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	Suman Jumani
Project title	Assessing the socio-ecological impacts of small hydropower projects in the Western Ghats, India
RSG reference	19584-1
Reporting period	April 2016 to August 2017
Amount of grant	£5000
Your email address	sumanjumani@gmail.com
Date of this report	25th September 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
1)Exploring the relationship between SHPs and human-animal conflict:	Off field data collection of secondary data from multiple sources				Forest Department data on elephant-related compensation claims were collected for 11 Forest Ranges across three Forest Divisions. The period of construction and location of each SHP was also collected and verified with Google Earth satellite imagery.
	On field data collection of local perceptions using social surveys				Initially, field visits were made to identify potential villages to be covered for extensive social surveys. The actual surveys were not undertaken due to political unrest and agitation over interstate water sharing dispute and subsequent logistical constraints. These situations were conveyed to the Rufford Foundation during the project. Since quantitative data obtained from the Forest Department was sufficient in establishing a relationship between HEC levels and SHP construction, we did not pursue field data collection.
2)Landscape-level modelling of SHP impacts:	Data collection, compilation and mapping				Location data on commissioned and planned SHPs was collected from Karnataka Renewable Energy Development Ltd. This data was sorted, verified and mapped.
	Geospatial analysis of river fragmentation indices at various spatial scales.				Existing and proposed SHP densities were computed for each catchment of the study area. This information was overlain with land cover and biodiversity indices to identify catchments of key conservation importance.

3)Outreach to stakeholders:	Creating a documentary film				A documentary film on SHPs was created in three languages – English, Hindi and Kannada
	Film screening and distribution				This film was screened at the Rufford India Conference, Rajasthan 2017. The film screening was followed by a panel discussion on the impacts of 'green' energy technologies. It was also screened and distributed to people in the Marenahalli village, Karnataka. It was also uploaded on YouTube along with a signature campaign hosted on Conservation India (http://www.conservationindia.org/campaigns/small-dams-big-problems) and received about 2000 views. It was screened for students at the Indian Institute of Technology, Palakkad, and will also be showcased at the Moving Waters Film Festival in September 2017.

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

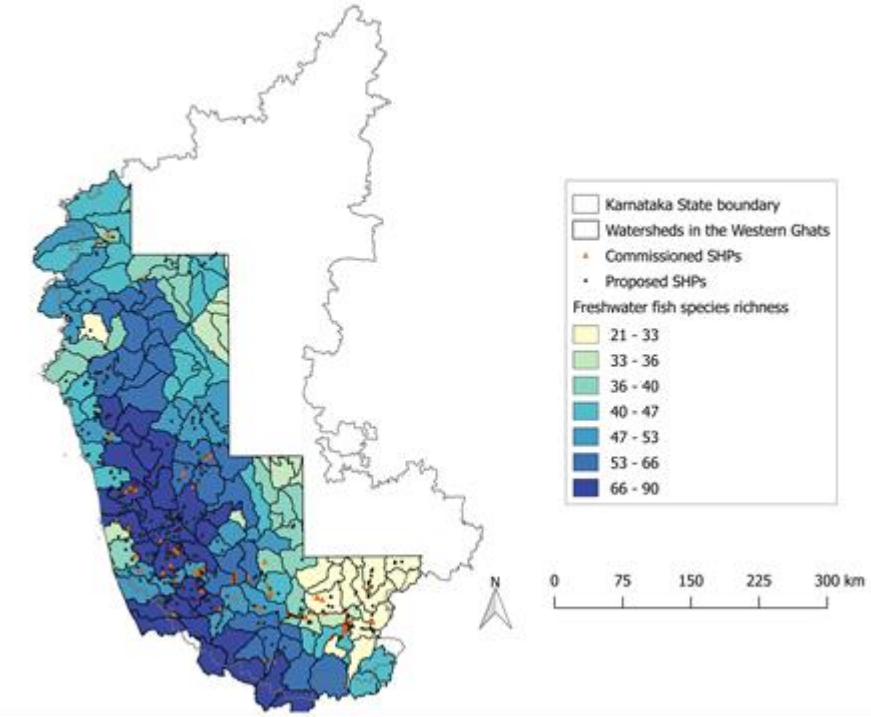
Obtaining, verifying and cleaning governmental data posed as one of our biggest challenges.

