Final Evaluation Report

Your Details	
Full Name	Hari Priya Eswaran
Project Title	Participatory mapping to understand the ecological impacts of trawl fishing in the critical seagrass ecosystems of Palk Bay, Tamil Nadu, India
Application ID	39862-1
Date of this Report	31.03.25

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
Co-create spatiotemporal maps with fishing communities, showing the extent of trawl fishing in Palk Bay			Fully achieved	With the GPS data collected in collaboration with fishers, we generated a map of the fishing grounds where the trawlers fish in Palk Bay waters.
Identify locations of potential nursery grounds indicating a high juvenile abundance of commercial species.		Partially achieved		We proposed to map the locations with high juvenile abundance of commercial species. However, we could not map the juvenile abundance of all species due to the challenges of identifying specimens at the species level due to their damaged condition. Moreover, we depended on the secondary literature available for size at first maturity (Lm) to achieve this objective, which was not reported for many species. Therefore, we aim to re-strategise our methodology, collect species-level data for representative species for this objective, and generate maps in post-project duration.
Develop maps demonstrating the spatial distribution of the IUCN red-listed species in Palk Bay waters.			Fully achieved	No VU, NT, EN, or CR species were found in our sample catch. Therefore, we could not generate

				maps for the IUCN red-listed species. Instead, we added the IUCN status as an additional layer to the trophic level database.
Understand the ecosystem's trophic levels and community structure by analysing the trawl bycatch caught in Palk Bay.			Fully achieved	We developed a database of trophic and community structures for the identifiable species. This database will help us observe long-term trends and monitor the Palk Bay ecosystem's health through participatory fisheries monitoring.

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

a). This project has laid the foundation for participatory research in Palk Bay, focusing on large-scale fisheries. We utilised this opportunity to collaborate with the local fishers and community members in data collection and analysis. Given the unsustainable nature of trawl fisheries and geopolitical sensitivities in this region, a significant amount of time went into successfully onboarding the fishers for the participatory work, which we have also highlighted below in section 3.
Through this project, we strengthened our relationship with fishers and contributed to the capacity building of the local youth who worked with us as 'Ocean Stewards'.

b). Our study provides comprehensive insights into species, quality and quantities of fish diverting from Palk Bay to the Fish Meal Fish Oil (FMFO) sector. In 22 samples collected during the project duration, over 36 faunal groups were recorded. Additionally, a key insight includes a significant overlap in species groups between the locally consumed species and those being diverted to reduction, raising concerns about food security, equity and resource utilisation.

c). This project offered an enhanced understanding of the ecological and social-economic issues associated with trawl fisheries. There is a significant gap between the theoretical frameworks for adaptive co-management versus the practical challenges we experienced during the implementation of this project. We look forward to working more on that front and including region-specific nuances to co-mangement frameworks in the coming years.

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

1. The participatory GIS and research with fishers pose their own unique challenges. Palk Bay region is highly sensitive due to its geopolitical history with Sri

Lanka. These trawlers often cross the International Maritime Boundary to fish on the Sri Lankan side, leading to diplomatic tensions between the two countries. As a result, fishers initially showed hesitation in collaborating, particularly in sharing GIS data on fishing tracks.

To address this, we prioritised building rapport and trust with them before starting data collection. We ensured free, prior and informed consent and maintained transparent communication regarding the project's objectives. This process eventually helped us persuade two boat owners to collaborate with us.

2.   Additionally, unpredictable weather conditions disrupted fishing activities, protests due to geopolitical conflicts and low fish catch reduced our opportunities for onboard sampling. To mitigate this, we adapted our research timeline and requested Rufford for a no-cost extension until March 2025, allowing us to increase our sample number and maintain the project's scientific integrity.

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

A significant portion of the project's data collection was conducted with the Ocean Stewards. They are the local community members identified to equip them with the necessary tools to best understand fisheries management and local governance. As part of their training, they developed skills in marine resource monitoring, enhancing their involvement in fisheries management processes.

