# 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. 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** | AHM Ali Reza |
| **Project title** | Herpetofaunal Species Richness in the Tropical Forests of Bangladesh |
| **RSG reference** | 25.12.07 |
| **Reporting period** | May 2008 - December 2009 |
| **Amount of grant** | £5,000 |
| **Your email address** | wild_reza@yahoo.com |
| **Date of this report** | December 2009 |

**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 |
|---|---|---|---|---|
| *Scientific knowledge.* The project will provide much new scientific information by producing peer-reviewed papers. Disseminate newly generated information by presenting research findings in the professional societies and research organizations. | | | √ | A total 85 species of amphibians and reptiles have been documented from Bangladesh. Seventeen species have been reported either as new or a re-description for the country: eight frogs, two skinks, four lizards, one turtle, and two snakes.<br>The project produced 16 peer-reviewed scientific papers, 3 of them are in press now (please visit: www.wildreza.com for detailed list and a copy). Several others are in preparation at this stage.<br>Five formal oral presentations have been made to various audiences in home and abroad:<br>i. Prioritize our Needs: A Herpetological Account from Bangladesh. At the Joint Meeting of Ichthyologists and Herpetologists. July 2009. Portland, Oregon, USA.<br>ii. Climate Change and Bangladeshi Herpetofauna. At the American Museum of Natural History's Southwestern Research Station. March 2009. Arizona, USA.<br>iii. Prioritize our NEEDs: A herpetological study in Bangladesh. At the Museum of Comparative Zoology, Harvard University. November 2008. Boston, MA, USA.<br>iv. Research and Photography: Experience on Bangladeshi Herps. At the South Asian Institute of Photography, Dhaka, Bangladesh. July 2007.<br>v. Herping: Fun and Science. Study on Amphibians and Reptiles. At |

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| | | | | the Department of Zoology, Jahangirnagar University, Dhaka, Bangladesh. August 2006.<br><u>Three posters have been presented based the information generated through this project:</u><br>i. Applied research for conservation of the Herpetofauna of Bangladesh. Presented at the ninth Student Conference on Conservation Science at the University of Cambridge. March 2008, Cambridge, UK<br>ii. Diversity and Biogeography of the Herpetofauna of Bangladesh. Presented at the Joint Meeting of Ichthyologists and Herpetologists. July 2007. Missouri, USA.<br>iii. Amphibians and Reptiles of Bangladesh. Presented at the Texas Herpetological Society Symposium. University of Texas at Austin. November 2007. Texas, USA |
| *Academic training.* The project will produce a PhD Dissertation at the Texas Tech University in the USA and will support two MSc theses at Jahangirnagar University in Bangladesh. | | | √ | PhD Dissertation on the Herpetofauna of Bangladesh is due by Spring/Summer 2010 at the Department of Natural Resources Management, Texas Tech University by the PI, Reza.<br>The project has supported two MSc Thesis by: Kamal Hossain and Sk. Md. Ibrahim Khalilulluah both at the Department of Zoology at Jahangirnagar University, Dhaka, Bangladesh<br>Four Graduate students from the Department of Zoology, Jahangirnagar University in Bangladesh have been trained in the field on the taxonomy and ecology of the amphibians and reptiles of Bangladesh. The students are: Kamal Hossain, D.M. Kamruzzaman, Sk. Md. Ibrahim Khalilulluah, and Hasanul Banna. |

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| *Conservation education.* Awareness programmes will be arranged for the community people in and around the protected areas. Herpetofuanal conservation will also be highlighted through media awareness targeting mass people of the country. | | | √ | At least 10 informal awareness programmes have been made in the nearby villages of the protected areas where most of the elderly people were invited to interact with the project team members on the herpetofuanal conservation issues.<br><u>Two television interviews have been made on the importance of biodiversity conservation:</u><br>1. An interview on the prospect of biodiversity conservation in Bangladesh. Aired on 21 August 2008 on nTV - one of the most popular private television channels in Bangladesh and telecasted around the world via satellite.<br>2. Interview on the herpetofaunal research and conservation issues in Bangladesh. Aired on 09 August 2006 on nTV - a privately owned satellite television channel in Bangladesh.<br>There were at least three news articles published in the local newspapers highlighting the project activities and prospects of biodiversity conservation in Bangladesh. |

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

There was one big unforeseen difficulty: someone broke into my apartment in Texas and stole my laptop and some other electronics with most of my field data. Some back-up CDs were available but however, about 60-70% data are gone as it was just a day after I got back from the field. A police case had been filed, but no recovery has been made till today. A recovery trip was made to several field sites in Bangladesh resulting extra expenses and man hours.

