

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	Natalia A. Rossi
Project title	Conserving American Crocodiles (<i>Crocodylus acutus</i>) in a Key Cuban Wetscape
RSG reference	13603-1
Reporting period	June 2013 - May 2014
Amount of grant	£4594
Your email address	nar2118@columbia.edu
Date of this report	May 16th 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
*Identify areas of high crocodile density within the Wildlife Refuge Monte Cabaniguan- Ojo de Agua (WRMC), Cuba, that need to be prioritised for conservation			X	During our field expedition, we were able to identify a minimum of 10 high density crocodile areas within the WRMC, most of these within interior lagoons of the mangrove, critical to the survival of hatchlings and juveniles
*Conduct a field expedition to the WRMC in south-eastern Cuba to collect population data and skin tissue crocodile samples for further genetic analyses at the American Museum of Natural History			X	We were able to get permits to conduct our field expedition at the WRMC, as well as export and import CITES permits to bring collected crocodile skin tissue samples to the Sackler Institute of Comparative Genomics at the American Museum of Natural History (AMNH)
*Conduct a population genetic structure analysis of <i>C. acutus</i> across the Caribbean and Central America to identify conservation management units within the WRMC and across <i>C. acutus</i> geographic range		X		Samples were successfully brought to the AMNH and I am currently working in the lab to: 1) extract DNA, 2) amplify specific regions of the genome (PCR); and 2) sequence those regions. Within the following months I will be able to fulfil this objective, and perform population genetic structure analyses and identify conservation management units for <i>C. acutus</i>
*Map key areas of crocodile nesting within the WRMC that need to be prioritised for conservation			X	We geo-referenced and mapped five communal crocodile nesting areas within the WRMC; these include Jobabito (71 nests), Salinas (56 nests), Jijira (18 nests), Soloburen (4 nests), and Ojo de Agua (2 nests).
*Incorporate findings in the bi-annual WRMC management plan			X	Results of our research including high density crocodile areas and key areas of crocodile nesting were incorporated in the 2014 - 2016 management plan for the WRMC. The management plan considers key nesting areas not-suitable for any time of recreational use during the nesting season. It also limits the use of boats and small vessels that may

				interfere with crocodile nesting activity. The management plan was developed in collaboration with Jobabo community members and presented the Empresa Nacional para la Proteccion de la Flora y la Fauna in Havana.
*Recruit eight community members from Jobabo, town nearby the WRMC, to be trained in beach-based and water-based crocodile surveys during 6-8 weeks of fieldwork.			X	Community members participated in the totality of the field expedition, as well as the drafting of the WRMC management plan.

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

Delays in the processing of the research visas required by Cuba to conduct my work in Cuba made me postpone the trip for a week. However we could still fulfil the original research plan

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

The three most important outcomes of this project include:

1. Conduct a successful field expedition to the WRMC. Differently from other places in the world, field expeditions in Cuban protected areas are more challenging in terms of the bureaucracy and logistics involved. Our project achieved a very successful expedition, where we located and registered a total number of 146 crocodile nests across four nesting sites; marked, measured, and weighted 150 recently emerged hatchlings; collected skin tissue samples from the hatchlings for further genetic analyses at the AMNH.
2. Identify high density areas critical for the survival of hatchling and juvenile *C. acutus* and key nesting areas that secure population persistence.
3. Incorporate community members into the conservation process; by training them in crocodile monitoring techniques; and contributed to the design of the 2014 action plan for the management of American crocodiles in the WRMC.

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

Up until recently, WRMC personnel include Director of the wildlife refuge Dr Manuel Alonso Tabet and a team of five field assistants (all members of the local community of Jobabo). Thus, knowledge of this area lies within a reduced group of extremely capable and experienced team. However, and in light of an expected increase of visitors to the area, community involvement has started to be very important to increase protection for this wetland ecosystem and its species. During our project, we provided training eight locals in crocodile monitoring techniques and general knowledge about the WRMC. In addition, trainees participated in the drafting of the WRMC management plan. Their involvement was successful and there is an opportunity for them to be incorporated

