

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. 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	Boris Marioni
Project title	Local communities monitoring black caiman (<i>Melanosuchus niger</i>) and spectacled caiman (<i>Caiman crocodilus</i>) populations for management purposes in Piagaçu-Purus Sustainable Development Reserve (SDR), Central Amazon, Brazil.
RSG reference	50.05.09
Reporting period	December 2009 – January 2011
Amount of grant	£ 5,824
Your email address	bmarioni@mac.com
Date of this report	February 2011

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
1. Carry out standardised spotlight surveys to evaluate the status of caiman populations			X	We were able to monitor effectively the caiman population (relative abundance and size structure) during 2009 and 2010 dry season, as part of a long-term monitoring programme carried out in Piagaçu-Purus reserve since 2005.
2. Improve local capacity to gather valuable biological information of caiman populations, useful to guide future sustainable harvesting programmes		X		Although few monitors were actually trained (10), the protocol for data gathering was discussed, elaborated and implemented in cooperation with local hunters. In three communities, local people are interested in starting monitoring in 2011.
3. Expand a small, community-based Caiman Nest Monitoring Programme		X		The record dry season of 2010 prevented us expanding the programme to new areas. The experience to join caiman nests monitoring effort with community-based <i>Pirarucu</i> fish programme was successfully carried out on a small scale.
4. Research the reproductive ecology of nesting females and evaluate nesting success			X	We captured 65 nesting females and gathered data on clutches produced. Nests survivorship was accurately studied and valuable biological information on recent-born hatchlings were collected.
5. Develop a management plan for caimans with local stakeholders and implement caiman conservation activities in local schools.		X		A complete management plan is built over a longer period of time and discussions with local communities were regularly carried out during field trips. Development of communitarian monitoring programmes is just a single part of a complex process involving a great diversity of actors. Regular activities in local schools were not possible due to the absenteeism of teachers. However, basic research activities were carried with almost 20 children from three different communities.

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

Global climatic change is affecting the central Amazon forest. During 2009 and 2010 the highest and lowest water levels were registered, respectively, in main Amazonian rivers since 1903. The extreme water level variation of almost 20m, were responsible for logistical difficulties for field activities. The local boat we initially wished to use could not serve its purpose because the access to most water bodies was almost impossible due to extreme drought. We had to concentrate efforts in a more restricted geographical area. However, the quality and quantity of information collected on reproductive biology was greater compared to previous years. On the other hand, the great 2009 high water level provided us access to almost all available water bodies. This gave us the opportunity to collect important data on the distribution of dwarf-caimans (*Paleosuchus palpebrosus* and *P. trigonatus*).

Brazilian banking bureaucracies prevented me accessing the grant money in 2009, and actually, the project had to start in early January 2010, this forced us to concentrate activities granted with RSG money in 1 year. Nevertheless, we did not miss data from 2009, since field activities were carried out with the help of other funds and the data gathered could be added to the present study.

Effective community organisation and local people training programmes can take a long time to be created. Historical misunderstandings can create complex divisions between local people. However, groups of people deeply interested on getting involved on caiman monitoring and management are growing in low Purus river region.

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

The Rufford Small Grant permitted us to keep strengthening a long-term caiman population monitoring programme of in the Piagaçu-Purus Sustainable Development Reserve. During two distinct dry seasons we were able to carry out standardised night surveys and collect data on species distribution, abundances and size structure of the population. During 2009 and 2010 dry season we surveyed more than 100 Km of shoreline.

Since water level is the most important environmental variable affecting caiman densities, our surveys were carried out with similar levels through the years. The proportion between spectacled caiman (*Caiman crocodilus*) and black caiman (*Melanosuchus niger*) were similar throughout the study period (60% and 40%, respectively). In 2005 only 15% of observed *C. crocodilus* were adults (Snout Vent Length > 60cm); however, during 2009-2010, 45% of individuals of this species were sexually mature. For *M. niger* we detected the same trends. The frequency of adult individuals (SVL > 100cm) grows from 5.5% to 14% of all surveyed individuals between 2005 and 2010.

A possible indicator that illegal and uncontrolled caiman poaching has been reduced in the last five years in the Piagaçu-Purus SDR, is the fast recovering of the adult population in the region, especially of *C. crocodilus*. However, *M. niger* populations need more time to completely recuperate due to bigger size and lower growing rates.

