

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	Dr. Muhammad Mahmood-ul-Hassan
Project title	Diversity, conservation education and awareness among people for usefulness of bats in Punjab
RSG reference	10451-2
Reporting period	1 year
Amount of grant	£6000
Your email address	drmmhassan@uaf.edu.pk ; drmmhassan1@gmail.com
Date of this report	December 1 st 2012

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
Purchase of Equipment			✓	
Preparation and finalisation of data entry sheets			✓	
Mist netting			✓	
Recording of echolocation calls		✓		Bat detector failed to work and became permanently non functional. Needs repair from manufacturer.
Field training			✓	
Presentations to school children			✓	
Publication and distribution of awareness material.			✓	

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

In spite of law and order situation, mist netting activities continued throughout the province. Cultural and local traditions however remained an obstacle. Some of the female students refused to work at night in remote areas of the country. It was in part due to the insecurity in the region but also getting permission to stay outside hostels till late at night from their parents/guardians was the main reason. University administration also did not allow the students to stay outside the campus for more than a night so more funds than allocated were consumed in travelling. In addition, the fuel cost increased from anticipated. Mist netting however was done in all the three regions of the province.

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

1. Bat fauna of Punjab was studied and baseline information about the bat species present in the area was collected.
2. DNA barcodes some bat species of Punjab were obtained to understand genetic diversity in these bats. Bat education and awareness campaign for children started in Pakistan.
3. A training workshop entitled "Species Distribution Modelling Techniques" was conducted in the University of where Dr. Alice C. Hughes (OCE Postdoctoral Fellow at CSIRO) trained 25 participants (15 Faculty members, 10 students) in species modelling techniques.
4. One research paper published in *Mammalia* (France), and another in the *Journal of Animal and Plant Sciences* (The JAPS Pakistan), one paper submitted to The JAPS while another submitted for publication to *Acta Chiropterologica*.

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

Awareness among the locals about the role played by bats as pollinators, seed dispersers and agents for controlling insect pests was created by using education material. We involved school teachers and officers of the Punjab Wildlife Department stationed at the Gatwala Wildlife Breeding Centre (Faisalabad) in our bat education and awareness campaign. Pamphlets were distributed and lectures were delivered to the school children visiting Gatwala Wildlife Breeding Centre (Faisalabad). They were also asked to complete a questionnaire to find out their awareness level before and after the briefings. The education material developed locally was distributed to the school children and a presentation on a multimedia was made. A marked difference in the awareness level of the students was recorded after this exercise. A Pakistani dish TV channel (*Dunya News*) watched in more than 70 countries of the world also broadcasted interview of the PI in its evening transmission. The interview was also posted on various facebook pages i.e. “Bat Friends of Pakistan”, “Southeast Asian Bat Conservation and Research Unit”, “Chiroptera” and “Harrison Institute” and The Rufford Small Grants”.

5. Are there any plans to continue this work?

Yes. I have concrete plans to continue bat research and conservation activities in Pakistan. I would continue to follow both short and long term measures for bat conservation in this country. Bat education and awareness campaign for school children will remain the top priority to bring a paradigm shift in the thinking of school children. This long-term strategy will definitely convert this community from foes to friends of bats. I shall continue to distribute bat education kit I have already developed among the target audience. Second, efforts to popularise bat science in academic and research circles in Pakistan will continue by disseminating the knowledge I have gained in the field. Regular workshops will be conducted in different universities to transfer field and laboratory techniques for capturing, handling recording and identification of bats in Pakistan. Third, field surveys will be made to capture, record and identify more bat species in Pakistan and modern laboratory techniques will be used to separate cryptic bat species.

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

The outputs of this project will continue to be shared as publications in peer review journals, as TV interviews and extension articles. One MPhil student is also finalising her thesis research through this funding.

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

The project was completed in time and every component went as scheduled.