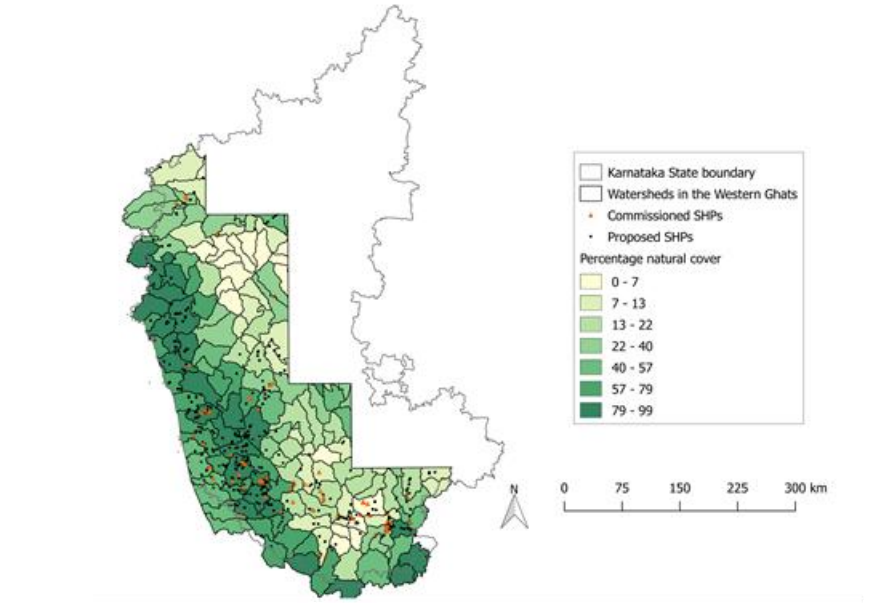
- Despite our best efforts, records of human-elephant conflict compensation claims filed by local communities were obtained year-wise. Our intention was to collect monthly data from the Karnataka State Forest Department which would have contributed to fine scale analysis. Additionally, this data was also characterised by missing entries. Hence, for some Divisions, we received data from only a subset of the ranges. Since administrative boundaries were revised about 3-4 years ago, additional efforts were invested in standardising data.

- Most SHP coordinate locations obtained from the Karnataka Renewable Energy Development Ltd were faulty, and some SHP locations were outside state and country boundaries. This resulted in investing additional resources on GIS assistances as each and every SHP location had to be manually verified and corrected based on location descriptions.

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

- Mapping all planned and commissioned SHPs within Karnataka. All existing and proposed SHPs were mapped, and this information will soon be uploaded on an open-source online portal (such as India Biodiversity Portal).
- Identification of conservation priority catchment areas within the Western Ghats of Karnataka.

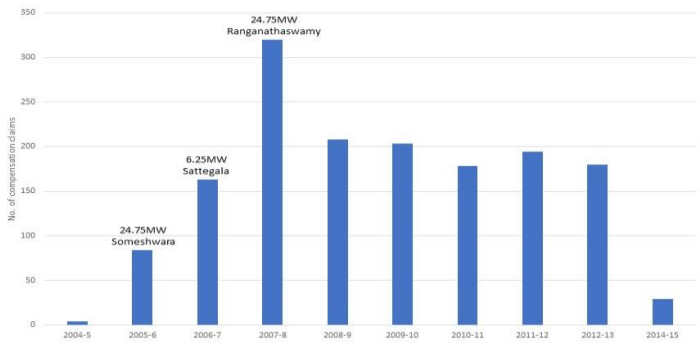
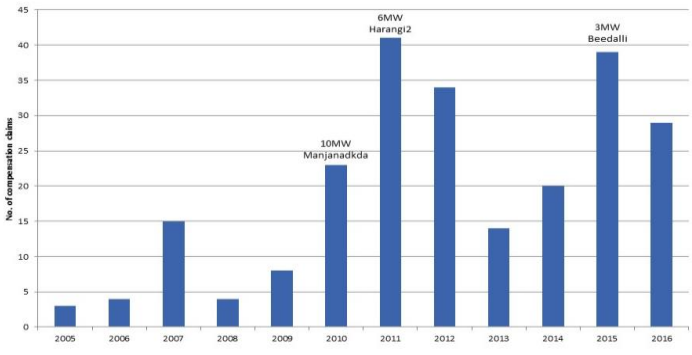