5. Are there any plans to continue this work?

Continuity of our crocodile conservation work will be assured by WRMC Director Dr Manuel Alonso Tabet and his research team, with the collaboration of Dr Georgina Espinosa Lopez from the University of Havana (UH), as well as international support by members of the IUCN Crocodile Specialist Group, and my collaboration. I am currently planning a field expedition for June-August 2014, to continue our efforts to support and encourage the protection of key crocodile habitat within the WRMC. In addition, as the official authority of the protected area, Dr Manuel Alonso Tabet will further work in crocodile conservation at the WRMC after my doctoral research is completed. Also, Dr Espinosa Lopez, head of the conservation genetics lab at Universidad de la Habana, will continue to collaborate in research and conservation of *C. acutus* in the WRMC through supervising related projects of BSc and PhD students at her lab. Furthermore, and with the main goal of assuring continuity of conservation efforts proposed by this project, I am currently working on the organization of a workshop on the "Conservation of American crocodiles (*Crocodylus acutus*) of Cuba" to be held within the next IUCN Crocodile Specialist Group (CSG) Meeting in Louisiana during May 2014. The IUCN CSG will be able to support travel fellowships for up to five Cuban crocodile researchers to attend this meeting, including Dr Manuel Alonso Tabet. The possibility for Cuban crocodile researchers to present results of this project and establish exchanges with other crocodile experts working on *C. acutus* elsewhere will provide grounds for strengthening potential research collaborations, furthering crocodile conservation work in Cuba. Throughout my PhD, I will continue to help create communication and exchanges amongst Cuban crocodile researchers and crocodile experts from other countries in the world to facilitate and secure continuing support.

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

In November 2013, we showed preliminary results of our work at the meeting "*Conservation and Management of Crocodiles of Cuba*" within the IX Simposio Internacional de Humedales, which took place in the Zapata National Park from November 12th to 15th. This session brought together 25 crocodile researchers, technicians and managers from across Cuba, as well as three specialists working in crocodile conservation in the Everglades, US. Participants included professors and researchers from Universidad de La Habana, ENPFF authorities, crocodile researchers from Manzanillo, Isla de la Juventud, las Tunas, Macurijes, Pinar del Rio, Zapata, and the Everglades. All project participants (of our RF project) were able to attend, including Jobabo community members. The gathering of key researchers, technicians, and managers working in *in situ* and *ex situ* crocodile conservation in Cuba provided a platform to identify threats, gaps in knowledge, and main needs to further protect and manage these species. In addition, I wrote blog for the "Women in Conservation" series at LiveScience for Women's History Month (<http://www.livescience.com/44219-women-hunting-crocodiles.html>) which depicts the conservation work we carry out at the WRMC. We anticipated publishing our findings in at least two peer reviewed journals within the following 6 months. We will also plan to present results of our work at the IUCN Crocodile Specialist Group Meeting to be held in Louisiana from May 23rd to May 30th 2014.

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 Rufford Foundation grant was used in preparation for the field expedition to the WRMC for equipment purchase (June 2013) and to cover all costs during the field expedition (end of June, July and August 2013). I continue to work on the project since returning from the field. This mainly

included laboratory work at the AMNH, and organisation and presentation of results at the International Wetland Symposium in November 2013 in Zapata Cuba.

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
Airfare New York to Havana, Cuba, for project leader (PL round trip)	132	132	0	
Ground transportation (car rental) – Havana to WRMC (round trip)	132	400	368	I needed to complement this amount with additional funds
Gas for car rental -Havana to WRMC (round trip)	264	300	36	
Water-based crocodile surveys at the WRMC - Boat trips gasoline	1320	1320	0	
Lodging and meals for team at the WRMC	1716	1716	0	
2 Nets for crocodile capture	153	150	3	Used to complement gas for car rental
4 Spotlights for crocodile counts	110	100	10	Used to complement gas for car rental
3 Camera traps for crocodile nesting monitoring	356	356	0	
2 GPS	145	155	10	
200 Vials for sample collection –crocodile skin tissue samples	132	120	12	Used to complement GPS costs
4 Thermometer /Humidity measurer	36	36	0	
1 External hardrive for data backup	98	120	22	
Total	4594			

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

It is important to continue to strengthen collaborations, communication and exchanges with Cuban colleagues at the WRMC and Universidad de la Habana. In order to provide continuity of our efforts to protect unique mangrove ecosystems and the American crocodile, their top predator and landscape engineer, we need to secure resources to continue generating important information to be incorporated in protected area management plans. Through this project, we have built solid partnerships within our team, with members of the local communities and with academic institutions. Moving forward, we will need to expand our research to other relevant suits of species inhabiting the WRMC, as well as assessments for future anthropogenic (e.g. development) and environmental impacts (e.g. sea level rise).

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

All team members use The Rufford Foundation logo for our presentations during the IX International Wetland Symposium during November 2013 in Zapata, Cuba, and other presentations done at the University of Habana, the Empresa Nacional para la Proteccion de la Flora y la Fauna, the American Museum of Natural History, the Wildlife Conservation Society and Columbia University. In addition, all team members will include The Rufford Foundation logo in presentations for the upcoming IUCN Crocodile Specialist Group Meeting in late May 2014 in Louisiana.

11. Any other comments?

We remain extremely grateful to The Rufford Foundation for its generous support. The Foundation's support made our conservation work possible and allowed to achieve meaningful conservation outcomes to help protected areas such as the WRMC planning for the present and future, prioritising the conservation of key species – such as *C. acutus* - for the maintenance of healthy mangroves.