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Final Report

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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	Himani Nautiyal
Project title	Livestock and Central Himalayan Langur Interactions in the High-Altitude Meadows of the Garhwal Himalayas, Uttarakhand, India.
RSG reference	19748-2
Reporting period	May 2016-December 2017
Amount of grant	£5000
Your email address	himani.nautiyal08@gmail.com
Date of this report	22 Dec 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
Interaction between livestock and langurs				Please refer to Comment 1
Documentation of medicinal plant knowledge in remote high-altitude villages				Please refer to Comment 2
Continuation of the awareness programme in the Mandal Valley for sustainable use of natural resources in the future				Please refer to Comment 3

Comment 1

Interaction between livestock and langurs

Behavioural observations and exclusion experiments to evaluate potential livestock-langur resource competition

To understand the competition between livestock (sheep and goats) and langur for feeding resources in the high altitude meadows of Rudranath, we have set up 44 vegetation plots (22 experimental and 22 control). We installed them in the first week of June (beginning of the summer alpine meadow grazing season) just before there is largest congregation of livestock's in the study area. It is the time when there will be highest level of grazing by livestock's in the alpine meadows. We collected the data from the experimental plots at the end of August (end of the alpine meadow grazing season). To reduce the impact on local wildlife, we have used locally available biodegradable material like jute rope and wooden sticks to make the experimental plots. Out of total, 13 plots were fully damaged by livestock and could not be included in the final analysis.

Refer **Figures 1, 2**

Langurs in Rudranath spent the maximum time feeding on leaves and fruits of the tree species found in nearby timberline forests, but herbs growing on the meadows also contributed as an important part of their diet. A total of 18 species of herbs were recorded being consumed by the langurs and among them, 12 species were damaged due to livestock grazing (67%). *Potentilla microphylla*, one of the important herbs recorded in the langur diet was damaged by livestock in 19% of the 22 experimental plots. We found, 48% loss in total growth compared to the control plots. Another important species in the langur diet, *Anemone tetrasepala*, was also

moderately damaged by the livestock (43%). More detailed study is needed to check the long-term impact on these high altitude meadows by livestock. These preliminary results showed a high level of competition between livestock and langurs in the alpine meadows.

Table1: Comparison among langur diet, percentage of damage by livestock in sampling plots (n=22) and growth loss of plants from harvested plots (n= 9).

S.N	Species	Type	%Fe	% Damage by livestock	% Growth loss
1	<i>Quercus semecarpifolia</i> Sm.	Tree	35.32	0.00	0.00
2	<i>Sorbus microphylla</i> Wallich ex J. D. Hooker	Shrub	29.53	0.00	0.00
3	<i>Asplenium</i> sp.	Fern	7.01	0.00	0.00
4	Moss insects	Fauna	4.98	0.00	0.00
5	<i>Prunus cornuta</i> (Wall. ex Royle.) Steud.	Tree	2.45	0.00	0.00
6	<i>Rhododendron campanulatum</i> D. Don.	Tree	2.12	0.00	0.00
7	<i>Pedicularis hoffmeisteri</i> Klotzsch	Herb	2.04	0.00	0.00
8	<i>Betula utilis</i> Don	Tree	1.88	0.00	0.00
9	<i>Potentilla microphylla</i> D. Don	Herb	1.55	14.06	48.16
10	<i>Anemone tetrasepala</i> Royle	Herb	1.31	42.86	0.00
11	Earthworms	Fauna	1.31	0.00	0.00
12	<i>Euphorbia stracheyi</i> Boiss.	Herb	1.31	4.17	21.62
13	<i>Cyananthus lobatus</i> Wall. ex Benth	Herb	1.22	3.75	43.37
14	<i>Dactylorhiza hatagirea</i> (D. Don)	Herb	1.06	10.19	0.00
15	<i>Bistorta microphylla</i> (D. Don) Sojak	Herb	0.90	13.12	45.13
16	<i>Trigonotis rotundifolia</i> Wall	Herb	0.90	13.33	74.68
17	<i>Rubrivena polystachya</i> (Wall. Ex Meisn) M. Kral	Herb	0.82	0.00	35.00
18	<i>Nardostachys jatamansi</i> (D. Don) DC.	Herb	0.65	9.38	42.61
19	<i>Rumex nepalensis</i> Spreng.	Herb	0.65	15.98	26.51
20	<i>Geum elatum</i> Wall. ex G. Don	Herb	0.65	4.81	31.09
21	<i>Lindelofia longiflora</i> (Benth) Baill	Herb	0.65	5.00	27.27
22	<i>Persicaria nepalensis</i> (Meisn) Miyabe	Herb	0.49	0.00	25.34
23	<i>Saxifraga diversifolia</i> Wall. ex Seringe	Herb	0.41	0.00	0.00
24	<i>Lyonia ovalifolia</i> (Wall.) Drude.	Herb	0.33	0.00	0.00
25	<i>Bupleurum himalayense</i> Klotzsch	Herb	0.24	40.00	75.60
26	Mushroom	Fungi	0.16	0.00	0.00
27	<i>Viola biflora</i> L.	Herb	0.08	0.00	0.00

