

### 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	Cindy Hurtado		
Project title	Carnivore persistence within the Tumbesian Dry Forest of Peru and Ecuador		
RSG reference	acd813-2		
Reporting period	Jan 2019-Jan 2020		
Amount of grant	£5000		
Your email address	cindymeliza@gmail.com		
Date of this report			



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	<b>Fully</b> achieved	Comments
Carnivore Survey				
Identification of Carnivore hotspots				
Identification of priority variables for carnivore persistence				In the models run, we identified forest and distance to forest patch as the most important factors affecting persistence. However, we will run more models after we have finished the current surveys.
Corridor design				We are currently running the models but are waiting for more sites to obtain a better spatially distributed corridor design.
Photo gallery				
Camera trapping workshop				

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

None.

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

We were able to confirm the presence of large carnivores in only one large protected area, the Cerros de Amotape National Park in Peru. However, mediumsized carnivores were well represented in most surveyed localities. The only carnivore that was almost always represented was the ocelot, *Leopardus pardalis*, showing its ability to survive near disturbed areas.

#### Carnivore hotspots were identified as:

- Cerros de Amotape National Park, with seven carnivore species, including the only remaining large carnivore of the ecosystem, the puma.
- Cerro Blanco protected forest, also with seven carnivores. However, no puma was registered here, but the greater grison, not found in the Cerros de Amotape National Park.
- Other protected areas with a high number of carnivores, six species, were Machalilla National Park and Marine and Coastal Wildlife Refuge of Pacoche,



both in Ecuador (these areas were not surveyed by us but considered in the analyses).

The most important variables for our land cover model were "forest cover" and "agricultural areas". Forest cover had a positive and significant effect on carnivore richness while agricultural areas had a negative and significant effect. This negative effect on carnivore richness was even greater than the "human settlements" effect.

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

We had a 2-day camera trapping workshop in Ecuador where more than 20 biology undergraduate students were trained in the use of camera traps and basic data analyses. We also invited them to participate in our surveys. Three of them are currently working on their honour's theses, using the data we collected in Ecuador. Additionally, other three Peruvian students from the National University of Piura are working on their honour's theses, using the data we collected in Peru. We also hired local guides to help us with camera trapping setting. Additionally, our photo gallery is available for the National Protected Area service of Peru, which will be used for environmental education of tourists. We also trained seven park rangers in protected areas of Peru and Ecuador.

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

Yes, we obtained funds to continue surveying other five protected areas in Ecuador and Peru, and we will continue the sampling during 2020. These data will help improve our models and expand the connectivity network.

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

We will share the results in a scientific publication, in local media websites, and in reports to every protected area that we worked at. We are constantly posting carnivore photos and news related to the project on the social media of the NGO that I founded, BioS. We already have given our reports to two protected area managers and we are working on the rest. We are also working on a publication entitled "Richness and abundance of medium and large mammals in the National Recreation Site, Isla Santay, Guayas – Ecuador" in which the first author is an Ecuadorian undergraduate biology student. Another publication, in which we will used the results of this project, is in preparation and will include the carnivore hotspots and connectivity network.

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

We received the grant in February 2019, and we used the funds for 1 year as anticipated.



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
Food for 7 fieldtrips for three people for a month each trip	1220	1800	+580	We were a little short on food supply for all fieldtrips, which were more expensive than expected. However, we compensated with gas and rental money.
30 USD for gas a day for 49 days	1137	950	-187	We reduced the cost of gas money by using public transportation to some sites and mules for remote places.
350 Batteries (AA) for 20 camera traps and GPS	206	1904	+1698	We underestimated the amount of batteries. We had to change all the batteries at least 2 times in each site. Which meant 160 pairs of AA per site. (1120 AA batteries)
49 days of truck rental to get to 6 sites	2437	346	-2091	Because we were short on money for batteries and food supplies, we asked the Natural Protected Services, to collaborate with our project and lend us the truck. They agreed as long as we paid for gas. We also used some of this money for mule rental to carry all the equipment, food and water. For the rest of the sites, we rented a truck, or reached by bus and walking.
TOTAL	5000	5000		1 Pound= 4.3 Peruvian Soles

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

- The most important next steps would be to maintain carnivore hotspots and suggest restoration and reforestation measures to hotspots and nearby areas, to reinforce connectivity.
- For research, the puma was not found in any Ecuadorian locality, suggesting its potential local extinction or rare status in coastal Ecuador. New puma



distribution models could suggest potential sites for its presence, and it would be important to survey these potential sites to confirm puma presence.

- If pumas are not found in other suitable areas, restoring connectivity between Ecuadorian and Peruvian forests will aid in the recolonisation of this umbrella species.
- The persistence of medium-sized carnivore was confirmed but is not guaranteed. An important next step would be to assess the populations status of medium-sized carnivores.

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

We used the Rufford logo in our camera trapping workshop flyer and shared in social media and Guayaquil University. We also posted several mammal photos in our NGO's Facebook and Instagram account and some in my personal Twitter account. In all of these, we acknowledged the foundation and used the hashtag. The Rufford logo is also included in our photo gallery which will be showcased in every environmental event that we go to.

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

Cindy Hurtado: Project leader and PhD candidate

Cole Burton: PhD supervisor

Jaime Salas: Collaborator and academic supervisor for University of Guayaquil students

Zoila Vega: Field coordinator of Peruvian localities

Cristian Diaz: Field coordinator of Ecuadorian localities

Benjamin Navas: Ecuadorian undergraduate student working on thesis

Belen Merchan: Ecuadorian undergraduate student working on thesis

Jordan Medrano: Ecuadorian undergraduate student working on thesis

Antonio Gomez: Peruvian undergraduate student working on thesis

Alely Crespo: Peruvian undergraduate student working on thesis

Fernando Cerna: Peruvian undergraduate student working on thesis





#### 12. Any other comments?

We want to thank the Rufford Foundation for the funding and other relevant institutions and people that help make this project possible: the protected area service, our volunteers, the referees that took the time to evaluate this project, and the local communities that appreciate the forest near them.