

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
Your name	Juliane Pereira Ribeiro
Project title	Diversity and distribution of amphibians in the Atlantic Forest of the state of Espírito Santo, southeastern Brazil
RSG reference	22439-1
Reporting period	August 2017 – August 2018
Amount of grant	4100
Your email address	Julianeribeiro25@gmail.com
Date of this report	10 September 2018

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
To analyse the diversity and distribution of amphibians in the Atlantic Forest of Espírito Santo, Brazil				We successfully conducted the first phase of this research. We recorded a total of 48 species of amphibians. A total of six conservation units distributed in Espírito Santo were sampled constantly, producing robust data. In addition, we are starting the project in five other areas. Unfortunately, some areas do not come from the physical structure that help in the field logistics, due to this, in some areas the project has not yet started, and it is necessary to raise more funding for the logistics of these places. The project will continue to be carried out in these areas in order to fully assess the distribution of amphibians.
To study ecological aspects of amphibian species in the Atlantic Forest of Espírito Santo, Brazil				We are conducting specific ecology works of some species of amphibians, such as <i>Aparasphenodon brunoi</i> and <i>Hylodes lateristrigatus</i> . These works have not yet been finalised because they are the subjects of the monographs of conclusion of course of undergraduate students in biological sciences. So the work is still ongoing.
Contribute information to assist the conservation of threatened amphibians and with deficient data in Espírito Santo				We recorded some threatened and data deficient species. The use of specific methodologies for litter amphibians and amphibians associated with the streams allowed us to record many rare species such as <i>Ischnocnema oea</i> (NT - IUCN), <i>Euparkerella tridactyla</i> (VU - IUCN) and <i>Scinax kautskyi</i> (DD - IUCN).
Contribute to the managers of the conservation units in the				We contribute information that may help with the management plan for some areas. We effectively

plan of management of the areas				participated in the elaboration of the management plan of the Reserva Biológica de Duas Bocas, in Cariacica, ES. We give lectures to managers on the species occurring in the areas and we also give courses to show how they can help the monitoring of species.
To disseminate project results through environmental education in schools around the areas studied				We lecture at some elementary schools on amphibians that occur on the spot and show the importance of preserving amphibians and the environment as a whole.
Produce scientific articles for dissemination of project results				We have submitted an article in a specialised journal about the composition and abundance of amphibians in Mata das Flores State Park. It is the first information about the park's amphibian fauna. In addition, three other articles are under development on the ecology of amphibians in the areas studied.

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

We found it difficult to sample some areas because of lack of local physical structure. Some areas do not have accommodation for research or nearby hotel. In this way, we had to postpone sampling in these areas. However, we are getting the support of the residents in the surrounding area to stay. So soon we will start sampling in these areas.

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

a) We sample six conservation units constantly for a year, producing robust data on the local amphibian fauna. We recorded a total of 48 species of amphibians, including rare and endangered species. The species are distributed according to their ecological specialties, with specific species of lowland areas (restingas) and specific species of areas with high altitude. For example, *Aparasphenodon brunoi* is a species that occurs in low areas. This species was only found in the Paulo César Vinha State Park and the Vale Natural Reserve, both areas located near the coast. *Scinax belloni* is an endemic species of mountainous areas in the state of Espírito Santo and was found only in the Forno Grande State Park, at approximately 1000 m altitude.

b) We recorded four species of threatened and data deficient in the IUCN list. *Scinax belloni* (EN) was recorded only at Forno Grande State Park, Castelo, ES. *Ichnocnema abdita*, *I. oea* and *Scinax kautsky* were found only in the Biological

Reserve of Duas Bocas, Cariacica, ES. *Scinax belloni* is an endemic species where it was found and inhabits bromeliads at high altitudes. We recorded a total of 34 individuals of the species.

We recorded five individuals of *Ischnocnema oea* and three individuals of *I. abdita*. We used a specific methodology for litter amphibians, composed of 4 x 4 m plots on the forest floor.

For the sampling of *Scinax kautsky*, we used transects of 50m along the streams, being a species strictly related to this habitat. We have recorded 45 individuals of the species so far. The continuation of this study will allow the production of specific scientific articles on these species. In this way, we will contribute with the conservation of the species and classification of risk.

c) The participation in the management plans of the areas and the environmental awareness of the population around the areas was successful. We effectively participate in the Management Plan of the Biological Reserve of Duas Bocas, helping to define the conservation targets and producing the fauna diagnosis of the reserve. The lectures at the schools had a positive return and the children made many inquiries and showed the importance of the amphibians after the lecture.

