The Rufford Foundation
Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other 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. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Bruna Martins Bezerra
Project title	In situ conservation of the blonde capuchins: predicting potential responses to future climate and anthropogenic disturbances
RSG reference	23362-B
Reporting period	September 2017 / January 2020
Amount of grant	£10,000
Your email address	brunamb1234@gmail.com
Date of this report	18th February 2020

1. Please 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
Behavioural and ecological observations				We conducted observations of the study population of blonde capuchins. These observations led to the production of a MSc dissertation (viva in 2018), two PhD theses (vivas in 2018 and 2019) and an undergraduate final year project dissertation (viva in 2019). Overall, we trained three local undergraduate students and three local postgraduate students during this phase of the project, thus qualifying future researchers.
Interviews with the local population				We started the semi-structured interviews but decided that it would be best to complete this aim of the project in the second semester of 2020. The activities at the Paraiba mine site are due to end in the first semester of 2021. Closer to the end of the mining activities in the area, we will have a better diagnosis of the destiny of the locals that work in the mining site
Workshops				We conducted five workshops instead of three. The workshops were aimed at school teachers (Figure 1), school workers and local leaders. After attending the workshops, they were able to pass on the acquired knowledge to a higher number of people, spreading conservation awareness and promoting behavioural changes in the local population. A total of 81 adults took part in the workshops (69 women and 12 men). The vast majority of school teachers and school workers were women.

				Together with the mining company, we also conducted three workshops directed at local school children (Figure 2). A total of 72 children took part in the workshops (41 girls and 31 boys aged between 6 and 13). The kids showed knowledge acquisition through drawings (Figure 4). At least three school teachers were also attending the workshops for the kids in the Paraiba mine site. Thus, more adults were indirectly trained by our conservation workshop with the kids. We refreshed the methodologies used by the Paraiba mine site staff in their environmental education actions to increase conservation awareness in the children. Now, such actions conducted are using the new techniques proposed in our workshops.
Remote monitoring				We carried out our long-term camera trapping monitoring of the animals.
Climate data collection				We finished the climate data collection, and the information was part of one MSc dissertation for a local student. The data will also be part of the PhD thesis of the same student. This PhD student is now comparatively investigating the impact of climate change in blonde capuchins and caatinga howler monkeys.
Modelling the potential impact of climate change on the behaviour and their habitats				We finished the modelling, and the information was part of one PhD thesis and one MSc dissertation for local students.
General data analysis				We finished the data analysis, and the information was part of one MSc dissertation and one PhD thesis. We are currently working on manuscripts to submit to scientific journals.

