

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	Rashmi Singh
Project title	Pastoralism and Rangeland Conservation: Understanding impact of Grazing on Rangeland Biodiversity in Eastern Himalayas, India
RSG reference	23379-1
Reporting period	October 2017- December 2018
Amount of grant	£ 5000
Your email address	rashmi89singh@gmail.com
Date of this report	22 January, 2019

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 document the traditional ecological knowledge among local herders and identify key factors which influence decision making of herders on daily as well as seasonal basis				Using social surveys and focused group discussion we successfully documented traditional ecological knowledge regarding the key factors determining pasture management. We also documented the local knowledge regarding change in the ecology of pastures over time, and the locally perceived reasons for the same.
To document the changes that have happened in pastoral system in last two decades and the reasons for the same				Social surveys in seven villages around Barsey Rhododendron Sanctuary were conducted successfully in order to understand the change in pastoral system of the region. We also documented the ecological and wildlife related issues that have arisen due to changes in the pastoral system.
To understand how these changes have influence the local livestock management and resource use				We found that the changes in pastoral system in study area has largely happened due to a government led intervention in Sikkim. We documented how this intervention influenced pastoral livelihoods and resource use.
To assess response of plant community structure and composition and. Wild ungulates to gradient of livestock grazing pressures				We successfully conducted vegetation surveys to understand the response of plant community in reference to grazing pressures. We also documented livestock densities and wild ungulate presence. However, due to paucity of time and restricted accessibility during a large part of the year, we could not cover the objective of documenting wild ungulate abundance. We plan to continue our research on this objective and have planned to document the wild ungulate abundance in summer 2019.

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

During the first field trip, which was dedicated for conducting social interviews and finalizing the field sites for vegetation surveys, the lead researcher herself met with an accident in the field while travelling to collect the research permits. This accident delayed fieldwork for more than a month due to multiple severe injuries. During the second field visit after conducting vegetation survey at one site, the field assistant got his knee injured which delayed the work for another 1 month. Though the lead researcher of the project was in the field during this time but could not make any progress for 1 month at two different instances.

Our study area receives excessive rains during between May to August, and even trekking paths got blocked. May to August is also the flowering season for most of the seasonal grasses. To reach the high altitude region of Sikkim, one must cover the temperate and subtemperate zone by walk for over 15-20 km. Blocked paths and landslides resulted in rescheduling of the vegetation survey plans twice.

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

1. A total of 240 herds, locally known as *goaths* of sheep, yak, buffalo and cow used to graze in an area of 104 km² which presently falls under the boundary of Barsey Rhododendron Sanctuary. These herds belonged to 96 herders, who owned two to five *goaths* of different livestock species. These herders used to keep helpers, the care takers of livestock herds, in absence of the main herder. Topography and seasonality were found to be the two key factors influencing the pasture use and livestock management in the study site. In the seven villages of the study area, livestock herds were mostly of buffalo and cows. During focused group discussions a map was prepared which includes temporal and seasonal movement highlighting the traditional pastoral practices across the region with rotational grazing. During peak winters, cows and buffaloes were herded in the pastures close to villages. During summers, pastures which are at relatively higher altitude were utilised. There were certain pastures which were reserved for peak monsoon, due to their comparatively plain topography and high windy conditions which results in less rainfall in these smaller patches of land.
2. Major change in the pastoral system of study site occurred during 1998, when the Government of Sikkim came up with a grazing ban policy in order to conserve the faunal and floral diversity of the region. The ban was implemented by physical removal of herders from the sanctuary in 2002. This was done with the help of members of Eco Development Committees, and forest department officials. Sanctuary area was not accessible by the local herders for open grazing. Herders, in absence of access and resources, either sold their cows and buffaloes in the neighbouring villages of Nepal or to the members of their own villages. People who were not traditionally engaged in herding bought one of two cows and stall feed them. One of the major changes this ban brought in the study site and in entire West Sikkim district

was a change in the kind of pastoralism, from traditional-self-sufficient pastoral system to a tourism-economy driven pastoralism where the livestock species are different too.

3. Grazing ban implementation affected the livelihoods of the herders as they stopped rearing livestock and started cultivating vegetables and large cardamom. Out of the 32 herders which were interviewed, seven adopted tourism-based livelihood options, and rest of them combined agriculture with seasonal labour work as their primary livelihoods. To understand the ecological response of the grazing ban policy on the vegetation composition, we compared the species composition of the site with and without grazing for last 10 years. Our vegetation surveys show that the species richness is more in the region where grazing is still continued. Locals also perceive that due to grazing ban the species composition has changed over time with comparatively less cover of the palatable species in the places where grazing is banned.

