

Final Evaluation Report

Your Details	
Full Name	Sofía Quiroga
Project Title	Avoiding the extinction of the only endemic fish in arid Argentine Patagonia: The Naked Characin (<i>Gymnocharacinus bergii</i>)
Application ID	33799-1
Date of this Report	22 nd December 2022

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
Objective 1: Evaluate the status of the two Naked Characin populations affected by White point disease.				We have collected all the data in the field, but we are still working on the analysis. Therefore, we consider that the objective has been achieved.
Objective 2- Recover habitat (1,300 m of stream) for the species and facilitate the connection between its populations.				This objective has been fully met. Now we monitor its evolution.
Objective 3- Make the local community aware of the importance of restoring the stream and conserving its species.				The objective was reached. We are currently beginning work on evaluating its success.

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

a). Current knowledge of the status of local naked characin populations that suffered a mass mortality in 2018. We estimate the relative abundance of the endemic naked characin and the invasive Uruguay tetra; this invasive fish is responsible for the white spot disease outbreak in the stream. Preliminary data analysis indicates that both species maintain the same abundance ratio observed in 2016 (3:1, naked characin: Uruguay tetra) and that their abundances have increased by 30% in these 3 years. In turn, we studied the health status (body condition) of naked characin, and the data is being analysed. The results of these estimates will be used for planning management actions.

b). Naked characin habitat recovery, free from threats. By creating sanctuaries free of domestic livestock and by eradicating invasive fish in key sectors of the stream. We created two sanctuaries that protect two local populations of naked characin. These are two spring that were damaged by cattle trampling. One of them harbours a local population of the species and the other only had wandering individuals. A closure was created in each spring to prevent the entry of cattle, the banks were restored, and native vegetation was planted. As a result, both habitats are completely restored, free of threats and with their vegetation fully recovered. The spring that only had wandering fish now houses a reproductive population of about 300 specimens of the species. On the other hand, we managed to successfully eradicate the invasive fish in 600 m of stream. This stretch of stream had been

invaded by rainbow trout since 1970, and in 2010 it was invaded by the Uruguayan tetra. With this project we managed to eradicate both invasive species and now we are carrying out monitoring to record the colonisation of the habitat by the naked characin. By eradicating the invasive fish, we created a corridor between two isolated populations of naked characin.

c). Involvement of the local community in restoration tasks. We established a bond with new families from the local community and worked together to restore the sources of the stream. Thanks to this, 80% of the local community is now aware of the stream restoration project for the conservation of naked characin.

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

The only difficulty we had was the impossibility of working with the children of the local school in restoration workshops in the field. This happened because there was a change in school authorities and the new authorities were unaware of the restoration project. Faced with this difficulty, we decided to carry out all the workshops in the school to first make the project known among the teachers. We carried out practical restoration workshops in the field with children and adults from other cities. We hope next year to be able to take the students from the area to the field and that they can be the protagonists of the restoration of the stream.

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

Local community members participated in all stages of the project. A woman from the area who is an environmental guard, her husband and her two small children participated in the collection of ecological data on naked characin. In the restoration tasks, we hired two men from the area to build the fences in the springs to prevent the advance of the cattle, for which they were financially benefited. We work in practical stream restoration workshops with at least five adult residents and four children. And we offered two theoretical workshops in the only school in the area, five adults and eight children participated (they are the only children in the community). We believe that the local community benefited because it received training related to natural values. As many of the residents want to incorporate nature tourism as an economic alternative, this learning is extremely useful. On the other hand, they incorporated tools to keep the watercourses healthy. These settlers live closely related to the sources of this stream, and drink its water, so now they will be able to maintain its quality for their benefit and that of biodiversity.

5. Are there any plans to continue this work?

Together with my team we have been working on the conservation of the naked characin for years and our goal is to restore the entire headwaters of the stream to ensure the survival of the naked characin in the long term. On the other hand, I am conducting research in the framework of my doctoral studies in the ecology and conservation of naked characin, so I will be dedicated to the research and

conservation of the species for three more years. However, we plan to continue with the actions to restore the creek for the next 10 years, the estimated time to reach the goal. The next steps to take will be focused on the control of the invasive Uruguay tetra in the stream sectors where the white spot disease occurred, and which killed 80% of the endemic naked characin. We are convinced that if we manage to keep the abundances of Uruguay tetra low, we will be able to prevent a new outbreak of the disease. While we carry out feasibility studies for the eradication of the invasive species in these sectors where it coexists with the naked characin. On the other hand, we will continue working together with the local community, to involve them in the conservation of the species and its habitat. We are also focused on supporting the local community in the development of nature tourism as an alternative economic activity that will ensure effective and long-term conservation of all nature in the area. In this sense, we want to focus on the creation of interpretation walking trails, and on the development of workshops and training courses for the residents.