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

Involvement of local communities was through lectures and meetings organised by the competent environmental body. In these lectures, we explain what species of amphibians occur in the areas, the importance of their preservation and possible impacts that would be affecting the species. Local communities have benefited from true information about the group and species. Before the lectures, there were many myths about amphibians and lack of knowledge was responsible for the community's negative actions with amphibians. Due to successive talks and conversations, several myths were demystified and the community benefited from knowledge. This was especially important after the outbreak of yellow fever that affected the state. Thus, the community has better recognised the importance of amphibians in biological control.

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

Yes, the work will continue. The first phase of the project was to raise the composition and distribution of amphibians in the areas. From this basic knowledge, we now hope to move forward with long-term ecological studies of communities and amphibian populations in the areas. In addition, we will extend the project to more areas in the state.

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

a) Scientific articles

We will produce scientific articles with the data collected throughout the project period. We are already with a scientific article submitted and three in preparation.

b) Banners and abstracts expanded in events

We produced five summaries in the form of a banner and two expanded abstracts for four events that occurred in Espirito Santo, one of them being of national scope.

c) Lectures

During the project period, we gave lectures for the dissemination of the partial results, three for children and three for undergraduate students in the biological areas.

We hope to continue disseminating the results as the data will be consolidated.

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

The grant was used from August 2017 to August 2018. The project period would be 12 months, but we were able to use it for 13 months. In addition, we believe that we will be able to use the money for another three months of field work.

We were able to use the funds for all the materials requested in the project and two more equipment that were not foreseen, which will be used in specific studies to evaluate the environmental impacts that may be influencing the species in the areas sampled (second stage of the project).

**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
Transportation to get to the areas	1500	1145	+365	Plane ticket and bus to reach the sampling areas. Juliane Pereira Ribeiro and Atilla Ferreguetti hold their doctorate in the state of Rio de Janeiro and used the air tickets to Espirito Santo. Within Espirito Santo, some project collaborators did not own a car, so they used buses to move between areas.

Gasoline for transportation inside and between the area	800	920	-120	
Food during the fieldwork days	1140	1450	-310	Food for all field staff, in all areas sampled. The difference was due to the high number of undergraduate students who helped with the project. Each team was responsible for one area.
Headlamps	120	87	+33	Four lanterns for the field team
Thermohygrometer	100	44	+56	Two thermohygroimeters for measuring temperature and humidity in the field
Banners	80	75	+5	Five banners for presentation of work
Shirts with identification of the research project	60	104	-44	Identification of shirts for the project team. The amount exceeded due to the high number of volunteers interested in helping with the project. In addition, as some areas are used for tourism, identification helps in controlling presence in restricted areas for research.
Inscriptions at scientific events (congresses)	300	77	+223	Registration in four events to present works
Phmetro Ph / Conductivity Meter	0	58	58	This equipment is being used in the study of the ecology of the species <i>Scinax kautsky</i> . This species is deficient in IUCN, being unable to place it in any risk classification. It lives in areas associated with streams and this meter will aid in understanding the physico-chemical conditions of the streams in which it is present.
Decibelimeter	0	37	37	This equipment is being used to evaluate the influence of highway noise on the abundance of amphibian species
<b>Total</b>	4100	3997	+103	Currency conversion = 1 GBP was 5.35 Brazilian Real

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

The next steps will be to continue the work in areas that have not yet been sampled and to focus on the ecology of some specific species, especially those that are threatened with extinction. In addition, we will collect data to perform a modelling to predict which sites and conditions are favourable for the species. We also hope to continue the work of environmental education in the areas surrounding the parks and to continue working with the managers of the areas to contribute with planning and conservation actions.

## 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 use the logo on the banners of the works that were presented at the events, presentations on slides of lectures and also on the scientific paper submitted.

All articles produced with data collected from the project will be named after the Rufford Foundation in thanks.

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

Juliane Pereira Ribeiro - PhD student and responsible for the project. He coordinated the field teams and guided the individual projects of undergraduate students (in progress).

**Atila Ferregueti** - PhD student. Helped the field activities, writing and analysis of the project data.

**Jonathan Cozer** - Undergraduate student in Biological Sciences. He develops a monograph with amphibians in the areas sampled.

