Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF 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 – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please DO NOT fill in and submit this form until the project has been completed.

Complete the form in English. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Anna Karolina Martins Borges
Project Title	Seahorses, Mangrove, and People: Integrated Conservation Planning in a Brazilian Complex Socio-ecological System
Application ID	42808-2
Date of this Report	10/10/2025

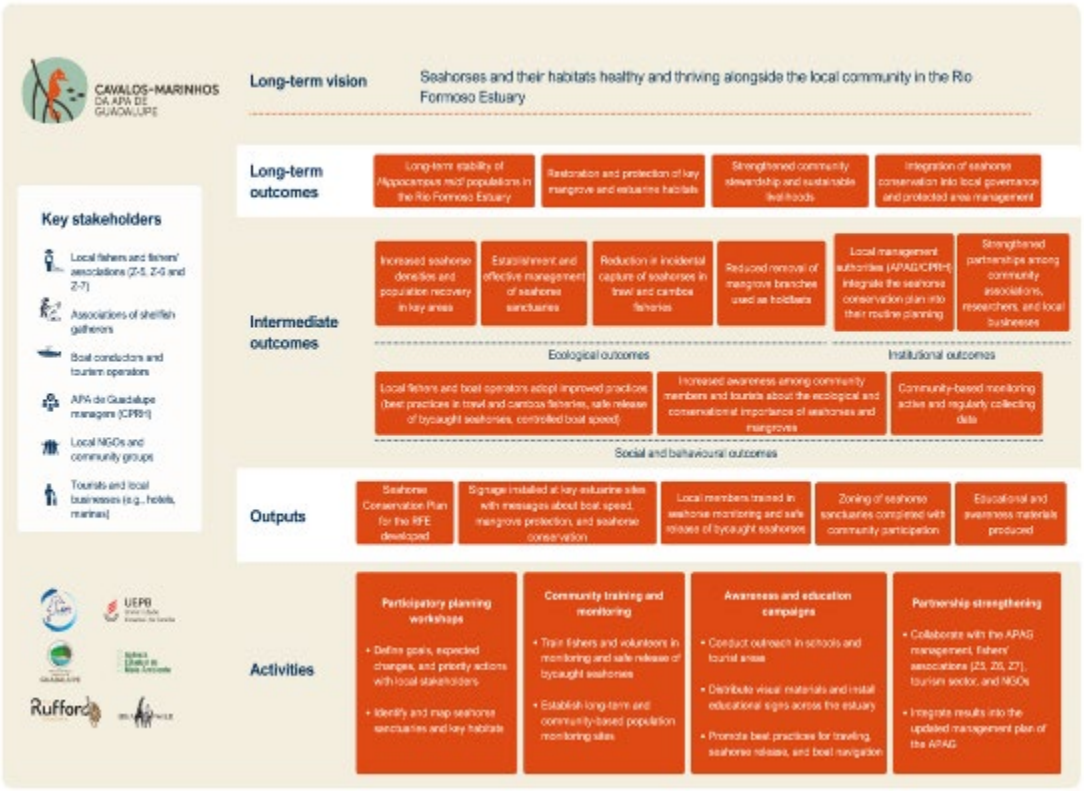
1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Develop a comprehensive plan and a theory of change for seahorse conservation in the RFE				We developed a theory of change for seahorse conservation in the Rio Formoso Estuary based on participatory workshops involving local stakeholders. This collaborative process allowed us to define shared goals, identify priority actions, and map out the pathways needed to achieve long-term conservation outcomes. We are now working on the development of the comprehensive conservation plan, which will build upon the theory of change to guide practical actions, monitoring strategies, and community engagement in the area.
Implement a monitoring program for seahorse populations in previously identified priority areas				We monitored the seahorse population monthly for one year across eight critical sites in the estuary, selected based on the participatory mapping conducted during the previous project. During this period, data were recorded for 355 individuals of *Hippocampus reidi*. These data are essential for understanding the population structure of seahorses in the estuary, identifying fluctuation trends by comparing them with previous monitoring efforts, and informing