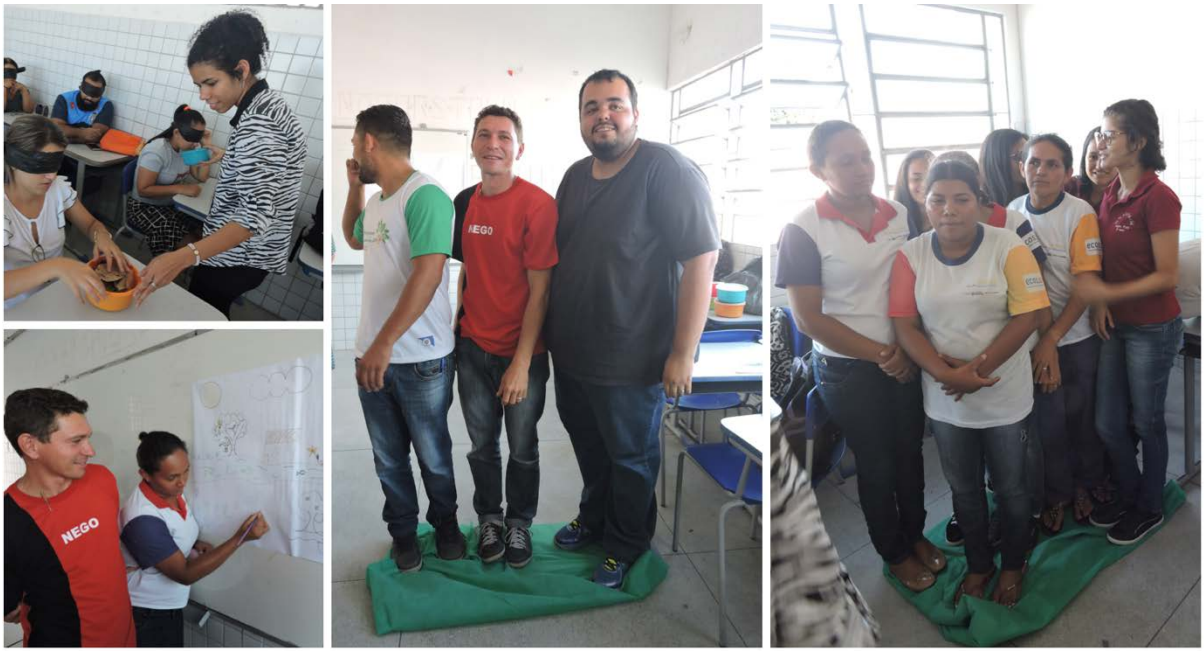

Figure 1. Workshops conducted with the adults. The images show local school teachers taking part in a practical activities from our workshops.

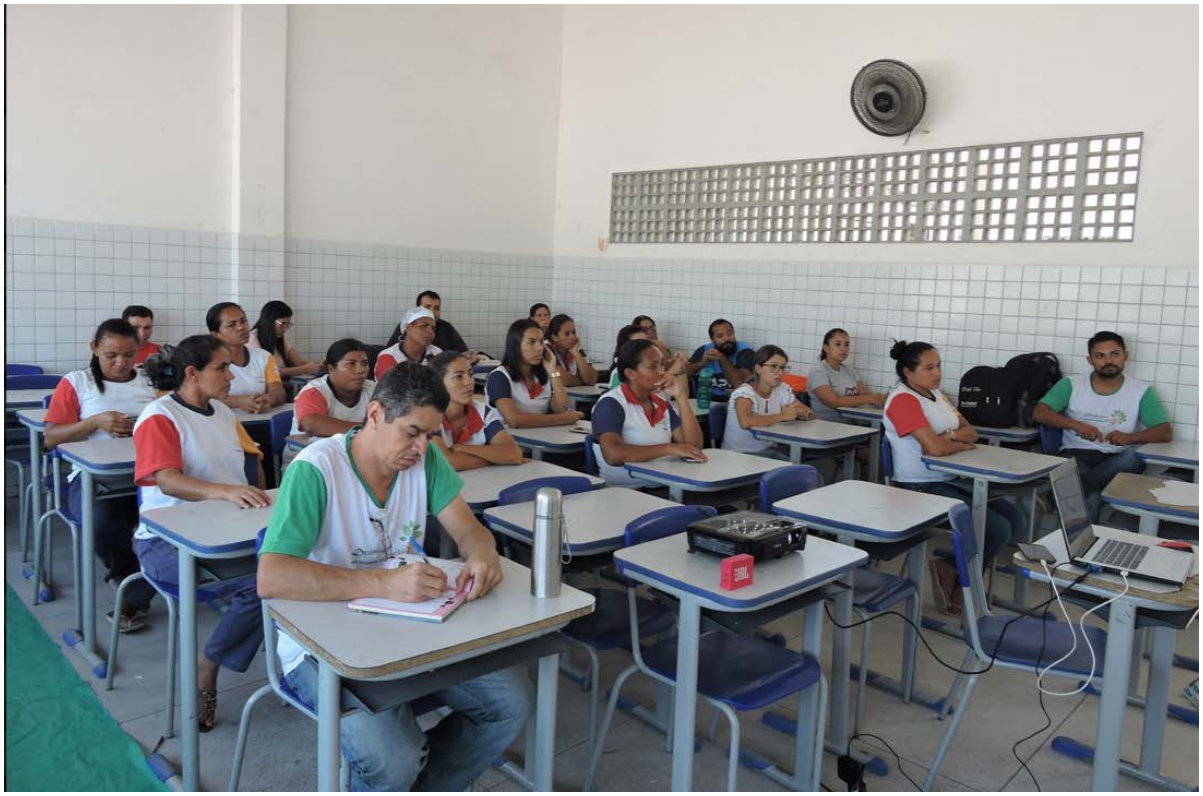

Figure 2. Workshops conducted with the adults. The image shows local school teachers taking part in an activity from our workshops. The workshops occurred in local schools.

