

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	Sonali Saha
Project title	Conservation of freshwater ecosystems in Indian Northeast
RSG reference	19591-2
Reporting period	July 2016-July 2017
Amount of grant	£4850
Your email address	bamboohydraulics@gmail.com
Date of this report	July 18, 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
Initiate a community water monitoring program at Rymben River				We were able to galvanise local school and colleges to establish monitoring program for river hydrology and aquatic macroinvertebrates.
Determine environmental flows required for maintenance of fish communities in the Rymben River				In conjunction with monitoring hydrology the diversity and estimates of fish catch were obtained to determine correlation between river discharge and fish abundances.
Sensitisation of local communities to water monitoring for sustainable water use and fish stocks. Build capacity of local schools and colleges utilising the rivers of East Khasi Hills District, Meghalaya.				We organised a field trip and data monitoring workshop at Lapalang village involving local communities and St Xavier's High School. Workshops and water monitoring workshops were organised at Umshyrpi college, Shillong, and headmen at Umran river, in Ri-Bhoi district.
Manual for monitoring hydrological parameters and illustrating fish diversity				We were not able to make a complete manual, we published small pamphlets of our hydrology monitoring programme and a guide to macroinvertebrates as indicators.

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

Difficulties that occur while working in the Indian northeast are the following: there is lack of capacity among local communities and in case of any equipment malfunction one has to coordinate with the local agencies which are always busy. We had to abandon an installation because of equipment malfunction, however we installed it after gap of 2 months. There are several cultural issues which at times make communication difficult. These can be overcome, and were overcome, but there is a learning curve.

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

1. We have now data of river discharge and stage height of Rymben River, for an entire year which did not exist before. Moreover, these data were collected with the help of local communities which made them aware of the importance of hydrological parameters.
2. We now have some information on catch size of the fish and preference of local fishermen. We discerned that chocolate mahseer, a fish species being overharvested at very young age threatening their population in the region.
3. We are able to build capacity among the undergraduate students and their lecturers on freshwater ecosystem conservation, and were able to continue collecting data on water quality and macroinvertebrates at several streams in East Khasi Hills district specifically in Umshyrpi and Umran rivers. We were able to publish our findings with all our collaborators in the journal of Indian Ecological Society giving the students exposure to the publishing and science communication process. We organised sensitisation workshops at three locations located at Rivers Rymben, Umran, and Umshyrpi (Fig. 1) including the local communities and college students and staff

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

Local communities are involved at every step of our work. Local communities at both the college and village "dorbar" (council), and fishermen level have benefitted from our work in Meghalaya. College students were exposed to the methods and equipment for monitoring quality and quantity of water in streams and rivers of Meghalaya. We sensitised the local communities to the relevance and importance of measuring the components of river parameters and its role in long-term sustainability of fish abundances.

5. Are there any plans to continue this work?

We plan to continue our work, in fact our work has never stopped since 2014 and it is a long-term project. We are going to broaden the network of streams to be monitored for water quality, hydrological parameters, aquatic macroinvertebrates and fishes. We want to monitor the diversity of riparian ecosystems that border the streams and rivers and the diversity of streams itself.

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

We have several avenues for sharing our work. We have published the findings of our monitoring studies in the Journal of Indian Ecological Society. We have held public seminars and meetings and presented our work at conferences and workshops. In 2016, our work carried was presented at the annual conference at Society of Freshwater Science in Sacramento, California. In addition to sensitising people we will share our results on environmental flows and fish abundances at

research seminars in India, such as one on 7th August 2017 at Bangalore based Ashoka Trust for Research in Ecology and the Environment.

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

This grant was used from July 2016 and will be completed at the end of July 2017. Our work in Meghalaya continues and really it is a long-term project that we have embarked on the part of which is funded by Rufford Foundation's support.

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 rate of £ has fluctuated during the grant period from 79 to 90 INR

Item	Budgeted Amount	Actual Amount	Difference	Comments
Nikon Camera	150	125	+25	
Local travel and logistics of traveling to Lapalang from Shillong and to Umsning from Shillong for data collection from July 2016 to July 2017	1500	1500		We have still a couple of field visits remaining which will be completed by early August.
Equipment for monitoring fish abundances	300	300		
Water level recorder, Sodaq board, GPRSbee	200	200		We spent £25 more than we accounted
Field Assistant Salaries	600	600		
Workshops venue, logistics and refreshments	800	800		Three workshops and meetings were organised at different locations in East Khasi Hills and Ri-Bhoi district in Meghalaya. Each was one to two day long and attracted incredible number of people.
Travel Within India	800	800		Drs Sonali Saha, Dr Amartya Saha from Mumbai to Shillong. Dr Bashida Massar presented the findings and went for training to the US, her local flights in India were funded by the grant.

Printing cost of manual	500	300	+20 0	This is something we were not very successful in achieving. We printed material and pamphlets, banners and posters for our workshops and distribution, we have not been able to make a manual for water monitoring
Manual Current Meter	0	225	-225	We used the money to buy another current meter to be used for monitoring of Umrans river. We had not budgeted for this but since our work grew we found it extremely useful to allocate funds for this equipment.

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

The work on monitoring of rivers and determining environmental flows in the northeast should be continued as the area is extremely data poor and the data needs to be collected with the help of local communities if conservation of freshwater ecosystems have to be continued. In addition, the rivers and streams should be monitored for catchment land-use and high biodiversity of the catchment areas for conservation.