As the nature of my fieldwork, I had to stay inside the forests to conduct night surveys during my fieldwork. In few occasions, the Forest Officials in Bangladesh did not allow my team members to use their facility (the only place to stay overnight in the forest) to stay overnight which hampered the fieldwork and hinder interesting results. My team members had to stay in a nearby township in few occasions and travel back and forth to the forests which were a matter of additional costs than expected.

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

**Field Research/Scientific Study**:
I have conducted fieldwork in eleven study sites of the five major habitat types in Bangladesh. So far, 17 species have been reported either as new or a re-description for the country: eight frogs, two skinks, four lizards, one turtle, and two snakes. I am now working on to identify one microhylid frog that has been collected from a national park which could possibly be new species for science. Above 10 other specimens are being carefully examined at this point for proper taxonomic identity.

Two evergreen forests, Kaptai and Lawachara National Parks, have been initially identified as the best herpetofaunal habitats in Bangladesh. With the help of computer softwares following ecological niche principle, I am now working on to produce species distribution model and habitat prioritization maps which would help to re-assess the protected area systems in the country. Using various IPCC (2001) climatic scenarios, I will then produce predictive distribution models of some selected species on a temporal basis.

Sixteen scientific papers have either been published or been accepted in internationally reputed peer-reviewed scientific journals. These papers describe most the major findings of the project. Please visit: www.wildreza.com for detailed list and copies of the papers (a list is also provided later in this report). Several other manuscripts are in preparation at this stage and should be published shortly.

**Local Manpower Development/Training:**
The project has supported (both financially and technically) two MSc theses at the Department of Zoology at Jahangirnagar University, Dhaka, Bangladesh. Kamal Hossain has just finished his report on the herpetofaunal diversity at Kaptai National Park under Rangamati District in the south-eastern region of the country whereas Sk. Md. Ibrahim Khalilulluah is concentrating his thesis in Lawachara National Park under Moulovibazar District in the northeast.

Four graduate students from the Department of Zoology, Jahangirnagar University have been trained in the field on the taxonomy and ecology of the amphibians and reptiles of Bangladesh. They are: Kamal Hossain, D.M. Kamruzzaman, Sk. Md. Ibrahim Khalilulluah, and Hasanul Banna. The students showed real interest and enthusiasm in their field with lots of energy and spirit. They have been trained in a way that they will be able to work in the field with minimum supervision and positively, would be the next generation wildlife conservationists in the country. The project is also expecting to involve more students in future with the next phase of the fieldwork.

**Conservation Education**:
Conservation activities have been initiated by providing media coverage in wildlife conservation of Bangladesh as well as training local students in the field. At least ten informal awareness programmes have been organized in the nearby villages of the protected areas. The protected areas where the awareness programmes were arranged are: Lawachara National Park and Satcharai National Park under Moulvibazar District, Kaptai National Park under Rangamati District, Madhupur National Park under Tangail and Mymensingh District, Teknaf Game Reserve under Cox's Bazar District, and Sundarbans Reserved Forest under Khulna, Bagerhat and Satkhira Districts. During these information awareness programmes, most of the elderly people were invited to interact with the project team members on the herpetofuanal conservation issues in the country.

As the Principle Investigator of the project, I was invited for two television interviews to discuss the importance of biodiversity conservation as well as to talk about the current herpetofaunal project in Bangladesh. Both of these television interviews were aired in one of the most popular private television channels in Bangladesh and telecasted around the work via satellite. The financial support from the RSGF for this herpetofaunal survey project in Bangladesh has been carefully acknowledged during these television interviews. The interviews were highly appreciated among the audience. The latest interview was aired on 21 August 2008 and the other one was aired on 09 August 2006.

In many occasions, local media reporter and other personnel were invited to join the field team to provide them more information on our field activities. Based on such information, at least three news articles were published in the local newspapers highlighting the project activities and prospect of wildlife conservation in Bangladesh. All these media activities created considerable amount of awareness for herpetofaunal conservation among the country people.

In general, it is very difficult to find someone in the local community who likes the amphibians and reptiles. It is a common practice in the country to kill snakes whenever they can find any. Due to the media awareness, I believe, the project contributed successfully conveying the message of not killing snakes or any other wildlife without any logical reasoning.

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

This herpetofaunal conservation research project was initiated by a Bangladeshi researcher to contribute to the dire need of information on the local fauna. So, local community was involved from the very early stage of this project. Communities were also involved in both *local manpower development* process and *conservation education*. Local manpower development by offering hands-on training in the field to the graduate and undergraduate students certainly benefitted the local communities. On the other hand, conservation education using local media as well as direct interaction with the local people has increased their capacity. In both cases, herpetological knowledge among local communities has increased significantly and they started appreciating the species diversity more than before.

