

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
Your name	Melissa Micaela Arias Goetschel
Project title	Addressing the illegal trade in jaguar parts in Bolivia: an evidence-based approach to inform conservation actions
RSG reference	25402-1
Reporting period	01/01/2019 - 06/09/2019
Amount of grant	£5000
Your email address	<a href="mailto:melissa.arias@zoo.ox.ac.uk">melissa.arias@zoo.ox.ac.uk</a>
Date of this report	25/09/2019

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
<p>To collect and organize the evidence available on jaguar trade, identifying the main information gaps in the jaguar trade chain.</p>				<p>Since receiving the Rufford grant, I have conducted a literature review to find all academic studies containing evidence on jaguar trade. A total of 559 academic articles were screened from the Web of Knowledge. Twenty-one % of these were reviewed in full text, and 5.5% were selected as eligible because they explicitly mention jaguar trading events. The information from these articles, which came from several countries in the jaguar's range, provided an initial snapshot of the jaguar trade chain, including details about the actors, the body parts that are traded, and the methods used to hunt and commercialize jaguars throughout the region. The preliminary results from this literature review were written up as part of my PhD thesis, which will become publicly available upon submission.</p> <p>In addition to the literature review, I also conducted two fieldwork seasons, in Mesoamerica and Bolivia. In Mesoamerica (Belize and Guatemala), I used semi-structured interviews with key informants (n=41) to obtain information on jaguar trade incidents. Each event help to construct a diagram of the structure of the trade chain, from supply to demand. When possible, incidents were also placed on a map to gain an initial view of any geographical patterns and to identify potential trade routes. During my fieldwork in Bolivia, I also had discussions with key experts on jaguar trade in the country</p>

			(n=15), including people from NGOs, the government and academia, who helped me to identify the main knowledge gaps and geographical biases in the information. These conversations informed the implementation of a large-scale survey in Bolivia focused on interviewing jaguar product suppliers to gain additional insights about the jaguar trade chain.
To assess the quality and impact of the evidence available on jaguar trade, making the information readily available for decision making processes.			Throughout my interviews in Mesoamerica and Bolivia, I always asked participants about their level of certainty in the information that they were providing. Based on that certainty, I then separated jaguar trade events into concrete examples or strong beliefs. This is an important distinction that helps to determine the quality of the evidence and the degree of uncertainty in the information. Beyond asking participants to consider the uncertainty of the information during the interviews, I am now starting to develop a set of indicators of the quality of the evidence and its suggested impacts on jaguar populations. All the information that I have collected through the literature review and interviews so far will then be analysed based on those indicators, to determine how much can we confidently say about the impact of trade on jaguars. This analysis is yet to be completed as one of the chapters of my PhD.
To gain insights about how decision-makers are using the available evidence and considering its underlying uncertainty to address jaguar trade.			I conducted a brief exercise with some of my interviewees who are also jaguar conservation decision-makers, in which I presented them with short excerpts of jaguar trade evidence coming from different sources and containing varying content. Interviewees were tasked with reading the excerpts and prioritising them based on their perceptions about the

			<p>source and the content. We then had an open-ended conversation about the kinds of evidence on jaguar trade that they are exposed to, and how they determine what evidence to use in their daily activities. This exercise was meant to provide insights about what are some of the factors and attributes of the information that most impact people, and what are some of the considerations that people have in mind when prioritizing the evidence on jaguar trade. The analysis of this exercise has begun, but I have yet to produce a report and to communicate the results to a wider audience.</p>
<p>To determine whether indirect questioning techniques can be used to estimate the prevalence of jaguar trade by conducting a pilot study in a local community in Bolivia.</p>			<p>From June to August 2019 I conducted a pilot study in Bolivia with the support of four research assistants in order to test five different types of indirect questioning techniques to collect information on the prevalence of jaguar killing and trading in the country. The different indirect questioning techniques included the Unmatched Count Technique, the Randomized Response Technique, Crosswise, Nominative Technique and Ballot Box. The pilot study was conducted in three different villages in the Department of Pando in the Amazon biome. Based on the preliminary results from the pilot, we were able to compare the comparative effectiveness of these methods in obtaining honest responses from participants about jaguar trade, and to determine the overall sensitivity of the issue in Bolivia. This pilot study became the fundamental basis for a larger data collection effort which took place immediately after.</p>