				future conservation decisions.
Engage local members in a community-based monitoring initiative by fostering capacity building and providing training for them to monitor seahorses in the RFE				This objective was not fully achieved due to budget limitations, which made it difficult to implement the planned training and regular monitoring activities. However, we made significant progress in refining the approach and preparing for its execution. We held discussions with the local community, which is already sensitized and motivated to participate, and with the APAG management, which has expressed support to help us put this initiative into practice in the near future.
Conduct awareness campaigns within the local community to foster a sense of responsibility regarding seahorse conservation in the RFE				We conducted several awareness activities within the local community (holding four talks and two workshops) to foster a sense of responsibility for seahorse conservation in the Rio Formoso Estuary. These activities included educational talks, distribution of informative materials, and social media outreach, successfully engaging fishers, shellfish gatherers, students, and tourists in discussions about the importance of protecting seahorses and their habitats. We produced leaflets (500), stickers (250), and posters (100). We also produced a waterproof informational material that local community members can use during tourism activities (100).

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

a). We developed a participatory Theory of Change for seahorse conservation in the Rio Formoso Estuary. This process involved two workshops that brought together local stakeholders, including fishers, shellfish gatherers, tourism operators, and managers of the Guadalupe Environmental Protection Area (APAG). The Theory of Change allowed us to identify shared goals, priority actions, and the logical pathways to achieve long-term conservation outcomes. Building on this framework, we are now developing the Seahorse Conservation Plan in collaboration with the local community and the APAG management, ensuring that the proposed actions are realistic, inclusive, and aligned with local governance structures.



Theory of Change for seahorse conservation in the Rio Formoso Estuary (RFE), illustrating the logical pathways connecting project activities, outputs, and outcomes toward the long-term vision of healthy seahorse populations and resilient habitats thriving alongside the local community.

b). We carried out a one-year monitoring program of seahorse populations at eight priority sites previously identified through participatory mapping. Throughout this period, we recorded 355 individuals, allowing us to identify trends and changes in population densities across the estuary. Important results include the decline in densities at two sites: in one of them, this decline appears to be associated with the removal of mangrove branches during fishing activities, which serve as preferred habitats for seahorses, as identified in our previous project. The second site presented a drastic decline this year, with only one individual recorded, likely related to intense boat traffic in the area. On the other hand, one site that previously had no records of seahorses showed signs of recovery, with individuals observed again

during this year's monitoring. We now aim to investigate the causes of these fluctuations, especially the declines, and to work on strategies to mitigate them. These data will expand our research group's long-term database on seahorse distribution, habitat preference, and population dynamics, providing crucial information for future conservation planning in the estuary. We expect to publish a scientific paper and a technical report soon, comparing these results with data collected over the past 20 years to provide a broader understanding of temporal trends in seahorse populations in the Rio Formoso Estuary (RFE).

c). We promoted several awareness and educational activities, reaching local fishers, boat operators, tourists, and students from the surrounding communities. These actions helped raise awareness about the importance of seahorse conservation and the role of the protected area, while strengthening community engagement in conservation initiatives. The strong participation of local community members in the workshops confirms the success of the campaigns in raising awareness about seahorse conservation, as attendance was significantly higher than in previous activities (approximately 100 participants). We also disseminated project results and information through social media, significantly expanding our outreach. Additionally, we consolidated the project "*Seahorses of the Guadalupe Environmental Protection Area*" (@cavalosmarinhosapag on Instagram), which we intend to continue developing as a long-term platform for community engagement and seahorse conservation within the protected area.

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

We faced some unforeseen difficulties mainly related to weather conditions and community engagement for participatory monitoring. During certain months, the study area was affected by heavy rainfall, which significantly reduced water visibility and made it impossible to collect ecological data at some sites. However, this issue occurred only occasionally — in three of the monitored sites and in alternating months — and the data collected during the remaining months are substantial and provide a comprehensive overview of seahorse population dynamics in the estuary.

We also faced challenges in implementing the community-based monitoring training, particularly in finding local participants with enough available time to engage consistently in field activities. In addition, the limited project budget was not sufficient to fully compensate for participants' working days. We are now improving our engagement strategy and seeking more substantial funding, including potential support from the APAG management, to ensure that future community-based monitoring is better structured, fairly compensated, and sustainable in the long term. We estimate that approximately £800 would be required to effectively carry out future community-based monitoring training. This amount would cover basic logistical costs, materials, and modest compensation for local participants during field activities.