Bangladeshi herpetofauna is probably the least-known among all South Asia countries and very little is done since the British are gone in the 1940s. The considerable knowledge generated during the current project through publishing scientific papers and presentations given by the PI, increases the opportunities for future research on these poorly known taxa of the country. Both the management authority and wildlife researchers in home and abroad would be benefitted through the new information generated through this project.

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

Certainly yes! I am now working on to explore funding for the next phase of more intensive herpetological work in Bangladesh. Moreover, ongoing research is underway from the just completed fieldworks on clarifying the taxonomic status of species and planned publications of new species are expected when the field data are thoroughly analysed. With some western scientists, I am now planning for a more advanced and systematic herpetological research work in Bangladesh to work on many taxonomic, ecological, and biogeographic unsolved issues.

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

Some results of the project have been published in internationally recognized peer-reviewed scientific journals which would be used by the researchers and policy makers at home and abroad. Many of the papers are open access or would be available on request to the author/s. A list of publications is attached here.

**Full-length Papers:**

Reza, A.H.M.A. 20XX (**In press**). First record of *Amphiesma venningi* (Wall, 1910) (Serpentes, Colubridae, Natricinae) from Bangladesh, with notes on its taxonomy, natural history, biogeography and other sympatric species.

Reza, A.H.M.A. 20XX (**In review**). Colubrid snake *Lycodon zawi* (Serpentes: Colubridae) from Lawachara National Park in Bangladesh.

Mahony, S. and Reza, A.H.M.A. 2008. A herpetofaunal collection from the Chittagong Hill Tracts, Bangladesh, with two new species record for the country. *Hamadryad*. 32(1): 34-45.

Reza, A.H.M.A. 2007. Destination Bangladesh: From the Himalayas to the Bay of Bengal. *Iguana*. 14(2): 106-114.

Praschag, P., Hundsdorfer, A.K., Reza, A.H.M.A. and Fritz, U. 2007. Genetic evidence for wild-living *Aspideretes nigricans* and a molecular phylogeny of South Asian softshell turtles (Reptiles: Trionychidae: Aspideretes, Nilssonia). *Zoologica Scripta*. 36(4): 301-310.

**Short Notes:**

Reza, A.H.M.A. and Mukul, S.A. (**In press**). Geographic Distribution. *Rhacophorus bipunctatus* (Twin-spotted Tree Frog). *Herpetological Review.*

Reza, A.H.M.A. and Mukul, S.A. (**In press**). Geographic Distribution. *Calotes emma* (Spiny-headed Forest Lizard). *Herpetological Review.*

Reza, A.H.M.A. and Sourav, S.H. 20XX (**In review**). *Varanus flavescens* (Yellow Monitor): Distribution record and reproductive behavior.

Reza, A.H.M.A. 2009. Natural History Notes. *Leptobrachium smithii* (Smith's Litter Frog). Defense and Pigmentation. *Herpetological Review*. 40(1): 72.

Reza, A.H.M.A. 2008. Geographic Distribution. *Nasirana altocola* (Annandale's Frog). *Herpetological Review*. 39(2): 234-235.

Reza, A.H.M.A. 2008. Geographic Distribution. *Occidozyga borealis* (Northern Trickle Frog). *Herpetological Review*. 39(2): 235.

Reza, A.H.M.A. 2008. Geographic Distribution. *Ptyctolaemus gularis* (Green Fan-throated Lizard). *Herpetological Review*. 39(2): 239.

Reza, A.H.M.A. and Mahony, S. 2007. Geographic Distribution. *Kaloula taprobanica* (Sri Lankan Bull Frog). *Herpetological Review.* 38(3): 348.

Mahony, S. and Reza, A.H.M.A. 2007. Geographic Distribution. *Sylvirana leptoglossa* (Long-tongued Frog). *Herpetological Review.* 38(3): 350.

Mahony, S. and Reza, A.H.M.A. 2007. Geographic Distribution. *Kalophrynus interlineatus* (Striped Sticky Frog). *Herpetological Review.* 38(3): 348.

Mahony, S. and Reza, A.H.M.A. 2007. Geographic Distribution. *Lygosoma bowringii* (Bowring's Supple Skink). *Herpetological Review.* 38(3): 353.

**Popular Articles:**

Reza, A.H.M.A. 2009. The Heat is On: Herpetofauna of Bangladesh. *Sanctuary Asia*. Vol. XXIX, No. 5. Oct. 2009. 54-59 pp.