Comparative study of parasite transmission between livestock and langurs in the high-altitude meadows

Major gastrointestinal parasite groups present in langur and livestock (sheep and goats)

All major groups of intestinal parasite such as nematodes, protozoans and trematodes were recorded in langurs and in livestock of Rudranath meadows. In total, 25 fecal samples from livestock and 26 from langurs were quantified. We carried out quantitative analysis for both sample sets using the McMaster technique. We calculated EPG (eggs per gram feces) and CPG (cysts per gram feces) to count the intensity of parasite load. *Dicrocoelium* sp. (trematodes) *Eimeria* sp. (protozoa) and Capillariidae, *Oesophagostomum*, *Strongyle*, *Strongyloides*, *Trichostrongylus*, *Trichuris* (nematodes) were identified.

Refer **Figure 3**

Inter-host species comparison of parasite infections

The trends in the difference of intensity and prevalence of infections between livestock and langurs varied by species of parasite. *Dicrocoelium* sp. reside in insects (ants) as an intermediate hosts to eventually infect their primary host. We have observed langurs foraging on insects under the moss in the meadows. There is also a strong possibility that langurs became infected by ingesting infected *Dicrocoelium* ants, the most common source of infections. Livestock also displayed a much higher prevalence of infection by this species (52%) than langurs (12%). It is most likely that the source of this infection is the meadows, and the high number of infected livestock foraging and defecating in the meadows could be responsible for the spill over of infections into langurs.

The intensity of *Oesophagostomum* sp. infection was higher in livestock as compare to langurs, but the prevalence of infection (number of samples containing the eggs of this species) was higher in langurs (31% versus 8%). For *Strongyle* sp., langur infection intensity and prevalence was lower than that of livestock. *Strongyloides* sp. and *Trichostrongylus* sp. infections were more prevalent in livestock. Livestock's are well known hosts of *Trichostrongylus* sp. but it is less common in primates. There is chance of transmitting this particular parasite from livestock to langur. Most primate species worldwide are infected by *Trichuris* sp. and the langurs in Rudranath were no exception with extremely high infection intensity and prevalence, compare to other parasite species.

Table 2: Type of gastrointestinal parasites and the intensity of infection in the livestock (Goats & Sheep) and langurs in Rudranath meadows.