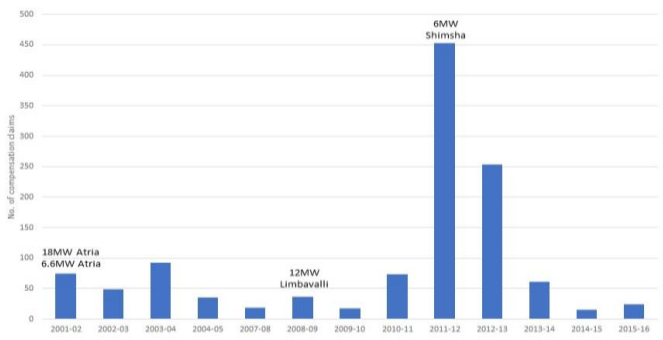
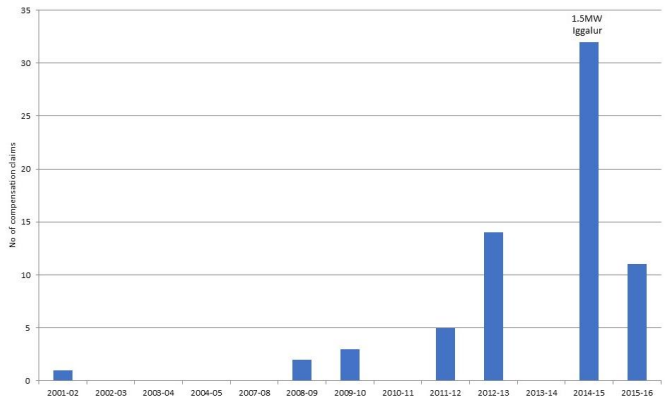
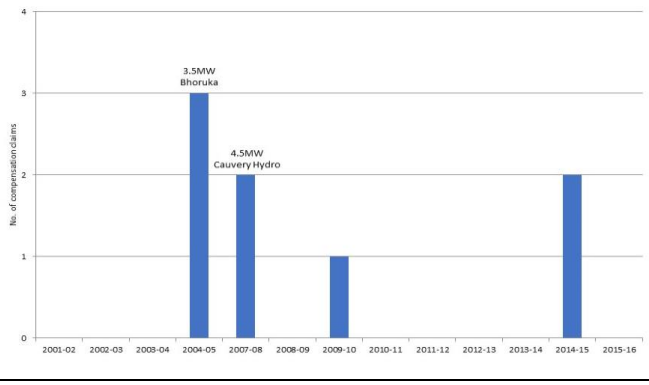
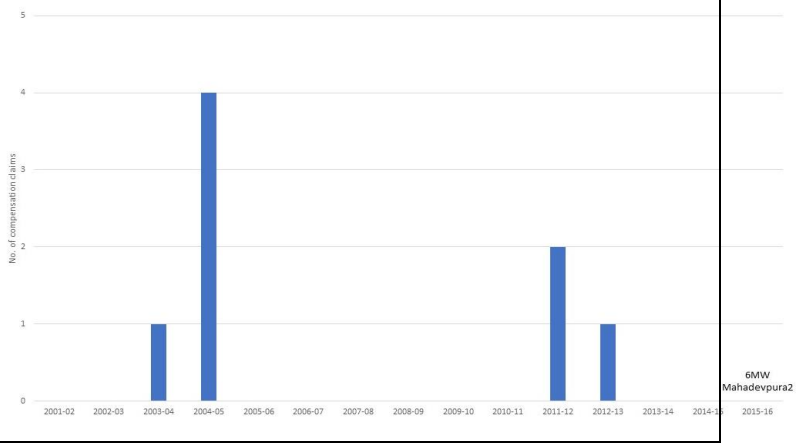


