

## The Rufford Small Grants Foundation

### Final Report

---

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

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. 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. 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**

---

#### Grant Recipient Details

<b>Your name</b>	Nina Attias
<b>Project title</b>	Ecology of Armadillos (Mammalia: Cingulata) in the Pantanal Wetlands of Brazil
<b>RSG reference</b>	13680-1
<b>Reporting period</b>	November 2013 – November 2014
<b>Amount of grant</b>	£5938
<b>Your email address</b>	nina.attias@gmail.com
<b>Date of this report</b>	27/Oct/2014

**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
Capture individuals		X		We were able to capture individuals of two of the three target species and we hope to add one more species to the study in the next months.
Attachment of GPS and radio tracking devices on animals			X	All the captured animal were attached with either a GPS or a radio device.
Animal monitoring		X		Each animal will be monitored for 1 year. For now, the animals that have been monitored for the longest have been monitored for 7 months.
Estimate home range			X	This is a 2-year project. Since we do not have all the data, we have not yet performed our analysis.
Characterise habitat use		X		This is a 2-year project. Since we do not have all the data, we have not yet performed our analysis.
Characterise activity patterns			X	This is a 2-year project. Since we do not have all the data, we have not yet performed our analysis.
Characterise diet		X		We have already processed part of the faecal samples of the yellow armadillos and one of our undergraduate students is doing her final work with this information.
Identify ectoparasites			X	All the collected parasites were identified by one of our collaborators.
Genetic analysis		X		Our collaborator has already created the genetic markers but has not finished the analysis yet.
Estimate the degree of overlap of the spatial, temporal and dietary niche dimension of these species	X			Since we do not have all the data we have not yet performed our analysis.
Student training			X	We have trained 2 undergraduate students in our project that did their final work with us. One was a veterinary student and the other an ecology student.
Communicating with the general public			X	With the help of a local NGO we have organized an exposition about the "Armadillos of the Pantanal" where an

				interactive exhibition was set, with photos, videos and sounds. The expo was open for a period of 2 months and received school groups and the general public. It was closed with a special day of activities that included a talk about our project.
--	--	--	--	--

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

We were not able to capture any individuals of *Cabassous unicinctus*. As we noticed during our study, this species has a very short above ground activity period (about 30 minutes per day) which made it very difficult to find and capture the animal with our techniques. We found only one individual of this species, but it was outside of our study site and we had no permission to work in the area.

We also had some logistic difficulties since the agency who was supposed to help us with the fuel, food and accommodation costs could not provide us with the expected amount of financial support. Hence, we are now looking for new sources to support these expenses.

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

We believe our project has contributed to the conservation of armadillos and the Pantanal ecosystem in many forms. We have contributed with the generation of new scientific information, increasing the awareness of the general public concerning conservation issues of the region and with the training of future conservation professionals.

We were able to communicate with the general public through the exposition organized in partnership with the "Fundação O Boticário para Conservação da Natureza" we were able to bring to the public information on the armadillo species of the region, concerning their biology and specially their conservation.

We were able to obtain fine scale information on the movement pattern of armadillos with the GPS telemetry method. This is the first time anyone has accomplished that with our studied species in South America and allows us to understand with more precision and confidence their movement patterns, habitat use and activity range. Additionally, besides the expected information on the spatial ecology and diet of armadillos, we have gathered unprecedented data on the parental care of yellow armadillos. We were lucky to monitor closely three pairs of mother-and-son and observe their patterns of activity, habitat use, burrowing activities, parental care and survival rates. This behaviour has never been monitored in the wild before and can be very useful for the conservation of the species.

We were happy with the outcomes of the training experience provided during this project. Both students who participated on our activities reported this to be a unique, life-changing experience and a turning point in their careers. The ecology student is doing her final undergraduate monograph on the dietary ecology of yellow armadillos. The veterinary student has graduated and has decided to pursue on the field of wild-animals veterinary, which he was unsure it was a viable career prior to his internship in the project. He will now continue in our project and be part of our research team as a professional vet.

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

With the help of a local NGO we have organised an exposition about the "Armadillos of the Pantanal" where an interactive exhibition was set, with photos, videos and sounds. The expo was open for a period of two months and was closed with a day of activities that included a talk about our project.

We will also organise a day of activities, similar to those provided during the exposition, to the children of the rural public school located at our study site.

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

Yes. This is actually a work under course. This is a PhD project and has a total duration of 4 years. The project is currently in its first year of fieldwork. We still have one more year of fieldwork to accomplish the aimed results. After this period, we also have hopes of transforming this in a long term armadillo conservation project.

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

The information generated in this project will be made available to the scientific community primarily through the development of a doctorate thesis with all the data gathered, analysed and interpreted. The information will be made available to the broad scientific community through the publication of comprehensive research papers, to be published in specialised journals. The first paper, on the influence of temperature on the activity pattern of yellow armadillos, has already been submitted for publication. Segmented information will be presented in national and international scientific meetings and in local lectures during the execution of the project. Partial information will also be made available through monographs and dissertations of the undergraduate students involved in the project.

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

The RSG grant was used mainly in the first 4 months of the project. The grant was essential to acquire the equipment necessary to begin the project, i.e. VHF radios and GPS equipment, without which we would not be able to start the project. This follows the original expenditure schedule.

**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
21 Body Implant – Coil Antenna ATS M1230	2016	2016		
14 Glue On transmitter ATS R1920	1080	1080		
10 Glue On GPS Tracker	2580	2580		
1 GPS Garmin 62sc	262	262		
Total	5938	5938		

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

We have to focus on continuing the monitoring of the animals that have already been marked and try to capture individuals of the other armadillo species of the Pantanal, such as the three-banded

armadillo (*Tolypeutes matacus*), the naked-tailed armadillo (*Cabassous unicinctus*) and the giant armadillo (*Priodontes maximus*). This action will provide a better understanding of their coexistence mechanisms and allow the planning of conservation strategies for the whole 'guild' of burrowing animals of the Pantanal.

The long-term monitoring of the marked animals will allow us to understand the degree of home-range fidelity in armadillos, an important aspect for long-term conservation of the species. We have also noticed a seasonal variation in the burrowing behaviour of yellow armadillos and a multi-season study will allow us to understand what triggers this behaviour. This is a very important aspect for the conservation of armadillos in the Pantanal. When armadillos increase their burrow building activities the number of accidents with horses and sheep in armadillo burrows increase and they are commonly persecuted by local ranchers.

Finally, we have to continue communicating with the broad public, making them more familiar with the species and with their conservation threats. This seems to be an essential strategy for the long-term conservation of the fauna of the Pantanal.

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

No materials were published yet. However, RSGF received publicity during the "Armadillos of the Pantanal" exposition.

**11. Any other comments?**

We would like to thank the Rufford Foundation for providing us with an essential support for the execution of this project.