	Parasite Species	Parasite Group	Average EPG/CPG of		Prevalence (%)	
			Livestock (n=25)	Langur (n=26)	Livestock (n=25)	Langur (n=26)
1	Capillariidae Gen.	Nematodes	0	165	0	12
2	<i>Dicrocoelium</i> sp.	Trematodes	61	21	52	12
3	<i>Eimeria</i> sp.	Protozoa	39	7	20	15
4	<i>Oesophagostomum</i> sp.	Nematodes	132	32	8	31

5	<i>Strongyle</i> sp.	Nematodes	73	13	40	19
6	<i>Strongyloides</i> sp.	Nematodes	100	28	64	31
7	<i>Trichostrongylus</i> sp.	Nematodes	134	39	44	27
8	<i>Trichuris</i> sp.	Nematodes	129	1500	56	92

Comment 2

Documentation of medicinal plant knowledge in remote high-altitude villages

We surveyed two high altitude villages namely Dumak and Kalgot, situated at altitudes ranging between 2500 - 2800 m asl. Both villages are far from the nearest approachable road (~ 20 km away) and it has no electricity or cell phone network coverage. The communities of Dumak and Kalgot know the high altitude meadows very well, especially of our study area, the Rudranath meadow. We sampled 80% of the 167 households during our survey. In total, 43% of the respondents belonged to the age group of 20-45 years, 48% were between 46-65 years, and 9% were older than 65. We found an almost equal literacy and illiteracy rate among the respondents, i.e. 51% of the respondents had basic secondary school education. Only 5% of the respondents have governmental jobs and 3% were self-employed (small shop, homestay etc.). The majority of people depended on the agriculture (92%) for their livelihood. Due to remoteness of the area, medicinal plants growing around the village or in the nearby meadows play a very important role in the life of local people. We asked them structured question for better understanding of the importance for medicinal plant in their life. When we asked them if they prefer medicinal plants over drugs provided by a hospitals in the village, 74% of the respondents said yes, and from many years, they have been using these plants to treat basic ailments. 86% of the respondents said that medicinal plants are very important part of their life. We also asked whether the natural availability of medicinal plants have changed in the past few decades. About 93% people said yes, and reported that it has gotten more difficult to get medicinal plants in the last 10-15 years.

Refer **Figure 4**

We recorded 14 important medicinal plants used by local people, which they use in day to day life for treating certain ailments (Table 3). Mostly the roots of these species are used as medicine in their processed dry powder form throughout the entire year. Villagers collect these plants from the nearby alpine meadows. These plants were mainly consumed for illness like the common cold, fever, indigestion, dysentery, internal wounds, muscular cramps and mouth ulcers. Among the most frequently noted species, *Dactylorhiza hatagire* commonly called 'Hathazari' is used for cuts. Hathazari is collected from the Rudranath alpine meadow. Another important medicinal plant is *Delphinium denudatum*, commonly called 'Mitha jari' and is also collected from the Rudranath alpine meadow.

Table 3: List of common medicinal plants reported by respondent during village survey at Dumak and Kalgot village along with their uses.

S. N	Scientific name	Common name	Life Form	Part use	Uses	% Use* (n=167)
1	<i>Dactylorhiza hatagire</i>	Hatazari	Herb	Roots	Cuts, calcium source	17
2	<i>Delphinium denudatum</i>	Mitha jari	Herb	Roots	Piles	15
3	<i>Girardinia diversifolia</i>	Dud kanali	Herb	Roots	Boils	15
4	<i>Picrorhiza kurrooa</i>	Kataki	Herb	Roots	Fever	9
5	<i>Geranium wallichianu</i>	Majethi	Herb	Roots	Indigestion	8
6	<i>Nomocharis oxypetala</i>	Ban payanj	Herb	Roots	Heart disease	8
7	<i>Achyranthes bidentata Bl.</i>	Lich-Kuru	Herb	Roots	Muscular cramps	5
8	<i>Rheum moorcroftianum Royle</i>	Dolu	Herb	Roots	Dysentery, Internal wounds	5
9	<i>Anemone rivularis</i>	Ratanjot	Herb	Roots	Leaf paste and juice for cuts and wounds, toothache	4
10	<i>Potentilla fulgens</i>	Bajradanti	Herb	Roots	Mouth ulcer	3
11	<i>Roscoea purpurea Sm</i>	Garud panja	Herb	Roots	Urinary diseases	3
12	<i>Bistorta affinis</i>	Kukhri	Herb	Leaves	Dysentery	3
13	<i>Allium stracheyi Baker</i>	Faran	Herb	Leaves	Cold, Spices	1
14	<i>Origanum vulgare L</i>	Ban Tulsi	Herb	Leaves	Swelling/ cold and cough	1

* Calculated from the responses provided by the respondents.