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

Our project relied on the active participation of the local community at several stages. We organized workshops to present the results of the previous project and to discuss local perspectives, priorities, and proposed actions for seahorse conservation. These meetings helped strengthen dialogue between researchers, fishers, shellfish gatherers, and the management of the APAG.
We also conducted awareness campaigns to disseminate information about seahorses and their conservation. The educational materials used in these activities were developed based on discussions held in earlier workshops, ensuring that the content reflected local knowledge and values. In addition, we delivered lectures in two local schools, reaching approximately 60 students and teachers to raise awareness about marine conservation and the importance of the estuary.

We provided specific training for women shellfish gatherers who lead an ecotourism activity offering visitors an immersive experience in the mangrove ecosystem, local cuisine, and traditional fishing practices. The training was conducted through a workshop focused on providing accurate information about local biodiversity that they can incorporate into their tours, adding educational and cultural value to the experience. It included lectures on local biodiversity (particularly on seahorses) and a guided visit to their ecotourism route, during which we offered practical suggestions for improvement. About 20 women participated in the workshop, which was organized in partnership with the management of the protected area and the shellfish gatherers association of Sirinhaém.

Finally, local community members were directly involved in fieldwork activities, being hired as boat conductors and assisting the research team, which strengthened local engagement and provided additional income opportunities.

5. Are there any plans to continue this work?

Yes. We plan to continue working for seahorse and marine conservation in the RFE, building upon the results obtained in this project to advance both research and community-based conservation actions.

Our next steps include finalizing the Seahorse Conservation Plan for the RFE, developed collaboratively with local stakeholders. We also intend to establish seahorse sanctuaries within the estuary — a demand that emerged as a priority during the Theory of Change workshops — with zoning and management defined through participatory processes involving the local community and the APAG management. In parallel, we will continue monitoring seahorse populations to better understand their fluctuations and underlying drivers, thereby strengthening the long-term database that supports conservation decisions.

Furthermore, we aim to contribute to the revision of the management plan of the APAG), incorporating actions for seahorse conservation, and to expand participatory monitoring, awareness, and educational activities in partnership with local schools and community groups.

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

The findings of our project will be disseminated through multiple channels to ensure they are accessible and informative to all relevant audiences. For the scientific community, we plan to publish manuscripts in peer-reviewed journals and present our results at conferences and scientific meetings. In addition to academic outputs, we will continue sharing updates and key findings on our social media platforms, particularly through the project's page on Instagram (@cavalosmarinhosapag). We also intend to maintain awareness campaigns aimed at both local residents and visitors to the estuary, promoting knowledge about seahorse conservation and the importance of the protected area. Finally, we plan to present and discuss the results directly with local stakeholders, including fishers, boat operators, shellfish gatherers, and APAG managers, in future meetings and workshops, ensuring that the outcomes of this project continue to support collaborative conservation actions in the region.

Our Co-Principal Investigator, is the Regional Focal Point for South America of the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group, and she has been consistently sharing the information generated by our project with the group.

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

The next important steps include finalizing the Seahorse Conservation Plan and, together with the APAG management, defining the best strategies to implement it, focusing on the priority actions identified through the Theory of Change. These actions include the delineation and implementation of seahorse sanctuaries, the installation of educational signage in key areas, the strengthening of participatory monitoring, and the training of local community members in the safe release of incidentally captured seahorses. In addition, we plan to continue and expand awareness and educational activities, reaching other fisher's associations within the area of the APAG to further promote community engagement and support for seahorse and habitat conservation.

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?

Yes, we used The Rufford Foundation logo in all materials developed for the project, including those used in educational and awareness activities, social media posts (@cavalosmarinhosapag on Instagram), audiovisual materials created for the campaigns, t-shirts and caps for the team and presentations at conferences. The Rufford Foundation also received visibility throughout the project's dissemination efforts, as the logo and acknowledgment were included in every activity, communication material, and outreach product. The logo will continue to be displayed in all future uses of the materials produced, as well as in upcoming conference posters and scientific manuscripts resulting from this project.

