

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	Pooja Yashwant Pawar
Project title	Birds beyond borders: hornbill populations, nesting and conservation in contiguous rainforests and adjoining plantation landscape in Anamalai Hills, India
RSG reference	21522-1
Reporting period	April 2017 – April 2018
Amount of grant	£ 4995 (INR 402224.79 @ exchange rate of INR 80.67)
Your email address	Pawarpy.1992@gmail.com
Date of this report	August 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
To estimate population of hornbills in contiguous forests and plantation landscape in the Anamalai Hills.				I proposed to cover the area spread across two states, viz. Tamil Nadu and Kerala. But due to delay in getting research permit from Kerala State Forest Department, I couldn't conduct survey during the entire study period. Thus, my study was restricted to the Anamalai Tiger Reserve and Valparai plateau in the state of Tamil Nadu.
To document active hornbill nests and monitor the nesting success of hornbills in contiguous forests and plantation landscape in the Anamalai Hills.				I could successfully survey the entire study area as proposed. I have monitored 120 hornbill nests in total. The nests located in the Vazhachal Reserved Forest, Parambikulam Tiger Reserve, Anamalai Tiger Reserve and Valparai plateau were assessed for their status and nest occupancy.
To map and monitor phenology of hornbill-food trees, mainly <i>Ficus</i> trees (an important hornbill food tree) in the plantation landscape.				I was able to monitor fig trees in the Tamil Nadu part of the study area. Due to delay in research permit, I couldn't monitor <i>Ficus</i> trees in Kerala.
To develop long-term monitoring and management protocols through stakeholder involvement for conservation of critical hornbill areas and their resources.				I interacted with the major stakeholders i.e. state forest departments and private plantation companies. I conducted an interactive session to inform them about the findings of this study and conservation plan for hornbills in the study landscape. The emphasis was on protection and conservation of key hornbill resources like nest trees and hornbill food plants in the region.

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

The major unforeseen difficulty I had was the delay in getting research permit from Kerala State Forest Department. Without permit, I couldn't conduct surveys in Parambikulam Tiger Reserve and Vazhachal Reserved Forest.

I got the permit only on 17th March 2018. I did complete the nest monitoring in the Parambikulam Tiger Reserve and Vazhachal Reserved Forest. This delay in the permit has resulted into partial completion of some of the study objectives. At later stage, I recorded hornbill sightings during nest monitoring surveys to obtain at least hornbill encounter rates in the forests of Kerala.

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

- a. This study provides a robust population estimation of hornbills in the tropical wet evergreen forests of PA and coffee plantations in the Anamalai Hills. The Great Hornbill densities in PA and plantation are $4(\pm 1.05)$ and $3(\pm 1.1)$ birds/sq. km, respectively.
- b. Assessment of 120 hornbill nests for their status and nest occupancy was done. 50 great hornbill, 66 Malabar grey hornbill and 4 Malabar pied hornbill nests were monitored during 2017-2018. On an average, 57% of great hornbill and 59% of Malabar grey hornbill nests were active. 25 nests were found in plantations, including non-native tree species as nest trees.
- c. Hornbill abundances seemed to be influenced by a set of ecological variables. Great hornbill abundance was positively correlated to the relatively undisturbed habitat i.e. protected area. Whereas, Malabar grey hornbill abundance is mainly influenced by the habitat, availability of food resources and the season. This suggests that hornbills can persist in the plantations surrounding protected areas provided that their resources are conserved.

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

The major local stakeholders were the state forest departments and private plantation companies. Both these were involved in terms of issuing permits to conduct this study, getting logistical support on field. During surveys, I trained ground staff of state forest departments in using equipment to record detections. Another important stakeholder group was tribal people in the region. I engaged with people from tribal settlements to exchange knowledge about hornbills in the region. They also guided me to the hornbill nests that they knew earlier. This project did not intend any direct benefits to local communities.

