

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	Narayan Sharma
Project title	The impact of harvest of a Critically Endangered Dipterocarp <i>Vatica lanceafolia</i> on its population and regeneration in the rainforests of north-eastern, India
RSG reference	16494-2
Reporting period	December 2014 to March 2017
Amount of grant	£ 4999
Your email address	narayansharma77@gmail.com
Date of this report	8 March 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
<p>Documenting the occurrence and density of <i>Vatica lanceaefolia</i> in various forests of the Upper Brahmaputra Valley.</p>				<p>We surveyed 28 Reserved Forests (RF) and four wildlife sanctuaries of Upper Brahmaputra Valley to document the occurrence and density of <i>Vatica lanceaefolia</i>. In these sites, we walked on forest and elephant trails of varying lengths. At every 200 m, we laid a plot of 10 m × 10 m on either side of the trail to document the occurrence and estimate the density of <i>V. lanceaefolia</i>. Overall we walked on 111 trails and laid 497 plots in them. Of these 32 sites, we did not find <i>Vatica</i> in five Sites (Kundilkalia RF, Mesaki RF, East Station RF, North Station RF and Deopani RF). The species was encountered in Hahakhati RF and Dehingmukh RF only outside the sampling plots. The density of <i>Vatica</i> was highest in Nambor-Doigurung WLS. We have also estimated the harvesting intensities (i.e., cut stumps of ≥ 30 cm /plots) in each site and selected eight sites that had very high (n = 2), moderately high (n = 2), low (n = 2) and no harvest (n = 2) intensities.</p>
<p>Comparing the population structure and regeneration patterns of <i>Vatica</i> in sites with varying levels of harvest intensities.</p>				<p>Based on our surveys we selected eight sites with varying degree of harvest intensities. The sites were: Telpani Reserved Forest (RF), Nambor-Doigurung WLS (heavy extractive pressure); Hollongapar Gibbon Sanctuary and Dehing Patkai WLS (moderate extractive pressure); Doomdooma RF and Buridehing RF (low extractive pressure)</p>

			<p>and Jeypore RF and Pakke WLS (almost free from extractive pressure). To estimate the population structure and regeneration patterns in these forests with different harvest intensities, we laid at least one 500 m × 10 m belt transects and counted the number of seedlings, saplings and matured trees of ≥ 30 cm. However, we could only complete survey on six sites (16 belt transects). While sampling on the remaining two sites was abandoned due to surge in the insurgent activities there. Our preliminary analysis suggests an adverse impact of harvesting of <i>V. lanceaefolia</i> on their population structure and regeneration pattern. The areas with heavy extractive pressure have fewer seedlings and saplings compared to areas that were free from extractive activities.</p>
<p>Conducting semi-structured questionnaire household surveys in the fringe villages</p>			<p>We conducted 599 questionnaire surveys in 76 villages adjoining the study sites. Of them 203 respondents (34%) admitted that they harvest <i>V. lanceaefolia</i> from the forests. Out of 203 respondents (those who harvested <i>Vatica</i>), 34% respondents (n = 70 respondents) wished to stop harvesting in lieu of other alternative sources of energy i.e., Liquefied Petroleum Gases (LPG) and biogas. 25% wanted employment for their unemployed sons/daughters; 20% wanted both LPG and employment; and the remaining 6% wanted biogas. The remaining 15% wanted to continuously harvest from the forest, as they feel that they would not be able to afford monthly refilling even if LPG is provided.</p>
<p>Creating conservation</p>			<p>We have produced posters and pocket</p>

awareness				guide (in Assamese and English) on the identification keys, conservation status and awareness and distributed them to the local people and the personnel of forest department.
Additional data (Not part of the objectives) Phenological Monitoring of the 25 individual trees of <i>Vatica lanceaefolia</i>				We monitored 25 individual trees of <i>V. lanceaefolia</i> in Hollongapar Gibbon Sanctuary for over 1 year. Although this was not an objective of the project, nevertheless, we did it to familiarise ourselves with different stages of <i>Vatica</i> trees, i.e., flowers, fruits, seedlings and samplings. All these information was used to correctly identify various stages of the plants later on while assessing the impact of harvest on <i>Vatica</i> .

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

Due to the delay in getting permission, the fieldwork was started from June 2016, which unfortunately coincided with the monsoon. As a result, there has been significant delay in the execution of the fieldwork. Some of the study sites have insurgent problems due to which it was sometime difficult to carry out the fieldwork. Even the locals and the forest personnel were hesitant to accompany us in the forest. Despite of these problems we were able to conduct our fieldwork as we kept a low profile in those areas and waited until the situation was conducive to carry out the fieldwork.