Findings of the project have been presented in professional meetings in home and aborad, e.g. an oral presentation and a poster have been presented at the Joint Meeting of Ichthyologists and Herpetologists in Portland, Oregon in the USA in July 2009. A poster has also been presented at the

ninth Student Conference on Conservation Science at the University of Cambridge, Cambridge, UK in March 2008. Several other oral or poster presentations have been made which are listed in the PI's website at: www.widreza.com.

In addition to the scientific publications and professional presentations, several local awareness meetings have already been arranged in the country to disseminate the project findings on the amphibians and reptiles of Bangladesh and their conservation prospects.

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

The project activities broadly followed the anticipated approximate timescale submitted to the RSGF project proposal (cited below). The planned project start date was spring 2008 and I could actually start the project activities in May right after the fund was released in April 2008. I was able to make three field trips to my field sites during the project tenure: one in summer 2008, one in each in autumn 2008 and 2009. I had to omit the summer 2009 field trip to join the professional annual meetings in the USA that only happen in summer. The final report was due to the RSGF by the end of summer 2009 which was little delayed for the last field trip in Fall 2009. Some of the data analysis is still in progress and would be reported as soon as they are systematically completed.

*Approximate timescale submitted to the RSGF proposal:*

| **Activities** | Spring 08 | Summer 08 | Autumn 08 | Spring 09 | Summer 09 |
|---|---|---|---|---|---|
| Background literature review, team mobilization, etc. | √ | -- | -- | -- | -- |
| Field research in Bangladesh | -- | √ | -- | -- | √ |
| Data analysis and interpretation (lab work) | -- | -- | √ | -- | -- |
| Museum specimens study | -- | -- | √ | -- | -- |
| Other data analysis | -- | -- | √ | √ | -- |
| Community-based conservation efforts | -- | √ | -- | -- | √ |
| Report preparation and submission to RSGF | -- | -- | -- | -- | √ |

**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** |
|---|---|---|---|---|
| **Salary** | | | | |
| Stipend for PI. For one year @ £1000/month | 0 | 0 | 0 | This expense was covered from another grant awarded to the PI from Texas Tech University. |
| Salaries/per diems for field staff. 3 field assistants @ £100/month | 600 | 550 | +50 | Student volunteers were available from Jahangirnagar University. Most of them refused to take payment or compensation of any kind. |
| **Sub-total** | **600** | **550** | **+50** | |

| Item | Budgeted Amount | Actual Amount | Difference | Comments |
|---|---|---|---|---|
| **Transportation** | | | | |
| International travel. Round trip for PI: Texas-Bangladesh-Texas | 550 | 650 | -100 | Ticketing price gone up than while the budget was estimated. There was no other matching grant to cover the extra cost. |
| Local travel. Project team travel expenses while in the field @ £200/month | 800 | 710 | +90 | Local travel cost was minimized by using public transportation service most of the time. |
| **Sub-total** | **1350** | **1360** | **-10** | |
| **Field Expenses** | | | | |
| Food & accommodation. 4 person @ £50/month | 500 | 450 | +50 | In several occasions, local people offered to use their facility without any cost or with very minimum cost. |
| Rental/purchased service. Mechanized boat/ caravan rental: 90 night @ £10/night | 500 | 600 | -100 | Had to hire expensive boat for overnight stay on board in the Sundarbans mangrove forest to maximize the survey time in the forest. |
| Equipment and tools. A digital camera unit with accessories, a laptop, GPS units, digital slide callipers, weighing balance. | 700 | 500 | +200 | Some equipment and tools were used from the Herpetology Laboratory of Texas Tech University. Expenses were minimized in that way. |
| Supplies and materials. Drift fence, traps, snake tongs, hooks, bags, spot lights, collecting jars, tissue sampling kits, chemicals, etc. | 300 | 440 | -140 | Field supplies expenses went up as overseen. Several spot lights were broken and drift fence and traps were lost/damaged in the forest which had to replace. |
| Repairs and maintenance. Field supplies, battery and laboratory equipments | 100 | 135 | -35 | Due to high humidity and dumpy condition, batteries ran out pretty fast. Had to use some expensive batteries. |
| **Sub-total** | **2100** | **2125** | **-25** | |
| **Publication & Others** | | | | |
| PhD Dissertations. Preparation, printing and binding | 200 | 200 | 0 | This expense is due when the Dissertation would be ready by Summer 2010. |
| Awareness materials. Preparation, printing, and refreshment | 100 | 110 | -10 | Photographs printing and purchasing of pictorial books were expensive. Number of |

