

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

| Grant Recipient Details | |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Your name | Rasmi Kunwar |
| Project title | Advancing Small Mammals Conservation through Science, Community Engagement and Awareness in Ghodaghodi Lake Complex, Western Nepal |
| RSG reference | 77d0ea-1 |
| Reporting period | November 2017- January 2019 |
| Amount of grant | £ 4987 |
| Your email address | kun.rashmi@gmail.com |
| Date of this report | 1/15/2019 |

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 |
|-----------------------------------------------------------------------------------------------------------|--------------|--------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status and distribution of Small Mammals(SMs) and current threats to them in Ghodaghodi Lake Complex(GLC) | | | | With live trapping (Sherman traps and tube traps), camera trapping and sign survey method, small mammal survey along different habitats was done. The data was collected during dry and wet seasons. Although, this project was hopefully targeted to record some vulnerable species of small mammals like otters and fishing cat, we were only able to record some indirect but unclear signs (yet to identify). Through site observation, discussions with key persons and questionnaire survey (n=400), overfishing/illegal hunting, overgrazing/fodder collection and land pollution (non-biodegradable wastes can be found excessively along lake area and adjoining forests) were documented as major threats existing, not only for small mammals but for overall biodiversity of GLC. |
| Community based conservation programme through capacity enhancement involving Forest User Groups (FUGs) | | | | Considering as a strong initiation for community based conservation and capacity enhancement, training on small mammal survey and monitoring techniques was organised. At first, Community Forests (CFs) along GLC were identified. After having short interaction with each of the focal person of Community Forest User Groups (CFUGs), two members from feasible groups were selected as trainees. They were taught about small |

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| | | | <p>mammals (their habits and habitat), survey and monitoring techniques (transects, how to use GPS, camera traps, Sherman traps and tube traps). Three of them were hired for regular field survey as they expressed their tremendous interest and commitments towards conservation.</p> |
| <p>Awareness building and school outreach programme</p> | | | <p>The team celebrated 'World Wetlands day-2018' on 2nd February 2018 with the theme, "Wetlands for a sustainable urban future", in collaboration with District Forest Office- Kailali, Sector forest office-Pahalmanpur, Bird Conservation Nepal, Bird conservation Network-Sukhad, Ghodaghodi Area Conservation and Awareness Forum, Basanta Protected Forest Council, Community Forest Users Group (CFUG), CFCC-Pahalmanpur and five schools in the premises of GLC. Altogether 109 participants, including government officials, conservationists/conservation stakeholders, journalists, teachers, students and other locals attended the event. For raising awareness among people on small mammal conservation, 1000 copies of posters, 500 round stickers and 50 t-shirts, with information about need of small mammal conservation and current threats to them were printed and distributed to district forest office, sector forest office, Ilaka forest office, Ghodaghodi Area Conservation and Public Awareness Forum (the local NGO), schools and colleges. Information about importance of wetlands, status of small mammals in GLC and need of</p> |

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|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | <p>conservation was disseminated through PowerPoint presentation to schools (n=10) and many local communities of Ghodaghodi municipality. A local FM "Manko manjhari" had broadcast our interview about small mammals, three times a week periodically.</p> |
|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

We didn't know that the trend of illegal fishing by major ethnic group (Tharu community) of the area was high in the evening, increasing the theft risk of camera traps. Hence, we had to deploy camera traps late in the evening and set out very early which might have reduced the capture rate of many crepuscular species. As the project area seemed very disturbed due to human interference, live traps used to be misplaced anonymously at times. Discussing our survey purpose and methods to regular forest patrollers and some forest guards helped us in minimising such activities.

It was difficult for us to find people at their home as most of them were farmers and they used to leave for work very early. We had to go to their workplace/fields to reach them. During questionnaire survey, people hardly used to cooperate believing that they won't benefit from the survey and had to stop hunting their major source of food (rodents). We had to convince hard for making them understand the purpose of our survey.

Most of the Tharu women couldn't understand Nepali language, which was a huge problem while conducting questionnaire survey, so we had to hire a local for interpretation.

We were disheartened when we came to know that the one we had hired to assist us during our forest walks, hunted the species we encountered, e.g. red giant flying squirrel, after we left the area. We excluded him from the team as his punishment and lectured him for hours explaining about the need of conservation and finally, his assurance of being committed for biodiversity conservation was convincing.

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

- a) Updated information on small mammal status in GLC and determined existing threats: We were able to document the existence of 16 species of small mammals in GLC representing four orders and eight families. The order Carnivora covered the highest number of species whereas Lagomorpha had single species. The mixed forest surrounding wetlands supported richer number of small mammal species which might be due to the heterogeneous and dense vegetation crediting food resource and serving as a corridor for

different habitats in the complex. Four hundred people were randomly sampled and interviewed by using a set of semi-structured questionnaire to assess anthropogenic factors influencing the status of small mammals in the study area. Overfishing was considered as the major current threat for biodiversity of GLC followed by overgrazing/fodder collection and land pollution.