Comment 3 Awareness programme in the Mandal Valley

Painting competition in the local elementary school

We arranged the painting competition in local government elementary schools in the Mandal valley. We selected elementary schools because kids are the future decision makers and this is the age when they can understand more about their surrounding wildlife and can develop compassion for the same. We conducted painting competitions for kids to motivate them to learn more about the wildlife having fun while drawing and colouring their favourite animals. The majority of students drew elephants and monkeys. I noticed that the awareness activities we

have conducted last year actually had a good impact on them. The majority of kids this year know much about langurs. Their understanding about langurs was reflected in their paintings. Last year, I gave a lecture in same school about life of langur mentioning that they also have families like we do. This year, kids not only drew just an individual monkeys but also families of langurs with adults and infants.

I noticed kids were more eager this time to know more about wildlife and were getting more involved in the activities. With the help of volunteers and my local field assistants, we were able to do multiple activities at same time. Kids from junior KG were not able to draw any animals, so we taught them how to draw, so they could enjoy painting too. We also explained to them about basic ecology of the animals they are observing in their day-to-day life or on the television. I explained that the plants langurs eat are becoming less in the forest, and that is what drives them to the village, so we have to make selective plantations inside the forest to ensure langurs will have enough food in the future for their families. All the students said they were happy to contribute to help raising and planting seedlings with us in the near future. In appreciation for their participation in the programs, we gave small rewards such as notebooks, pens etc. to each participant.

Refer **Figure 5**

Small lecture on langur life to the Women's Association Committee in Mandal Valley

I conducted a small meeting with the Women's Association Committee of Mandal village. I explained to them about the langurs' social life. I also explained why langurs are going more inside the agriculture lands recently. We also planned for future awareness activities on a bigger platform and the leader of the Women's Association is willing to help me with that. I also explained to them about the current situation of the forest and over-exploitation of forest products, and they agreed that they have to do something more to protect the forest. Women are the main agricultural work force in this area and they regularly go to forest to collect fodder for their livestock and wood for cooking fuel, so they have a better idea how much the forest has changed as compare to the past. All women were in agreement that they now have more difficulty in collecting livestock fodder and firewood from the forest nearby the village, making it necessary for them to go further into the forest for these daily activities. They also gave me very good information about the degradation of the surrounded forest because of the encroachment. Most of the families have encroached into the forest surrounding the village, and cut down all the trees. Unfortunately all those areas fall under the langurs' home range, reducing the quality of their habitat. Women showed an understanding about this problem and were willing to contribute in the restoration of the surrounding forest.

Refer **Figure 6**



Figure 1: Vegetation sampling plots in Rudranath meadows. **Top left-** Measuring herbs length inside (control) and outside (experimental) the plots, **Top right-** control plot made by local material and ropes, **Bottom left-** Measuring percentage damage by livestock, **Bottom right-** control plot damaged by livestock.





Figure 2: Top left- langur searching for insects under the moss, Top right- troop of langurs feeding on plants in the Rudranath alpine meadow, Bottom left- our basecamp at 3,500 meters above sea level, Bottom right- livestock grazing in Rudranath meadow.