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
Mist Net 716/6p, Denier: 75/2, Mesh: 16x16 Mm, Shelves: 5, Length: 6m, Height 2,5, M, Polyeter, Model No. 716/9p, Poland (6 Nos)	570	570	0	
Field Assistants (2 Nos @ £10/Day For 35 Days)	350	350	0	
Fuel Charges (80 L/Round Trip @ £ 1.00/L For 6 Round Trips)	900	600	300	Fuel costs increased in Pakistan
Food And Accommodation (@ £ 15.00/Night/Person For 4 Person And 35 Nights)	2000	2100	100	Difference was adjusted to compensate fuel cost
Field Training Workshops	1300	1400	100	Difference was adjusted to compensate fuel cost
Publication Charges For Bat Conservation Education Kit For School Children	700	800	100	Difference was adjusted to compensate fuel cost
Stationary, Cold Drinks And Seasonal Fruits For School Children	180	180	0	
Total	6000	6000	0	

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

I believe that the strategy devised last year is the best way to achieve bat conservation in Pakistan. It is based on three actions which include:

1. Bat conservation education for school children.
2. Bat Surveys.
3. Bat Science.

1. Bat conservation education for school children. Bats are generally considered loathsome and disliked by public in Pakistan. They are often associated with witchcraft and are thought to be responsible for transmitting diseases and entering in human ears. It is highly difficult to shift the existing paradigm and convince people about positive role of bats in ecosystem. It will take a lot of coordinated efforts to change the existing mindset and turn them from “bat-foes” to “bat-friends”. The only way to overcome this problem is to educate school children so that they should start admiring the role of bats at tender age and should become stewards for bat conservation in the country. So awareness raising campaigns for school children should continue as one of the important next step.

2. Bat surveys. Since bats are the least studied groups of mammals in Pakistan, extensive bat surveys should be conducted to document as many bat species from the country as possible. There are many bat species which have not been recorded after they were described from the country. *Hipposideros cineraceus* Blyth, 1853 and *Rhinolophus blasii* are the two such cases. So promoting further bat surveys in various areas should be second import step so that various species and their preferred habitats should be identified and strategies for their conservation should be devised.

3. Bat Science

This involves following two steps

- a. Redefining distributional ranges and habitat analysis
- b. Reconfirmation of the Bat taxa of Pakistan.

a. Redefining distributional ranges and habitat analysis. The Egyptian tomb bat has been captured from Attock for the first time. Capture of the second county record from this area raises two scientific questions.

- i. Whether the species inhabited this area but could not be recorded by earlier surveyors?
- ii. Has the species extended its range from south to north?

Thus one the important next step is to carry out serious scientific studies to redefine distribution of all the bat species using global positioning system.

b. Reconfirmation of the Bat Taxa of Pakistan. Species form fundamental building blocks of biological diversity as they provide goods and services to sustain life on earth. Use of novel techniques in biology has made this era a new age of discoveries and new species are being discovered each day with an unprecedented rate across broad taxonomic and geographic spectra. Many new species of mammals, a group that was once considered to be fully explored, have recently been described throughout the world. These new mammalian species are described either from a previously poorly known geographical area or they have arisen as a result of using molecular genetic techniques. The later discoveries were made in such areas where geographic range of a well-known mammal species was actually the combined ranges of two or more cryptic species—one's not easily recognised by morphological features. Pakistan qualifies both the above mentioned conditions. It is not only poorly surveyed part of the world but also owing to its unique geographic position on the globe many of the cryptic small mammal species need to be reconfirmed taxonomically.

The same species of *Plecotus auritus* and *P. austriacus* can never exist in Pakistan and UK due to isolation of the two populations for thousands of years and the answer to this question can only be found if molecular genetics of the bats found in Pakistan is studied.

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?

RSGF logo was used on all the banners, brochures and booklets which were displayed or distributed. RSGF was mentioned to all key stakeholders during field work and will be acknowledged in every publication from the study in the future.

11. Any other comments?

I am extremely grateful to RGSF for the provision of financial support. Two of my post-graduate students benefited from this grant. One of them is completing her MPhil thesis research while the other used a part of this grant to carry out his field work for PhD study. This grant played a key role in their research work which I am sure will contribute to the global efforts of biodiversity conservation. I am really thankful to and hoping for continuous support from RGSF in the future.