Final Evaluation Report

Your Details	
Full Name	Shishir Thantya Rao
Project Title	Assessing the Effects of Hydropower Operation on Flow and Sediment Dynamics, and River-Dependent Livelihoods, in the Tropical Estuaries of Karnataka, India
Application ID	38850-1
Date of this Report	July 24, 2024

1. 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) Instrumentation of salinity loggers and water level recorders				
2) Collection of weekly water samples for suspended sediment concentration (SSC) measurement				
3) Lab work for processing SSC				
4) Interviews for understanding livelihood adaptation of bivalve collectors.				

2. Describe the three most important outcomes of your project.

a). Quantifying how water releases from hydropower dams affect estuarine salinity and suspended sediment concentration (SS).

b). Understanding how bivalve collectors adapt to changes in bivalve availability in a free-flowing riverestuary as compared to a dam-affected estuary that will result in a conservation-focused participatory GIS map detailing the distribution of bivalves, and the threats to bivalve persistence in the estuaries.

c). Networking and potential collaborations for estuarine conservation related projects in the future in the Uttara Kannada.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

1. Instrumentation was logistically challenging because loggers could be installed only during lowest low tides which occur only on specific days of the month.

Assistance from knowledgeable fisherfolk was crucial in installation of data loggers and data retrieval.

2. The water sample collection for SSC was challenging because the samples had to be collected every 15 days at a specific time, simultaneously at all four rivers. I hired local farmers and fisherfolk at each field site, trained them in data collection, to achieve this objective.

3. Finding people who were willing to give interviews and scheduling interviews was challenging since bivalve collectors would regularly go out for bivalve collection or in some cases ex-bivalve collectors were working in fishing docks far away from study sites. Through local networking, snowball sampling, and by contacting fisherfolk society leaders, I was able to find candidates for interview, and schedule and conduct interviews.

4. Describe the involvement of local communities and how they have benefitted from the project.

My project aims to understand the links between hydropower releases, estuarine salinity variation and bivalve persistence. The time-series data on freshwater levels and estuarine salinity can be a powerful tool in the hands of bivalve collectors to argue for environmental flow releases by hydropower dams as part of a mitigation plan to restore estuarine salinity.

A part of my project involved extensive interviews with bivalve collectors, to understand how they are adapting to changes in the estuary. The results of these interviews will potentially show how bivalve collector's livelihoods, hydropower dam releases, shell and sand mining in the estuary are intricately linked in this social-ecological system. These results are likely to be helpful to fisherfolk community leaders, local environmentalists and NGOs who are interested in the conservation of estuaries, and bivalves.

5. Are there any plans to continue this work?

Yes, after I finish my PhD, I intend to continue this work on the estuaries of Uttara Kannada. The field work I conducted was helpful in identifying how this research can be expanded to other nearby estuaries as part of a long-term project that monitors upstream flow alteration and downstream salinity.

I am also interested in supporting and aiding a local NGO called Aikya that is attempting to setup a co-operative of bivalve collectors for sustainable harvesting of bivalves, like the co-operative model of Vembanad clam fishery in Kerala.

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

The results will be shared in the form of:

1. Two peer-reviewed articles.
2. A participatory map produced in association with the bivalve collectors that depicts the historic and current distribution of bivalve species and uses infographics to highlight the role of bivalves as indicators of estuarine ecological integrity. The map will also document the potential threats to bivalve persistence as perceived by bivalve collectors.
3. I will publish the policy-relevant findings of my hydrology and sediment-related results as an opinion piece on re-thinking hydropower dam operation, in "Economic and Political Weekly", an Indian journal that has high visibility among policymakers and bureaucrats.

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

Currently, I am focusing on completing the analysis, writing up my dissertation, publishing the peer-reviewed articles and generating the conservation focussed outputs of my PhD. After completing my PhD, I will explore avenues for continuing this work in India. Importantly, there is a need for improving the hydrometric monitoring in the rivers and estuaries of India, for baseline data on river discharge, water quality and sediment, etc. I am interested in writing a grant to set up a long-term monitoring project to this effect. Simultaneously, I also see a huge opportunity for community-based conservation initiatives in common-pool resource systems such as estuaries.

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

I am yet to produce any material related to this project.

9. Provide a full list of all the members of your team and their role in the project.

Since this field work was related to my PhD research, I did the field work by myself under the guidance of my advisor Dr. Seth Wenger and other committee members based in University of Georgia. For field work, I hired 8-10 local fisherfolk for data collection to whom I paid daily wages during equipment installation, logger data retrieval and water sample collection. I did not hire any research assistant as such.

10. Any other comments?

None.