

Final Evaluation Report

Your Details	
Full Name	Julia Simões Damo
Project Title	Forest fragments as a source of exotic <i>Callithrix</i> species for a conservation unit and its implications for the conservation of <i>Callithrix aurita</i>
Application ID	30865-1
Date of this Report	08/22/2023

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
Identify forest fragments and silviculture areas that may be sources of <i>Callithrix</i> alien species individuals for the Rio Doce State Park.				<p>Due to methodological aspects, such as the spatial distribution of the silviculture areas and the lack of independence that would result from the sampling of these areas and the forest fragments, we decided to carry out the active data collection only in the forest fragments. The silviculture areas were one of the types of matrix evaluated in the connectivity analysis. We sampled 22 forest fragments around the park and registered a total of 49 groups of <i>Callithrix</i> spp. in 13 of these. Most groups (N = 22) observed, where it was possible to identify individuals, were mixed. These groups were predominantly (N = 14) of hybrid individuals that contained phenotypic characters between <i>C. geoffroyi</i> x <i>C. penicillate</i>.</p>
Modelling of the probability of dispersal of the alien species and identify Rio Doce State Park regions that are more vulnerable to invasions.				<p>To design the lowest-cost routes of dispersal of the alien species of <i>Callithrix</i> between the forest fragments where individuals were recorded and the PERD, we obtained specialist opinion to compose the resistance surface and used the "BioDispersal" tool from Qgis 3.28.2 to run the analysis. We adopted three values for the maximum dispersibility: (1) 150, representing the lowest and most conservative cost value; (2) 500 representing an intermediate cost value, and (3) 1000 representing a high dispersibility scenario. The results showed that the western and southern regions of the park were more vulnerable to the introduction of allochthonous marmosets, possibly because they are more permeable to</p>

				the movement of these primates.
Make a management plan for the region surrounding the park to assist in the conservation of <i>C. aurita</i> .				In April 2023, a meeting took place at the Rio Doce State Park to discuss the new management plan for this conservation unit. The findings of this work and management recommendations related to these results were presented during this meeting to the representatives and those responsible for implementing the management plan.

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

- a) Comprehensive diagnosis of the invasion of forest fragments around the park by the alien *Callithrix* species.
- b) Identification of the areas of the Rio Doce State Park that are more vulnerable to invasion by alien species due to greater connectivity (more permeable matrices or the presence of anthropic structures that facilitate dispersal).
- c) Information generated by the survey and management recommendations presented to Park officials to contribute to the conservation of the endangered species, *Callithrix aurita*.

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

Not considering the complications resulting from the global pandemic, one complication was the presence of areas that were flooded after heavy rains, which prevented access to areas that were previously chosen for collection. We spoke with the locals to find alternative routes, and in some situations, we moved the sampling points while maintaining sample independence.

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

As the collections were carried out in areas adjacent to the park, most of the sampling points were within private areas. Thus, we had direct involvement with the community due to the need for authorisation to enter the areas. The community, in general, was open and excited to contribute in some way to the research. We had several moments of conversation and exchange of information about the species, the impacts generated by alien species on native species and the importance of primates. When there were groups in the area, we were notified by the community of their presence in the sampling area.

5. Are there any plans to continue this work?

Yes, team members will continue to work in Rio Doce State Park with the primate species present in the protected area.

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

Some results and products generated during the work have already been shared with the park team and the local community. We are currently writing the article to submit for publication in the journal "Biological Conservation".

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

The results point to the regions to the west and south of the park as more vulnerable to invasion by alien marmosets, possibly because they have greater permeability for the movement of these primates. Our findings, in addition to indicating a great threat posed by alien marmosets and their hybrids to the small population of *C. aurita* found at the park, also indicate a threat to two other species of marmosets native to some of the surrounding regions, such as *C. geoffroyi* and *C. flaviceps*, the latter also considered one of the most endangered primates in the world. Considering the serious scenario of biological invasions, the next step would be to carry out actions to manage allochthonous marmoset populations and their hybrids in forest fragments around the park. In addition, studies must be carried out to assess the threat posed by invasive species to the persistence of *Callithrix flaviceps* populations in the region.

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 results of this project have not yet been published in any journal or presented at a congress or scientific event. The presentation used by a member of our team to present the results during the management plan meeting contained the foundation's logo, as well as any future publication or mention of the project will also contain.

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

Flavio Henrique Guimarães Rodrigues: contributed to the data analysis.

Vanessa de Paula Guimarães Lopes: participated in the field data collection and the data analysis.

Natasha Grosch Loureiro: participated in the field data collection and data analysis.
Bianca Flávia de Lima Silva and Guilherme Andrade Damasceno: These scientific initiation students who were part of the team at the beginning of the project left before the start of data collection and the effective performance of the work, no longer being part of the team.

10. Any other comments?

I thank The Rufford Foundation for the opportunity to carry out this project and to be able to generate results and instruments that could contribute to the conservation of endangered species.

Below are a few photos taken during the field data collection:



Figure 1 - Hybrids of *C. penicillata* and *C. geoffroyi*. © Natasha Grosch Loureiro.



Figure 2 - Hybrid of *C. penicillata* and *C. geoffroyi*. © Natasha Grosch Loureiro.



Figure 3 - Hybrid of *C. aurita* and *C. penicillata*. © Natasha Grosch Loureiro.



Figure 4 - Hybrid of *C. aurita* and *C. penicillata*. © Natasha Grosch Loureiro.