Nest survivorship was efficiently studied in the nesting season of 2010. Reproductive biology is also monitored since 2005. With the help of RSG and collaboration with Laboratory of Zoology applied to Conservation (Federal University of Amazonas State, Brazil, UFAM), a student of Aveiro University

(Portugal) completed his undergraduate thesis. More than 100 nests were monitored in five water bodies. The objective of this work was to evaluate the effect of the researcher on nesting success of *C. crocodilus*. This was accomplished by capturing females and manipulating eggs in different levels of possible disturbance, and verified with repetitive visits to the nest-site. During this work, local monitors participated actively as guides and field assistants. Data are still being processed and we plan to submit the results to be published in a relevant scientific journal and presented in a related congress. During 2010 dry season, local nests monitors working in partnership with *Pirarucu* fish monitors (*Arapaima gigas* - the world's largest freshwater fish), searched caiman nests during 5 days and locating over 200 caiman nests in seven different water bodies. Also, the project team and local field assistants found 96 caiman nests in 2009 and 133 in 2010. During the study we captured 65 nesting females and opened 58 *C. crocodilus* nests, around 20% of these nests were encountered hatched and 17% predated.

Throughout the whole project local inhabitants actively participated in different phases. We organized several meetings to discuss natural resources use and communitarian monitoring. Ten local caiman hunters helped us to elaborate protocols for data collection based on regional knowledge and their experience working with caimans, which was a significant contribution to our objectives. To monitor caiman populations, three different communities prepare the creation of groups of local inhabitants; motivated by the success of the *Pirarucu* harvesting programme, which is an example of a valuable natural resource recently harvested legally based on a management plan. Local authorities have interest in support such monitoring initiatives and collaboration with other regional community-based monitoring programs will be beneficial to local hunters.

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

This was the first experience in the State of Amazonas implementing a complete community-based caiman monitoring programme, which was inspired on a similar and previous work carried out in nearby Santarém, State of Pará. Although an effective programme is not completely mounted yet, the interests of local communities to participate have increased during the lapse of this project. An initial group of monitors is already collecting information on the location of caiman nests. Local associations are discussing modality of conservation (enforcement, monitoring, organisation, commercialisation, etc...) and improve their abilities to work together. Capacity building of community leaders has been strengthened by the opportunity to learn from other experiences, such as the first *Arapaima* legal harvesting programme, or by visiting different protected areas. Their participation is fundamental for the elaboration of caiman management plans, which can represent an important income to local families and also contribute to the conservation of the species and their habitats.

Monitoring of harvested species is one of the keys when developing a management plan. Based on similar realities of other programmes, local hunters are now conscious of the importance of carrying out population surveys and locating reproductive females, allowing the control of caiman populations with low costs and coupled to other fishery or enforcement activities.

5. Are there any plans to continue this work?

Depending on expected funds, the project should continue the implementation of the local monitoring programme in three communities. A group of about 10 people will be organised in each

community to monitor caiman populations in water bodies inside their habitual area of use. The objective is to effectively protect nesting areas and females, and estimate possible harvesting quotas based on the size and structure of adult male populations, as suggested by IUCN SSC/ Crocodile Specialist Group.

Our results should provide valuable information on biological and ecological aspects necessary for the implementation of a responsible communitarian management programme. To achieve this objective, we should be able to continue our research to elucidate the trends of caiman populations under different levels of pressure.

Joining efforts with other monitoring programmes is also important for local users to understand the different profound relationships between sympatric species and their complex habitats.

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

Parts of activities carried out at the beginning of 2010 were already presented during the 20th Crocodile Specialist Group Meeting, held in Manaus, Brazil in September 2010. Seven abstracts were submitted and accepted by a scientific commission. All of them cited Rufford Small Grant as an economic supporter and RSG logo was properly used in oral presentations.

Some of the results obtained during this study will probably be part of complete publications in regional, national and international scientific journals, including peer-reviewed publications. Participation in national/international congress is also considered during 2011 to present final results.

Institutional collaboration, especially with regional authorities (SDS) and federal universities (UFAM) are always maintained and results shared; to build effective conservation projects. Our relationship with Instituto Mamirauá is also a great opportunity to strength teamwork with other conservation partners.

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

1. **September – December 2009:** Field trip to Piagaçu-Purus reserve to monitor caiman populations. Information was collected on population densities, size structure, sex-ratio and reproductive biology. We also began the first discussions with local hunters on caiman monitoring.

2. **January 2010:** End of Bajaquel project, funded by Brazilian federal government. RSG helps for part of local assistant payments and permits students of UFAM to participate of field activities (not initially previewed by RSG).

3. **March 2010:** Continue study on the distribution of *Paleosuchus spp.* in the Piagaçu-Purus Reserve and surrounding areas. We were able to capture all four Amazonian caiman species in a single night on the shores of the same single lake. Due to limited budget (not initially previewed by RSG) we carried out such surveys only once a year.

4. **September 2010:** First half was dedicated to an international congress in Manaus. At the end of the month, five-days field trip to discuss organization with local communities. The driest season registered in more than 100 years limited the access to most water bodies.

