

The Rufford Small Grants Foundation

Final Report

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

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. 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. 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	Kuenzang Dorji
Project title	Small Mammals in Small Country: Diversity and Conservation of Small mammals in High Altitude Wetland of Phobjikha, Wangdiprodrang, Western Bhutan.
RSG reference	
Reporting period	December 1st 2014- November 30th 2015
Amount of grant	£5000
Your email address	kdorji@uwice.gov.bt
Date of this report	November 30, 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
To estimate the species diversity and relative abundance of small mammals with relation to habitat types in high altitude wetland of Phobjikha		x		However, the bats which are also categorised as small mammals were not counted during the research due to lack of bat expertise.
Publish pictorial guide of small mammals of High Altitude Wetland of Phobjikha		x		Could not include the volant species of small mammals like bats. However, the pictorial guide is supplemented with sampling procedure.
Train 30 trainee foresters of College of Natural Resources on small mammals conservation research (sampling design, survey techniques and identification)			x	Besides 30 trainee foresters, 37 students of BSc Sustainable Development and 30 trainee foresters of junior batches were also trained on importance and sampling design to study small mammals.
To assess the effect of environmental variables on presence of small mammals in high altitude wetland of Phobjikha			x	
To identify the conservation threats that effects the survival of small mammals in high altitude wetland of Phobjikha			x	

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

The successes of the project are challenged by some difficulties. Due to lack of classification keys of small mammals for Bhutan, identification of captured animal was quite challenging. At the time of data collection, the photo (dorsal, ventral) and morphometric measurement were recorded vigorously which was later shared with member of Small Mammals Specialist Group (SMSG) and professors of University of Montana to help identifying the species. Further, South Asian classification keys of Small Mammals were also referred to identify the species.

In addition that, due to remoteness of the study area, the storage of DNA sample was challenging too. For this, I have collaborated with local area veterinary officials to permit us to store the samples in their laboratory.

The harsh and extreme climatic condition has caused high rate of animal mortality at first trapping session. In later stage of trapping, the cotton cushion were placed inside the traps as beddings to provide insulation and traps were covered with leaf litter, twigs and branches and bark to avoid direct cold on the traps and save animal mortality from cold.

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

- 1. Documented the species diversity and estimated relative abundance of small mammals of high altitude wetland of Phobjikha.** The agricultural land had high species richness and the forest had high diversity of small mammals. The macro habitat used by small mammals was agricultural land and microhabitats used were the shrubs.
- 2. Published pictorial guide book and survey protocol of small mammals of Phobjikha Valley.** The guide book that includes eight species of small mammals and distribution range of individual species was published. The guide also includes the survey protocol and animal handling as reference for future researcher who are interested to study small mammals.
- 3. Trained 30 trainee foresters of College of Natural Resources on conservation research on small mammals.** The trainees were taught on how to design the general wildlife survey design, impart practical field techniques for ecological studies and handling of small mammals, field and lab techniques for scientific studies on small mammals. Design small mammal research using Geographic Information System (GIS) in their respective parks.
- 4. Assessed the conservation threats that affected the presence of the small mammals.** As one of the project outcome, both natural and anthropogenic conservation threats that affect the survival of small mammals in high altitude wetland of Bhutan had been identified. The anthropogenic threats observed during the study included 100 % of grazing (N=55), 33% of road (N=18), 65% of timber extraction (N=36), and 7.27% of quarry (N=4).

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

Local communities form vital part of the project titled: Small mammals of small country: Conservation and Diversity of Small mammals of High Altitude Wetland of Phobjikha, Wangdiprodrang, Western Bhutan. Local people were engaged in consultation meeting and they have rendered full cooperation and ensured the traps are not removed or damage intentionally. Local people have permitted the project to undergo trapping exercise in their agricultural field which is one of the sampling frames of four major habitat types.