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

Anna Karolina Martins Borges (Principal Investigator) - participated in all stages of the project, from the design of the proposal, collecting data in all fieldwork,

developing educational material, data analysis, carrying out awareness activities, and writing reports.

Tacyana Pereira Ribeiro de Oliveira (Co-Principal Investigator) - participated in all stages of the project.

Clycia Susanna Augusta Marques - participated in field expeditions, assisting with data collection and community engagement activities.

Amanda Pereira Leite - participated in field expeditions, assisting with data collection and community engagement activities.

Wesley Ruan Fernandes Bezerra - participated in field expeditions, assisting in data collection.

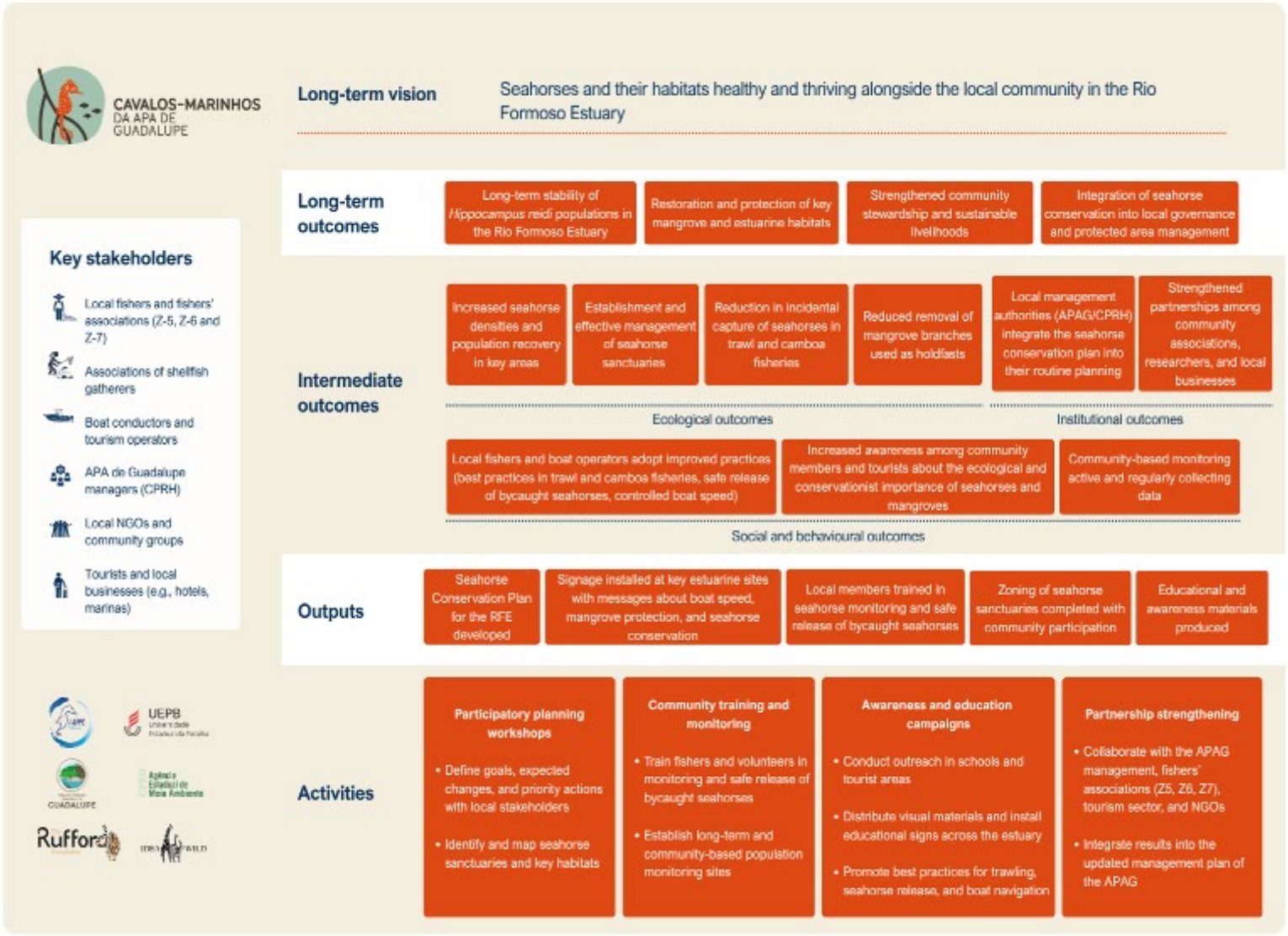
Lucas de Brito Soares - participated in field expeditions, assisting in data collection.