5. **October-December 2010:** Data collection in the northern region of the Piagaçu-Purus SDR. Nesting success was accurately surveyed in five different localities where high nest densities were registered. Night surveys were carried out only in main canals and lakes due to low water level. Two new localities were also visited, the Jacaré Lake and Piranha Lake region, located around 100km of Manaus (not initially previewed by RSG). Legally not protected and with interesting caiman populations apparently not subject to illegal hunting. Data collected permitted us to estimate the real impact of irregular poaching and the possible future impact of legally organised caiman harvesting and commercialization. Communities from these places are also interested in monitoring local caiman populations.

6. **January-February 2011:** Data gathered is being analysed and the final report prepared to be submitted to Rufford Foundation.

7. **March – April 2011:** With the rest of the grant (~ 8% of initial amount, see section 8) we are planning a final meeting in two communities where caiman monitoring will be carried out in the next dry season. Results of previous work will be discussed and priority zones to be protected will be indicated. T-shirts with RSG logo-mark and project title will be distributed among the participants.

Initially supported by Wildlife Conservation Society (WCS - 2005/09), the project was funded over 14 months (Jan 2010 – April 2011) by RSG, over a previously planned period of 5 years (2009-2014) to finish 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.

Exchange rate used: £ 1,00 = R\$ 2,64 (Brazilian Real)

Item	Budgeted Amount	Actual Amount	Difference	Comments
Fuel	£ 1.878 R\$ 4.957	£ 2.632,6 R\$ 6.948	+ £ 754,6 + R\$ 1.991	Almost over 40% of initial amount of fuel was bought. Part of the money budgeted as regional boat rent (£ 940) was used to buy extra fuel necessary for overboard motors.
Field assistant	£ 1.096 R\$ 2.893	£ 780 R\$ 2.059	- £ 316 - R\$ 834	The exceeding were used to cover fuel dispense or are still disposable
Food supplies	£ 1.127 R\$ 2.975	£ 860,5 R\$ 2.270	- £ 266.5 - R\$ 705	The exceeding were used to cover fuel dispense or are still disposable
Material	£ 594 R\$ 1.568	£ 465 R\$ 1.227	- £ 129 - R\$ 340	The exceeding were used to cover fuel dispense or are still disposable
Transport	£ 189 + £ 940 R\$ 2.980	£ 644 R\$ 1.700	- £ 485 - R\$ 1.280	Because of dry season we do not rent regional boat (£ 940), but travel with regular boat to reach activities area and than moving with small overboard motor
TOTAL	£ 5.824,00 R\$ 15.375	£ 5.382,10 R\$ 14.208	- £ 441,9 - R\$ 1.167	The exceeding money will be used in march 2011 to carry out a reunion where results will be presented and discussed with involved

				communities. T-shirt will be offered to hunters involved in Caiman monitoring program.
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9. Looking ahead, what do you feel are the important next steps?

In my opinion, two different steps should be targeted.

First, the implementation of effective community-based caiman monitoring programmes expanding to other interested communities within the Piagaçu-Purus Reserve. These programmes should integrate other natural resources to be monitored, which can be found in the same areas and/or periods of the year. For example, joining the monitoring activities of *Arapaima* fish with caiman nest-surveys showed successful results during this study because both activities are overlapped in time and space and they do not prejudice each other. Local participants can concentrate their monitoring activities on several water bodies in only a few days if they join efforts to monitor more than one species at the time. We began to record the actual consumption of yellow-spotted river turtle (*Podocnemis unifilis*) in one community of the lower Purus River. This activity should be integrated within the monitoring programmes as well. In this way, three of the most important natural resources for local residents (caiman, *Arapaima* fish and river turtles) should be correctly monitored and maybe legally harvested for familiar subsistence or commercial purposes.

The second step should be the expansion of such integrated monitoring programmes beyond the limits of the Piagaçu-Purus Reserve to other areas with important caiman and *Arapaima* populations such as “Jacaré” village and the “Piranha” lake region. Preliminary results in these areas indicate a great potential for these species. The interest of local communities to join monitoring efforts is also evident in these places. This is important specially because the region is not legally protected and this could represent a real threat to the integrity of natural habitats, biodiversity and local inhabitants’ well being.

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?

September 2010: During the 20th Crocodile Specialist Group World Meeting seven oral presentations used and acknowledged Rufford Foundation for its financial support.

March – April 2011: T-shirt (~50) with RSGF logo will be distributed to Piagaçu-Purus monitors and UFAM students who participated in the project.

July 2011: We plan to present an oral presentation in the next Latin American Herpetological Congress.

11. Any other comments?

The project team would like to really thank our master and friend John Thorbjarnarson who unfortunately died from malaria last February 2010. Without him and his efforts, crocodilian conservation loses a great person to motivate, coordinate and support the new generation of researchers we represent.