

## The Rufford Small Grants Foundation

### Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. 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. 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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

Grant Recipient Details	
<b>Your name</b>	Tshering Dorji
<b>Project title</b>	Dragonfly diversity and conservation in Toebay Rongchhu stream watershed, Punakha, Bhutan.
<b>RSG reference</b>	11311-1
<b>Reporting period</b>	October 2012-October 2013
<b>Amount of grant</b>	£6000
<b>Your email address</b>	<a href="mailto:Tsheringtshang@gmail.com">Tsheringtshang@gmail.com</a> <a href="mailto:tdorji1.cnr@rub.edu.bt">tdorji1.cnr@rub.edu.bt</a>
<b>Date of this report</b>	25 <sup>th</sup> October 2013

**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
Adult dragonfly diversity within study area.			X	Adult dragonfly diversity could be recorded from different locations within the study area along with coordinates for future reference.
Dragonfly larva diversity within study area.			X	Most fulfilling experience was discovering larvae of <i>Epiophlebia laidlawi</i> (one of the three species belonging to family Epiophlebiidae) from two of the tributaries of Toebay Rongchhu viz., Jichulum and Dorokna streams thereby connecting the distribution of <i>E. laidlawi</i> from Haa to Bumthang districts in Bhutan.
Preservation of voucher samples in CNR laboratory.			X	I have preserved voucher specimens of larvae as well as adult dragonflies along with colour photographs for students' reference in CNR laboratory.
Recording and identification of habitat types and conservation threats.			X	Different habitat types from roadside ditches, paddy fields, streams, small ponds to sizeable pond were recorded within the study area. Also different threats like grazing, road debris, waste disposal and habitat disturbance by logging, road widening, house construction, land conversion from wetland paddy cultivation to housing and dryland cultivation due to lack of irrigation water and of course the major threat being water abstraction for irrigation were recorded and shared with different groups of people.
Talks and information sharing in schools		X		Information could be shared through distribution of pamphlets and also to group of students in Royal Botanical Park (RBP) information area in Dochula during my field visit to the Baritsho pond (a large permanent high-altitude pond managed by RBP management). The information was shared with CNR forestry students, the future backbone of conservation in Bhutan through seminar talk. Research papers are to be written and submitted for publication after this report.

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

The dissemination of information to schools could not be done as it required too much official work as my timing happened to fall during Bhutan's second parliamentary election, but I took chance to

explain about the study to group of students on field trip to Baritsho pond within Royal Botanical Park information centre in Dochula during one of my field visits to the pond. Besides, I could donate the pamphlets to schools within the study area on the study.

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

- 1) Recording of adult dragonfly diversity within the study area for the first time. I am going to submit and publish checklist of dragonfly within the study area in journal and this will compliment the information from eastern Bhutan done by other workers.
- 2) Discovery of larva of *Epiophlebia laidlawi* within two streams, viz., Dorokna and Jichulum. This connects the distribution of *E. laidlawi* from western most district in Bhutan (Haa), Thimphu, Punakha (current study area), Trongsa and Bumthang in central Bhutan. The exceptions to distribution are Paro district between Haa and Thimphu, and Wangduephodrang between Punakha and Trongsa.
- 3) Collection of voucher specimens of adult and larva dragonfly for the College of Natural Resources laboratory. It will be constant source of information for the students for future study. I will continue to build the collection and in future if expansion of laboratory happens then insect collection room will be created.

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

Whenever I was on field visit, I shared information about my work with local elderly people about the importance of dragonfly for their paddy cultivation. The local people call the dragonfly by common name “Ja wangkurmi” or “the blesser of paddy” from the unique flying behaviour of dragonflies over the paddy. I also explained importance of leaving few of the terraces with irrigation water during winter to help maintain healthy number of dragonfly larvae as the farmers usually stop irrigating paddy fields during winter and early parts of spring.

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

Yes, I will definitely continue the work on dragonfly diversity in Bhutan as a whole henceforth. I have already begun to collect dragonfly from other parts of the country whenever I visit different parts of the country.

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

I will make the pamphlets and seminar paper on my study available on the CNR website besides submitting to your organisation and distributing it within the schools in the study area. I will also distribute the pamphlet to Royal Botanical Garden information centre at Lamperi, Dochula. Also I will publish the study in open access journals for broader scientific community.

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

I used the RSG within the stipulated study time. I know my study of dragonfly diversity within the study area is not exhaustive as it expands only one year and many more species could be recorded in the study area if the project period could be longer.

**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
GPS	850	670	-180	Procured by my cousin from Bangkok.
Digital Camera	750	620	-130	My cousin procured from Bangkok.
Rent and maintenance of field vehicle and fuel	1500	1700	+200	Fuel price increased over the project period and also vehicle hiring charges were underestimated.
Other small equipments (nets, batteries, lamps) & office supplies	230	230	Nil	
Preservative equipment (chemicals, glassine envelopes, bottles, jars)	460	370	-90	Some jars and bottles recycled from local supplies.
Daily allowances for field assistants and meals during field works	1050	1410	+360	Number of field days had to be increased with a greater number of helpers than initially conceived. Also, the price for meals hiked during the study period. Met from left over amount from other activities.
Talks in schools	310	150	-160	Could not talk in two of the initially three chosen schools. Excess amount adjusted for deficit amount in other activities.
Dissemination of results (pamphlets, information brochures, journal papers)	850	850	Nil	No cost for journal paper kept as it will be submitted only after project period is over. But the cost for printing colour pamphlets was underestimated and being met from initially planned journal publishing fees.
<b>TOTAL</b>	<b>6000</b>	<b>6000</b>	<b>00</b>	Exchange rate: £1 = Nu.80/-

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

1) The important new step is to do through study on the distribution of *E. laidlawi* in Paro and Wangduephodrang districts in Western Bhutan and Mongar, Lhuntse, Trashi Yangste and Trashigang districts in Eastern Bhutan that have areas with similar elevation range.

2) Also urgent study of other freshwater macroinvertebrates in the country and possible identification of potential areas for freshwater biodiversity conservation area outside the existing nature reserves or within the current nature reserves in the face of almost all the major rivers in Bhutan being targeted for hydropower generation and headwater streams being abstracted for different uses in the face of climate change.

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

Yes, I used RSG logo for my seminar presentation and pamphlet. I also shared about RSG with my in-service forestry under graduate students who work and will work and with forestry diploma students who will work at various levels of conservation related jobs under the Department of Forest, within Ministry of Agriculture and Forest.

### 11. Any other comments?

RSG has opened my carrier on research path by giving me this funding. I have been awarded Annual University Research Grant by my University to do study on freshwater macroinvertebrates. Hopefully my relationship with RSG will go a long way.



Left: *Ceriongrion fallax cerinomelas* mating pair at Manigang pond. Right: *Neurobasis chinensis* at Toebay Rongchhu below Chimi Lakhang near to confluence of Toebay Rongchhu stream with Punatshangchhu River (only 2 sighted during entire study period).