Figure 3**.** Workshops conducted with local children living close to the study forest fragment at Paraiba, Northeast Brazil. The images show the kids taking part in the activities of the workshop. We took the kids to the forest fragment where several activities were performed *in situ* to enhance their knowledge of the blonde capuchins and to increase their conservation awareness.

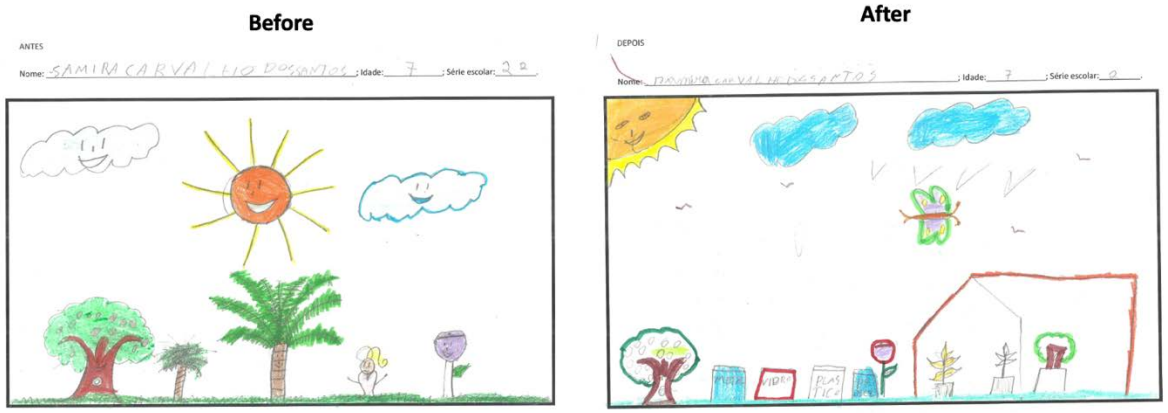

Figure 4. Examples of drawings made before and after the workshops by the kids.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

We had a delay in the importation of the audio traps from wildlife acoustics due to bureaucratic importation laws. Nevertheless, we completed the importation process, and the audio traps arrived in early February 2019. Thus, since them, the continuous monitoring of blonde capuchins have been conducted through both camera traps and audio traps. An undergraduate student and a new MSc student are currently working on this acoustic data.

Because of the current strict Brazilian legislation with regards to punishing hunters, we believe some locals did not provide honest answers, and thus, we did not obtain a fair picture of hunting pressure in the area. We then decided to focus on the workshops targeting local school teachers, local leaders and children that could share their knowledge and increase awareness about the conservation of the blonde capuchins, the negative impact of hunting and the importance of the Atlantic forest to as many kids as possible. We are planning to include the teachers that took part in our first workshops (and also the ones that will take part in the future workshops) to help us with obtaining information on the hunting pressure in the area using a citizen science approach. Also, by renewing our collaboration with the new owners of the fragment (TRONOX), we managed to guarantee the monitoring of the blonde capuchin population for the coming years. The Paraiba mining site was sold in 2018, but we managed to establish collaboration with the new owners to carry on monitoring the blonde capuchins in the area.

3. Briefly describe the three most important outcomes of your project.

i)We have trained several local students (at undergraduate and graduate levels) to become future researchers and conservationists in northeast Brazil.

ii) A high number of local teachers attended our workshops and will be able to pass on their knowledge to many children.

iii)Data obtained through the blond capuchin project resulted in peer-reviewed scientific papers, MSc dissertations and PhD thesis used to furnish public policies in Brazil.

iv) Data obtained through the blond capuchin project have been used to support Brazilian public policies for conservation (e.g. Action Plan for the Conservation of Primates in Northeast Brazil; The definition of priority areas for conservation in the Centro de Endemismo Pernambuco; and Brazilian red list of threatened primate species).

