

Final Evaluation Report

Your Details	
Full Name	Anna Karolina Martins Borges
Project Title	Distribution, habitat availability and population characteristics of seahorses in a Brazilian estuary
Application ID	33703-1
Date of this Report	01/07/2023

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
Collect georeferenced data on the location of individuals and microhabitats, to analyse the distribution of seahorses and their habitat throughout the RFE				We collected essential data on seahorse occurrence and habitat preferences on the RFE, which will be crucial to subside the design of conservation strategies in the protected area.
Collect data on seahorse population structure to generate an explicit database to characterize the RFE seahorse population				We monitored the seahorse population for 6 months in eight critical sites in the estuary (selected based on the participatory mapping carried out with local fishermen). We collected environmental data and data on the 286 seahorses found in these 6 months. These data will also be essential to understand seahorse population structure in the estuary and subside conservation decisions.
Conduct interviews with local community members to identify local perceptions about the species' occupation, its abundance, habitat preferences, and threats that affect its conservation				We interviewed a total of 25 fishermen who live and work in the RFE. We collected data on the occurrence of seahorses, the threats they face, the knowledge that the local community has about the species, and the community's perception of the importance of seahorse conservation.
Conduct a participatory mapping exercise with local community members to collect information on seahorse distribution, their habitats, and points of conflict with human activities				We carried out the participatory mapping exercise with all the fishermen who participated in the study. It was possible to map the distribution of seahorses in the RFE and the sites where they may be exposed to threats based on the traditional knowledge of fishermen.
Conduct workshops with the local community to build a participative proposal with fishermen, researchers, and managers, determining				We were unable to hold the workshops. They were planned to occur concomitantly with the protected area management plan update, but the meetings that the state environmental agency would

priorities and measures to be adopted to guarantee the conservation of seahorses in the RFE				organise did not happen.
Develop educational material that will be disseminated in the local community, including an online campaign on social media				We successfully developed the educational material used to carry out several awareness activities in the estuary, including campaigns with tourists, distribution to the local community, and lectures on local schools, besides the promotion of the project and their outcomes on social media.

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

a). We obtained important data about the ecological aspects of the occurrence of seahorses in critical sites of the Rio Formoso estuary. Those data will expand our research group's database about seahorse distribution, habitat preference, and populational dynamics, which will be crucial for future seahorse conservation planning in the estuary.

b). By assessing the traditional knowledge of the local community, we obtained unprecedented data on the seahorse distribution, the threats they face, and the community's perception of the importance of seahorse conservation in the protected area. That information will complement the ecological data in the future planning for seahorse conservation. Besides, this project outcome is especially important since it promoted the engagement of the local community and our project, which we expect to continue carrying in the area.

c). We promoted several awareness and educational activities, reaching local fishermen and boatmen, tourists, and students from the local community. By doing that, we have raised attention to the importance of seahorse conservation and the role of the protected area, as well have promoted the engagement of the local community. We also reached several people by promoting the project and the produced knowledge on social media. In addition, we also developed and established a project that we intend to continue growing, focusing on actions for seahorse conservation in the protected area (Project 'Seahorses of the Guadalupe Environmental Protected Area', @cavalosmarinhosapag - Instagram).

With this project, we started what we hope to become a long-term project for seahorse conservation in the Rio Formoso Estuary. The data obtained here will subside the planning of strategies for seahorse protection and the articulation, networking, and engagement of the local community and public authorities created through this project will be fundamental for this to be done in a participatory and, therefore, efficient manner.

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

We faced some difficulties during the project, primarily due to the pandemics and unexpected weather events. Due to the pandemics, we had to reduce our fieldwork team, but it did not hinder the project's success. However, due to Brazil's pandemic and political situation, we faced a significant increase in fuel prices, which affected our planned budget. To overcome this, we had to readjust our fieldwork schedule and reduce the number of expeditions we had initially planned.