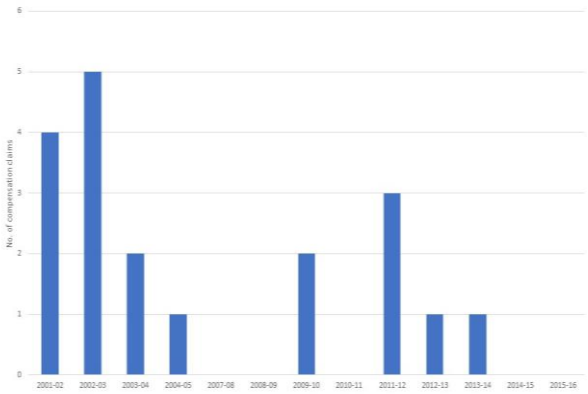
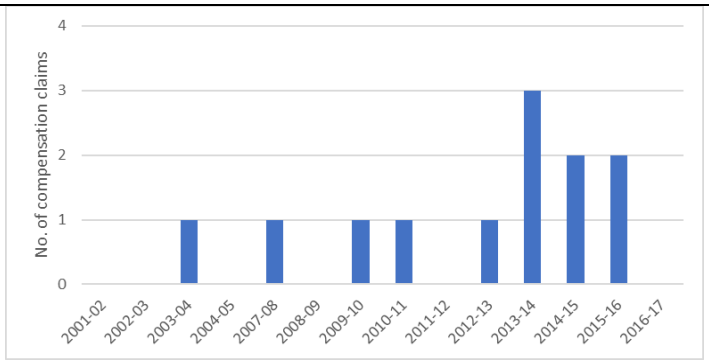
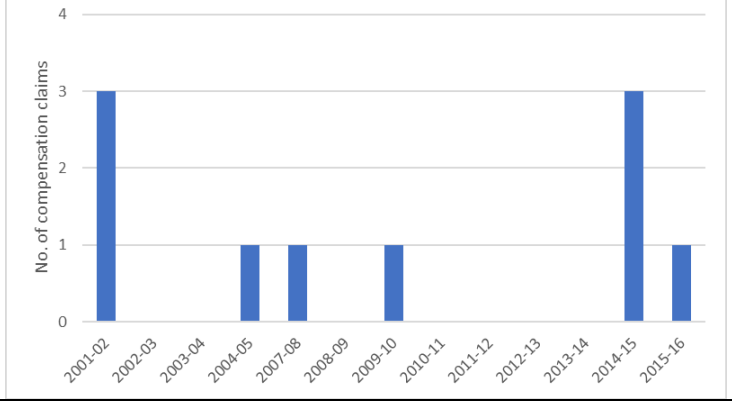
Creation of a film highlighting the current scenario, impacts and policy recommendations regarding SHPs in India. This film has been produced in English, Kannada and Hindi languages, and have been uploaded on YouTube. The links to the above are below:

https://www.youtube.com/watch?v=0LqdOwYmFwU
https://www.youtube.com/watch?v=NjQNSKgnlbw
https://www.youtube.com/watch?v=Fdu6DZD7nVs

- Examining the relationship between SHP construction and human-elephant conflict levels in 11 forest ranges. As expected, periods of SHP construction were seen to coincide with periods of increased human-elephant conflict in Sampage, Kollegal, Rampura and Hannur ranges. All these ranges are characterised by presence of elephant habitat, SHPs and moderately undulating terrain. However, no consistent trend was observed for the seven ranges in Mandya Division. The Malavalli and Maddur ranges, characterised by three and one new SHPs respectively, were most severely impacted during the 13-year period (with 1205 and 68 conflict records respectively). Two ranges (KR Pet and Srirangapatna) had very low conflict levels despite having new SHPs being constructed. The remaining three ranges very low conflict levels (less than 20 over the 13-year period) and were characterised by the absence of SHPs. Since the administrative boundaries of Mandya Division were altered, all data post 2013 have to be re-examined.