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Locals have been working as our field assistants during these 10 years of the project, and this has indirectly helped to increase conservation awareness in the local communities.

Through our workshops, we have established a new cooperation with the mayor of the city of Mataraca, Mr Egberto Madruga, and his local educational secretary, Mr Paulo de Tarso Araújo. Mataraca is the central municipality close to the study site, and its education secretary controls the local schools around the study forest fragment. The mayor welcomed our project and gave days off to the teachers so that they could attend our series of workshops. The educational secretary saw the workshops as an opportunity to provide low-cost training to their schoolteachers and improve the quality of the pupil lessons on environmental education. Through the workshops, we have been able to have contact with several local teachers and students, promoting behavioural change *in situ* on those people and spreading information about the blonde capuchins, the Atlantic forest, conservation and environmental education.

We established collaboration with the new owners of the Paraiba mine site, the Tronox. The Paraiba mine site was sold in 2018. The long-term collaboration with the mining site has been very positive, making it possible for us to be conduct research on the blond capuchins in the area since 2010, promoting the conservation of the species in a national scale.

5. Are there any plans to continue this work?

We have been conducting studies on the blond capuchin in the area since 2010. Over this period, several local students have benefited from research training. The data generated so far has supported national public policies for primate conservation. We will continue our long-term blonde capuchin research conservation project.

We will continue our remote monitoring of the blonde capuchins in the area, using our camera traps and audio traps. We currently have a new local undergraduate and a graduate student working on the long-term monitoring of the blonde capuchins.

We intend to conduct a new series of workshops in other local schools close to the study site in the second semester of 2020, and we are currently fundraising to conduct such conservation actions. We plan to double the number of schools and adults participating in the workshops when compared to this phase of the project. The Pituba municipality area, for instance, is increasing in size and concentrating most of the impoverished population in the area. We will focus on the Pituba schools to promote behavioural changes in the area and increase conservation awareness.

Lastly, we plan to conduct semi-structured interviews with the locals using a citizen

science approach starting from June 2020.

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

The results of this phase of the project have already integrated two PhD Thesis, a MSc dissertation and an undergrad dissertation, all of them from local students.

PhD Thesis

Monique Bastos. (2018) Bioacústica, Ecologia comportamental e aspectos da biologia molecular do *Sapajus flavius*. PhD Thesis. Posgraduate Programme in Animal Biology. Universidade Federal de Pernambuco.

Barbara Lins Caldas de Moraes. (2019) Efeito da paisagem na distribuição e diversidade de populações de Macacos-Prego da caatinga (Sapajus libidinosus) no semiárido de Pernambuco. PhD Thesis. Posgraduate Programme in Animal Biology. Universidade Federal de Pernambuco.

MSc Dissertation

Antonio Robério Gomes Freire Filho. (2018) Efeitos potenciais de mudanças climáticas no padrão de atividades do macaco-prego galego, Sapajus flavius (Mammalia: Cebidae). MSc Dissertation. Posgraduate Programme in Animal Biology. Universidade Federal de Pernambuco.

Undergraduate student dissertation

Camila Dutra. (2019). Monitoramento de Longo Prazo de mamaco-prego-galego por armadilhamento fotográfico. Universidade Federal de Pernambuco.

So far four manuscripts were published/accepted for publication in this phase of the project, and we now plan to submit at least two new manuscripts to scientific journals.

Published/Accepted manuscripts

Moraes, B. L. C.; Razgour, O.; Souza-Alves, J. P.; Boubli JP; Bezerra, B. (*accepted*). Red alert: habitat viability for primate conservation in northeast South America. ORYX.

