

## Final Evaluation Report

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Your Details	
Full Name	Lucy Perera-Romero
Project Title	Assessing impacts of human disturbances on jaguars and terrestrial vertebrate communities in the Maya Biosphere Reserve
Application ID	27440-1
Grant Amount	£4900
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Date of this Report	01/17/2020

**1. Indicate the level of achievement of the project’s original objectives and include any relevant comments on factors affecting this.**

The objectives of the project were aimed to be achieved after completing field activities and data analysis by May 2021. The objectives stated in this section relates to activities proposed in section 2.3, numerals 3 and 4, which were those proposed to be carried out in 2019.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
3ai. Camera trapping surveys, Dry season				
3a.ii. Camera trapping surveys, Wet season				This activity was restricted to obtaining additional funds. We restricted field sessions to only the dry season as no further funding sources were confirmed.
3bi. Point count surveys March – May 2019.				Dry season game bird point count surveys were conducted for 2 of the 3 months. Although we needed to restrict surveys for 1 of the 3 planned months (for similar reasons to the point above), the data collected, is still enough for analysis and will serve its original purpose.
4. Analysis of Data				This is still an ongoing process. Completed tasks include camera trap images collected in 2019 sorted by species and data formatting to detection histories for multispecies occupancy. Ongoing activities include multispecies occupancy analysis and identification of jaguar individuals. Pending activities include analysis for jaguar density estimation and formatting point counts data and analysis of gamebirds occupancy.

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

The most important difficulty was related to the US Government shutdown at the beginning of 2019, resulting in the cancellation of a US-government fund source that was positive in supporting this project. We then needed to conduct only the dry season surveys, reduce the number of field technicians and the effort deployed for point counts. These decisions had consequences for the original proposed budget.

Despite this, the information gathered is valuable for the assessment proposed and it will contribute to fulfil the original objectives proposed.

Another important difficulty was the restricted time allocation for analysis, as proposed from July 2019 to January 2020. Academic compromises (PhD preliminary examinations preparation) restricted this time considerably. As a result, analyses are still in process.

In terms of data collection, one foreseeable challenge will be the severity of the dry season during 2019. We can anticipate the analysis will need to be adjusted to take into consideration the great variation between both dry seasons.

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

In 2019 the most important outcome was to be able to conduct the field surveys with limited funds and great collaboration among partner organisations (WCS<sup>1</sup>, OMYC<sup>2</sup> especially). This data is fundamental for understanding how wildlife communities perform inside protected areas and far away from human forest use.

It was also essential to deliver the preliminary results of 2018 to personnel of OMYC and CONAP<sup>3</sup> and that they can use that preliminary information to communicate about the wildlife in Uaxactun. WCS, OMYC, and CONAP, in collaboration with other institutions in Guatemala, are preparing a series of short videos about our project in Uaxactun, highlighting the commitments that community forestry concessions have with wildlife and forest conservation.

The ongoing analysis is also a significant outcome. The surveys carried out in 2018 and 2019 are vast in terms of spatial spread of effort, quantity, and diversity of data collected. An example of this is the short note publication about waterholes during the dry season. The patterns reported for that publication were possible to obtain mainly as a result of such a significant effort (more than 150 sampled locations for each year). The patterns I want to study with the multispecies occupancy analysis also require such an effort (considerable number of spatial replicates and trap nights), and the fact that I am being able to use the proposed models for multispecies occupancy, is an important milestone.

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

During 2019 we had the participation of four of the 20 local hunters that were involved in 2018. Their successful insertion on the project is always representative of a secure income for at least four families and the message that wildlife monitoring is an alternative generating income activity for hunters. This was an important achievement as one of the goals of the initiative was to allow hunters to use their

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<sup>1</sup> Wildlife Conservation Society

<sup>2</sup> Organización de Manejo y Conservación, Uaxactun

<sup>3</sup> Consejo Nacional de Areas Protegidas

wildlife tracking abilities in activities such as wildlife monitoring and wildlife guides for tourism.

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

The project originally proposed to have 3 years of field data collection. Two of those years were already completed and there is only 1 pending year, which will be fundamental for one of the objectives of my PhD research project. We hope we can still count with the support of Rufford Foundation for the culmination of this last field session.

Apart from my academic goals, this project has been always thought of as a training programme for hunters as wildlife monitors, birders and/or wildlife tourist guides. The door is open for other projects that keep working towards that goal, ideally by establishing sustainable mechanisms that enable hunters to have continuous opportunities as wildlife guides inside the extension of Uaxactun forestry concession.

