

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Renato Richard Hilário
<b>Project Title</b>	Conservation of the red-handed howler monkey in Amapá, Brazil
<b>Application ID</b>	32081-2
<b>Date of this Report</b>	June 16th, 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 the sites with higher abundance of red-handed howler monkeys				
Assess the viability of the populations and the impact of hunting and genetic flux in population viability				
Identify drivers of the species density				We had rerun the analysis logarithmising some variables. Then, we found that forest height and the amount of forest and flooded areas in the landscape influenced positively the density of <i>A. belzebul</i> .
Elaborate a conservation strategy for <i>A. belzebul</i> in Amapá				We have begun contact with politicians to communicate our results and lobby towards the conservation of <i>A. belzebul</i> , especially by protecting the region with the most favourable areas for the species. It may take a long time to achieve any positive result in this regard.

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

**a).** A conservation strategy for *A. belzebul* in the region, identifying key sites to be conserved and possible management actions.

**b).** A baseline for population sizes of *A. belzebul* in the study area which will allow us to infer about the efficiency of the management actions.

**c).** The identification of key threats to *A. belzebul* populations through the population viability analysis.

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

The project was expected to start much earlier, at the end of 2020. However, we did not anticipate that the COVID pandemic would last this long and prevent us from starting the project. Thus, the project start was postponed for about 1 year.

During the pandemic, the university radio station stopped functioning, which prevented us from divulging the project actions in the radio. The university radio station returned to its functioning in August 2022 but the radio programmes that we have participated in before were discontinued.

One of the team members (Saulo Silvestre) got a good job opportunity. Thus, his participation was reduced, which has delayed the analysis process.

We had a problem assessing one of the forest patches. This forest patch was recently bought by another landowner that did not allow us to enter the forest patch on his property. Although this was upsetting, we still could survey 17 forest patches, which is more than the 15 forest patches expected to be surveyed at the beginning of the project.

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

The institution that managed the funds has an agreement with a car rental company. This agreement reduced the costs of car rental, however, there were extra charges if a distance limit was exceeded. This extra cost made us change our strategy and sleep in the local communities during the field expeditions, which reduced the overall costs with travelling.

Although the infrastructure of local villages is precarious, staying there had some benefits. We hired a local person to cook for the team and paid to stay in local houses. So, local people enjoyed this income and developed a good relationship with the team.

We trained two local people who were our field assistants. The field assistants were trained to record the bearing of the vocalising groups, allowing us to have three people in the forest patches recording this information. This was important to replace two team members that could not continue their participation in the team due to family and health issues. Thus, the field assistants not only have benefited from learning the research technique, but also benefited from the income. Since their participation demanded training them, they have participated in all the field expeditions (five expeditions each), resulting in a good income. Indeed, they were grateful and satisfied for participating in the project.

Finally, we conducted environmental education activities in four communities. Instead of only talking with the hunters when we deliver the hunting calendars, we decided to also make talks in the communities, in which we explained about sanitary

care that people should take when handling bushmeat, as well as about nature conservation, threatened species, sustainability, and legislation regarding hunting. So, we provided information for the communities that we think will be important for their lives. Overall, 50 people (31 women and 19 men) participated in these talks. We noticed that the smaller the community, the more people were willing to attend our talk. In the smaller community (<50 houses), 18 people attended the talk. In the intermediate communities (~60 houses and >100 houses), 17 and 10 people attended the talk, respectively. In the larger community, which is close to the state's capital city and has over 1000 people, only five women showed up. We tried to reinforce the invitation and repeat the talk, however, none showed up the second time. Nevertheless, the smaller the community, the more the people depend on natural resources. So, we are confident that our activity had some importance for the smaller communities.

### **5. Are there any plans to continue this work?**

Yes, we plan to continue working with *A. belzebul* in the region. Besides trying to implement the conservation strategy designed in this project, there are other important information that we plan to obtain in the future, such as assessing the genetic and health status of the populations and investigating possible hybridisation with *A. macconnelli*.

We also plan to start a population monitoring that will allow us to have demographic data on *A. belzebul*, which will allow us to refine population viability analysis, as well as obtaining other important information to manage the species.

Finally, we also plan to develop a deeper relationship between the project and local people. For example, we plan to design handicraft products associated with *A. belzebul*, which will be made by people from the local communities. The profit from the sales will be directed to these people, so they will perceive the benefit of conserving *A. belzebul* in the forests.

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

We will continue the contact with the hunters that agreed to participate in the research, especially those hunters that live close to the key conservation sites. Indeed, we already informed them about the results of the study.

We are contacting key local environmental authorities to inform them about these results and try to convince them to implement the conservation strategy developed by this project. The state government is now discussing a new zoning proposal, in which there is a chance to protect part of the distribution of *A. belzebul*. However, it is not simple to convince the environmental authorities to create another protected area in the state, considering that about 70% of the state is already protected (although most of this protection is outside the distribution of *A. belzebul*) and that there is a lobby of other political groups, such as soybean farmers, to expand the agricultural area.

