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	Sufia Akter Neha
Project title	Niche Differentiation between Hoolock Gibbon (*Hoolock hoolock*) and Other Frugivorous Vertebrates with Emphasis on Their Conservation in Bangladesh
RSG reference	21997-1
Reporting period	July 2018
Amount of grant	£5000
Your email address	neha.jnu463@gmail.com
Date of this report	07 July 2018

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
Evaluate the behaviour and ecology of hoolock gibbon in Bangladesh				Two protected areas in north-eastern region of Bangladesh have been successfully surveyed and data on behaviour and ecology of endangered hoolock gibbon in Bangladesh using instantaneous scan sampling method has been collected.
Enumerate the niche overlap between hoolock gibbon and other frugivorous vertebrates				Ad libitum observations have utilised to gather information on interspecific competition between gibbon and other frugivorous vertebrates through identifying their differences in diet, vertical stratification of resource use, niche breadth, niche overlap, and behavioural interactions.
Identify the anthropogenic pressures of hoolock gibbon				A combination of both closed and open ended questions have employed for obtaining information on conservation challenges faced by the species in their potential habitats and the attitudes of local community towards the conservation of hoolock gibbon.
Arrange workshop and group discussion programs among the local people, forest staffs and other stakeholders				Interactive workshop and group discussion programmes have arranged in two different study areas documenting gibbons' population, food habit, anthropogenic threats, and conservation measure to raise awareness among the local people, forest staff and other stakeholders. In fact, The forest department staff have now developed a sense of responsibility for the conservation of the gibbon.
Train up local young and being registered them as an eco-tour guides				We have trained up 30 local young in two study sites and being registered them as an eco-tour guides. Registered eco-tour guides are now identified by new ID card accredited

				by the Bangladesh Forest Department which all guides are required to have in their possession whilst guiding.
Education and outreach materials development				Billboards carrying information on profile, threats and conservation needs of hoolock gibbon have mounted along the highway of the study area. Posters and stickers of gibbons and their role in nature have developed as part of the outreach materials.
Disseminate results in scientific conference and submit paper in an International journal				The results were presented to the scientific community at the RSG Nepal Conference- 2018 and 9th One Health Bangladesh Conference. We have already submitted our research works in an International journal and publication is underway.
Develop sustainable management plans to the conservation of hoolock gibbon and their habitats.				Elementary conservation plans have been recommended to the Forest Department through different workshops and group discussions.

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

(a) Hoolock gibbon are generally shy and time is required to have the animals comfortable with the researcher's presence and continue their behaviour and activities. For the first few months the gibbons seemed to be more fearful, used to flee rapidly, throwing a small horizontal tree branches and urinate on us. After 3 months of field study, they become habituated with us and gave longer time period to observe. Watching them from partial hiding (if the observer pretends not to watch them) helped them become habituated over time.

(b) Because of wild weather and heavy rainfall, we were unable to conduct intensive surveys during the monsoon. To overcome this issue, we had to change a bit the timetable in order to stay well balanced. Therefore, achieving the substantial amount of data for rigorous analysis, we had stretched our field works in summer and winter.

(c) Information regarding the threats and perceptions towards conserving the hoolock gibbon is derived from accounts by local communities; however, community based research to collect these records has not been conducted in a systematic fashion. For this reason, at the beginning, the traditional people in and around the protected areas appeared reserved and reluctant to provide the valuable feedback on the questions. All respondents were assured that data would

be kept anonymously; interviews were conducted following verbal consent of participants.

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

(a) Though many field studies have conducted on distribution, behaviour and ecology of hoolock gibbon, knowledge about the resource partitioning and niche overlap between gibbon and other frugivorous vertebrates is still lacking. Consideration of primates within the context of the broader vertebrate community promises to provide a richer understanding of the ecological and evolutionary forces that shaped their adaptations. Hence, this data provides a new insight and baseline information, which has filled a gap in gibbon studies and helped in the promotion of conservation strategies.

(b) We trained up 30 local young and registered them as an eco-tour guides by providing ID card authorised by the Bangladesh Forest Department, which all guides are required to have in their possession whilst guiding. It is very important because various illegal and unregistered guides provide tourist with misleading information. They are now being committed to assist the future enthusiastic researcher who wants to initiate their interest of research on wildlife. In fact, trained forest guides will foster their traditional knowledge to the tourist to make the forest a better place for research and education.

(c) We have successfully reached to broader scientific communities, government stakeholders and indigenous people through presenting our results in national and international conference, group discussions and workshops. The government officials are now concerned of the project activities and these data will be an inception for the implementation of any sustainable conservation actions for the long term survival of hoolock gibbon in the country.

