

Final Evaluation Report

Your Details	
Full Name	Valerie Andrea Corado García
Project Title	Current Population Status of <i>Crocodylus acutus</i> and their Anthropogenic Interaction in the Sarstún River Multiple Use Area, Izabal, Guatemala
Application ID	32726-1
Grant Amount	£5844
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Date of this Report	11/30/2021

1. 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
Estimate the population status and age structure of <i>Crocodylus acutus</i> in the Sarstún River				<p>To fully achieve this objective, it was necessary to extend the monitoring area to Rio Dulce and private reserve Bocas del Polochic in Izabal. Unfortunately, we observed a high level of negative impact due to human activities on the Sarstun River that included irresponsible use of gill nets, as well as plastic bottles and hydrocarbons along the river.</p> <p>Additionally, the protection level of the river border differed, causing a huge pressure over the natural resources, which has caused a social conflict between the local communities of Guatemala and Belize. This conflict posed a security risk of the research staff. Because of the issues we encountered on the Sarstún, we decided to expand our survey area to assess the population status and age structure of <i>C. acutus</i>.</p>
Identify the association between the vegetation structure and the relative abundance of <i>C. acutus</i> in the study sites.				
Identify the anthropogenic threats to the wild populations of <i>C. acutus</i> in the study sites				
Evaluate the knowledge, perception, and practices toward <i>C. acutus</i> population in the study sites.				

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

One difficulty that arose during the execution of the project was the low number of spotted individuals in March and April 2021 along the Sarstún River, with an encounter rate of 0.055 crocodiles/km, in 20 hrs of monitoring covering 71.5 km of the river. These results were attributed to: i) high levels of human activities in the monitoring area (e.g. cattle ranching, tourism and spearfishing at day and night); ii) fishing practices with different net types (e.g. gill nets and cast nets) and crab traps; iii) appearance of invasive species, such as *Oreochromis niloticus*; and iv) high presence of plastics (e.g. plastic bottles and bags) and hydrocarbons in the river. Since the river is located along the border of Belize, the gill net ban by the Belizean Ministry of Fisheries, Forestry, the Environment and Sustainable Development and the protection level in both countries is causing a huge pressure over the natural resources, developing a social conflict between the local communities of Guatemala and Belizean military security in the Sarstoon River, baulking the night surveys and risking the security of the research staff.

To achieve the objectives in the project proposal, we requested permission from The Rufford Foundation to expand our monitoring sites in the same department (Izabal) where had been reports of *Crocodylus acutus* presence in Parque Nacional Río Dulce and Refugio de Vida Silvestre Bocas de Polochic. Which allowed us to have a better understanding and a general scenario of the species' current situation in Izabal.

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

1. One of the most important outcomes is the high level of interest that NGOs (e.g., FUNDAECO and DEFENSORES DE LA NATURALEZA), private sector (a mining company in Izabal which have a private natural reserve), and CONAP (governmental institution) have shown during the project execution, since they were involved during the field trips and the educational workshops. Also, they have requested copies of our data collection sheets and pictures on how to collect tail scales so they could replicate our study and obtain more data to support us in developing a conservation programme for *Crocodylus acutus* in the medium term.
2. We could notice during the educational workshops that this was the first-time people from local communities received a more specific information about crocodiles and its importance in the ecosystem. Also, the communities showed a positive reaction with the crocodile conservation signs and understood the negative impact that could result from the disappearance of crocodiles in the area, especially the fishermen.
3. This project was very helpful to describe and recognise the multiple threats that *Crocodylus acutus* wild populations are facing due to the lower rate encounter in three study sites in Izabal. These data will support the CONAP decisions in international meetings to maintain the species in CITES I and

Category I in the Threats Species List from CONAP Guatemala, until more conservation projects allow to promote a sustainable use of the species.

4. What do you consider to be the most significant achievement of this work?

5. Briefly describe the involvement of local communities and how they have benefited from the project.

The local communities on the three study sites were involved during the interviews and educational workshops in which they participate and gave us excellent feedback on how they perceived the crocodiles related to their fishing practices. The participants understood the crocodiles' diet since they have the idea that humans are part of their food, also, learned to keep barnyard animals (e.g., chicken, pigs, etc.) away from the river's edge.

Additionally, we prepared three different signs that were placed in strategic sites around the community so all the local and non-local people could read them, and a had a spot on the radio in Q´eqchi´ (their native language) was released in December 2020 and January 2021 to promote the correct coexistence between humans and crocodiles and their conservation of the species in Izabal. Due to a meeting with Abel Sandoval Wildlife Department Director from CONAP Guatemala (Fig. 1) recommend us to develop this kind of activity because the people listen and talk in Q´eqchi´ but they do not read it.



Fig 1. Meeting with Abel Sandoval (Wildlife Department Director, CONAP Guatemala) who invited us to talk about the *C. acutus* project in Izabal.

6. Are there any plans to continue this work?

Yes, we have plans to continue due to the high interest showed by all the key actors (local NGOs, CONAP, private sector and local people), the next step is to monitor other water bodies in Izabal, place some traps, due to their evasive behaviour, to collect scale tissue from the crocodiles in the area and carry out a genetic analysis in collaboration with ECOSUR Institution in Mexico.

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

The preliminary results were shared in the last workshop in November 2021 with the key actors, then a report in Spanish will be delivered to all the institutions to replicate our study in the subsequent months. We shared a standard data collection sheet by google docs with the key actors to build up a baseline in which gathers crocodile sightings, relocation of individuals, accidents with crocodiles, tissue samples, crocodile deaths, etc. This data base will be handled by Tannia Sandoval from CONAP Izabal, to maintain a standardized method for data entry.

