

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	Sangeeta Angom
Project title	Conserving the endemic Manipur brow-antlered deer (<i>Rucervus eldii eldii</i>) in Keibul Lamjao National Park, north-eastern India
RSG reference	49.03.09
Reporting period	2010 to 2011
Amount of grant	£6000
Your email address	sangeetaangom@gmail.com
Date of this report	02 May 2011

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
1. Conservation awareness and education programme	-	-	100%	Conservation awareness programmes were conducted at various areas adjoining the Keibul Lamjao National Park, Bishnupur district and in the state capital, Imphal. The overall aim of the conservation awareness and education programme was to provide people with information about all aspects of the species, park and its management. The objectives was to help promote a better understanding of the natural history, ecology, available resources, human interactions, significance of Sangai and its habitat. Publication materials like posters, pamphlets and banners were printed with detailed information on the biological, ecological and conservation significance of Sangai and its habitat. Stakeholder's workshop and focused group discussions were conducted involving indigenous local communities, forest department, non-governmental organisations, local clubs, academic and research institutions on the ecological and conservation importance of Sangai and reasons to preserve and protect the biodiversity of the Keibul Lamjao National Park thereby ensuring long lasting survival of the species.
2. To determine the distribution and abundance of Sangai in the park		75%		To determine the distribution and abundance of Sangai, a sampling strategy using occupancy modelling following Mackenzie <i>et al.</i> (2002) and Royle and Nichols (2003) was worked out after conducting a reconnaissance of the park which will be tried in the second phase of the study. The intensive study area will be divided into 1 x 1 km ² sampling grids and cameras traps will be placed in all the grids, with one camera trapping unit covering each of the grids. The camera trapping effort should be carried out in all the season with a minimum at least 30 trapping nights, for each season, for every year. As Mackenzie & Royale (2005) have suggested, for a rare species, approach should be to survey less intensively more sampling grids rather than less sampling units more intensively. Relative abundance through sign data in correspondence to the sampling grids in addition to

				camera traps will provide comprehensive information.
3. To ascertain the threats for the long-term survival of Sangai and its habitat			100%	<p>Based on the discussion made during the stakeholder meeting organised at Keibul Lamjao National Park threats to long-term survival of Sangai was ascertained. Following seven factors were identified:</p> <ul style="list-style-type: none"> (a) Deteriorating habitat condition. (b) Lack of connectivity for recolonisation. (c) Change in plant community structure in the park. (d) Biomass demand. (e) Degradation of water quality. (f) Increased probability of disease and mortalities during catastrophes. (g) Poaching and incidental mortalities. <p>Further stakeholder analysis has identified the key people, groups of people, institutions who may significantly influence the success of achieving the goal i.e., Restoration and conservation of KLNP. This analysis will also help in anticipating the kind of influence (positive or negative) that each stakeholder will have on the initiative made in achieving the goal. With the help of this analysis, various strategies can be developed to get the support of stakeholders for all the initiative and reduce the obstacles to successful implementation of the program.</p> <p>Based on the factors affecting the Sangai population, extinction probabilities were calculated. In 100 simulations of population for 100 years in a scenario using Vortex where catastrophe (flood) and deteriorating habitat conditions with 3-4 off takes (poaching) gave the probability of extinction of 0.08 (± 0.0271) with a mean growth rate (r) 0.0554 annum⁻¹. In Scenario II, there was deteriorating habitat but no flood to catastrophe level with 3-4 off takes gave the probability of extinction as 0.02 (± 0.0140) annum⁻¹ with a population growth rate (r) of 0.0645 annum⁻¹. In the Scenario III where only impact of flood that occurred to a catastrophe level but deterioration of phumdi was halted with 3-4 off takes gave a probability of extinction of 0.06 (± 0.0237) annum⁻¹ mean population growth rate (r) was 0.0548. In scenario IV where none of these factors were operating the population figure was 189.32 (± 4.05; 40.50) and the population is likely to continue at a</p>

				mean growth rate (r) of 0.0572 annum ⁻¹ with very little probability of extinction.
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

As the Keibul Lamjao National Park is located close to Indo-Myanmar border there were problems with insurgent groups affecting the progress of the field study. In fact, the entire state of Manipur is under siege because of insurgency that also affects the field conservation.