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 the logo was used for pamphlets, banners, and field manuals that were printed for the workshops organized at several locations in Meghalaya. Each presentation made by the participants of the project makes a point to profusely thank The Rufford Foundation.

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

Dr Bashida Massar: St. Anthony's College, Shillong, Meghalaya led the monitoring of Rymben River and determined the size of fish catch with help of local fishermen.

Dr Sonali Saha: Miami Dade College, Miami put the team together and envisioned the project and helped with organising workshops, data collection and built capacity to monitor hydrological parameters.

Dr Amartya Saha: Archbold Expeditions, was the resource person for monitoring discharge and helped with methods for monitoring environmental flows.

Mr Tony Marak: William Carey University, organized the workshop at Umsning where the local headmen and the students of WCU participated in the program.

Mr Nachiket Kelkar: Ashoka Trust for Research in Ecology and Environment helped us with the methods for monitoring fish abundances in Rymben.

Dr Kiran Nongrum and Mr Noor Nongrum: Umshyrpi College, Shillong, organized the two-day workshop and monitoring of Umshyrpi River by the students of Umshyrpi College. They also organized sensitization events in the catchment area of Umshyrpi River.

Mr Zulfi A, and Mr Archie Kharpouri: Grace City, played a pivotal role in coordinating the sensitization and water monitoring workshop at Umran River at Umsning town of Ri-Bhoi district. They were generous to offer their premises that fall within the catchment area of Umran River for access to monitoring the river.

12. Any other comments?

Grants from Rufford Foundation have been extremely helpful in developing capacity in the field of freshwater ecosystem conservation and getting baseline data on river hydrological parameters. However, the task of building capacity, sensitization of people for freshwater and ecosystem conservation is far from over. Indian northeast is a large region dissected with numerous free-flowing streams and rivers. The state of the aquatic ecosystems and biodiversity they harbour is severely threatened. We are continuing our work in this field and will certainly approach Rufford Foundation in the future.

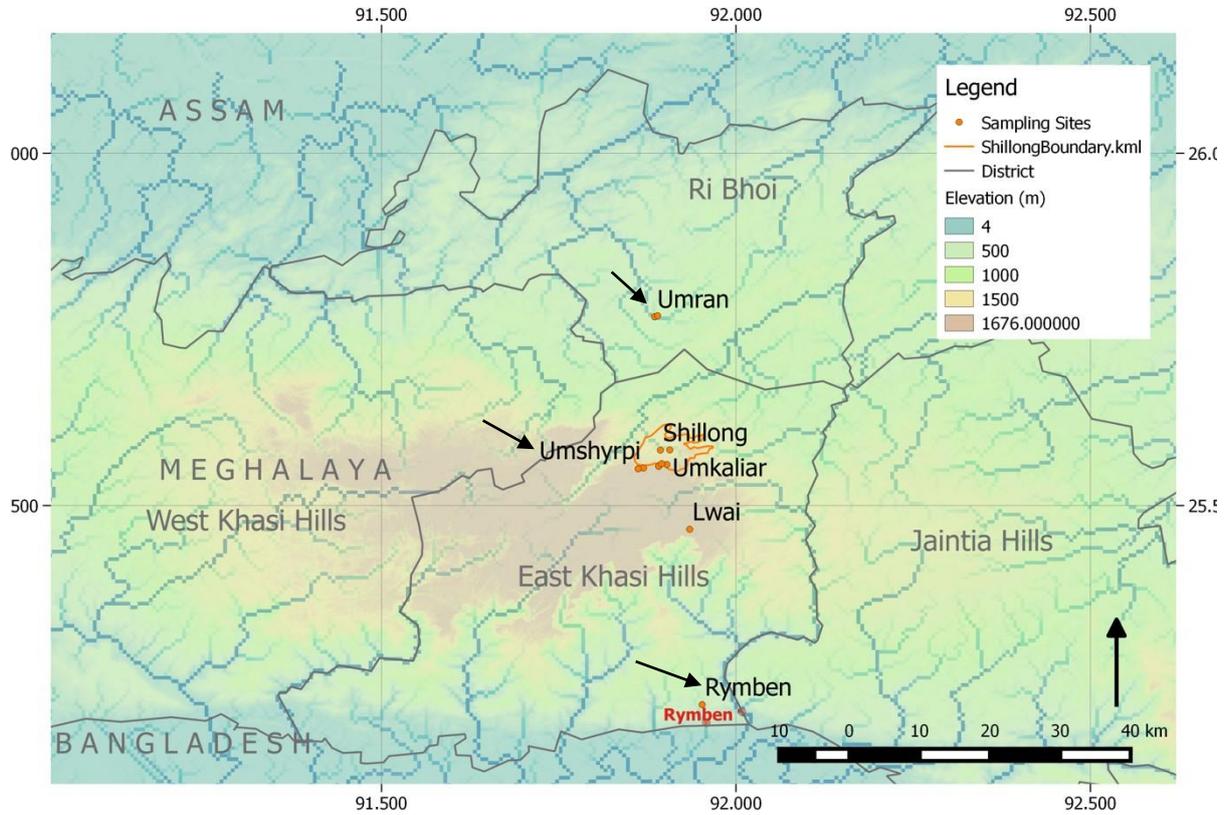


Fig. 1 Map of field sites pointing the study locations where river monitoring program has been initiated during this project.