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

To ensure the engagement of community people to conserve gibbon and their habitat was another key objective of the project. The local communities in the study area had the opportunity to participate in the outreach education programme on gibbon conservation as well as way to protect them from the brink of extermination. Moreover, the erection of billboards and dissemination of other outreach materials will help them become aware about the role of gibbon in the functioning of forest ecosystems. In short, the trained local young will now act as professional forest guides and represent as an envoy to save this endangered lesser apes both in species and habitat approaches.

5. Are there any plans to continue this work?

The study niche differentiation needs long time for intensive observation. Replication is very fundamental for good understanding of community ecology of the animal as well as building capacity to safeguard this elusive species. We are planning for the

next phase to further our studies beyond its current level and, we think, continue this work will be the perfect way to do so.

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

We have gathered sufficient information to publish at least two scientific papers in peer reviewed journals. One of our paper has already submitted and under review while another one is underway for submission. Besides this, we have attended RSG Nepal Conference- 2018 and 9th One Health Bangladesh Conference where we have presented our findings. As a matter of fact, our presentation has been awarded as best presentation at the conference. Furthermore, we have organized several group discussions and workshops at our study sites and spread our activities with Bangladesh Forest Department and local stakeholders. Regardless, we are also thinking out to organize seminars in different public universities that will eventually encourage the students doing research on gibbon conservation in Bangladesh.

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 RSG was used from July 2017 to July 2018 as mentioned in the proposal and the project was apt to the actual timeline.

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
Food	£1080	£1115	+35	Due to unavailability of hotels near the study areas we had to go far to take food.
Transportation	£1080	£1248	+168	Heavy rainfall and extreme rarity to collect adequate data of the study animals increase the number of days for field survey from 60 days to 72 days
Accommodation	£648	£500	-148	We got discount while staying in the students dormitory
Daily allowance for field guides	£360	£350	-10	
GPS(Global Positioning System)	£250	£245	-05	
2 Binoculars	£320	£320		
Rangefinder	£200	£210	+10	

Outreach and educational materials	£1045	£1107	+62	
Total	£4983	£5095	+122	Additional funds were raised through National Science and Technology (NST) Fellowship

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

We are planning to conduct our further surveys in south-eastern region of the country, where assumed to be occupied large populations of hoolock gibbon and indeed remain undiscovered. The primary cause of the loss of the species in Bangladesh is habitat destruction that inevitably results from the anthropogenic activities. In addition to outright destruction, habitat fragmentation leading to an even lower population size. Thus, in the next phase, we will intend to find the ways of conceptualising and measuring the effects of habitat fragmentation on gibbon, whether these processes can be extrapolated to the landscape level.

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?

The RF logo was put to use in every printed and produced education and outreach materials. The RF have acquired publicity and acknowledgement in our scientific publication and they have also used at the presentation slides during conference presentation.

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

Sufia Akter Neha – This project is her MSc thesis. She was responsible for data analysis, presentation of the findings and preparation of scientific papers.

Dr. Ummay Habiba Khatun – Assistant professor of Zoology Department at Jagannath University who contributed with our project as supervisor and gave recommendations and corrections on scientific papers.

Dr. Sabir Bin Muzaffar – Associate Professor of Department of Biology at United Arab Emirates University who had been our advisor and provided valuable comments on field methods and database analysis.

Md. Ashraf Ul Hasan – He has completed his graduation in Wildlife and Biodiversity Conservation at Jagannath University. He have a hand in conservation education and awareness program in the project.

Hossain Mineuddin – He is currently doing her MSc in Wildlife and Biodiversity Conservation at Jagannath University. The project funded his MSc thesis and he played a part in collection of behavioral and phonological sampling.

Nayeem Ahmed – A designer who contributed to draw all of our printed outreach materials.

Prasenjit Debbarma- A local field assistant who helped to collect gibbon and other frugivorous vertebrate data.

Sumon Tantabay – A local field assistant who has hired to gather gibbon and other frugivorous vertebrate data.

12. Any other comments?

This study would not have been possible without the generous support of RF. I am deeply indebted to RF, it gave us the opportunity to come along with the Rufford Direct, Josh Cole, to whom we had shared our project experience in the RSG Nepal Conference- 2018.


Left: Familiarizing wildlife to locals and forest department staff. Right: Providing ID card to eco-tour guides.


Left: Hoolock gibbon billboard mounted along the highway of the study site. Right: Measuring DBH of gibbon food trees.


Attending RSG Nepal Conference -2018