

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	Dr Chittaranjan Baruah
Project title	Assessment Of Turtle Diversity And Habitat Suitability In Community Temple Ponds Of Assam, India
RSG reference	15983-2
Reporting period	April 2015 – December 2016
Amount of grant	£5000
Your email address	chittaranjan_21@yahoo.co.in
Date of this report	15 th May 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
To study the diversity of freshwater turtles in temple ponds of Assam				Survey was carried out at 16 different community temple ponds in six selected districts of Assam, India. We observed highest turtle diversity (13 species) in Hayagriva Madhab temple pond (Kamrup district) followed by nine species in Sivasagar tank (Sivasagar district) and Nag-Sankar temple pond (Biswanath district) and eight species in both the ponds- Gorokhiya Gosair than temple pond, Sorbhog (Barpeta district) and Joysagar tank (Sivasagar district).
To assess habitat quality and current threats in temple pond turtle conservation				Habitat quality and current threats in turtle habitats were assessed at regular interval in each temple ponds surveyed. The major habitat threats observed in most of the ponds are: pollution caused by devotees by providing foods to turtle viz. layer of oil on water from biscuits, plastic bags in water; increased competition for food by large population of prolific breeder fish viz. tilapia (Oreochromis mossambicus) and common carp (Cyprinus carpio); injury to the turtles by carnivorous fish (Clarias gariepinus), presence of toxic algae (Microcystis aeruginosa), severe parasitic infection, poor dissolved oxygen during continuous rain, poor basking space and no water circulation or filtration facility. Most of the habitat quality parameters of Hayagriva Madhab



		temple pond (Kamrup district), Nag-Sankar temple pond (Biswanath district), Sivasagar tank and Joysagar tank (Sivasagar district), and Gorokhiya Gosai than temple pond, Sorbhog (Barpeta) were found to be in nearly favourable range for aquatic organisms. However, some of the parameters such as Dissolved Oxygen and BOD levels need serious attention during rainy season. Over population of <i>Nisssonia gangeticus</i> in Nagshankar temple pond is creating serious threat to other species.
To conduct education and awareness programmes towards community participation to assist the community temple pond habitat management		Local awareness campaigns were conducted in and around the temple pond habitats of turtles in Assam, where we transmitted the awareness about pollution caused when providing foods to turtle viz. layer of oil on water from biscuits, plastic bags in water. We also trained youth, women and students on identification of turtles, differentiating turtle and tortoise (as many times, tortoises were released to water due to lack of knowledge) and distributed educational material. We verified the improvement on local people's perception on turtle conservation at the end of the project

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

- **Community participation:** At the beginning of the project interaction with local people and their participation in the project was complicated, due to local peoples' previous negative experience on some earlier investigator who couldn't keep their promise on pond habitat improvement. During initial awareness programmes, participation was low. To solve these problems we carried out a series of group discussions with local people and their acceptable view point was taken into consideration for preparing conservation strategies. At the end, we identified



much more interaction and community participation to fulfil the project's aims and objectives.

-Habitat survey and collection of water samples: Sampling for water quality analyses at regular intervals is quite problematic at all 16 temple ponds (located at a distance range of 65 to 700 km between two ponds) covered under the present study. To overcome this problem, we trained our local volunteers of Kamrup district with the field and water quality analysis technique which was very fruitful for successful implementation of the project.

- **Ex-situ conservation conducted in selected ponds only**. Since the present study incurred most expenditure in survey and sampling, limited fund was left for ex-situ habitat improvement. Suitable sandbanks were created in the corners of the pond for turtle basking and nesting. The nesting and basking ground were created in our previous project was improved. To solve the problem of limited fund, we "suggested the pond management strategy through fund raising" to each of the pond management committee which are presently under implementation.

- **Morphological identification**: Identification of closely related turtle species of same genus viz. *Nilssonia hurum* and *Nilssonia nigricans* basking at aquatic habitat without capture was quite difficult phenotypically. We are still trying to solve this problem by designing pictorial key for their identification. A proper scientific study on genomic characterisation using suitable molecular marker will only permanently solve the problem of species identification and differentiation.

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

I. Increased awareness and knowledge about temple pond turtles and their importance.

With the help of our trained project team, we have conducted several awareness campaigns simultaneously in and around the temple pond habitat, which increased the level of awareness among local communities towards protecting 'their' nearest turtle habitats. Questioner cum photographic surveys was conducted at the beginning and ending of the project. By the end of this project we were able to increase awareness among all students, youth and local fishermen substantially and they were found to be motivated toward conservation of turtle diversity in Assam, northeast India.

II. Assessment of Physicochemical parameters:

The physicochemical parameters of water and soil were analysed in the present study. The study revealed several parameters leading to serious threats to conservation of freshwater turtle diversity.

III. Enhancing the endangered turtle species protection:

The experiences acquired from the visit to various contemporary turtle conservation projects teach us that involving the local communities residing around turtle habitats is the best approach at the current situation in Brahmaputra Valley. Therefore, we



are in the process of involving them in the protection of turtles, the result of which will be reflected in the final report, through the nest protection programme.