Manoel Batista do Nascimento - local community member, participated in field expeditions as guide and boat conductor.

10. Any other comments?

Receiving funding from The Rufford Foundation was essential to strengthen our ongoing efforts for seahorse conservation in the Rio Formoso Estuary — a region of remarkable social and ecological importance. This support enabled us to advance scientific research, promote environmental education, and foster meaningful engagement with the local community. The outcomes of this project have laid the foundation for long-term conservation actions that will continue to benefit both seahorses and the people who share their habitat. Moreover, the Rufford grant played a key role in supporting the training and development of undergraduate and PhD students, contributing to the growth of new conservation professionals in Brazil. We are sincerely grateful to The Rufford Foundation for believing in our work and for its continued commitment to empowering small-scale conservation initiatives around the world. Your support inspires us to keep moving forward with dedication and hope.

Therefore, I am attaching some photos of our activities during the project.


CAVALOS-MARINHOS DA APA DE GUADALUPE
Long-term vision
Seahorses and their habitats healthy and thriving alongside the local community in the Rio Formoso Estuary
Key stakeholders
Local fishers and fishers' associations (Z-5, Z-6 and Z-7)
Associations of shellfish gatherers
Boat conductors and tourism operators
APA de Guadalupe managers (CPRH)
Local NGOs and community groups
Tourists and local businesses (e.g., hotels, marinas)
Long-term outcomes
Long-term stability of Hippocampus reidi populations in the Rio Formoso Estuary
Restoration and protection of key mangrove and estuarine habitats
Strengthened community stewardship and sustainable livelihoods
Integration of seahorse conservation into local governance and protected area management
Intermediate outcomes
Increased seahorse densities and population recovery in key areas
Establishment and effective management of seahorse sanctuaries
Reduction in incidental capture of seahorses in trawl and camboa fisheries
Reduced removal of mangrove branches used as holdfasts
Local management authorities (APAG/CPRH) integrate the seahorse conservation plan into their routine planning
Strengthened partnerships among community associations, researchers, and local businesses
Ecological outcomes
Institutional outcomes
Local fishers and boat operators adopt improved practices (best practices in trawl and camboa fisheries, safe release of bycaught seahorses, controlled boat speed)
Increased awareness among community members and tourists about the ecological and conservationist importance of seahorses and mangroves
Community-based monitoring active and regularly collecting data
Social and behavioural outcomes
Outputs
Seahorse Conservation Plan for the RFE developed
Signage installed at key estuarine sites with messages about boat speed, mangrove protection, and seahorse conservation
Local members trained in seahorse monitoring and safe release of bycaught seahorses
Zoning of seahorse sanctuaries completed with community participation
Educational and awareness materials produced
Activities
Participatory planning workshops
• Define goals, expected changes, and priority actions with local stakeholders
• Identify and map seahorse sanctuaries and key habitats
Community training and monitoring
• Train fishers and volunteers in monitoring and safe release of bycaught seahorses
• Establish long-term and community-based population monitoring sites
Awareness and education campaigns
• Conduct outreach in schools and tourist areas
• Distribute visual materials and install educational signs across the estuary
• Promote best practices for trawling, seahorse release, and boat navigation
Partnership strengthening
• Collaborate with the APAG management, fishers' associations (Z5, Z6, Z7), tourism sector, and NGOs
• Integrate results into the updated management plan of the APAG
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PESCADORES:
Café da maré


HISTÓRIAS DE
PESCADORES:
Café da maré
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HISTÓRIAS DE
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do Rio

ANNEX – Financial Report

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