**Thais Meirelles** - Graduate student in Biological Sciences. It develops a monograph with amphibians associated to the streams in the areas sampled.

**Camila Figueiró** - Graduate student in Biological Sciences. He develops a monograph with amphibians in the areas sampled.

**Tainá Fraga** - Undergraduate student in Biological Sciences. He develops a monograph with the population of *Aparasphenodon brunoi* in the Paulo Cesar Vinha State Park.

**Fernando Paulino** - Graduate student in Biological Sciences. He develops a monograph with amphibians in the southern region of the state.

**Thainá Vecchi** - Graduate student in Biological Sciences. He develops a monograph with amphibians in the southern region of the state.

**Roberta Pires** - Graduate student in Biological Sciences. He develops a monograph with restinga amphibians in Espírito Santo.

**Natália Vagmaker** - Graduate student in Biological Sciences. He develops a monograph with litter amphibians in the Reserva Biológica de Duas Bocas, Cariacica.

**Gabriella Gusman** - Graduate student in Biological Sciences. He develops a monograph with amphibians in flooded environments in Espírito Santo.

**Anna Flavia Sachetto** - Graduate student in Biological Sciences. He develops a monograph with amphibians in the mountainous areas of Espírito Santo.

## 12. Any other comments?

I would like to thank the Rufford Foundation for all this assistance. The financial support was extremely important for the realization of the project, which became much larger than expected. With the support of Rufford, we were able to sample areas where they did not yet have basic wildlife studies. In addition, we have been able to support several undergraduate researches in biological sciences, providing technical knowledge to students who are early in their careers. We have had records of very rare and endangered species and we are going to be able to produce data that can help in the conservation of these species.

Rufford's assistance was especially important in the face of the economic crisis Brazil is facing. We had absurd funding cuts for science in the year 2017 - 2018, we had public universities on the verge of ending the lack of government funding. Laboratories without equipment, without money to go to the field. Therefore, the Rufford Foundation is very important in the success of this research. We and the biodiversity of Brazil deeply appreciate the support of Rufford and we commit to continue the work efficiently to continue generating information for the conservation of amphibians in Brazil.

## Fieldwork



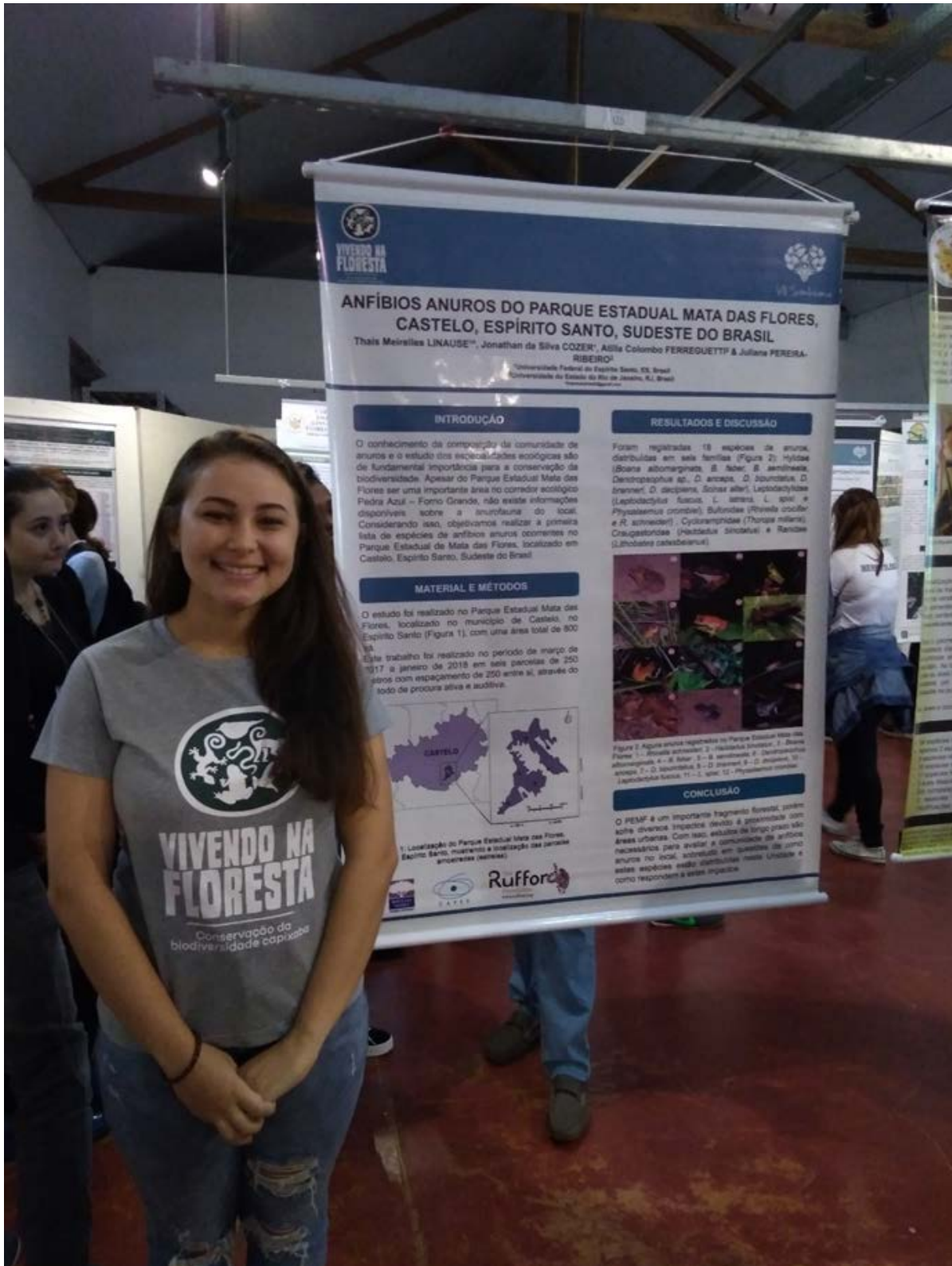
Left: Performing the acoustic shell methodology to identify the vocalizing species.  
Right: Performing active search for amphibians in the litter.