Medeiros, K.; Bastos, M.; Jones, G.; Bezerra, B. (2019) Behavior, Diet, and Habitat Use by Blonde Capuchin Monkeys (Sapajus flavius) in a Coastal Area Prone to Flooding: Direct Observations and Camera Trapping. International Journal of Primatology, V. 40, P. 1-21, 2019.

Bastos, M.; Medeiros, K.; Souto, A; Jones, G.; Bezerra, B. (2019). Use of Mangrove Habitats by Sapajus flavius Assessed by Vocalization Surveys. In: Katarzyna Nowak, Adrian A. Barnett, Ikki Matsuda. (Org.). Primates of Mangrove and Coastal Forests. 1ed, 2019, v. 1, p. 64-67. Cambridge University Press.

Bastos M; Medeiros, K. ; Jones G ; Bezerra, B. M. (2018). Small but wise: Common marmosets (Callithrix jacchus) use acoustic signals as cues to avoid interactions with blonde capuchin monkeys (Sapajus flavius). AMERICAN JOURNAL OF PRIMATOLOGY, v. 80, p. e22744-10, 2018.

We have an ongoing PhD project, a MSc Project and one undegrad student project connected to the Blonde capuchin project at the moment.

Ongoing PhD student student project

Student Antonio Robério Gomes Freire Filho.
Uma comparação dos impactos potenciais de mudanças climáticas sobre a ecologia comportamental e conservação de duas espécies de primatas ecologicamente distintas e ameaçadas no nordeste do Brasil, Sapajus flavius e Alouatta ululata.
Posgraduate Programme in Animal Biology. Universidade Federal de Pernambuco.

Ongoing MSc student project

Student Bruna Teixeira.
Acessando a qualidade do ambiente de Mata Atlântica com diferentes períodos de reflorestamento através da ecoacústica.
Posgraduate Programme in Animal Biology. Universidade Federal de Pernambuco.

Ongoing undergraduate student project

Student André Felipe Carneiro Dos Santos.
Monitoramento não invasivo de uma população de macaco-prego-galego (Sapajus flavius) do nordeste brasileiro. Universidade Federal de Pernambuco.

We have presented some of our results in the last International Primatological Conference held in Africa in 2018, the last Brazilian primatological conference and the last Brazilian Mammal conference in 2019. In the Africa conference, in particular, two poster presentations were performed by our local student, Karolina Medeiros, trained in the Blonde Capuchin project. Karolina Medeiros conducted her final year undergraduate project and her MSc dissertation working on the Blonde Capuchin project. Karolina was fully funded by the conference organisers to attend the Africa conference after applying for a competitive conference grant. Karolina continues working on the blonde capuchin project through a technician grant.

Conference presentations

Medeiros, K.; Campelo, A. C.; Bastos, M.; Bezerra, B. (2019) Projeto Galego: conhecer para proteger. In: XVIII Congresso Brasileiro de Primatologia? Educando Primatas. Teresópolis, Rio de Janeiro. XVIII Congresso Brasileiro de Primatologia.

Filho A R G; Teixeira, B. A. ; Bezerra, B. (2019) Impactos potenciais de mudanças climáticas no padrão de atividades e no uso do espaço do Criticamente Ameaçado *Sapajus flavius* (primata: Cebidae). In: XVIII Congresso Brasileiro de Primatologia? Educando Primatas. Teresópolis, Rio de Janeiro. XVIII Congresso Brasileiro de Primatologia.

Filho A R G; Teixeira, B. A.; Rodrigues, K. C.; Castro C S S; Bezerra, B. (2019). A influencia das plantas exóticas na ecologia comportamental do macaco-prego-galego (*Sapajus flavius*). In: XVIII Congresso Brasileiro de Primatologia? Educando Primatas. Teresópolis, Rio de Janeiro. XVIII Congresso Brasileiro de Primatologia.

Teixeira, B. A.; Filho A R G; Bezerra, B. (2019). Registro de fêmea de macaco-prego-galego (*Sapajus flavius*) carregando filhote morto. In: XVIII Congresso Brasileiro de Primatologia? Educando Primatas. Teresópolis, Rio de Janeiro. XVIII Congresso Brasileiro de Primatologia.