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

Through this project we developed a very good linkage with the local communities residing in and around identified important community temple turtle habitats.

The local community involved in nest protection programme, creation of basking ground of turtles, monitoring of physicochemical parameters of water and soil and their management and cleaning of ponds at regular interval.

Outcomes of the study were shared with local people involving in pond management. The audience identified new questions related to turtle conservation strategy and management of habitat parameters, agreed active participation in habitat management and turtle conservation.

5. Are there any plans to continue this work?

Yes, we are continuing our turtle conservation activities in selected localities. Communication with local communities, fishermen, students and conservation NGOs is still in progress. We visit the study sites periodically and developed conservation network named "Turtle Conservation and Research Programme (TCRP)". Motivated villagers are continuously helping us in turtle nest searching, nest protection and habitat improvement programme.

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

We already shared the outcome of the project at community meeting, where we have recommended not using plastic bags in and around the temple pond habitat of turtles. During our information sharing many new collective ideas have been proposed by local communities, which we expect could be achievable soon.

Concerning the scientific community, a research paper on involvement of local communities entitled "Community-based turtle conservation in Assam: A strong tool against illegal wildlife trade" has been accepted for oral presentation in the forthcoming National Seminar on Wildlife trafficking in Northeast, at Dhing College, Nagaon, Assam, India where Rufford Foundation has been acknowledged for the financial support.

We have recently presented our findings in a national seminar held at Gauhati University, Assam, India the proceedings of which will be published very soon. Additionally we are preparing scientific Research paper on the project outcomes on physicochemical parameter analysis of soil and water. Rufford Foundation has been acknowledged in all our scientific communication for the financial support.



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 RF was used consecutively during the project period April 2015 – December 2016. However, the main expenses were made on field work during the first 6 months of the project. Expenses for purchase of glassware, pH meter, sampling material and kit for water parameters, training of local field assistants were performed during the first four months i.e. April 2015 to July 2015. Monthly expenses were made for sampling and community awareness programme. Turtle species identification was carried out at the middle phase of the project i.e. August -November 2015. Lab work was conducted from December 2015 to April 2016. Ex-situ habitat improvement was carried out during the last 6 months of the project (July - December 2016). The fund was fully utilised according to what was anticipated in the project. However, an unexpected problem i.e. flood in Assam had created problem in regular field activities during May - July 2016, for which the reporting has been delayed.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and

Item	Budgeted Amount	Actual Amount	Difference	Comments
Field Work and Travel	2500	2710	-210	The vehicle and boat expenditure exceeded by £ 210 due to rate hike than during project preparation and more monitoring days than proposed. We were able to cover 16 temple ponds of Assam with longest distance of 950 km.
Subsistence	1200	1200	0	A local project assistant and local field guides were given a negligible amount of honorarium during the study period.
Equipment (1 GPS and 1 digital pH meter)	500	475	+25	One GPS and one hand held digital pH meter were purchased. The balance amount of £25 was spent for field work.
Chemicals and glassware, testing kits (for water and soil and turtle habitat quality analysis)	600	605	-5	The difference is due to rate hike during the project period.
Ex-situ habitat improvement	300	205	+95	We have offered full technical support to each "Temple Pond

the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. 1 \pounds sterling = 83.10 INR

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(Preliminary Sand filling, nets for egg protection, etc. for suitable turtle nesting site creation) Contingency (including special needs)				Management Committee" and the motivated local volunteer helped in cleaning the ponds, creating of nesting and basking grounds under ex-situ improvement programme. Therefore, we spent fewer amounts for the same. The excess amount of £95 was spent for adjustment of expense in Field work and travel.
Contingency (including special needs)	50	50	0	This amount was totally spent for adjustment of expense in Field work and travel.
Total	5150	5245	-95	

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

i. Population estimation of turtles in each temple pond is of high priority, which will help in development of effective management strategy. As in our study, we have found that over population of *Nisssonia gangeticus* in Nagshankar temple pond is creating serious threat to other aquatic species.

ii. Our Long term goal is: Enhancement of Community-based turtle conservation by creation of eco-tourism prospects in and around the most potential turtle habitats.

iii. Conducting capacity building programme among local youths towards community-based conservation programme in the riverine forested areas.

iv. Rehabilitation of poachers and to find out alternative means of supporting livelihoods of many impoverished rural communities.

v. Strengthening the capacity of Turtle Conservation Network- "TCRP" (Turtle Conservation & Research Programme), for sustainable long-term turtle conservation.

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

Yes. We have used RSG logo in the awareness campaign banners, leaflets and educational materials, National seminar presentations and the final technical project report.

11. Any other comments?

Financial support from The Rufford Foundation can bring changes in the conservation scenario of this region. Being a turtle priority conservation area, continuous long-term support is essential for conserving the imperilled turtle fauna of northeast India.