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

This project was disseminated on social networks throughout the year. We plan to continue to communicate the results there as well. In turn, we will publish the results at national and international conferences, such as the Simposio Argentino de Ictiología (SAI), the Congreso Argentino de Conservación de la Biodiversidad and the Congreso Latinoamericano de Manejo de Fauna (COMFAUNA- Colombia). On the other hand, we will publish the results of management actions in the indexed journal Conservation Evidence. In turn, part of the data collected in the ecological investigations of naked characin carried out in this project will be used in the elaboration of population viability models of the species, which will be published in other scientific conservation journals such as Aquatic Conservation: Marine and freshwater ecosystem. We also plan to publish this work in the broadcast magazine Mongabay.

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

The next important steps will be:

- Monitor the conservation actions previously carried out, paying special attention to the colonisation of new habitats free of invasive fish by the naked characin.
- Carry out population control tasks of the invasive Uruguay tetra in the stream sectors where the white spot disease occurred. We have discovered that this invasive species makes a differential use of the habitat, choosing ponds overflowing the stream to reproduce. These ponds only harbour the invasive Uruguay tetra, so the total elimination of its individuals is feasible. This way we can keep the densities of the invasive species low and prevent future outbreaks of white spot disease.

- We will carry out feasibility studies for the eradication of the Uruguay tetra in the stream sectors where it shares habitat with the naked characin. The objective of these studies will be to obtain robust information that allows us to choose between long-term management of the species (population control) or eradication. For this we will summon international experts.
- Recover a greater extension of habitat for the naked characin free of invasive fish. We will move forward with the management of invasive fish by creating new management units through the construction of temporary barriers (waterfalls). In these sectors of the basin, the endemic naked characin was completely displaced. There we will proceed to eradicate the invasive fish to return habitat to the species and create new corridors for the connection of their local populations.
- We will continue with the activities related to the involvement of the local community. We will work in ecological restoration workshops in schools in the town of Valcheta, a town located in the lower course of the stream. We will carry out practical restoration workshops in the field with the students from the local school and from the town of Valcheta.
- We will contribute to the development of a sustainable alternative local economy. We will promote nature tourism in the area through the creation of interpretation trails in the restored sectors. In this way we will be supporting an economic activity that favours the conservation of nature.

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?

The Rufford Foundation logo is featured on the cover of our Facebook page, and the Rufford Foundation was tagged in every social media post (<https://www.facebook.com/MesetaSalvaje/>). The logo was present in the presentations with slides exposed in each talk with local people. We also put the Rufford logo on outreach material we made for a local community event (town birthday). Postcards and colouring material for children were made. We still have results of the project to publish in different media and in which the Rufford foundation and its logo will appear (logo when possible).

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

Main team:

Marina Quiroga (Biologist): technician in data collection in the field, coordinator in the planting of native plants, and collaborator in educational activities.

Santiago Morawicki (Biologist): technician in data collection in the field and in the removal of invasive fish.

Jonatan Ferrada (Park Ranger): technician in data collection in the field, and collaborator in educational activities.

Alexander Guchal (local resident, Park Ranger): Builder of a fence for cattle and collaborator in the removal of invasive fish.

Main Contributors

Valeria Pasos (local resident): Collaborator in collecting biological data in the field and in restoration actions.

Laureano Curayán (local resident): Builder of a fence for cattle and collaborator in restoration actions.

José Quiroga: Collaborator in data collection in the field and removal of invasive fish.

Morgan Pendaries (Biologist- Maca Tobiano Project): Collaborator in field data collection and invasive fish removal.

Luciana Iriarte (Biologist): Collaborator in data collection in the field.

Rodrigo Gutiérrez (Mountain guide): Collaborator in data collection and ecological restoration.

We also have the participation of at least 15 more volunteers, 10 of them members of the Maca Tobiano Project, a conservation project developed on another Patagonian plateau located south of Somuncura, their participation has been very enriching for both parties. The bond created with this team of conservationists will be key to strengthening both projects.

10. Any other comments?