Additionally, this project served as a catalyst for deeper conversations on the future of trawl fisheries in Palk Bay. Alongside other ongoing action research, this work paves the way towards sustainable and equitable fisheries management in Palk Bay.

5. Are there any plans to continue this work?

We plan to build on this work by expanding our research to explore the socioeconomic and nutritional security impacts of bycatch diversion from trawlers. This involves continued collaboration with fishers and other relevant stakeholders across the value chain and understanding trade-offs between FMFO production and local food security.

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

We plan to disseminate our findings through community consultations with fishers in Palk Bay, particularly those directly and indirectly involved in the project. We will also utilise Dakshin's social media platforms, conduct workshops and write popular science articles to showcase our work. These discussions will ensure the insights gained are shared and accessible to all, fostering further collaboration and dialogues on sustainable fisheries.

Additionally, we aim to publish our results in peer-reviewed journals and conferences and contribute to the growing body of evidence on the impacts of bycatch diversion. By doing so, we hope to inform policy discussions and encourage inclusive interventions addressing ecological and socioeconomic challenges associated with trawling in Palk Bay.

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

1.   One of the crucial steps is to share our findings with wider stakeholders, including academicians, fishers and grassroots organisations working on this front. This will help draw attention to the issues and foster collaborative discussions on sustainable transformations.

2.   Building on the momentum of this project, it is crucial to deepen engagement with trawl fishers on this subject area, strengthening participatory research for more inclusive and community-driven solutions.

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?
We will feature Rufford's logo in the final versions of the training modules we have developed for sampling and species identification purposes. We are also going to include the logo in the upcoming MARE 2025 People and Sea Conference paper presentation, highlighting the ground insights gained from the project.

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

Core Team Members:

1.   Hari Priya Eswaran
a.   Co-led project conceptualisation, budgeting and objective setting.
b.   Co-developed training modules on onboard sampling, species identification, etc.
c.   Co-designed and implemented the sampling strategy in collaboration with ocean stewards.
d.   Conducted workshops and consultations with fishers and ocean stewards regularly.
e.   Performed data analysis and reporting.
f.   Overall, proactively involved in managing project and outputs.

2.   Meghana Teerthala:
a.   Actively involved in project conceptualisation and objective setting.
b.   Contributed to developing training modules - onboard sampling, species identification, etc.
c.   Proactively contributed to implementing the sampling strategy with Ocean Stewards.
d.   Performed data analysis and reporting.

3. Abhilasha Sharma:
a.   Actively involved in project conceptualisation and objective setting.
b.   Oversaw the overall progress of the project and proactively contributed to the troubleshooting processes.

Ocean Stewards Members (4 members)
Piyo Lijora, Maria Hotlin, Daniel Vinoth and Initha Prakasi

a.   Ocean Stewards are local community members working in Dakshin's Ocean Stewardship initiative. It aims to bridge the gap between local traditional knowledge systems and scientific ways of monitoring and fisheries management by equipping local youth with the necessary tools to understand local governance mechanisms.
b.   Co-led data collection and entry.
c.   Helped build rapport with trawl fishers and proactively communicated the project's aim and objectives during regular fieldwork to fish landing centres.

10. Any other comments?
A combination of factors resulted in a lower number of samples than we expected. These include:

1. Delay in identification and onboarding of boat owners to collaborate with due to the sensitivity of trawl fisheries as an occupation in Palk Bay,

2. Less number of fishing days due to erratic weather, fishers protests, local festivities and two months of monsoon fishing ban,

However, this experience enhanced our understanding of the local trawling-related issues and also helped us gain key learnings towards replicating and scaling participatory GIS and onboard sampling across the Indian coast. The rapport built with the trawl boat owners and local fishing communities during the project duration will be instrumental in conducting long-term research and enabling sustainable interventions in this region.