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

I worked closely in collaboration with a local NGO Khangchendzonga Conservation Committee (KCC). This collaboration helped in effective implementation of the research objectives. Results of the study were shared with the members KCC at small intervals during the course of the study.

Field team consisted of two field assistants, who helped in conducting vegetation surveys as well as social surveys. Both the field assistants were hired for 6 months. During field visits to high altitude area for conducting vegetation surveys, two potters and one cook was hired for 25 days. This provided short time employment to five local people. In addition to this, my field assistants took keen interest in learning the scientific names of birds, trees and grasses during the fieldwork. They are now well trained to work with researchers in future on both social as well as ecological questions. Tourism is an important part of the local economy in the region, and these assistants can also work as nature guides.

5. Are there any plans to continue this work?

Yes. One of the objectives of the proposed study was partially fulfilled. I plan to conduct the field surveys to document wild ungulate abundance in the summer 2019. I have been working on pastoral communities of high altitude regions of eastern and western Himalayas for more than 6 years now, I will be continuing to expand my horizons to the ecological understanding and research questions in the near future.

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

Part of this work has already been shared with the Forest Department officials who are the primary bodies involved in designing conservation policies. A brief

Powerpoint presentation was made on 7 July 2018 at the Forests, Environment and Wildlife Management Department, Gangtok, Sikkim.

Results have also been shared with Khangchendzonga Conservation Committee NGO, working on the grassroots level in the region for two decades now. This NGO is an important stakeholder in the region. They are constantly involved in planning and decision making by the forest department for environment conservation and capacity building programmes.

In order to share the results of this study with the scientific community, I am presenting my work at the upcoming Rufford Conference in India. I am keen in presenting this work periodically at various national and international conference on the themes of rangeland management and pastoral lives. I am also planning to communicate a research paper from the finding of this research soon.

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

Project funds were utilised between October 2017 and December 2018. Actual proposed duration was between October 2017 and October 2018, which had to be extended due to two different accidents incidents in the field. I continue to work for my PhD research in the same geography for next two years and planning a long-term engagement in the Eastern Himalayas in future.

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
Stationary and Communication	60	60		
Hiking and Camping equipment	500	500		
Equipment (Laptop, GPS, Binocular, Voice recorder, Digital Camera and Tripod)	1550	550	-1000	
Travel (Local + Air)	715	715		
Field assistants for six months	600	1075	+475	
Field expense (Accommodation and field per diem for six months)	1575	2100	+525	
Total	5000	5000		

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

While conducting field surveys, we engaged with the local communities and could identify several other key conservation issues in the region. First important step for now would be to complete the partially successful objective of this study. Field surveys to document the wild ungulate abundance in the region are therefore planned to be conducted in summer season this year. One of the most interesting consequence of grazing ban emerged out to be the escalating human wildlife interactions and incidents of crop raiding, which was ascribed to the decline in palatable species in the regions closed for herding now, and increase in wild boar numbers, post grazing ban implementation.

It would be interesting to understand the linkages between these two in the near future and identify ways by which the negative interactions can be reduced. This was a study conducted in a very small area in the West Sikkim district. We are hoping to expand the study area to understand the issue of rangeland ecology and resource use change over time in Sikkim at a larger scale, focusing on the local factors that drive changes.

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

Yes, the logo was used in the presentation made at the Forests, Environment and Wildlife Management Department, Gangtok, Sikkim. In any presentation or publication in reference to this work, The Rufford Foundation name and logo will definitely be included.

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

Rashmi Singh: Study Design, Data Collection and analysis, and final report

Chatur Singh Limboo and **Ramesh Chettri:** Field Assistants

Madhusudhan Khannal: Volunteer helped with vegetation surveys and identification

Kinzong Sherap Bhutia and **Tshering Uden Bhutia:** Project Collaborator

Dr. Sandeep Tambe and **Dr. Rishi Kumar Sharma:** Study/academic inputs

Dr. Suresh Babu: Co-investigator and Guidance

12. Any other comments?

We would like to thank The Rufford Foundation for funding this study. Furthermore, for supporting an interdisciplinary nature of work and acknowledging the role it plays in the issues of environmental conservation in India.