

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	Upma Manral
Project title	An assessment of phyto-resource availability and community-based conservation of natural resources in Western Himalaya
RSG reference	18064-1
Reporting period	1 st November 2015 to 30 th April 2017
Amount of grant	£4650
Your email address	upmamanral2@gmail.com
Date of this report	1 st May 2017

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
To estimate the availability of major phyto-resources in and around human settlements of the region along with assessing the impact of anthropogenic disturbances on forest structure in the Kedarnath Wildlife Sanctuary, India.				Vegetation sampling was done in agro-forestry system of seven villages and forests around four villages (six transects in forests). The objective partially covered one of the objectives of doctoral work of team leader. Rest of the sampling for doctoral objective (14 transects in forest and agro-forestry systems of ten villages) was done under the project funded by Uttarakhand State Council for Science & Technology, Government of Uttarakhand, India.
To evaluate the role of local communities in natural resource conservation in the area.				Focus group discussions were conducted with village heads or <i>Gram Pradhan</i> (head of <i>Gram Sabha</i> , a formal local governance body elected under <i>Panchayati Raj System</i> that receives funds from government for development work in village), <i>Sarpanch</i> (head of local governance body at village level or Panchayat, it looks into issues related to community forests, disputes among villagers, religious activities and traditional fairs organized in the village), and heads of women welfare groups. Door-to-door questionnaire surveys were also conducted in 16 villages to assess the local communities' participation in, and attitude towards activities organized by <i>Panchayat</i> and welfare groups.

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

As part of participatory activities of project, plantation of multi-purpose species in agro-forestry systems (AFS) was planned in selected villages. However, we faced

difficulty in procuring saplings of identified species (particularly *Ficus* spp. suitable for plantation in villages above 2000 m elevation). We contacted officials and forest nurseries of Uttarakhand Forest Department, however, none or very few individuals were available of selected species. As an alternative, we decided to target regenerating individuals in agro-forestry systems that are uprooted by villagers to avoid over-crowding of trees. However, by the time talks were initiated and households were identified for buying saplings, the plantation season was over. Thus, we have set aside a budget and plantation activities will be carried out this year. The process has been initiated and we are aiming to plant around 500 saplings. A conservation awareness camp for school students, which was to take place simultaneously with the plantation, was also planned; however, it had to be postponed to match with plantation schedule.

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

I. Biomass availability

Villages in the area were grouped into three elevation categories viz., high elevation villages (HEV; villages > 1800 m with locals frequently visiting forests at or above 2200 m, which was part of Kedarnath Wildlife Sanctuary); mid elevation villages (MEV, 1400-1800 m) and low elevation villages (LEV, < 1400 m; villages mostly with riverine forests). Results indicated that total available biomass (tonne per hectare) of both preferred fuelwood and fodder species in the forest did not vary along the elevational gradient. However, it varied significantly for most preferred species. *Rhododendron arboreum* and *Quercus leucotrichophora* had higher biomass in MEV and HEV while *Engelhardtia spicata* and *Q. glauca* had higher biomass in LEV forests. Most importantly, the area accessible to villagers for resource extraction varied along elevation. Both HEVs and MEVs were situated either inside the sanctuary or on its fringes, surrounded by forest on two or more than two sides. The villagers, thus, had better access to free resources. LEVs were surrounded by other villages and were situated 3-4 km from sanctuary forest. Their community forests were closed for most part of the year and were opened during early winters for few days for fodder collection.

LEVs had higher availability of tree fodder in the agro-forestry system (AFS) in terms of biomass and density of trees. Most of the cultivated species had higher biomass in LEVs that could be due to more efforts by locals in enhancing fodder (multi-purpose tree species) within the village system and also suitability of these species to low elevations. Almost 50% of the green fodder in AFS of HEVs and MEVs was contributed by *Q. leucotrichophora* (Banj oak) and *Debregeasia* spp., both naturally occurring species. Banj oak trees were those left along the agricultural fields after the encroachment of the forest land. Results of this objective were presented at the Rufford India Conference, Rajasthan 2017.

II. Anthropogenic pressure in forests

The forests in the area fell under two management regimes viz., government owned sanctuary forest and community owned forest. The sampling was done along resource use trails in both types of forests. As community forests are closed for most part of the year, a large part of fuelwood and fodder demand was fulfilled from

sanctuary forests. Thus, sanctuary forests had higher disturbance signs. Lopping intensity and regeneration proportion improved in both the management regimes forest with decrease in disturbance. Tree stand and shrub densities, basal cover of trees and mean canopy cover increased from high disturbance to moderate and low disturbance forests. Results indicated disturbance caused succession in the established forests of the region as it augmented the growth of early succession species. We found low density of trees in higher girth classes and relatively low recruitment of seedlings indicating a disturbance impacted successional trend in the vegetation community of these forests. The detailed results under this objective are under review as a research article entitled 'Forests composition and structure under various stress regimes in Alaknanda Basin, Western Himalaya' in the journal 'Mountain Research and Development'.

