

Final Evaluation Report

Your Details	
Full Name	Trisha Gupta
Project Title	Assessing the effect of trawl fisheries on sea snake feeding ecology along Sindhudurg coast, Maharashtra
Application ID	24116-1
Grant Amount	4976 GBP
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Date of this Report	28 th October 2019

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
Characterising sea snake diet, commercial fish catch as well as bycatch				We were able to collect gut content data on 136 sea snakes from two species. We also carried out monitoring of fish catch at Malvan over a 13-month period.
Determining ontogenic and sexual differences in resource utilization				We were unable to complete our stable isotope analysis as planned due to technical issues with the equipment at our first partner lab. The second lab we partnered with cost us three times as much per sample and we were hence not able to run all the samples we planned for. We are currently awaiting these results. However, our on-field observations have given us invaluable insight into sea snake diet and resource partitioning.
Determining interspecific competition for dietary resources between <i>Hydrophis schistosus</i> and <i>H. curtus</i>				
Determining differences in sea snake diet with varying degrees of fishing pressure				We faced challenges in the form of logistics and topography at our first choice of control site (Tambaldeg) and hence, decided to move our site to Vayangani, but were only able to conduct pilots for our independent sampling protocol and were unable to collect data due to unfavourable weather.

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

We faced issues with hiring boats and finding transport and unfavourable weather conditions along the coast. We evaluated our objectives to determine what was achievable given these hurdles. We decided to focus most of our effort on monitoring fishery – sea snake interactions at Malvan, Maharashtra due to logistic feasibility. During the fair-weather period of about 2 months, we were able to develop and test multiple methods for trapping and monitoring sea snakes independent of fisheries. The biggest hurdle we faced was with our stable isotope analysis that we hoped to complete by the end of the year. Despite these challenges, we believe we have collected useful information on fisheries – megafaunal interactions that we hope to publish in the coming months.

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

1. Community engagement – While our interests were primarily to understand the ecology of sea snakes, our work would not have been possible without the cooperation of local fishing communities and other local stakeholders. We conducted workshops to communicate our results and discuss our future plans with the fisher community. We also conducted consultations and interviews with local stakeholders to gauge interest in future initiatives. We created a poster with information about our work on sea snakes in both English and Marathi that we have shared with the local stakeholders, forest department and the on social media
2. Knowledge generation – The primary objective of this project was to add to the limited body of knowledge on sea snakes as well as on the issues of sustainability and bycatch in fisheries. While these objectives are long term, we believe we have made substantial progress on both these fronts over the course of the last 2 years with the support of the Rufford Foundation.
3. Opportunities for locals and students – During the course of our project, we offered multiple volunteering opportunities to students to come and work with us and learn more about fisheries, coastal communities and the issues of bycatch. We also provided logistic support for a master’s student during her thesis in Malvan. We also worked extensively with community members in hiring boats, guides and field assistants.

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

The involvement of fishers is essential to our work in Sindhudurg, from providing information on fishing gear and sea snakes, allowing us to accompany them on their fishing trips and providing our team with a place to stay. As they are stakeholders in our research activities, we made an active effort to communicate our results with them in the form of workshops, consultations and media. We are in the process of consulting with the local community on future work that will focus on fisheries issues.

5. Are there any plans to continue this work?

We plan on having a long-term engagement in the Sindhudurg region. Along with our monitoring of bycatch and research on megafaunal ecology, we hope to engage with the fishing community on development and livelihood issues as well as on sustainability in fisheries.

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

We are in the process of writing manuscripts to make our data and findings available to the scientific community. We have also written multiple popular articles and created outreach material (listed below in Section 10). The protocols we have developed for fisheries monitoring and sea snake ecology over the course of this project will be made available online in the coming months in the form of a manual.

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

The grant was used between January 2018 and November 2019. Due to reasons mentioned in previous sections, we were forced to take two extensions totalling around 9 months.

8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Miscellaneous	541	558	+17	
Outreach	236	168	-68	
Research Assistant	848	604	-244	
Sampling Costs	413	334	-79	
Transportation	306	317	+11	
Field Logistics	824	1623	+799	With around 4 researchers on staff at Malvan we required a larger field base, we also conducted our field work for longer than previously anticipated
Laboratory Analysis	1471	779	-692	Due to administrative reasons, a large part of our analysis costs were borne by our partners at Centre for Ecological Sciences, IISc
Supplies	50	13	-37	
Equipment	287	587	+300	GPS loggers necessary for our work with tracking bycatch were purchased
Total	4976	4983	+7	Excess costs were borne by Dakshin Foundation

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

Maintaining a long-term presence in the region is vital for developing and implementing any interventions. We will be expanding on both our research and outreach in terms of its scope and depth. We also believe that it is important to take our learnings from the Sindhudurg region and implement them across multiple geographies.

10. 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?

Our work was covered multiple times in local news outlets (Tarun Bharat, Mumbai Mirror) and in popular articles written by members of the team. We also created outreach materials in the form of a poster that were widely distributed. Our organisation (Dakshin Foundation) regularly posted updates about our project on social media. Due credit given and/or the Rufford logo was attached wherever applicable.

- Creasey, M. and Dsouza, S. 2019. Sailing into an uncertain future. Current Conservation. Page 7 of 7
- Dsouza, S. 2019. Scaly business: A day in the life of a sea snake ecologist. Current Conservation.

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

Shawn Dsouza - Project lead, conceptualisation, proposal writing, planning and executing field work and lab work, analysis and writing.

Trisha Gupta - Proposal writing, assisting in data collection and logistics.

Chetan Rao - Project Supervisor

Muralidharan M. - Project Supervisor

12. Any other comments?

I would like to thank the Rufford Foundation, in particular, Jane Raymond, for your understanding and support through the many hurdles and consequent delays over the past year.