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

There were several unforeseen difficulties that arose during my project. The first difficulty appeared very early in the process, while I was trying to obtain ethical approval from my university's ethics committee, and research permits from the Bolivian authorities. Both processes took longer than anticipated, affecting the original timeline of the project. Similarly, it took me longer than expected to obtain sufficient funding to be able to conduct all components of my project. Another challenge that I experienced had to do with the logistics of conducting surveys and interviews in Bolivia. Many of the locations that I visited together with my team were remote and hard to access. This made our transportation very difficult and more expensive than initially thought. Similarly, I wish that I had considered unexpected events in my project's timeline and budget, as there were instances where members of my team were not available to work due to personal or force majeure circumstances, which also ended up causing delays and financial constraints to my project. However, incentivizing a good team dynamic with strong communication and transparency helped to overcome these challenges.

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

- Interviewing and having informal conversations with experts and key informants in Mesoamerica and Bolivia. These interviews delivered valuable information about the drivers of jaguar trade, the main actor-types involved in the different levels of the jaguar trade chain, their motivations, and the methods they use to kill and trade jaguars, including potential trade routes. Moreover, the interviews also provided information on the key strengths and weaknesses in the laws and the capacity of the conservation community, which allowed me to generate recommendations for relevant institutions to improve their response to jaguar trade in these countries.
- Conducting a pilot study to test the effectiveness of five different sensitive questioning techniques, and their applicability to study sensitive behaviours around wildlife in Bolivia, including the Unmatched Count Technique, the Randomized Response Technique, Crosswise, Nominative Technique and Ballot Box. The lessons from the pilot study served to design a larger data collection effort focused on estimating the prevalence of jaguar killing and trading in Bolivia, which was applied to a sample of more than a thousand people.
- Training four Bolivian research assistants in the implementation of different direct and indirect questioning techniques, as well as in statistical survey design and sampling methods. Through the pilot, and later through the full data collection process, research assistants became experienced and skilled interviewers, and their engagement with the project will continue until publication.

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

This research took place in rural villages across the lowlands of Bolivia, with the authorisation of national authorities, as well as village leaders. Interviewees, who were primarily local hunters, farmers and ranchers, were able to express their views about living next to jaguars, and to report their concerns about human-jaguar conflict and other unwanted interactions with jaguars. The goal is that the results of this research will not only contribute towards jaguar conservation, but that they will also guide authorities and the conservation community to understand and manage human-jaguar interactions better.

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

Yes, my goal is to write up the results from this research and to play an active role in sharing those findings with relevant authorities and with the conservation community, including the villages where the data was collected. Beyond simply handing them the information, I would like to organise workshops that build on the project's results, to generate urgently needed and community conscious interventions to address jaguar trade. These workshops would not only help to guide the agenda and funding allocation of different stakeholders, but also bring people from different sectors together to coordinate their efforts, which is something desperately needed in Bolivia. Depending on funding, I would like to support local stakeholders in piloting a behaviour change intervention, combining conservation education with sustainable alternatives to jaguar products.

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

As mentioned above, my main communication strategy will be to personally engage with decision-makers and the conservation community, including local communities, to share the findings of this research. Beyond the workshops described above, I plan to publish one or more academic articles that result from this research in peer review journals. Doing so will contribute to the field of interdisciplinary conservation science while also strengthening the scientific knowledge base on IWT in Latin America. I am also keen to present my results in more widely accessible blogs, and in relevant conferences or illegal wildlife trade meetings.