| Item | Budgeted Amount | Actual Amount | Difference | Comments |
|---|---|---|---|---|
| | | | | participants was more than expected and the cost of refreshment was more than expected. |
| Medical facilities/ insurance. 4 persons | 200 | 185 | +15 | First aid medicine for the remote field sites. In most cases, oral saline and intestinal disorder medication were necessary for the field team. |
| Communications | 50 | 65 | -15 | Constant contact between field team members was necessary. Managerial aspects in many cases have been taken care of remotely. |
| Postage and freight | 50 | 90 | -40 | Overweight luggage charges with scientific equipment from USA to Bangladesh were more than expected. |
| Final report. Preparation and printing | 100 | 70 | +30 | Facilities at the Texas Tech University were used. Expenses were less than expected. |
| Miscellaneous | 250 | 245 | +5 | |
| **Sub-total** | **950** | **965** | **-15** | |
| **Total** | **5000** | **5000** | **0** | |

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

To document the total diversity of a group or groups of animals is a life-long process. The current project is one of the initial steps for such a long-term process of documenting the species diversity of amphibians and reptiles in Bangladesh. During the current project, an effort was made by a team of researchers and graduate students from local universities in Bangladesh to record the species diversity as much as possible and note their natural history. Additions to the existing species list were made from the first day of the field to the last. Several corrections/ re-descriptions were made on the previous species list of the country based on proper field data. Extensive future field work is necessary to document the true diversity and to clarify the taxonomic status of the many misidentified or unidentifiable species found in the country. The rapidly vanishing natural habitats in one of the most densely populated areas of the world should be surveyed as early as possible to document all its diversity before many of them are gone extinct.

**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?**

I have extensively used RSGF logo in all of my oral and poster presentations in home and abroad. The logo was not possible to use in the scientific papers, but however the RSGF funding has been gratefully acknowledged in all the published materials.

**11. Any other comments?**

On a drizzling night in a remote tropical forest in Bangladesh, I was looking for a rare frog that comes out from their burrows for a short window of time. Suddenly, my flash light battery run out….my assistant and myself lost our way back to the field station. We were out of any cell phone network connection and without any help for about 3 hours. Finally, a local forest-dweller helped us getting back to our destination. That time, I was most grateful to that local tribe, Muing Jing Lao. In the same way, numerous people provided me timely help and support during the last few years, often in very difficult circumstances. I would not have gotten this far without their contribution and support. In any case, I cannot forget to mention the people back home in Bangladesh, without their constant support it would not possible to write this report.

My very first financial support for my doctoral fieldwork came from the Rufford Small Grants Foundation. This grant was actually the ice-breaker for me to initiate this research project and start this as my PhD academic research.

Very special thanks to my academic advisor Dr. Gad Perry at the Texas Tech University who has always been on my side whatever I proposed to do. Dr. Aaron M. Bauer from Villanova University is been my mentor and an encouragement for me for all the time. Despite his extremely busy work schedule, he responds my e-mail in a minute with all the support I need. There are also many other people who helped me identifying species or answering any sorts of herpetological questions or just helped me in any other means: Guin Wogan, M. Firoz Ahmed, Indraneil Das, Bryan Stuart, Patrick David, Samrat Pawer, Jeff Wilkinson, Gernot Vogel, Harold Voris, Rafe Brown, William Espenshade, and Jens Vindum. My advance apologies if I miss someone to cite here, but don't worry……you will be remembered truly when I can recall your contributions.

I thank Bangladesh Forest Department for issuing me a permit [CCF (wildlife)/2M-47/2006] to conduct fieldwork in different forests in Bangladesh. They also offered local hospitality during my fieldwork in the country. Dr. Md. Mostafa Feeroz, Professor, Department of Zoology, Jahangirnagar University provided me support and help for this research. I am sincerely grateful to Dr. Anwarul Islam from Dhaka University and my colleagues at the Department of Zoology of Jahangirnagar University for their constant support on my research. I also thank the authority of Jahangirnagar University for their administrative support on my project.

Finally, I would like to thank Md. Kamal Hossain, a graduate student from Jahangirnagar University was my all time field assistant during the project. D.M. Kamruzzaman, Sk. Md. Ibrahim Khalilulluah, Hasanul Banna, Tafsirul Islam, and few other graduate students from Jahangirnagar University also helped me in the field. Peter Praschag from Austria and Anthony Giordano from USA accompanied me in the field in few occasions.

At last, I take the opportunity to thank the Almighty for everything to be done so smoothly. My family has been my most consistent support for my professional development in life.