Filho A R G; Andrade, B; Bezerra, B. (2019). Comensalismo entre a cutia-da-garupa-vermelha (*Dasyprocta iacki)* e o macaco-prego-galego (*Sapajus flavius*). In: X Congresso Brasileiro de Mastozoologia e X Econtro Brasileiro para estudo de quiropteros, Água de Lindóias, São Paulo.

Medeiros, K.; Bastos M; Bezerra, B. (2018) Use of the mangrove, várzea and terra firme forests by the Critically Endangered blonde capuchins (*Sapajus flavius*). In: XXVII International Primatological Society Congress, 2018, Nairobi. XXVII International Primatological Society Congress, 2018.

Medeiros, K.; Bastos M; Bezerra, B. (2018) Monitoring social behaviours in *Sapajus flavius* through camera trapping. In: XXVII International Primatological Society Congress, 2018, Nairobi. XXVII International Primatological Society Congress, 2018.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

Our last Rufford grant was directly used over 14 months. We had to change the time of the workshops because of the dates the teachers and children were available. We had several issues with strikes due to fuel prices in Brazil in 2018, forcing us to conduct some of the environmental actions after the planned dates for security reasons. These strikes led to petrol shortages and changes in the dates that teachers and children would be available.

Nevertheless, The Rufford Foundation has been vital for the success of the blonde capuchin project for the past 10 years, and hopefully will continue supporting our long-term actions. The project has benefitted several local students and the conservation of the blonde capuchins in Brazil.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Food / Fieldwork	650	650		Rufford grant
Fieldwork Consumables	1600	1600		Rufford grant
Petrol For Fieldwork	350	350		Rufford grant.
Sound Traps	1400	1400		*Rufford and FACEPE grant.
Camera Traps	500	500		*Rufford grant and University grant.
Data Loggers (Climate Data)	500	500		
WORKSHOPS Included Five Workshops With Local Teachers And Local Leaders And Three Workshops With Kids. It Covered Costs With Workshop Materials, Travelling, And Coffee Breaks During The Workshops.	2000	3000	+1000	Rufford grant.
Accommodation / Fieldwork	1000	1000		*Mine site support.
Car Rental / 12 Month Fieldwork	2000	2000		Rufford grant.
TOTAL	**10000**	**11000**	**+1000**	Currency exchange rate: 1 British Pound = 4.5 Brazilian Real.
Undergrad Scholarship (For The 12 Months Of Fieldwork)		1440		CNPq grant.
Msc Scholarship (For The 12 Month Fieldwork)		4500		FACEPE grant.
Phd Scholarship (For The 12month Of Fieldwork)		7200		FACEPE grant.
Binocular		200		University grant.
Sound Traps		1400		*Rufford and FACEPE grant.
Gps		500		University grant.
Camera Traps		1000		*Rufford grant and University grant.

Overall Budget	**10000**	**27240**		

*Funding by two organisations.
*Because we managed to obtain accomodation support from the mining site, we relocated the money to increase the number of workshops.

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

The next steps of our project will be to:

i) Continue the long-term monitoring of the study blonde capuchin population.

ii) Continue the training of local students by investigating the blonde capuchins and their habitat.

iii) Conduct more workshops in local schools.

iv) Understand the intentions of the local workers once the mine site ends its activities.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did The Rufford Foundation receive any publicity during the course of your work?

Yes, we used the Rufford logo in conference presentations and also in our conservation workshops (Figure 5). We also acknowledge Rufford Foundation in our publications.