Besides, support and cooperation, local people furnish local information on types of small mammal species presence in study sites which help the researcher to make a professional guess while identifying the animal. Local people were also engaged as local guides and they have provided porters and pony services during the data collection which in turn they were financially benefitted from project.

5. Are there any plans to continue this work?

Currently I am working as the focal person for small mammal research in Bhutan. This project is first ever kind of conservation research to study small mammals of Bhutan. The project was the stepping stone to publication of classification keys of small mammals of Bhutan. As a continuation conservation research on small mammals, I will study the seasonal (dry and wet) differences in species diversity of small mammals in Khotokha Ramsar site of Bhutan. Similar project will be initiated in Ramsar site of Bumdeling, Eastern Bhutan in collaboration with graduate students. Later, the conservation research will be expanded in protected areas and other Government Reserved Forest (GRF) of the country. Besides that, I will encourage more people to develop interest on small mammals through training, workshops and educational awareness.

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

As of now, the results and information were disseminated through poster presentation, symposium, seminar and class presentation. The poster was presented during Bhutan Ecological Society (BEST) Symposium attended by more than 500 participants. The results were presented to 80 trainee foresters and five forestry faculties during weekly technical seminar in College of Natural Resources. The findings were also presented to 37 students of BSc. Sustainable Development as part of thesis presentation. The results and findings of the research were also presented to 30 participants who attended the week long training on conservation of small mammals organized by Ugyen Wangchuck Institute for Conservation and Environment (UWICE) and 11 in-service staff of Natural Resource Development Limited (NRDCL).

Further, a copy of thesis will be submitted to 10 colleges of Royal University of Bhutan as reference. The article on conservation threats to small mammals of Phobjikha was submitted to RNR Journal of Bhutan. A copy of pictorial guide of small mammals of Phobjikha was distributed to institutions and agencies. The survey protocol and research design used during the research will be incorporated in the wildlife science module for certificate course on forestry and environment in UWICE. The photo and samples collected during the research will be used during preparation of classifications keys of small mammals of Bhutan in later stage.

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

As the activity (data collection) of the project is spread throughout the project year, the fund was proportionately used all around the year. Major chunk of money was spent at initial stage to meet the cost for equipment and train research assistants and conduct consultation meeting with local leaders and community people. To gather data for all four seasons was bit ambitious and entailed lots of fieldwork which was challenging to complete in a year with approved grant.

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
Digital Camera Lens	500	600	-100	The Nikon lens (70-300mm) has cost Nu. 55,600 at the

				exchange rate of 1 £= Nu. 92)
Field equipment's and instrument	500	450	50	
Purchase of field guide book	150	75	75	
Induction Course to Research Assistants	400	400	0	
Vehicle Rental and Maintenance	600	600	0	
Daily Allowance for field assistant and local guides	600	700	-100	
Porter and Ponies charges	400	475	-75	The cost for daily allowance, porter ponies and food supplies have escalated due to intensive field works (60 days per trapping exercise and 240 days for data collection)
Food and supplies	350	400	-50	
Travel and Logistic	300	310	-10	
Field Gears	400	415	-15	
Pictorial Guides	600	300	300	
Stationery	100	125	-25	
Printing charges	100	150	-50	
TOTAL	5000	5000		

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

Within the mammalogy, small mammals have highest diversity comprising of 3821 species of order Rodentia, Chiroptera and Soricomorpha (Anke *et al.*, 2010). Equally important as terrestrial and arboreal species of small mammals, the research should focus on bats in Bhutan which are also small mammals.

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

Obviously the answer is "yes". The RSGF logo was used in all presentation, posters and pictorial guide book printed for educational purposes. Thus it has resulted that approximately 500 Bhutanese people were aware about RSGF and most of the early Bhutanese biologist and conservationist are applying for RSGF to conduct conservation research in Bhutan.

11. Any other comments?

RSGF should look into considering the continuation grant with fewer formalities when compared to first grant.