Measuring depth of litter

Event presentations



Thais Meirelles presenting work on the anurans of Mata das Flores State Park.

**VIVENDO NA FLORESTA**

# ANFÍBIOS ANUROS DO PARQUE ESTADUAL MATA DAS FLORES, CASTELO, ESPÍRITO SANTO, SUDESTE DO BRASIL

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## INTRODUÇÃO

O conhecimento da composição da comunidade de anuros e o estudo das especialidades ecológicas são de fundamental importância para a conservação da biodiversidade. Apesar do Parque Estadual Mata das Flores ser uma importante área no corredor ecológico Pedra Azul – Forno Grande, não existe informações disponíveis sobre a anurofauna do local. Considerando isso, objetivamos realizar a primeira lista de espécies de anfíbios anuros ocorrentes no Parque Estadual de Mata das Flores, localizado em Castelo, Espírito Santo, Sudeste do Brasil

## MATERIAL E MÉTODOS

O estudo foi realizado no Parque Estadual Mata das Flores, localizado no município de Castelo, no Espírito Santo (Figura 1), com uma área total de 800 há. Este trabalho foi realizado no período de março de 2017 a janeiro de 2018 em seis parcelas de 250 metros com espaçamento de 250 entre si, através do método de procura ativa e auditiva.




Figura 1: Localização do Parque Estadual Mata das Flores, Castelo, Espírito Santo, mostrando a localização das parcelas amostradas (seteiras).

## RESULTADOS E DISCUSSÃO

Foram registradas 18 espécies de anuros, distribuídas em seis famílias (Figura 2): Hylidae (*Boana albomarginata*, *B. faber*, *B. semilineata*, *Dendropsophus* sp., *D. annectans*, *D. sibilatrix*, *D. branneri*, *D. decipiens*, *Sonax alata*), Leptodactylidae (*Leptodactylus fuscus*, *L. lemnis*, *L. spixi*), Physalaemus ornatus), Bufonidae (*Rhinella crucifer* e *R. schneideri*), Cycloramphidae (*Thrinacoselache*), Craugastoridae (*Haddadus binotatus*) e Ranidae (*Lithobates catesbeianus*).