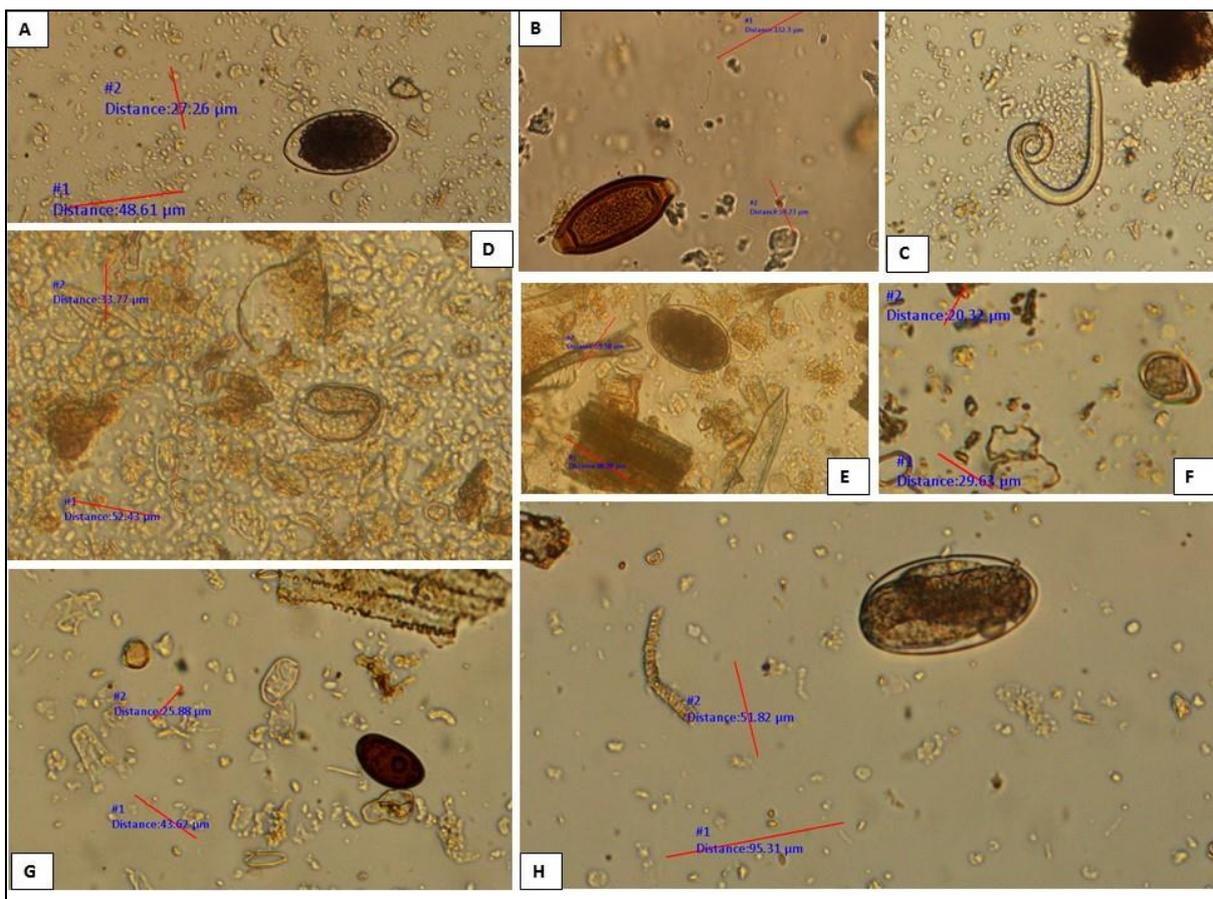


Figure 3: Parasite species in Livestock and langurs around Rudarnath meadow. A- Strongyle sp. egg, B- Trichuris sp. egg, C- lungworm, D- Strongyloides sp. egg, E- Oesophagostomum sp. egg, F- Eimeria sp. Cysts. G- Dicrocoelium sp. egg. H- Trichostrongylus sp. egg



Figure 4: Questionnaire survey in two high altitude villages. **Top left-** asking questions about medicinal plant use with the help of a pictorial guide of medicinal plants, **Top right-** Dumak village, **Bottom left-** local community at Dumak village, **Bottom right-** villager processing local red beans which are a very important crop in Dumak and Kalgot village.





Figure 5: Painting competition at the elementary school in Mandal valley. **Top left-** Class 4 and 5 students drawing their favourite animals, **Top right-** teaching junior KG kids, **Middle left-** drawing by class 4th student which reflect her understanding about the langur family, **Middle right-** Class 2nd students drawing their favourite animals, **Bottom left-** Class 3rd students drawing their favourite animals, **Bottom right-** teaching kids about the basic ecology of animals found in the surrounding forests of the village or what they watch on the television.