We will also publish the results of this project as journal articles. We plan to publish two papers, one with the population viability analysis and another with the drivers of the density of *A. belzebul*. So, the scientific results of this project will be made available for other scientists and conservationists. The paper about the drivers of the density of *A. belzebul* is almost ready for submission.

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

The most important step now is working to implement the conservation strategy developed in this project. This will not be easy, since politicians may also consider the interests of soybean farmers, who are interested in expanding over the study area, threatening *A. belzebul* populations. However, we will do everything that is possible to try to implement this conservation strategy.

Furthermore, now we have baseline estimates of *A. belzebul* populations, which are important to monitor population changes over time. So, we may replicate this approach in the future in key sites to assess whether conservation actions are being successful in maintaining the population stable or even in increasing population sizes. This can also be made if the conservation measures are not implemented to assess whether populations are declining or not.

We also think it is important to continue monitoring hunting levels, as this may represent a threat for *A. belzebul*.

Lastly, there are other studies that will also be important for the conservation of *A. belzebul*, such as the assessment of the genetic diversity of local populations, the assessment of possible hybridisation with *A. macconnelli* in the western part of the study area, and the assessment of the parasitism levels in the populations of *A. belzebul* and its relationship with human presence and activities.

### **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. Rufford's logo was included in the hunting calendars and in the flyer that we delivered during the environmental education activities. I send attached to the email pictures of the flyer, of the hunting calendar, and of the environmental activities. The description of the pictures is found below:



Pictures 1a and 1b – Flyer with information about hunting and conservation that we gave to the attendees of the environmental activities. Note the Rufford's logo in the flyer.



Picture 2 – Hunting calendar hang on the wall of a participant of the research



## CALENDÁRIO DO COLABORADOR

# JANEIRO

2022

S	T	Q	Q	S	S	D
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30



**JABUTI**




**TRACAJA**




**GUARIBA PRETA**




**GUARIBA VERMELHA**




**CAIARARA**




**COAMBA**




**MACACO PREGADO**




**MACACO DA NOITE**




**QUEIXADA**




**CAÏTUTU**




**ANTA**




**FUBOCA**




**VEADO VERMELHO**




**VEADO GALHEIRO**




**PACA**




**CUTIA**




**CAPIVARA**




**TATU BOLA**




**TATU RABO MOLE**




**TATU BRANCO**




**TATU CANASTRA**




**TAMANDUA BANDEIRA**




**PÁSSAROS**




**JACARÉ**


Realização:





Apoio:






Picture 3 – Hunting calendar that we gave to the hunters that agreed to participate in the research. Note the logo.



Picture 4-5 – People were listening to the talk in Mel da Pedreira.



Pictures 6-7 – We gave away basic food baskets during the environmental education activities in Mel da Pedreira to attract more people.



Picture 8 – We also served food (juice and cake) to attract more people to the environmental education activities in Mel da Pedreira.





Picture 9-12 – Environmental education activity in São Pedro dos Bois.



Picture 13 – Environmental education activity in Igarapé do Lago. Picture 14 – Banner.

Also, In October 2022 I attended the Brazilian Congress of Mammalogy, in which I presented the results of the hunting monitoring during the previous phase of this project, which was also funded by Rufford. So, the Rufford logo was also included in the banner (picture 14).

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

**Renato Richard Hilário** – I was the team leader, managing the funds and coordinating the project activities. I was also the academic advisor of two other team members (Paulo Lima and Mariana Amorim) and taught them how to carry out some methods in the field.

**Saulo Silvestre Meneses de Sousa** – Saulo has extensive experience in our study site and has good relationships with some hunters. This was important for us to assess the forest patches and to carry out the environmental education activities. Saulo was

responsible for contacting the people and organizing the environmental education activities. He was also the co-advisor of Paulo Lima and helped us in the data analyses.

**Paulo Rogério Nascimento Lima** – Paulo was responsible for carrying out most of the fieldwork, recording the bearings of the vocalizations to triangulate group positions. Paulo was also responsible for maintaining contacts with the hunters who are filling the hunting calendars and reminding them to keep up the records.

**Mariana Falcão Amorim** – Two team members could not continue in the team: Felipe Todeschini and Rafael Gomes Oliveira gave up their participation for family and health issues, respectively. Then, Mariana replaced them. As Paulo, Mariana was also responsible for carrying out the fieldwork, recording the bearings of the vocalizations to triangulate group positions.

**Tiago Miranda Marques** – Tiago intended to start his master's course a few years ago, but due to some family problems, he could not do so. He is now halfway through his master's course, but he is working with primate dietary patterns.

#### **10. Any other comments?**