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

1. Though people are aware of the conservation issues of Sangai and the park, our effort though limited made people more sensitive towards conservation issues of Sangai. Awareness campaigns conducted under this project addressing local people living around the park, schools, colleges, academic institutions and other departments were highly effective.
2. Various threats were identified and ascertained which are crucial for the long-term survival of Sangai. Future conservation efforts should address seven identified issues for the long-term survival of the Sangai.
3. A detailed design to execute the field exercise to monitor the population trend of Sangai and other sympatric ungulates in the park was developed which could be used in the future.
4. Based on the factors affecting the Sangai population, extinction probabilities were calculated.

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

The project involved largely the local people belonging to the *Meitei* community. The local people have expressed and responded positively towards not only for the conservation of Sangai and its habitat but also to conserve the biodiversity of Manipur. The local people have also been sensitised about their role in nature conservation. Also, efforts were made to educate students about the Rufford foundation and the process of application for availing conservation grant.

5. Are there any plans to continue this work?

Yes, I intend to continue this work, the active network formed during the project should be continued. Further a detailed comparative genetic study of Sangai and other related cervids both in wild and captivity are required to formulate a conservation action plan for the species. Conservation education and awareness programmes are needed to be carried out along with this to convince locals about the ecological significance of conserving this species.

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

The final report will be shared with organisations, institutions who are involved in research and conservation efforts in the north east India like the Wildlife Institute of India, Zoological Survey of India, G.B. Pant Institute of Himalayan Environment and Development, Botanical Survey of India, Manipur University, North Eastern Hill University, North Eastern Regional Institute of Science and

Technology and Bombay Natural History Society. Also, I plan to write up scientific and popular articles for publication in peer reviewed journals and popular magazines.

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 for a period of 1 year from 2010 to 2011. The field work was delayed due to unforeseen insurgency problem in the Manipur State, in particularly surrounding the Keibul Lamjao National Park.

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
Volunteers hiring during the entire period	1000	1150	+150	The project activities required regular interactions with the local people, grassroots level workers, school children, graduate students and various other stakeholders. Hence local volunteers were hired to execute the work.
Camping expenditures- purchasing tents and essential field equipments	1500	1600	+100	Equipments like camera, binoculars, field dress, camping materials were purchased. Food and lodging expenditure while conducting the work were also made under this head.
Daily wages for one field technical assistant @ £ 2 /-365 days	700	700	0	A field assistant was required to carry out the proposed activities.
Headquarter to study sites by road for the project leader	500	500	0	Vehicles were hired to visit various sites to achieve the project objectives.
Organising stakeholder workshop for awareness creation at select villages and at other places	1500	1300	-200	The proposed activity was achieved with no excess expenditure under this head.
Report publishing and information dissemination by posters and booklets	800	750	-50	Over 1000 posters, and brochures were printed for wide circulation. Also banners and flex boards were also made to be used during the awareness programmes.
TOTAL	6000	6000		

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

1. Conservation awareness programme needs to be carried out at a much larger scale involving other print and visual communication medium for a better national and international reach.

2. Continued monitoring of Sangai population using latest and advanced robust field and analytical methods is a top priority which needs to be carried out.
3. Captive breeding programme to restock and revive the wild population should be carefully assessed and implemented at the earliest.

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, the Rufford Small Grant Foundation logo was extensively used in the education materials like the posters and brochures. The RSGF logo has also been used in the final technical reports and banners. Efforts were made to sensitise the graduate students, conservation workers about the Rufford foundation and the small grant programme were briefed.

11. Any other comments?

The Rufford Small Grants Foundation which is a prestigious and a premier charity has been providing generous fund support to budding young conservationist to execute their ideas for nature conservation and to address key conservation issues. I have been very fortunate to have got this grant and complete this work successfully. During the course of the project, there were various hurdles and problems including my pregnancy related issues, but I was very fortunate to have been supported and guided by Dr. Jane and Dr. Josh Cole who trusted me and were exceptionally helpful throughout the duration of the project.