We also experienced a considerable delay in our fieldwork planning due to severe weather events. We expected to start our data collection in March 2021. However, our study area suffered from heavy rains that were totally atypical for that time of year, which made it impossible to collect ecological data due to poor water visibility conditions. As a result, we had to postpone the data collection until the next dry season and our project's duration was extended.

Finally, we faced some difficulties that prevented us from carrying out the workshops we planned for the project. The workshops should have occurred in parallel to the meetings for the update of the management plan of the protected area, which the state environmental agency would organise. We participated in the first meeting; however, the subsequent reunions did not happen, making it impossible for us to hold our workshops. We still have plans to hold the workshops at a more suitable moment for the protection area.

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

Our project counted on the active involvement of the local community in several stages. We assessed the traditional knowledge of the local community on seahorses through interviews and participatory mapping. We also held awareness campaigns where we disseminated knowledge about seahorses using the material produced on the project. The material was developed based on earlier workshops we held with the local community, so the information used in the material was discussed and set in a participative way with stakeholders. Besides, we carried out lectures about seahorse conservation in local schools. Finally, we also involved community members in our fieldwork activities, hiring them as boat conductors.

5. Are there any plans to continue this work?

Yes, we aim to continue working for seahorse and marine conservation in the RFE, using the results obtained in this project to advance our research and educational initiatives. We plan to carry out the postponed workshops, discuss a plan for seahorse conservation in the RFE and design effective measures with the participation of all the stakeholders. Additionally, we will continue to monitor seahorse populations in the RFE to understand fluctuations and their underlying drivers. Finally, we have plans to develop awareness and educational activities with the local community of the RFE in partnership with the protected area managers.

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

Our project's findings will be disseminated through various channels to reach different audiences, thus being widely accessible and informative to all relevant stakeholders. For the scientific community, our results will be published as manuscripts in scientific journals and presenting them at conferences and scientific events. Moreover, my doctoral thesis will be made available. In addition to academic production, we will use social media platforms to continue sharing the results of this project on our social media (@cavalosmarinhosapag, Instagram). We also plan to implement awareness campaigns with the public that frequently visit the estuary and the local community. Finally, we aim to share the results with the stakeholders involved, including fishermen, boatmen, and the protected area managers in future reunions and workshops.

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

The important next steps are directed to conduct participatory planning to outline strategies for the conservation of seahorses in the Rio Formoso Estuary. We will organise workshops with all the relevant stakeholders to discuss our project's findings and outline efficient strategies to towards mitigating the identified threats to seahorses and their habitats in the protected area. Then, we hope to put these strategies into practice, so we need to gather efforts to obtain the required financial support. Finally, we plan to not only continue but also expand our awareness activities with the local community and further strengthen the project's relationship with local managers (e.g., the protected area managers, environmental agencies, and local community leaders) to raise their engagement with seahorse 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 the material developed and used in the educational and awareness activities, in posts on social media (@cavalosmarinhosapag on Instagram), audiovisual material designed to use in the campaigns and presentations at conferences. The Rufford Foundation logo will remain in evidence in all activities related to disseminating the material produced during the project and in the outcomes of my doctoral thesis, including in future panels that I will present at scientific events and manuscripts to be published in scientific journals.

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) - advised Anna Karolina and also participated in all stages of the project.

Rômulo Romeu da Nóbrega Alves – advised Anna Karolina and played an important role in the work as a co-supervisor.

Jéssica Sobral de Souza - participated in field expeditions, assisting in data collection.

Cynthia Alessandra Pereira da Silva - participated in field expeditions, assisting in data collection.

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

Francisco Assis de Souza - local community member, participated in field expeditions as boat conductor.