Division: Madikeri Range: Sampage Data period: 2005-16 No of conflict records: 234 No of independent SHPs constructed: 3	
Division: Kollegal Range: Kollegal, Hannur, Rampura Data period: 2004-15 No of conflict records: 1563 No of independent SHPs constructed: 3	

Division: Mandya Range: Malavalli Data period: 2001-05; 2007-16 No of conflict records: 1205 No of independent SHPs constructed: 4	
Division: Mandya Range: Maddur Data period: 2001-05; 2007-16 No of conflict records: 68 No of independent SHPs constructed: 1	
Division: Mandya Range: KR Pet Data period: 2001-05; 2007-16 No of conflict records: 8 No of independent SHPs constructed: 2	
Division: Mandya Range: Srirangapatna Data period: 2001-05; 2007-16 No of conflict records: 8 No of independent SHPs constructed: 1	

Division: Mandya Range: Mandya Data period: 2001-05; 2007-16 No of conflict records: 19 No of independent SHPs constructed: 0	
Division: Mandya Range: Nagamangala Data period: 2001-05; 2007-16 No of conflict records: 12 No of independent SHPs constructed: 0	
Division: Mandya Range: Pandavapura Data period: 2001-05; 2007-16 No of conflict records: 10 No of independent SHPs constructed: 0	

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

A few members of the local community in Sakleshpur were interviewed for the creation of the film. Subsequently, the film was screened for an audience there. Based on the film screening and follow-up discussions, local village council members then decided to write to the MNRE to ask for a revision in the SHP policy that will make public consultations mandatory for all upcoming SHPs.

We also engaged with the Ministry for New and Renewable Energy to petition for the inclusion of environmental and social safeguards in the revised SHP policy. A detailed document outlining policy recommendations was submitted to the Ministry of New and Renewable Energy. Additionally, the film was released with a signature

campaign that petitioned the MNRE to include environmental and social safeguards in revised SHP policy.

5. Are there any plans to continue this work?

Yes. Based on the results of this work and previous studies, we are making all efforts to engage with state and central ministries to come up with better SHP policies.

We plan on conducting detailed geospatial analysis to: (a) identify priority conservation catchments, and (b) determine the factors influencing the relationship between human-elephant conflict and SHPs. We are also collaborating with law students to explore the economic feasibility of these projects.

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

- The maps of all planned and commissioned SHPs within Karnataka will soon be uploaded on an open source web based platform.
- The films have also been made available on YouTube.
- I have also written a popular article about SHPs in *The Wire* (https://thewire.in/80075/without-proper-impact-assessment-small-dams-could-cause-great-ecological-damage/)
- After further analysis, our findings will also be published as a freely accessible report, popular article and a scientific paper.

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

This grant was used between April 2016 and September 2017. Hence, we exceeded the anticipated period by about 6 months.

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
Per diem for Student (190/month for 11 months)	2090	2660	-570	Since our project timeline was extended, per diem was also given for 2 additional months
Field assistant/ research assistant wage (75/month for 8 months)	600	1050	-450	We hired additional assistants to help with data validation and data cleaning
Field lodging and food	360	97	+263	We did not use the entire

(60/month for 6 months)				amount since social surveys wasn't undertaken. This amount was spent during recces and field visits.
Travel costs – public Transport	144	144	0	Bus travel to various field sites along the Cauvery river and Sakleshpur
Fuel costs for vehicle (30km/day for 120 Days)	432	127	+305	
Vehicle hiring charges (120/month for 4 months)	480	108	+372	
Equipment and stationary - satellite images, voice recorder, batteries etc.	170	170	0	Bhuvan satellite images purchased for landscape level analysis
Creation of outreach Material + Workshops and trainings	244	164	+80	
Telephone and internet costs (10/month for 11 months)	110	110	0	
Administrative costs including audit	270	270	0	
Contingency costs	100	100	0	
Total	5000	5000	0	

Local exchange rate used: 1 pound sterling = 94.54 Indian rupees

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

Conducting similar basin-wide assessments to identify catchments or sub-basins of conservation priority and inform SHP development in other ecologically diverse States.

In addition to SHPs, there are numerous emerging problems with our rivers. Ill-conceived projects such as the inter-linking of rivers, national water way and additional water storage projects, are bound to alter the functioning and biodiversity in our rivers. SHPs are smaller versions of the larger problems mentioned above. We hope that the results we have so far should provide valuable information to will contribute toward better conservation of our fresh water systems.

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?

Yes, the logo was used in all three films produced. Since these films have received over 2000 views and have been publicly screened, the RSGF has received some publicity during our work.

11. Any other comments?

No

SHP related ancillary structures criss-crossing across a forest