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

- a. First, the project has provided the first-ever comprehensive and quantitative assessment of the occurrence, density and conservation status of *V. lanceaefolia* from 28 Reserved Forests and three Wildlife Sanctuaries of the Upper Brahmaputra Valley.
- b. Second, we did find an adverse impact of harvesting of *V. lanceaefolia* on their population structure and regeneration pattern. Heavily logged areas have fewer seedlings and saplings compared to areas, which were free from extractive activities.

- c. Third, we found that most of the villagers wanted to discontinue extraction of the species if LPG, biogas and other alternative source of energy and livelihood are provided.

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

Local communities were benefited in three ways. First, it is the first time that the locals as well as the forest department were made aware of the conservation status of the Critically Endangered *V. lanceafolia* in their forests. We have also sensitised them by providing booklet and posters on the identification of the species and importance of the species. The posters were published in both Assamese and English languages and distributed them to the local peoples and forest departments. Finally, many local guides were employed during the surveys and we were able to contribute a modest help in term of daily wages. We have also conducted many impromptu dialogues with villagers and forest department and sought their opinion on how to better conserve this species. We do hope that they will be more judicious in future while extracting this important forest resources.

5. Are there any plans to continue this work?

I intend to apply for the Booster grant of Rufford Foundation to continue this project.

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

The results of this study will be disseminated in peer-reviewed scientific journals and popular articles (print/online) in English and vernacular Assamese languages. In addition a technical report will be submitted to Assam and Arunachal Pradesh Forest Department who can use the findings of the study to manage and regulate the extraction of *Vatica* from the different forest fragments and also design strategies to mitigate the dependence of local communities on this important forest resource.

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 project was implemented from June 2016 to February 2017 and the Rufford Foundation grant was used during this period. Although, we were able to complete the fieldwork in seven months, the writing of final report will take some more time.

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
Stipend per diems and wages	3304	3304	0	During the project period the PI was moved and joined a new institute i.e., Cotton College State University in Guwahati, Assam. As it was a paid job, the amount requested for the stipend was spent towards hiring three field researchers and their monthly stipend (~ £128/month) was paid through this amount.
Travel and accommodation	1230	1380	- 150	Many unexpected local travels have to be made to and fro Guwahati (where the PI is currently based) and multiple field sites. The amount was spent towards the additional travel.
Expendables	100	100	0	
Conservation materials (Production of the posters and other education materials)	300	150	+ 250	Production of the posters and other education materials were cheaper than expected.
Miscellaneous	65	0	0	
Total	4999	4999	0	

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

- We need to develop a nursery and raise the *Vatica lanceafolia* saplings in it. As this is a very important firewood species, raising them in villages and fallow land would reduce people's dependency on it. For this we need to work with the local communities and the forest department.
- Distribution of LPG to the locals at subsidised rates so that their dependencies on firewood could be reduced. The region is one of the important oil

reservoirs in India and many companies are involved in extraction, refining and distribution of oil and oil-based products. We should work with Oil India Limited (OIL) and Oil and Natural Gas Corporation Limited (ONGC) and try to distribute the fuel at subsidised rates to make to sustainable and socially acceptable activity.

- We have noticed that the plant used to be severely infected by many insects. Therefore, a study on the role of herbivory on the plant growth and regeneration is very important.

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, we used The Rufford Foundation logo in the identification booklets and posters. In these awareness materials we have prominently acknowledged the support of The Rufford Small Grants Foundation.

11. Any other comments?

Our initial survey generated important information on the uses of various parts of the tree. We found that the bark and the branches of the *Vatica lanceaefolia* are used in traditional medicine. Locals use branches for tool handling, resin- leaves and branches for religious ceremony by certain local tribes. We have also documented two varieties of *Vatica lanceaefolia*, which are unknown previously. Along with it, interviewed villagers (those who harvested *Vatica*) were asked about their preferences for alternate livelihood of which most of them wanted the supply of gas/cylinder from government and employment for the youngsters. However the remaining villagers preferred harvesting trees for fuelwood, as for them they if the use gas stoves, they need to spend money in monthly refilling the cylinders, which they could not afford due to limited budget. We hope that all this descriptive information will help in preparing a long-term conservational proposal for research of this target species.

Along with all this, I would like to express gratefulness to The Rufford Foundation for supporting this important study that supported different aspects of this long-term research and conservation endeavour. We hope that The Rufford Foundation would continue to support our research and conservation efforts in the future. Thanking for the support.



Top to bottom: Conducting questionnaire survey in the adjoining villages; Harvest of *Vatica lanceafolia*; Measuring the girth of the *Vatica* tree and measuring the seedling and sampling's height.