Figura 2: Alguns anuros registrados no Parque Estadual Mata das Flores. 1 - *Boana albomarginata*; 2 - *Haddadus binotatus*; 3 - *Boana albomarginata*; 4 - *B. faber*; 5 - *B. semilineata*; 6 - *Dendropsophus* sp.; 7 - *D. sibilatrix*; 8 - *D. annectans*; 9 - *D. branneri*; 10 - *D. decipiens*; 11 - *L. spixi*; 12 - *Physalaemus ornatus*.

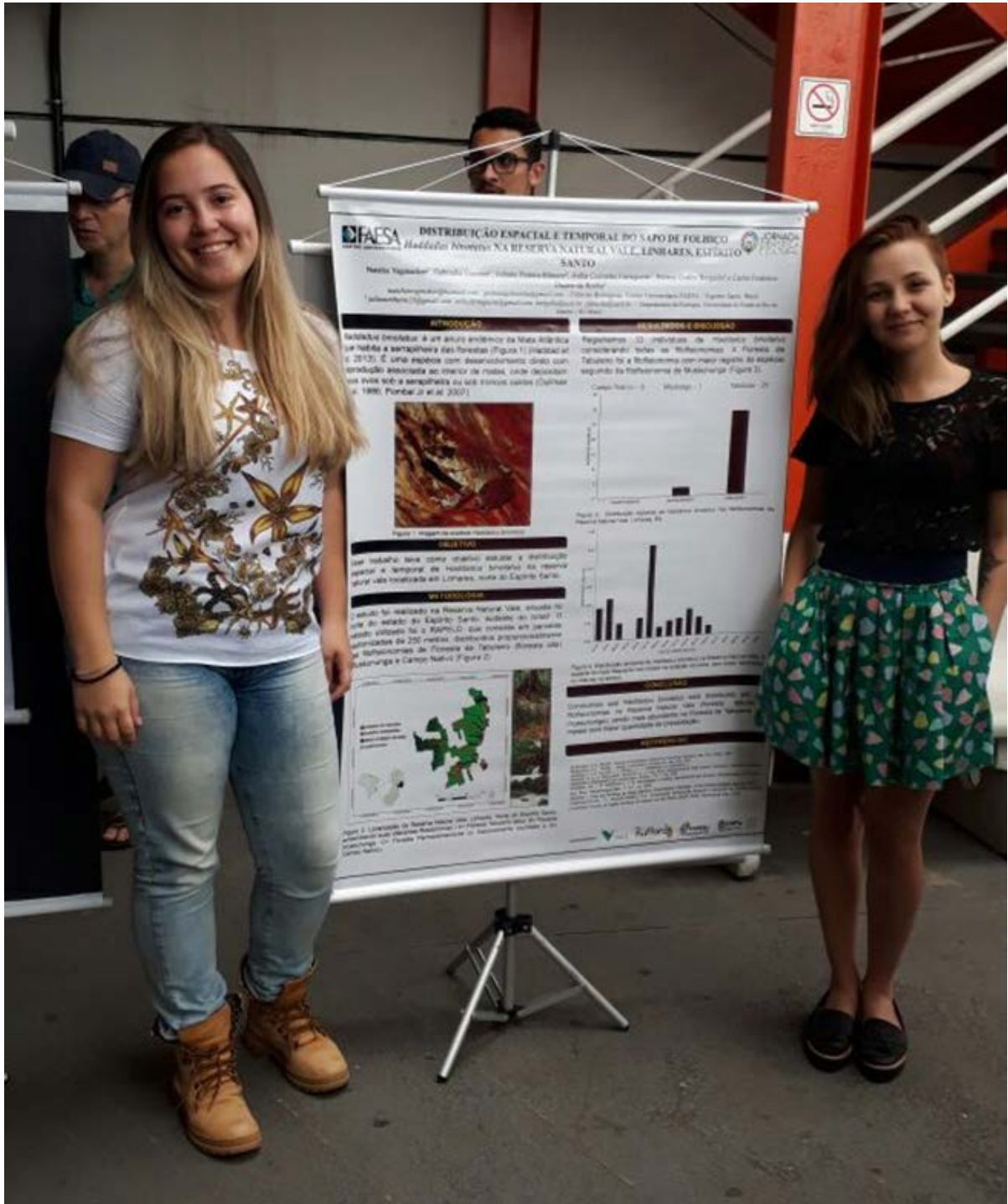
## CONCLUSÃO

O PEAM é um importante fragmento florestal, sendo fonte diversos impactos ambientais. A conservação das áreas urbanas para evitar a extinção de espécies de anuros no local, sobretudo em ambientes de áreas estas espécies ainda distribuídas, sendo necessário como responsável a área urbana.

