

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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Ganga Ram Regmi
Project title	Mapping crop-raiding hotspots and predicting actual crop-raiding risk using a spatial (GIS) model to alleviate people-primate conflict in Nepal
RSG reference	10910-B
Reporting period	March 2012 – May 2013
Amount of grant	£11910
Your email address	regmigr1978@yahoo.com
Date of this report	May 20th 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
Field data collection on primate crop raiding events throughout Nepal			x	Successfully collected >2000 household survey and crop raiding presence/absence data using semi-structured interviews throughout Nepal and with well designed and scientifically sound survey design
Mapping of primate crop raiding hotspots in Nepal		x		Data analysis is still going on. I am looking for high resolution GIS layers of landuse pattern of the study area for achieving the best possible outcome of the project. It may take another 3-4 months for the complete analysis of the field data.
Workshops on primate survey training to the university students, government wildlife officers and local people			x	One day national level Distance Sampling Workshop was organised in Kathmandu, Nepal. The training benefited 23 young researchers from Central Department of Zoology and Central Department of Environmental Science, Tribhuvan University, conservation agencies and Department of National Parks and Wildlife Conservation.
METADATA publication of the field data		x		METADATA has been prepared in the required format in Excel spreadsheet and ready for submitting to USGS (United States Geological Survey) website for long-term storage, global access and sharing of all the field data.
Publication in scientific journals		x		Part of the Rufford funded project has been published in the international journal 'Endangered Species Research'. Some manuscripts are in preparation for submission to international peer-reviewed journal.

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

I have received only low resolution GIS layers of the study area to date and trying to analyse the data with these layers. However, I am continuously trying to obtain high resolution layers from different sources around the world. I have already received some of those predictor layers e.g. environmental layers, elevation, and some proximate variables. I am waiting for some land cover and agricultural/cropping pattern layers.

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

I. Collection of field data on primate crop-raiding events throughout Nepal and public METADATA

I have completed >2000 household surveys using semi-structured interviews with local farmers and georeferenced crop raiding presence/absence data throughout Nepal. This is the first detailed study in Nepal for understanding the primate crop raiding patterns in space and time. All the field data have been arranged in Excel spreadsheet and ready for submitting in the form of METADATA to USGS (United States Geological Survey) public domain for global sharing and freely available to anyone/agency who wants to develop human-primate conflict mitigation measures based on the results derived from these data.

II. Publication of the part of research in international peer-reviewed journal

I have recently published the part of the research on crop-raiding monkeys in *Endangered Species Research*, an international peer-reviewed journal with impact factor 2.259. The abstract is now available online (<http://www.int-res.com/prepress/n00502.html>). The full paper will be available within a couple of months. This case study in Langtang National Park on crop-raiding monkeys shows that:

- a) Potato (*Solanum tuberosum*) and maize (*Zea mays*) are the most vulnerable crops for raiding by monkeys.
- b) The crop raiding events are concentrated near the forest edge (<400 m) and dropped significantly when the crop-field distance exceeds 400m from the nearest forest edge.
- c) The monkeys raid the farms in the early hours of the day, presumably to avoid conflict with farmers.

This case study analysis and its outcomes help me to analyse rest of the data, to select the predictor variables and extrapolate the results throughout Nepal

III. National level 'DISTANCE' sampling workshop

A 1-day national level Distance Sampling Workshop was organised in Kathmandu, Nepal and it had been completed successfully on 25th August 2012 at Hotel Palagya, Kathmandu. The training benefited 23 young researchers from Central Department of Zoology and Central Department of Environmental Science, Tribhuvan University, conservation agencies and Department of National Parks and Wildlife Conservation. We would like to acknowledge all the partner agencies and Dr. Falk Huettmann and Associate Professor Ewhale, University of Alaska Fairbanks (UAF) USA, for his contribution as resource person and lecturer in the training workshop. This is the first training programme on 'DISTANCE' sampling technique in Nepal. 'DISTANCE' is the advanced method for surveying forest primates and other terrestrial mammals and it is the best available method to date for estimating population of the wild mammals like primates. I hope that the participants will apply this method to survey monkeys, other mammals and endangered forest birds in Nepal. Besides Rufford Small Grants, the programme was sponsored by Ocean Park Conservation Foundation Hong Kong (OPCFHK); American Society of Primatologists, USA; Primate Society of Great Britain, UK; The Columbus Zoo and Aquarium, USA; and Idea Wild, USA.

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

I work with university students in the field. They have been well trained for collecting field data (interview data) and for conducting community awareness in remote areas. I hope that they are able to run their own independent wildlife conservation projects in future. As mentioned above, the university graduate students and government wildlife officials received 'DISTANCE' sampling training which is the most reliable and advanced technique to date for estimating primates and other wildlife

populations. I hope that this training will be helpful for them to carry out wildlife survey projects in the coming days.

5. Are there any plans to continue this work?

After complete spatial analysis of the field data and mapping crop raiding hotspots throughout Nepal, the conflict mitigation measures in such areas will be carried out. For instance, farmers will be encouraged to grow alternative cash crops instead of highly vulnerable maize and potato and at least in and near the forest edge. These buffer cash crops (unpalatable to monkeys) help to reduce human-monkey conflict and help to increase the farmers' income for their sustainable livelihood. Therefore, the human-monkey conflict mitigation project will be carried out as the continuation of this current work and for achieving ultimate goal of human-monkey coexistence where both people and primate can live without interfering each others' habitat.

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

The results of the project will be shared in different ways as follows:

- a) The field data will be shared globally in the form of ISO compliant METADATA in the USGS website.
- b) The field data and project reports will also be shared with local government agencies and stakeholders.
- c) The part of this research has already published in *Endangered Species Research* journal - <http://www.int-res.com/prepress/n00502.html>
- d) At least other 3 manuscripts are in preparation for submitting to international peer-reviewed journals i.e. *International Journal of Primatology*, *International Journal of Pest Management* and *Global Ecology and Biogeography*.
- e)

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

The RSG was used from March 2012 to April 2013. Along with the original crop-raiding surveys, we have also collected the distribution data on different primate species throughout Nepal. The manuscript of this distribution data (particularly for Assamese macaque) is ready and will submit to *Global Ecology and Biogeography* journal by the end of May 2013.

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
Travel fare	1040	1100	-60	The difference is due to the slight increase in fuel price
Field expenses	7320	7320	0	
GIS/RS works	1500	1500	0	
Consumables	800	800	0	
Medicines and first aid kits	250	250	0	
Data management, analysis and reporting	1000	1000	0	
TOTAL	11910	11970	-60	

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

The development of people-primate conflict mitigation measures is crucial in the crop raiding hotspots. Therefore, capacity building of local farmers and training and support for the growth of alternative cash buffer crops in the conflict areas are very important and for coexistence of people and primates locally.

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 the RSGF logo in the 'DISTANCE' sampling training programme and had already sent the relevant pictures of the programme to RSGF.

11. Any other comments?

I would like to give big thanks to RSGF for supporting my primate research and conservation works in Nepal since long time. All three grants (1st RSG, 2nd RSG and RSG Booster) helped me to develop my career in conservation science and particularly in primatology. The research works done with the financial support of RSG, promoted me to be graduated from Oxford, UK with the leading primatology course (MSc Primate Conservation) in the world. Moreover, the research works carried out with the RSG financial supports helped me to share the results globally via conference presentation and publication. Now I can proudly say that I am the second person in Nepal with primatology degree and trained primatologist. I hope the continuous support from RSG for my future primate project.