

## 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

Please submit your final report to [jane@rufford.org](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

---

<b>Grant Recipient Details</b>	
<b>Your name</b>	Maitreya Sil
<b>Project title</b>	A study on ecology, diversity and distribution of three families of freshwater gastropods in India and its implication on conservation of species and habitat
<b>RSG reference</b>	19805-1
<b>Reporting period</b>	1 year
<b>Amount of grant</b>	£4998
<b>Your email address</b>	maitreya.sil@gmail.com
<b>Date of this report</b>	30.09.2017

**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 uncover diversity and distribution of three families of freshwater snails from the wetlands and rivers of India				<p>In order to capture the true species diversity of the three families of freshwater snails of India, multiple lines of evidence (molecular data, morphology and niche modelling) have to be used. Although molecular data suggests presence of multiple species, we need to corroborate that with other kinds of data as mentioned above. Molecular analysis of remaining samples is likely to detect more lineages and give us a clearer picture of the distribution of these lineages.</p> <p>We have finished 70% of the expected sample collection and started molecular work and analysis</p>
To understand the ecology of freshwater molluscs				<p>We have collected data on water temperature, pH, salinity etc. from several locations.</p> <p>Data collection on various water quality parameters is in progress</p>
To design, print and distribute booklet and flyers				<p>The designing and publishing of booklets and flyers will start once the work on estimation of species diversity and distribution is over. We have already contacted several NGOs and university teachers who will help us distribute the materials.</p> <p>We are yet to start working on the booklets and flyers</p>

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

The availability of certain species only during the monsoon made it harder to finish the whole sample collection in just one year. Again, prevalence of occasional flood during the monsoon made us forego some sampling plans.

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

- Discovery of several new lineages of freshwater snails which might be true species belonging to genera *Pila* and *Bellamya*.
- Possible rediscovery of some species known from single specimens (data deficient) that belongs to genus *Pila*.
- Investigation of whether large scale developmental projects such as the Indian River Linking project will have an effect on freshwater snail distribution and survival.
- Communication with people living in rural areas and wetlands about the importance of freshwater biodiversity for their healthy existence.

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

Booklets and flyers will be distributed among local communities with the help of some NGOs. The documents will contain information about local species of snails from genera Ampullariidae, Viviparidae and Planorbidae, their role in maintaining a healthy wetland ecosystem and also discuss briefly the pressing need to conserve wetlands and their flora and fauna. However, the documents are yet to be designed.

**5. Are there any plans to continue this work?**

Yes. The freshwater mollusc diversity in India is large and we have only targeted a small portion of that. With the threat of climate change and developmental activities looming some of India's most rich habitats in terms biodiversity such as the Western Ghats, might get altered in the next few decades. So, it is imperative to understand the diversity, distribution and ecology of Western Ghats endemic families of freshwater snails in order to conserve them. We also plan to extend our work to other freshwater fauna in order to understand the potential detrimental effect of anthropogenic agents on freshwater ecosystem.

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

The team is already in touch with several NGOs who will help communicate with people living near wetlands. It is of paramount importance that people who live near the wetlands and dependent upon them for livelihood and basic amenities are

made aware of the biodiversity in those wetlands and their role in maintenance of the habitat. We also have contacted several university professors who will help distribute the booklets to interested students for easy identification of freshwater snail species.

There are further plans of sending booklets to the forest department in order to draw their attention to the wealth of freshwater biota, misuse and pollution of wetlands and ways to identify polluted habitats.

We shall also disseminate our results in the form of papers in peer reviewed journals and presentation in international conferences to the scientific community. Part of the work has already been presented in two international conferences, namely, Third International conference on Southeast Asian Gateway Evolution (SAGE, 2017) conference held in Bogor, Indonesia and Biogeography- India meeting, 2017 held in Bangalore, India.

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

We started utilizing The Rufford Small Grant from 15th July, 2016 onwards. Over the course of one year most of sample collection and parts of analysis of molecular, morphological and ecological data and species delimitation analysis have been completed. Although we wanted to complete the sample collection by October, 2016, natural calamities such flood, unavailability of vehicle and field staff forestalled our work. Consequently, the post hoc data generation, analysis and communication were also delayed. We hope to finish sample collection by October, 2017 and other procedures including distribution of booklets and description of new species by August, 2018.

**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
Field assistant's salary (GBP 4.95/day for 90 days)	446	563		This section included field staff salary as well as driver's salary which was not taken into account.
Food and lodging (for team members and field assistants)	1300	610		We stayed in budget hotels, guesthouses and were also offered free accommodation by local NGOs and biologists.

Long distance travel (from Bangalore to field sites outside South India)	350	208		Much of our fieldwork outside South India was carried out using the department vehicle, hence long distance travel cost was reduced.
Local Transport (Hiring cars for transportation around field site)	1254	357		In many cases borrowed vehicles was used.
Fuel cost (for travelling inside South India; GBP 15.9/day for 45 days)	636	730		We have used the department vehicle for fieldwork in places we have
Field equipment	312	250		Field equipment for water quality measurement are yet to be purchased.
Designing and publication of booklet (GBP 4.5/copy for 100 copies)	450	0		We haven't started printing the booklets yet.
Designing and publication of flyers (GBP 0.5/copy for 500)	250	0		We haven't started printing the flyers yet.
TOTAL	4998	2718		A few more months of fieldwork is yet to be done. Any remaining funds after that will be used in printing

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

1. Systematic survey of diversity, distribution and threats to all freshwater mollusc families in India.
2. Understanding the effects of large scale developmental projects on wetland biodiversity.
3. Communication with people utilizing wetlands for their livelihood for e.g. fishing communities, the importance of different organisms including molluscs in the food chain which in terms ensures the longevity of the wetland.

**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 Rufford Foundation logo will be used in all the presentations that we are going to make in the next few years including work presentations in the department and at international conferences. We have already produced it twice during SAGE, 2017 conference held in Bogor, Indonesia and Biogeography- India meeting, 2017 held in Bangalore, India.

It will also be printed on the booklets and flyers that we are going to distribute.

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

**Maitreya Sil:** Maitreya Sil, the team leader has carried out most of the field work in different parts of the country, molecular work and analysis. Part of the work also has been presented by him in two international conferences. He was also responsible for approaching some of the NGOs who will help us distribute the booklets and flyers to local communities.

**Praveen Karanth:** Dr. Praveen Karanth helped in understanding the phylogenetic and species delimitation analysis which forms the backbone of the work. In addition, he provided the lab facilities and financial support for molecular work and analysis.

**Aravind Madhyastha:** Dr. Aravind Madhyastha has started some preliminary morphology and morphology work necessary for species delimitation on the samples collected by the group. Moreover, he is going to help the team understand and carry out the niche modelling analysis. He has introduced the team to NGO members and to people who helped us during fieldwork. He also helped us procure some important specimens from field.

**12. Any other comments?**

The team expresses their gratitude towards The Rufford Foundation for their support. The project will assuredly contribute towards a better understanding of wetland mollusc fauna and their conservation.