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

The results of the first year of study were shared with Uaxactun leaders during my visit to Guatemala in 2019. Then a second meeting was carried out with local hunters and other community members in November 2019 by WCS-Guatemala colleagues. The planned annual meeting for wildlife monitoring in the Maya Biosphere Reserve was carried out in September 2019, so I couldn't participate as I was not longer in Guatemala. To attend to this meeting and share the result with the scientific community of Guatemala is still a pending matter which I hope to accomplish at some point during the length of the project.

Additionally, I hope to share the results of my project to a broader audience, I have four conferences in mind for this year and I hope to at least attend to two of these:

- Conference: Scaling up Camera trap surveys to inform Regional Wildlife conservation. May 5<sup>th</sup> – 6<sup>th</sup> 2020, British Colombia, Canada.
- Society for Conservation GIS Annual conference, July 8th-10th 2020. Monterrey, California.
- NAOC: North American Ornithological Conference, Puerto Rico, August 10th – 15th 2020.
- CIMFAUNA: Amazonian and Latin American Wildlife Management and Conservation International Congress, to be hosted from 9th to 13th November 2020 in Paracas, Perú.

So far, I have been accepted in the camera trap survey conference, Canada.

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

The grant was used for the field activities of 2019, From 01 March to 02 June. This period was as proposed.

8. 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
Field Technicians	3197	2899	-298	We need to cut funds from personnel in order to fund vehicle repairs, food and field supplies provisions.
Field Supplies	230	409	+179	
Food	607	628	+21	
Fuel	866	501	-365	Less personnel also required less fuel as a smaller number of bikes were used during the project. These funds helped to balance transportation costs to the field site.
<b>SUB-TOTAL</b>	<b>4900</b>	<b>4437</b>	<b>-463</b>	
Transportation		382	+382	
Vehicle repairs		80	+80	
<b>Totals</b>		<b>4899</b>		

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

The results of this project, beyond my PhD research, must be translated into a community-based wildlife monitoring framework that could be adopted by other communities inside the Maya Biosphere Reserve. To date, wildlife monitoring indicators have been lacking from sustainability protocols and we see that forestry concessions should be reporting on these measures. I hope to provide indicators that help to gauge the health of wildlife communities around communal forestry concessions. We have seen an important commitment from hunters, but this might be fragile with a lack of continuity. That is why looking for opportunities towards strengthening the initiative of wildlife monitors and wildlife-based tourism is fundamental to the decline of income-driven hunting.

Other important next steps might be to conduct projects aimed to monitor wildlife spatial patterns and movements during extremely dry seasons. During 2019 we witnessed a severe dry season that resulted in half of our monitored waterholes dried. Wildlife congregation of a few waterholes was important and contrasting from the previous year. We could just foresee that extremer events are yet to come with the potential of an increase in wildlife mortalities. These are silent threats, even inside

the heart of protected areas, that are important to monitor and understand to be able to tackle in any possible way.

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

WCS-Guatemala is working toward the production of four short videos to deliver information about the relevance of the study carried out in Uaxactun (2018-2019). These videos will include the Rufford logo. We are also submitting a short communication to a journal where the Rufford Foundation is acknowledged. Additionally, we have been tweeting about the project in the tweeter account of the lab which I am part of (Mammal Spatial Ecology and Conservation Lab at WSU) and we always acknowledge the support of Rufford Foundation. This will also be the case for future presentations about the project.

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

Team members

**Auner Revolorio** and **Fernando Avelar**: Field technicians, Expert birders trained by Audubon, WCS and Cornell Laboratories. Camera trap installation, Arboreal mammals and Bird Surveys, support in logistics and data management.

**Danilo Obando, Isaías García, Manuel de Jesús Ortíz, Carlos Álvarez**: Uaxactun community members and hunters, incorporated as wildlife technicians. Camera trap installation, Arboreal mammals and bird surveys.

**Rony García-Anleu, Roan McNab, Julio Zetina**: WCS-Guatemala colleagues, provided fundamental institutional, logistic and field support.

**Freddy Bedoya, Decny Mayen, Darwin Aguirre, Abraham Mateo**: Dos Lagunas Biotopo Personnel, supported in the field for specific camera trap stations installation.

**12. Any other comments?**

As mentioned before, the project is still pending to have the last field session. That final session will use information from the two previous surveys and will be fundamental to compare survey strategies for both estimating the jaguar population and monitoring wildlife communities. However, we have also decided to give priority to the analysis phase instead of rushing to catch the 2020 dry season. This way, we can better inform the design of the pending survey while also returning the results of the first phase of the project to the collaborating institutions and the scientific community. Whether the next field season takes place in the late 2020 dry season or 2021 dry season, the collected information will still be decisive for reaching the proposed objectives.