**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 project had a bit of a late start, with the fieldwork component taking place from May 2019 to August 2019, rather than from April 2019 to June 2019. This delay had to do with obtaining the necessary research permits from the Bolivian authorities, as well as ethical clearance from the university. However, this delay did not affect the overall timeline for the project, as I am currently on track with the analysis and dissemination of results, as established by the original timeline.

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
Research Assistant Compensation	1500	3364	+1864	I ended up hiring 4 research assistants to conduct the work rather than just 1, in order to be able to cover a larger area and sample size.
Equipment		360	+360	Although we did not use tablets as originally intended, we had costs associated to printing surveys and to acquiring the materials for the different indirect questioning techniques that were piloted.
Food	700	2330	+1630	Additional food expenses for more research assistants
Lodging	1500	2615	+1115	Additional accommodation expenses for more research assistants.
Local Transportation	300	1540	+1240	Because the areas we visited were remote and public transportation was unreliable, local transportation became very expensive.
Domestic Travel	400	1210	+810	Additional domestic travel for more research assistants.
International Travel	600	1260	+660	As anticipated
<b>TOTAL</b>	<b>5000</b>	<b>12,679</b>		

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

The next steps are to finish building the electronic database with the responses from our paper surveys, and to begin the formal analysis of the data. This will include a comparison among the results of the direct and indirect questioning techniques, several regression analyses to determine the predictors of jaguar killing and trading (focusing primarily on socioeconomic and geographical variables), and potentially a thematic analysis using text coding to extract key information from open ended answers and comments. Given the implications of this work on future jaguar conservation actions, I am very interested in devising a plan and obtaining funding to appropriately communicate the results of this work.

**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?**

So far, I have not yet delivered any presentations or materials about this research. However, I will be using the Rufford Foundation logo next year when communicating the results from this research to multiple audiences. Similarly, acknowledgements to the Rufford Foundation will be present in resulting publications.

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

The core research team for this project includes **Prof. E.J. Milner-Gulland** as my DPhil supervisor, **Dr. Amy Hinsley** as a co-supervisor for this chapter of my thesis, and myself. As a core team, we had several meetings and email exchanges before and throughout the fieldwork in order to plan, design and implement this research.

This research was possible thanks to the support of several collaborators. **Jenny Glikman** from the San Diego Zoo Global (SDZG) was a key supporter of the project from its early stages. She also helped design the survey questionnaire, and she will continue to be involved in the analysis and write up. Jenny introduced me to **Nuno Negroes** from the Bolivian Association for the Conservation and Research of Andean and Amazon Ecosystems (ACEAA). Nuno became my local NGO collaborator, and provided me with office space in La Paz to interview research assistants and to plan research logistics. Nuno also helped to draft the survey questionnaire, to select the study sites and gave me very valuable logistics advice. Nuno introduced me to Isabel Moya, from the Fauna Collection of the Museum of Natural History of La Paz.

The museum, as an authorized scientific authority in Bolivia, became our official partner and helped us to obtain the research permit from the government. Aside from these collaborators, I met with several other NGOs and individuals inside and outside of Bolivia, who helped me to understand the context behind jaguar trade in Bolivia, not only in terms of the information that is missing, but in terms of who are the current players involved in jaguar trade research and conservation actions. This was crucial to avoid unnecessary overlaps and to generate more useful information.

The research assistants (RAs) who contributed to the data collection processes include **Paola Nogales, Pamela Carvajal, Jorge Zapata** and **Miguel Fernandez**, all Bolivian nationals. All RAs had previous experience working with jaguar conservation, illegal wildlife trade, human-wildlife conflict and/or hunting. Moreover, they all had training and experience conducting surveys and interacting with local communities in the locations where this study was conducted. They also possessed skills in statistics, GIS, biology and project management, which contributed immensely to the development of the project on the ground.

**12. Any other comments?**

My team and I are extremely grateful to the Rufford Foundation for making this project a reality. It was a truly rewarding experience to conduct my fieldwork in Bolivia, and I hope that the results from my research will provide tangible benefits to jaguars and to the field of wildlife conservation in the country.