Figure 6: Lecture on langur life. **Top left-** First slide of the lecture, **Top right-** group photograph with local community members and students after the awareness class, **Bottom left-** explain to village women about langurs and forest degradation issues, **Bottom right-** discussion with women association committee head for future awareness activities.

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

The fieldwork was done in higher Himalayas. Due to the high altitude conditions, we had to face many challenges because of torrential wind and rain, which was almost constant during the months of fieldwork. We made our tents like local herders do at Rudranath meadow, so it could handle the high altitude hailstorms and heavy winds. At first, it was really difficult to follow the langurs because of harsh weather and because they were too shy, since they have never encountered humans trying to follow them from a close distance. Our hard efforts every day, and learning new skills for coping with the harsh climatic conditions made this project successful.

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

1- We found that herbs growing on the meadows are an important part of the langur diet at high altitudes. 67% of the herbs consumed by the langurs were damaged by livestock which had an impact of plant growth and their availability to langurs. These results show the potential competition between langur and livestock for feeding. To see the impact of this competition on langur behaviour ecology, we have to collect behaviour data on a long-term basis. We also found three major groups (nematode, protozoa and trematodes) of gastrointestinal parasites in the livestock and langur populations. We found differences in intensity and prevalence of infections between them. It is most likely that the source of this infection is the meadows, and the high number of infected livestock foraging and defecating in the meadows could be responsible for the spill over of infections into langurs. We need more detailed studies to understand parasite species at the species level, in order to confirm parasite transmission from livestock to langurs.

2- The medicinal plant survey in the high altitude villages showed that these plants are very important for the local people. Remoteness of the areas is the main cause

of their highly developed knowledge about the value of medicinal properties as a primary source of treatment for many illnesses with these herbs.

3- We found that the previous year's outreach activities had a major impact on kid's understanding about the wildlife surrounding their village. Women from Mandal valley were able to understand that the cause of crop damage by langurs was increasing because of high pressure on the surrounding forest by the women themselves collecting large amounts of fodder and fuelwood. They were willing to help with the planting of trees in the forest with us in future.

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

The project conducted in the higher elevation areas, from beginning to end involved the local people, and their participation was important for our success. Our site was 32 km from the nearest road worthy road, so we hired local people as porters to carry stuff up to the mountain, which gave them continuous economic benefits throughout months of the project. Local field assistants and the camp caretaker were from Mandal village (selected people based on economic condition). This project was very important for them as they got income that is normally difficult to obtain in this area. Another benefit for them to work in this project is that they got trained in scientific data collection and collation of results on the computer, which helped them to improve their knowledge. If they have good abilities in field, they will get good opportunities in the future for field assistantship position in other higher Himalaya scientific projects. For setting up the vegetation plots, we hired local people who not only benefitted economically, but they also learned about scientific techniques of vegetation sampling; another useful skill for future work in scientific projects. Awareness activities done in Mandal valley helped local people in terms of understanding the reasons of crop raiding by langurs and other animals. This led to their willingness to help with replanting of preferable tree species in the forest surrounding the village. Our talk about local wildlife and langur ecology at the elementary school will help to involve kids in wildlife related studies. If they are interested to know more about the wildlife at this age, they can be very good nature guides in the future, a lucrative job in this area of high touristic value providing them a good economic resource.

5. Are there any plans to continue this work?

This project focused on big landscapes and different elevation zones in the Himalayas. There is a need to continue this project to successfully complete the larger goals. In these past 3 years, we were able to get a basic idea about langur ecology in this unstudied area and get the people's involvement in the project. This has helped to set up some basic guidelines for conservation activities. Our results suggested parasite transmission from livestock to langurs in the higher elevations. For a better understanding of parasite transmission, we have to genetically identify parasite species. We found it bit difficult to collect fecal samples from the higher elevation, so it would be good if we collect samples from the langurs nearby villages (at lower elevation from our previous field site) and identify the species of parasite

and also compare the parasite load between high and lower elevation populations. There is a need to continue our awareness activities as we can see it is having a good impact on the kids. Awareness activities in the local school and in large groups of village people should be continued. It is right time now to take steps forward to implement active conservation efforts by planting trees with the help of local people and school kids. Keeping all these points in mind, I would like to continue this project at the lower elevation and focus more on conservation activities there.