**Rufford**

CAPEL

Banner about the anurans of Mata das Flores State Park.



Gabriela Gusman and Natália Vagmaker presenting work on the ecology of *Haddadus binotatus*.

## Lectures



Juliane P. Ribeiro lecturing on methodologies for studies with amphibians



Juliane P. Ribeiro lecturing on the life of amphibians for children.



Juliane P. Ribeiro lecturing on the life of amphibians for children

Link of the report on this presentation on the website of the state environmental agency: <https://iema.es.gov.br/Not%C3%ADcia/alunos-participam-de-palestra-sobre-anfibios-no-parque-estadual-mata-das-flores>

### Participation of management plan with managers of the areas studied



Course on monitoring of fauna taught by Juliane Ribeiro and Atilla Ferregueti.



Link of the report on this presentation on the website of the state environmental agency: <https://iema.es.gov.br/Not%C3%A1Dcia/capacitacao-mostra-a-importancia-da-sistematizacao-de-dados-de-monitoramento-ambiental>

Workshop to prepare the management plan for the Duas Bocas Biological Reserve.

Link of the report on this presentation on the website of the state environmental agency: <https://iema.es.gov.br/Not%C3%A1Dcia/workshop-sobre-a-reserva-biologica-duas-bocas-e-realizado-na-ufes>



Species registered

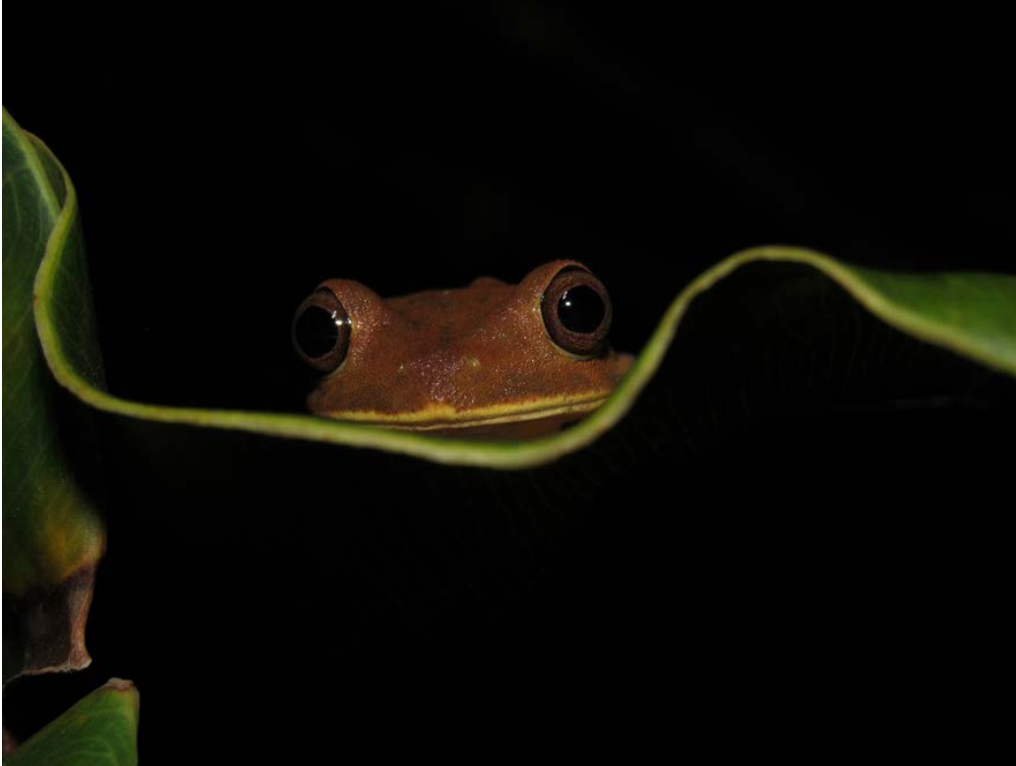


*Sphaenorhynchus planicola*



*Proceratophrys schirchi*





*Boana semilineata*



*Ololygon argyreornata*



*Scinax kautsky*



*Physalaemus crombiei*



*Ischnocnema oea*



*Euparkerella tridactyla*