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

The grant budget was used from the end of February to end of November 2021, it was executed in the required time of the project.

9. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Support staff	507	695	+188	The difference was because we need to pay a specialist in Geographic Information Systems to elaborate several maps and land use in Izabal.
Workshops	234	558	+324	The difference was due to the radio spots and other materials as a support of our educational outreach in the local communities of our study sites.
Fuel and lubricants (local travel)	2340	1377	-962	The difference occurred since we monitored only two months in Sarstún river, which was the

				site with greater distance in comparison with Río Dulce or Bocas del Polochic.
Food (meals "per diem")	1326	1252	-74	The difference was given by the number of people in each field trip. Also, the meal costs varied between the area of Sarstún river and Río Dulce, being more expensive in Sarstún river.
Flights	468	537	+69	The difference was given by the variations on the airplane tickets in every three months during the whole year.
Unforeseen expenditure	430	515	+85	The difference was given by the extra equipment purchases need it in the field, boat parking in the Sarstún river area, courier, and banking expenses.
Field equipment	156	526	+370	The difference was given by the purchases in Amazon since some equipment wasn't available in Guatemala and the prices for other equipment increased due to inflation for COVID-19.
Project management	383	382	-1	The difference was given by the rate exchange of the sterling pounds to US dollars.
TOTAL	5844	5841	-3	(Exchange rate to Dollars \$1.32 and Exchange rate to quetzals Q. 7.68)

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

The most important next steps are to: i) further the alliance with the governmental sector to develop and implement a conservation programme with a greater scope in the social and educational sector, including a continuous educational outreach to the local communities; ii) continue monitoring the species in different rivers along Izabal complementary with genetic studies that allows us to determine the health of the population in the area; and iii) develop a programme which includes mitigation and prevention among threats that *C. acutus* faces.

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

Yes.

- Rufford Foundation logo was used in signs given to the local communities and DEFENSORES DE LA NATURALEZA NGO.
- In social media, CONAP promote the final workshop given in a Puerto Barrios, Izabal as a private event to present the project results.

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

Javier Benítez: Mexican biologist who participated in a valuable way to all the activities in the field, reviewing the activities during the workshops and writing monthly reports.

Tannia Paola Sandoval (Wildlife Director, CONAP Izabal): she oversaw the legal permissions to enter the protected areas in Izabal, and call key actors to the final workshop for the project.

Emilio Pitán (Sarstún river Director, FUNDAECO): he supported in giving us lodging in the area and gave us the key actors name to interview them for our project.

Andrés Caal Chalib (Río Dulce Director, CONAP Izabal): he guided us to monitor in strategic sites in Río Dulce to sight crocodiles in the area and supported us with convening local people to attend the educational workshops.

Luis Barrientos (Refugio de Vida Silvestre Bocas del Polochic Director, DEFENSORES DE LA NATURALEZA): he provided us boat and boat drivers to do the crocodile night surveys and gave us the legal authorizations to be in the private reserve. Also, supported us with housing during the field trip week.

Samuel Yatz: boat driver for Sarstún river hired from CONAP Izabal.

Natanael Caal, Elmer Tun and Joel Caal were our boat drivers hired by CONAP Izabal.

13. Any other comments?

In this part you can see:

- The signs given to the local communities.
- Photographs of our workshops.
- The post made in social media by CONAP.

SI DE PECES TE
QUIERES ALIMENTAR,
A LOS COCODRILOS
DEBES CUIDAR



English: "If you want to feed on fish, then the crocodiles you must conserve"

SI SEGURO QUIERES
NADAR,



DE LOS
COCODRILOS
TE DEBES CUIDAR



English: "If you want to swim safely, you must check out for crocodiles"



SÉ SABIO EN UN PAÍS DE
COCODRILOS



English: "be croc-wise in a croc-country"



SI TRANQUILO QUIERES ESTAR,
A LOS COCODRILOS
NO DEBES ALIMENTAR



English: "If safe you want to be, crocodiles should not be feed"





Educational workshops in local communities in Río Dulce, Izabal (Community Las Brisas, Community Camelias and Community La Esmeralda)



November workshop with local key actors that supported us during all the project was carried out in Hotel Tijax, Puerto Barrios, Izabal. Participants: Niquel Mining Company (CGN Compañía Guatemalteca de Níquel), CONAP Izabal and DEFENSORES DE LA NATURALEZA Staff.



Conap Consejo Nacional de Áreas Protegidas
17 Nov · 🌐

#CONAPNoriente en coordinación con la Reserva Privada Setal se realizó capacitación de Marcaje de Cocodrilo América, actividad donde se presentaron avances de la investigación sobre #CocodriloAmericano (*Crocodylus acutus*) que se lleva a cabo en el Área de Usos Múltiples del #Río #Sarstún, #Izabal a cargo de The Rufford Foundation y la presentación de rótulos que se colocarán en puntos estratégicos en áreas protegidas.

Participaron los administradores de las #ÁreasProtegidas Refugio de Vida Silvestre #BocasDePolochic y #PuntaDeManabique, área de Uso Múltiple #RíoSartún y Parque Nacional #RíoDulce, personal #técnico y #guardarecursos del CONAP.

Continuamos trabajando por la diversidad biológica y las áreas protegidas del país, junto a nuestros aliados estratégicos.

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Post in social media of CONAP about the last workshop for *Crocodylus acutus* project.