- b) Initiation of community based small mammal conservation programme through capacity enhancement and involvement of citizen scientists for small mammal's survey: Community's involvement is believed to be crucial for the success of any conservation intervention. Therefore, we targeted CFUGs to maximise the impacts of this work through local people's engagement. After identifying CFUGs of potential community forests around the GLC, two local forest users representing each of those FUGs, were trained on small mammal survey and monitoring techniques. Some of them were hired as citizen scientists for regular monitoring of small mammals.
- c) Community-based conservation awareness programmes: Conservation awareness programmes were carried out among different local groups. As Tharu group were more prone to fishing and hunting, they were lectured for hours focusing on need for small mammal conservation for maintenance of ecosystem and current threats faced by them. 10 CFUGs were involved in small mammal conservation issues and values through sensitisation-workshops.

Ten schools were outreached and knowledge about importance of wetlands and small mammal conservation was disseminated among about 1000 students through PowerPoint presentation. Promotional materials (posters, round stickers, t-shirts and banners) played vital role for them in better understanding.

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

The project started with the celebration of World Wetlands Day 2018 with huge participation (n=109) of concerned authorities and local communities involving students, FUGs, and so on. The event witnessed some remarkable speeches from many conservationists and stakeholders focusing on importance of wetlands and need of immediate steps for conserving GLC which might have strengthen the beliefs of local communities about their role, concern and duties for every activities carried for conservation in the area.

GLC, being an important Ramsar site for birds, people seemed to be more concerned about birds, which indeed was a good thing but at the same time, it was difficult to mention about conservation of small mammal as they find rodents, small cats, etc. deleterious to their livelihood. Hence, sensitisation workshops for small mammal conservation had helped them in better understanding of wetlands, ecosystem processes and importance of small mammal conservation.

We had very good understanding with some locals who helped us throughout the project. Most of the field assistants were locals who also used to help us in identifying potential sites to encounter small mammals along different habitats. Training on small mammal research and monitoring techniques given to citizen scientists (belonging to different community forests) who seemed keen interested in learning to handle GPS, camera traps and other live traps, might have capacitate them at some level.

The field assistants and citizen scientists also had received financial support during their assistance.

5. Are there any plans to continue this work?

Yes. Since local people, at some extent, have started realising the importance of conservation, the media campaign (using local languages) focussed on small mammal conservation and current threats (explaining immediate need of addressing them), will be held time to time through digital and other sources. The citizen scientists and forest guards will be approached at regular terms to understand the sensibleness of local people towards conservation activities.

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

Detailed report will be disseminated to concerned authorities like District Forest Office, FUGs, Ghodaghodi Area Conservation and People Awareness Forum and all other related organisations. Two manuscripts based on this project are under process, and are believed to get published in international peer-reviewed journal very soon.

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 December 2017 to November 2018 as anticipated.

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 |
|-------------------|-----------------|---------------|------------|----------------------------------------------------------------------------------------------|
| Transportation | | | | |
| Long route travel | 360 | 450 | -90 | We had to visit project area thrice. Due to paddy cultivating season, local people were very |
| Local travel | 126 | 152 | -26 | |

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|-------------------------------------------------------------------------------------------------------------------|-------------|-------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | busy and unapproachable at times and also it was almost impossible to deploy camera traps near wetlands area due to inundation of water. |
| Food and accommodation | 990 | 1025 | -35 | Increased no. of field assistants increased expenditure of food (tea and snacks). |
| Equipment and gears (Live traps, camera traps, boots, head lamps, rain suits, etc.) | 1355 | 920 | 435 | We couldn't buy camera traps as they seemed to be very expensive (more than estimated) and were provided by Himalayan Nature (a renowned conservation research institute in the country) along with 20 Tube traps at reasonable rate on rent. Similarly, 10 Sherman traps were supported by National Trust for Nature Conservation- Biodiversity Conservation Centre. |
| Education and awareness outreach activities (Posters, round stickers, t-shirts, media, meetings, workshops, etc.) | 1098 | 1290 | -192 | 500 additional posters were made for awareness outreach activities. |
| Remuneration for field assistants and citizen scientists | 840 | 960 | -120 | Two additional field assistants were hired for deploying camera traps as sites were very distant and we always had theft risk for traps. |
| Insurance for research team | 120 | 60 | 60 | Research team was well experienced and very careful. |
| Miscellaneous - Stationery, printing, photo-copies, Topographic Maps, batteries etc. | 98 | 133 | -35 | Batteries and SD cards cost more than our estimation. |
| Total | 4987 | 4990 | -3 | |

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

Small mammal belong to less prioritised and least studied group of animals in Nepal. Extensive survey of small mammals need to be carried out at national level. Development of a long-term monitoring of small mammal with higher spatial occupancy can be carried out. Moreover, there are number of research gaps

relating the landscape, ecosystem processes and small mammal species, which can be explored extensively.