5. Are there any plans to continue this work?

Findings of this study provides a good baseline for long-term monitoring and conservation of hornbills in the region. In coming years, I would be interested in understanding turnover rate of nests and population dynamics in the Anamalai Hills. During this study, I could not sample forest types other than tropical wet evergreen forests. In future, I would like to survey other habitats in and outside the Anamalai Hills to get a holistic understanding of hornbill communities in the Western Ghats.

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

I have already conducted workshops with Tamil Nadu FD and Tata Coffee PVT Ltd. to share results of the project and discussions on ways to strengthen hornbill conservation in the private lands as well as within protected areas. I will be submitting technical reports to the state forest departments and plantation companies in Valparai. Manuscripts for scientific publications are also under preparation. I plan to share findings at the Students Conference on Conservation Science (SCCS-Bangalore) in September 2018.

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 Rufford Foundation grant was used between April 2017 and April 2018. The duration and the grant money were just adequate for executing all the activities as planned.

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.

The budget was proposed at the exchange rate of INR 85 to 1 pound sterling, as seen on 17th November 2016. However, the grant was received at the exchange rate of **INR 80.67 to 1 pound sterling**. I assumed that field vehicle would cost the highest, and under-budgeted for many items. I have used the balance from over-budgeted items towards the under-budgeted expenses. I could have done budget allocation differently, but the flexibility that Rufford Small Grant allows enabled proper utilisation of funds as required in the field and therefore it did not affect the outcome of the project negatively.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Fuel charges for field vehicle	2353	1478	875	I allocated more budget to vehicle usage, but I couldn't use the vehicle in most of the places that were remote. This also resulted in under-

				budgeting of more essential items like consumables. Thus I used balance from this item towards field assistants' wages and consumables mainly.
Field expenses	588	744	-156	Field expenses, groceries
Field Assistant wages	1059	1421	-362	I did not account for annual increment during the financial year while budgeting for wages. The extra amount was paid from balance field vehicle cost.
Field Station charges	424	526	-102	Due to drop in exchange rate from proposal submission to the receipt of grant, couldn't account for this difference under the same head, had to use balance from field vehicle cost.
Consumables	50	247	-197	I under-budgeted for consumables, but for a yearlong project, expenditure was much higher than proposed.
Organising workshops and seminar	471	479	-8	expenses related to workshops- food, venue, etc.
Miscellaneous + Medical Expenses and emergencies	50	45	5	Miscellaneous
Total	4995	4940	545	

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

I look forward to study hornbills across the Western Ghats, focusing on understudied hornbill areas like Northern Western Ghats. The northern Western Ghats is another identified hornbill hotspot which has different kind and degree of landscape modification. In future, I plan to conduct a hornbill study in different kinds of human-modified habitats to understand their conservation potential for hornbills. The learnings and findings during the study in the Anamalai Hills would certainly help me in better budgeting, designing and execution of projects in future.

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 did. I gave a talk at Dandeli Hornbill Festival in Karnataka titled 'Hornbills of Western Ghats: Status, culture and conservation'. I presented my study proposal in the research committee meeting held by Kerala Forest Department at Thiruvananthapuram. I also, presented a part of this study at the annual gathering of the institution at Mysore. I had used the Rufford Foundation logo in all my presentations to emphasize the support from The Rufford Foundation. I will be using the logo during my talk at SCCS-Bangalore 2018.

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

Team leader: **Pooja Yashwant Pawar**

I carried out all the field work, data analysis and report writing of this project

Field assistants: **Manikraj, Sundarraj & Sathish**

I was assisted by knowledgeable and experienced field assistants. Manikraj and Sundarraj guided me through forests during the surveys. Sathish helped me mainly in coordinating commute between survey sites.

Advisors: **Dr Divya Mudappa and Dr TR Shankar Raman**

Dr Divya and Dr Shankar are my mentors and helped me a lot during execution of the project. They provided me a strong institutional support through Nature Conservation Foundation, Mysore. Discussions with them during planning and data analyses and each stage of the project were immensely helpful. Due to their long-term practice of conservation science in the region, gaining partnerships with local stakeholders was useful.

12. Any other comments?

I am grateful to the Rufford Foundation for awarding me this small grant to carry out my project. Without this financial support, it would have been really tough to carry out this study.