III. Community participation in forest conservation

Community forest and civil land with fodder plants in villages were managed by Gram Panchayat (GP). Such land, characterised by dominance of grass species such as *Chrysopogon* sp., *Themeda* sp., *Apluda* sp., and *Pennisetum* sp., is closed for most part of the year and members of GP decide the days of resource collection, called Upadhi. In some of the villages, these forests are opened for grazing during the winter months as well. Anyone who does not abide by the rules has to pay a fine between INR 21 to 500. The Gram Sabha had little role to play in managing the village forests, however, funds received for development work in the village could be used for making check dams in forests or villages to prevent land erosion. Women Welfare Groups (Mahila Mangal Dal or MMD), mostly registered with the block development office, formed an important component of local governance. The primary job of MMD was to organise village women for activities such as cleaning of forest streams and resource use trails, chasing away macaques and Himalayan langurs who damage crops, and convincing women to not extract resources from community land during prohibited period and not to cut green branches. In villages with strong and committed GP and MMD, community forests were better conserved. Trees in these forests had less lopping signs and forests in some villages were closed for a recovery period of 2-5 years for the trees.

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

Local communities were involved at various stages of the project. First, was to organise a few women in a group and involve them in income enhancing activities. Identified women were gathered and value added products such as Badi (sun-dried dumplings made with pulses, cucumber and spices), lime pickle and green salt (a mix of table salt and locally available herbs and spices) were prepared. Of these, green salt was chosen as the product for marketing after products were pilot tested among few families both in village and in Dehradun. The prepared salt was distributed among few families and reviews were taken for further improvement.

Households were chosen for plantation of multi-purpose species in the agro-forestry system. As mentioned in section 3, households from lower elevation villages have been identified and saplings will be bought from them. This will also enable these

households to earn some income from the activity. During the plantation, school students will be targeted and involved through a conservation awareness drive.

Under the activity of IRRRRFM (the local partner in the field), we were also involved in other women empowerment activities such as running a sewing training centre at one of the villages. Though, running the centre was not part of current project, however, I interacted with these women and discussed various environment issues. I closely interacted with young adult girls taking their views on forest and environment related issues and sharing mine with them. One of them (daughter of my host and field assistant) became my active partner and would talk about forest conservation among village women. She once even stopped women from littering in the forest during a plantation drive organised by forest department and was appreciated by the forest officials for the same. Currently, she is engaged with a local NGO working on issues pertaining to alternative livelihoods and natural resource conservation (at a time when girls her age are getting married).

5. Are there any plans to continue this work?

I plan to keep visiting the site, as work permits, to see the success of plantation activities and to interact with members of group established. During the current project, we also identified few other threats to the protected area and its resources such as collection of NTFP e.g. Brahmakamal flowers (*Saussurea obvallata*) and grazing by large herds of sheep and goats in the high alpine areas of Sanctuary. Brahmakamal flowers are collected from their high-elevation habitat (around 4500 m) as part of a local ritual and brought to villages to be offered to local deity. The locals who have been collecting these flowers for the past two to three decades or visiting its habitat were interviewed. Similarly, one of the team members interacted with the local shepherds, involved in herding around 800-1000 sheep and goats of all the village households during their seasonal migration to alpine area, and assessed the threat that they might be causing to the habitat.

The current project focused more on identification of conflict issues and some solution from traditional governance of natural resources. In future, I intend to emphasise on public outreach, primarily targeting school and college students from the area.

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

I am planning an outreach meeting with members of Women Welfare Groups in few selected villages and share the project results with them. I have also planned a workshop for school students during the plantation. Results of one of the objectives have been communicated as a manuscript and a popular article has been published in a conservation magazine during the project.

I plan to interact with forest department officials and NGOs involved in decision-making with respect to plantation in the region and suggest species that might reduce pressure on the sanctuary.

I also plan to work on more research and popular articles to disseminate the results among a larger audience.

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 grant was used from November 2015 to December 2016. The plantation and remaining outreach activities are planned in June-July 2017.

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
Subsistence allowance	1840	1840		
Field Assistant Salary	490	490		
Base camp establishment and maintenance	500	500		
Travel	1020	816	204	Funds left will be used for travelling to field for plantation, transportation of the saplings and stay of team in field.
Contingency	300	250	50	Funds will be spent on printing booklets and outreach material for students.
Meetings and training program for local community	500	300	200	Funds will be used for buying saplings, paying the assistant and villagers for manual jobs during plantation and outreach.
TOTAL	4650	4196	454	

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

- I. To conduct awareness and educational campaigns for local communities, particularly women and children who collect natural resources.
- II. To mainstream the livelihood of forest-dwelling communities with the conservation either through sustainable extraction of natural resources or by providing alternatives through capacity building and teaching them various skills.

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?

RSGF logo was used on the banner during the meetings with locals and will be used on the outreach material during plantation. I use RSGF logo for my presentations as one of the funding agencies and will continue to do so in near future.

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

12. Any other comments?