Even though GLC have been overexploited by Tharu ethnic group, it has witnessed progressive interest of local people in conservation efforts especially for birds with strong support of concerned authorities and also they are being awakened about importance of biodiversity in signifying GLC. Many vulnerable vertebrate species like Burmese python, lesser adjutant, common leopard, etc. are recorded frequently which resemble the species richness in the complex. Many I/NGOs have been organising various technical trainings and workshops for FUGs and homestay management committee targeting forests protection and biodiversity conservation.

Likewise, our initiation on conservation of small mammals have generated hope among local people who express their immense concern in such activities. To boost their positive beliefs, numerous source of media with preferable language should be involved for the influential impact for conservation awareness. Prior to this, immediate actions should be taken to address current threats in GLC like overfishing, illegal hunting, over grazing, land pollution and so on.

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

We used the Rufford Foundation logo on promotional materials like round stickers, posters and t-shirts for awareness programmes and also on different banners made for world wetlands day 2018, training sessions and awareness events.

The RF received mentionable publicity during World Wetlands Day 2018, as prizes distributed among the winners of interschool speech competition, were fully supported from the fund provided by RF. We acknowledged RF during sensitisation workshops for supporting this project. Also, the foundation will be duly acknowledged in all publications of this work.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Rasmi Kunwar: As a team leader, Ms Kunwar has been involved in every activities of this project like project conceptualization, designing, data collection, designing promotional materials, awareness campaign, report writing and more.

Damber Bista: Mr Bista was very much involved in the planning and designing this project.

Sandhya Sharma: Along with her participation on this project design, Ms Sharma was one of the key researcher of this project and played very crucial role during first field visit.

Sanjan Thapa and Hari Basnet: Mr Thapa and Mr Basnet had played major role in species identification, especially rodentia and carnivora species.

Field assistants and others

| | |
|--------------------|---------------------------------------------|
| Kalendra Kadayat | : Field assistant throughout the project |
| Ramesh Chaudhary | : Field assistant during first field visit |
| Laptan Chaudhary | : Field assistant during second field visit |
| Bhagiram Chaudhary | : Field assistant during second field visit |
| Sandhya Kunwar | : Field assistant during third field visit |
| Rajib Chaudhary | : Field assistant during third field visit |
| Kedar Chaudhary | : Language Interpreter |
| Hirulal Dangaura | : Facilitator throughout different events |
| Laxman Chaudhary | : Logistic manager throughout the project |
| Pooja Chaudhary | : Helper |

Citizen scientists and their Community forest (CF)

| | |
|-----------------------|-------------------------------|
| Rudra B Kadayat | : Hariyali CF |
| Gopi Rawal | : Hariyali CF |
| Buddhi P Chaudhary | : Maghi CF |
| Dil Bahadur Chaudhary | : Maghi CF |
| Krishna B Chaudhary | : Maghi CF |
| Budharam Chaudhary | : Maghi CF |
| Suresh Dhakal | : Ghodaghodi CF |
| Man B Chaudhary | : Maghi Homestay |
| Gyanu Chaudhary | : Ilaka Ban Karyalaya, Sukhad |
| Keshav Khatri | : Yamuna CF |
| Surendra Chaudhary | : Yamuna CF |

Note: Mr Dil Bahadur Chaudhary, forest guard of Maghi CF, was one of the highly interested and involved citizen scientist during this project.

12. Any other comments?

This project would have never happened without the financial support of RF. Hence, our team, wholeheartedly, would like to express our sincere gratitude towards RF for providing us this grant. We are immensely grateful towards Prof Dr Kumar Sapkota, Dr Jefferson M. Fox and Mr Damber Bist for strongly recommending RF about us for this project.

Also, we are extremely grateful to Idea wild-USA for providing binoculars, GPS and camera lens for this work, Himalayan Nature and National Trust for Nature Conservation- Biodiversity Conservation Centre for providing us necessary equipment like Camera traps, tube traps and Sherman traps throughout the duration of project.