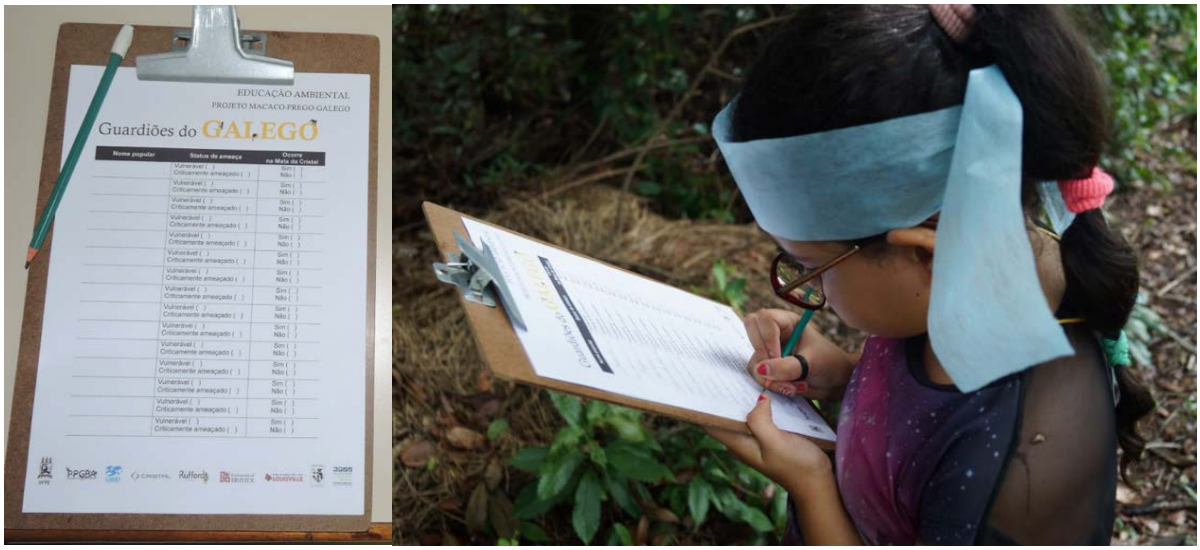

Figure 5. A local kid engaged in practical activity of the workshop in the Paraiba mine site. All materials used as part of the workshop had the logo of the Rufford Foundation.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Team member – Fase II	Role	Roles
Professor Bruna Bezerra, PhD (Zoology Department, Federal University of Pernambuco)	Project coordinator	Responsible for fundraising, recruiting local students, conduct students training, setting priorities and actions for the project and planning the workshops.
Karolina Medeiros, MSc	*Workshop and research team sectors – Current project technician*	Planning and running workshops, monitoring data managing, Project technician.
Anielise Campelo, MSc	*Workshop team sector*	Planning and running workshops
Monique Bastos, Ph.D.	*Workshop and research team sectors team sector*	Planning and running workshops. Conduct behavioural research on blonde capuchins.
Barbara Lins, Ph.D.	Research team *sector*	Conduct habitat modeling connected to climate change.
Ana Lima, BSc	*Workshop team sector*	Ana was a Biology student trainee and she is now a biologist. She helped to run the workshops.
Jonathan Marques Tavares (Biology Undergraduate student trainee).	*Workshop team sector*	The member helped to prepare the workshop materials. Biology student trainee.
Breno Rafael (Biology Undergraduate student trainee).	*Workshop team sector*	The member helped to prepare the workshop materials. Biology student trainee.
Robério Freire Filho, MSc.	Research team *sector*	Student that conducted observations on the effects of climate change on the behavior of blonde capuchins. Robério had his MSc Viva in 2018 and he is now a PhD student comparatively investigating the impacts of climate change on both the blonde capuchins and the caatinga howler monkeys behaviours and habitats.

Luiza Azevedo (Biology and environmental science undergraduate student trainee)	Research team *sector*	Field assistant. Biology student trainee.
Bruna Teixeira (Biology teaching student trainee)	Research team *sector*	Bruna was a Biology student trainee and she is currently an MSc student working on the blonde capuchin project.

12. Any other comments?

The Rufford Foundation has been essential for the success of the long-term Blonde Capuchin Research conservation project. In 2020, the project is completing 10 years. Through this project, we have qualified several local students, provided information to furnish national public policies, and so far, we have guaranteed the preservation of the study population of blonde capuchins. We are extremely thankful for the support provided by The Rufford Foundation and genuinely hope we can count on the foundation in the phase III of the project.