10. Any other comments?

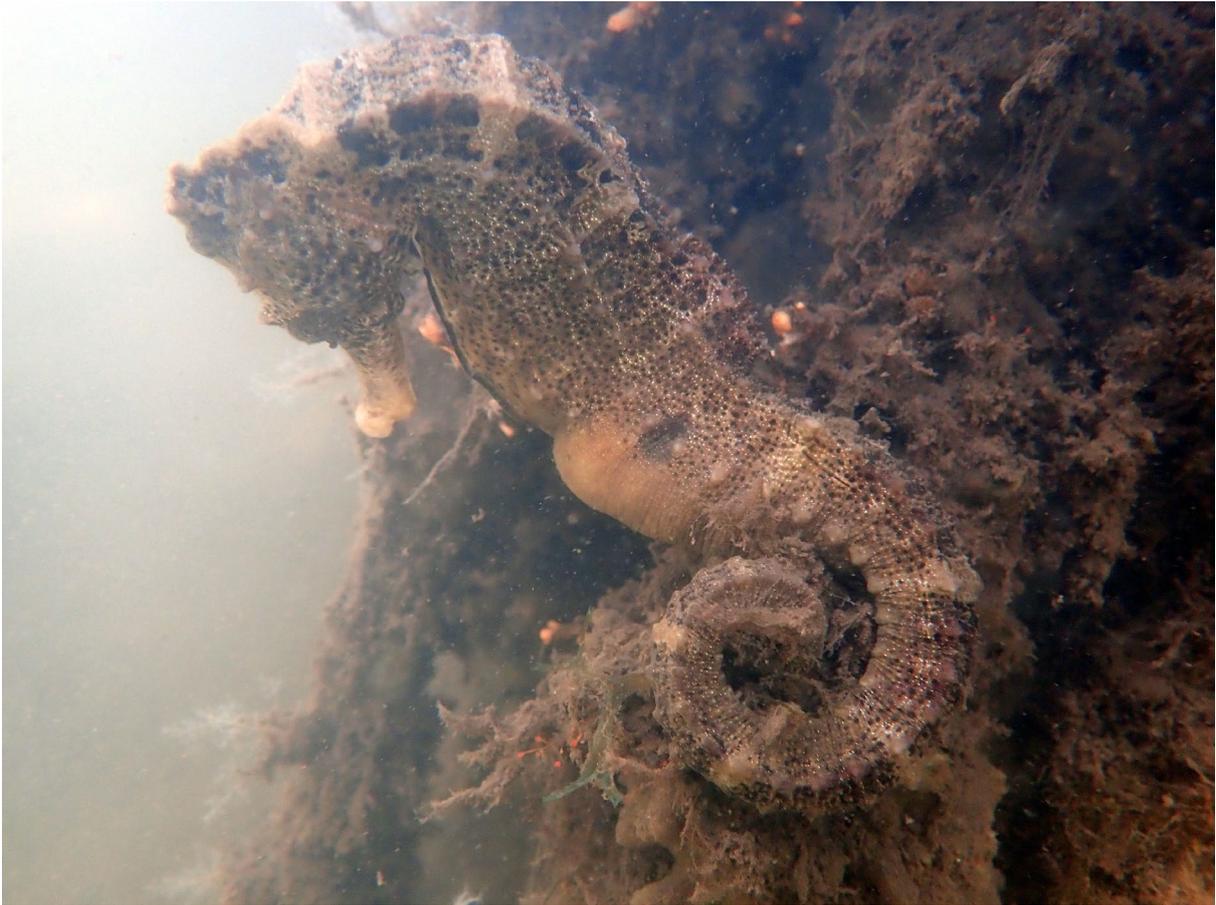
The funding provided by The Rufford Foundation gave us the opportunity to gather attention for the conservation of seahorses in the RFE estuary, a very important area in social and biodiverse terms. The outcomes obtained from this project will be crucial to gather efforts to advance seahorse conservation. In addition, the funding was essential for the realisation of my doctoral thesis. So, we are very grateful to The Rufford Foundation for this opportunity. Your initiative is essential to encourage us to keep going forward for conservation.

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

1. Monitoring seahorse populations in the Rio Formoso Estuary.









2. Assessing the local ecological knowledge of artisanal fishermen on the distribution, threats and conservation of seahorses in the Rio Formoso Estuary.





3. Development of educational activities with the local community to raise awareness of seahorse conservation.





