nature Conservation Acts/Rules? Yes:  No:

If yes, what animals are protected strictly by the law? -----  
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2. Is there any penalty for killing wildlife? Yes:  No:

3. Have you/your family members attended any conservation awareness programmes? Yes:  No:

If Yes, what type of programme and how many times? -----  
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4. Why should Himalayan black bear and other wildlife be protected?

- a. Scientific study
- b. To maintain ecological balance
- c. Genetic resource
- d. National revenue
- e. Prevent extinction
- f. Employment
- g. National wealth
- h. Others

5. Social and cultural value of Bear: Yes  No

a. Reason: -----  
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6. Do you think offenders should be imprisoned besides imposing monetary fines?  
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7. What compensatory methods do you prefer in case of bear-human conflict?  
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8. What anti-depredation measures taken by villagers to protect crops/livestock/themselves?  
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9. Which one is most effective?  
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