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

I want to write popular articles about my work so my research can reach to the general public. I already published two articles about my work in a very good platform (links are here <https://www.natureinfofocus.in/indian-wildlife-information/living-with-langurs>, <https://www.ndtv.com/education/blog-adventurous-life-of-langurs-in-the-himalayas-1780589>). I also have plans to make short documentaries related to my work, which can be helpful in the terms of awareness activities in the school.

For the scientific community, I have plans to publish my studies in good international journals. One aspect of our research in Rudaranth is currently in press in a research paper form and will be on-line soon in Mammal Studies, a journal of wildlife behavior and ecology. I already presented my previous results at an international symposium in Sri Lanka, Japan and Indonesia. I will present this project's results in an upcoming international symposium in Nepal in February.

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

Fieldwork was conducted over the period of 1 year starting from May 2016 to June 2017. We expected to finish lab work by the end of September but it was delayed by 1 month. According to our time scale, we were able to finish our final report end of December.

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
Air travel: Return air travel from headquarters, Bangalore, to the field site for two persons	685	685	0	
Local travel in the field: Taxi hire	23	23	0	

and train transportation from Delhi (nearest airport) to the field site.				
Food transportation in the field: Mule transport, from Mandal to Rudranath, 35 km trek in each direction	520	600	80	Transportation cost depends on the season. During high raining days, it was raised by the trekkers due to high risk to the Mules.
Salaries for field assistant and field guide	1654	1654	0	
Awareness activities	300	300	0	
Field gear: Torches, batteries and camping equipment, solar lamps, medicines. Herbarium identification charges, Labour costs for construction of Experimental plots	1550	1550	0	
Field equipment: Glass slides, collection tubes, parasite culture bags, 10% formalin, lysis buffer for parasite DNA preservation, Portable centrifuge.	560	560	0	
Consumables and Stationery: Costs of publication of Information leaflets in the field and reports	200	200	0	
Total	5492	5572	80	Transportation cost depends on the season. During high raining days, it was raised by the trekkers due to high risk to the Mules.

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

During our past 3 years of research in broad landscapes, we were able to establish baseline information for this least studied species. Keeping our long-term goals in mind, the next step is to move further in higher quality research and active conservation. From a research point of view, it is important to understand what are the parasite species present in the langurs living in close proximity with people?; to identify them at the genetic level and to know where there is direct transmission between animals and humans in either direction. For conservation, there is an urgent need to replant tree destroyed by human's activities that are important for langur's survival as maturation of trees and effective replacement will take several years. So it is good to start planting as soon as possible. We found a good impact of continued awareness activities within local kids and it is important to continue this for the next few more years.

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, I used Rufford logo for the awareness activities in the school. I used the logo for all my international symposium talks and posters. I always acknowledge Rufford foundation in my publication for supporting the studies.

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

Prof. Anindya Sinha- He helped in all important paperwork related to getting permission working in Rudranath and taking fecal samples out from India. Prof Sinha provided his guidance whenever it was necessary.

Prof. Michael A Huffman- This project was conducted under his supervision. All parasite analyses were done in his lab under his guidance. He also visited the field site and helped us in field work. He provided lots of guidance for producing the final report and during data collection.

Mr Harish Maithani-Harish is local field assistant. He was one of the members of my team. He helped logistics for camp setup at higher elevation. Because he is from Mandal Valley, he helped us to conduct awareness activities with kids and adults in the local community.

12. Any other comments?

I would like to thank the Rufford Small Grant for making this study possible and continued support for two years. I hope that the Foundation will continue its support for my research and conservation activities in the future.