

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 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

Your name	Tripti Suwal
Project title	Assessing the efficiency of Footprint Identification Technique to monitor rhinoceros and tiger populations in Nepal
RSG reference	13507-1
Reporting period	April 2013 – April 2014
Amount of grant	£2500
Your email address	ts175@duke.edu
Date of this report	July 31 st , 2014

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
Determine the possibility of obtaining footprint images			X	This project was designed as a pilot study to find as many footprints of rhinos and tigers as possible. Although not all the images collected were ideal for image processing, I was able to capture a total of 176 rhino and 156 tiger footprint images.
Assess if animal identification by FIT matches with that from the national tiger census 2013		X		I was provided with printed copies of the map showing the tiger survey grid and camera trap locations, but comparison process has been stalled due to permission requirements for unpublished data from the census
Determine sex and individual identification of footprint image in FIT programme		X		Sex and individual identification was achieved for the tiger images. However, only the individual ID was determined for rhinos. This is because the database we had to use for discriminant analysis had to be based on known white rhinos.
Evaluate the practicality of using FIT			X	Observance, experience and photographic evidence helped establish the practical applicability of using FIT for monitoring in Chitwan National Park

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

One difficulty faced was going back to Chitwan in June-July for the second round of footprint image collection. I had originally planned to go back to Chitwan to recapture footprint images even though I knew the monsoon rain might hinder field work. However, I was advised not to take the risk of travelling to Chitwan in the peak monsoon season. Therefore I tried to get as much done as possible in one trip.

Another difficulty that I experienced was with using motorised vehicle to travel through the park for fieldwork. When using a safari jeep, I was mostly forced to stay on the predefined paths, which eliminated possible footprint sightings in majority of the grasslands of CNP. Moreover, use of the gravel path caused difficulties in obtaining any kind of tracks. Firstly, they do not help to leave footprint impressions of tigers and rhinos. Secondly, riding in the jeep over the gravel path made a lot of noise, which scared away the animals.

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

- i. Individual identification of rhinos and tigers: The WildTrack team and I tested rhino and tiger footprint images with known ones from the databases for Bengal tigers and white rhinos.

When we performed a pair-wise analysis of two trails from known tigers with three from Chitwan, a cluster dendrogram is created. These cluster dendograms demonstrated that:

- a. known animal footprints and unknown Chitwan animal footprints are from different individuals.
 - b. three trails obtained from three separate locations of the Chitwan tigers were evidently from three different individuals. Consequently, the pair-wise analysis performed for rhinos also gave similar results.
- ii. Sex discrimination of tigers: We performed discriminant analysis for sex discrimination of tigers. This presented that all the footprint images we used for the analysis are from female tigers. There were four footprint images that could have been from male tigers but the probability was low (0.19-0.40).
- iii. Introduction of FIT to local technicians: I worked closely with a few NTNC and park technicians who already had a keen sense of tracking tigers and rhinos. They have knowledge of the location of the animals from sightings, GPS collars and experience. I was able to provide brief training to one of the junior technicians on the photography protocol used by WildTrack so that he can continue data collection even after I left.

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

Local people who had been trained and hired by the National Trust for Nature Conservation (NTNC) and the Chitwan National Park provided their knowledge and assistance in tracking and taking photographs for the project.

5. Are there any plans to continue this work?

There have been talks with WildTrack, the organisation I am working with, to go to Nepal to conduct a workshop on FIT and create a thorough database of known tigers and rhinos in Chitwan National Park. There was also unofficial talk about testing the use of Footprint Identification Technique for snow leopards in the Kanchenjunga Conservation Area.

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

The results of my work will be shared online in Duke University's library catalogue and with a presentation at the master's symposium. The final project paper and a report on the practical application of FIT will also be provided to the Department of National Park and Wildlife Conservation (DNPWC), WWF-Nepal, and National Trust for Nature Conservation (NTNC).

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

The Rufford Foundation grant was used from April to July 2013. Majority of the expenses was in Chitwan but there were travel and costs in Kathmandu as well. The stay in Chitwan and Kathmandu was as anticipated, except for being unable to collect data for a second time. This was compensated by covering more area and distance during the first Chitwan trip.

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
Roundtrip airfare	1320	1200	120	
Transportation & travel	220	390	-170	Due to higher petroleum prices, transportation and travel expenses were higher than expected. Costs were covered for the 4WD jeep that was required for long distance travel in CNP
Compensation & field expenses	790	455	335	There were other expenses for field equipment. Compensation provided to technicians and elephant drivers was a bit higher than budgeted for. This worked out well as I could use money left over from the second survey that I could not conduct in June-July.
Subsistence	170	300	-130	
Stationary materials	0	70	-70	
Communication	0	65	-65	Needed to buy a used cell phone and sim card for communication in Kathmandu and Chitwan
Total	2500	2480	20	

£ 1 = NRS 133

* The total amount I received for the grant was a little less as the bank deducted £ 25 for international transaction fees.

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

Footprint Identification Technique is an alternative monitoring method that could be very helpful for conservation efforts in Nepal. This present study serves to demonstrate the potential of this technique in the geographic conditions of Chitwan National Park. To make the use of FIT stronger in Nepal we need to build a robust database of the animals, especially for the great one-horned rhino. This will also require selecting a period in the year when conditions are suitable to obtain ideal footprint images. A workshop also should be held with WildTrack where we can involve more local people who will be skilled at tracking animals, identifying good footprints to analyse and capturing good footprint images. There is also the need to generate further awareness about FIT and its uses in the conservation departments in Nepal. Although the use of pugmark identification is an old technique, its use in conjunction with software analysis, is new to Nepal. Therefore, I would like to push the importance of this method in order to make it accepted especially in the conservation community.

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

I used the Rufford Foundation logo on all the presentations I made related to this project. It was used for class presentations and for club/society talks about the project and about grants. The logo was always placed on the first introductory slide in the presentations. I would also make sure that I talked about how I heard about RSGF and the process I went through to obtain the grant.

11. Any other comments?

I would firstly like to thank my adviser, Dr Stuart Pimm for his input and support on getting this project together. I would also like to thank the WildTrack team, Zoe Jewell and Sky Alibhai for introducing me to FIT and guiding me throughout the course of this project. They have provided constant technical assistance, as well as great support for the completion of the study. Additionally, I am very grateful for the assistance I have received from all the wildlife and conservation departments in Nepal. The Department of National Parks and Wildlife Conservation, WWF-Nepal, National Trust for Nature Conservation and Chitwan National Park have been an immense source of information and help. I would like to acknowledge Sabita Malla at WWF-Nepal and Chiranjibi Pokharel at NTNC for providing me with valuable suggestions regarding field work. The assistance received from field technicians from NTNC and CNP is also immensely appreciated, and their skill to track animals is greatly revered. And last but not the least I would like to thank Rajendra Suwal at Lumbini Crane Conservation Center for introducing me to many of the people in the conservation network and to those who I worked with in the field.