We would also like to thank District Forest Office-Kailali, Sector forest office-Pahalmanpur, Illaka Ban Karyalaya- Sukhad, Bird Conservation Nepal, Bird conservation Network-Sukhad, Ghodaghodi area conservation and Awareness

Forum, Basanta Protected Forest Council, Community Forest Users Groups, CFCC-Pahalmanpur, Mann ko manjhari FM, all participating schools, field assistants, citizen scientists, and local communities for their immense support during the project. Also, we would like to thank Nature Conservation for Sustainable Development Society, Resources Himalaya Foundation and Small Mammals Conservation and Research Foundation for their generous contribution in our work. Our special thanks goes to Mr Sanjan Thapa and Mr Hari Basnet (SMCRF), who not only supported voluntarily from the beginning but also guided us whenever needed. At last, we would like to thank Mr Dhiraj Lamsal for helping us in equipment delivery from US to Nepal.





Left: Indian Gerbil released after measurements



Right: Asian house shrew in capture bag



Left: Indian grey mongooses



Right: Small Indian civet



Left: Mask palmed civets near Kauwa river at GLC



Right: Indian hare near Nakrod lake



Bushnell 11-02-2018 04:08:57

Left: Jungle cat captured near Hariyali CF



Bushnell 02-04-2018 21:30:55

Right: Leopard cat captured near Nakrod lake



ScoutGuard 11.01.2018 01:55:28

Left: A feral cat recorded at forest region of GLC



Right: An unidentified pugmark near wetland



Bushnell 10-11-2018 22:10:41

Left: Wild boar captured near Ghodaghodi lake



Bushnell 11-02-2018 04:54:42

Right: Common leopard captured on forest trail



Left : Girls with Helka, a fishing tool



Right: Local women fishing in Kauwa river at GLC



Left: Man using tube for collecting lotus seeds



Right: Cattles grazing in dry wetland region



Left: Wastes from temple dumped in forest area of GLC



Right: Waste materials thrown at the bank of Doda river near Sukhad



Left: Chidiya lake, one of the associated lake of GLC



Right: Discussions during sensitization workshop with Maghi homestay committee



Left: Local people participation in awareness program



Right: Field assistants

Table 1: List of small mammals (identified till) recorded from GLC

| Order | Family | Scientific Name | Common Names | Nepali/Local names |
|--------------------|-------------|-----------------------------------|---------------------------|-------------------------------------------------|
| Sociomorpha | Soricidae | <i>Suncus murinus</i> | Asian House Shrew | Ghar chhuchundro |
| Rodentia | Muridae | <i>Mus musculus</i> | Eastern House Mouse | Dukure muso |
| | | <i>Rattus rattus</i> | House Rat | Ghar muso, Chappar kuduwa |
| | | <i>Mus booduga</i> | Little Indian field mouse | Sano khet muso, Bill khuduwa |
| | | <i>Tatera indica</i> | Indian gerbil | Uphraney muso, Kharkatti muso |
| | Sciuridae | <i>Petaurista petaurista</i> | Red Giant Flying Squirrel | Rato rajpankhi lokharkey Koiralo, Pakhyari muso |
| | | <i>Funambulus sp.</i> | Squirrel sp. | Lokharkey, Chiddi muso |
| | Hystricidae | <i>Hystrix indica</i> | Indian Crested Porcupine | Jure Dumsi |
| Carnivora | Viverridae | <i>Paradoxurus hermaphroditus</i> | Asian Palm Civet | Tadi nir biralo |
| | | <i>Viverricula indica</i> | Small Indian Civet | Sano nir biralo |
| | | <i>Paguma larvata</i> | Masked Palm Civet | Gajale nir biralo |
| | Herpestidae | <i>Herpestes edwardsii</i> | Indian Grey Mongoose | Thulo nyaurimuso, Namchiuri |
| | | <i>Herpestes javanicus</i> | Small Asian Mongoose | Nyauri muso, |
| | Felidae | <i>Prionailurus bengalensis</i> | Leopard Cat | Chari bagh |
| <i>Felis chaus</i> | | Jungle Cat | Ban biralo, Dhaade | |
| Lagomorpha | Leporidae | <i>Lepus nigricollis</i> | Indian Hare | Jungali kharayo, Namaha |

Table 2: List of CFUGs involved in sensitization workshops/awareness programmes

| S.N. | Name of CFUGs | Locality |
|------|--------------------|-------------|
| 1 | Hariyali CFUG | Simtari |
| 2 | Maghi CFUG | Maghi |
| 3 | Kalpabrikshya CFUG | Simtari |
| 4 | Maunyal CFUG | Bhaluphanta |
| 5 | Nakhrodi CFUG | Nakhrod |
| 6 | Loharpur CFUG | Loharpur |
| 7 | Ramjanaki CFUG | Gaidakheda |
| 8 | Bakhdorail CFUG | Simtari |
| 9 | Chautari CFUG | Ganeshpur |
| 10 | Yamuna CFUG | Simtari |