Final Evaluation Report

Grant Recipient Details	
Your name	Dulce Itandehui Hernández Aguilar
Project title	Impact of the COVID-19 pandemic on the perception of mammals, with an emphasis on bats, and action plan for their conservation in Oaxaca, Mexico
RSG reference	33209-1
Reporting period	January 2021- January 2022
Amount of grant	£6,000
Your email address	dulce.hernandez@estudianteposgrado.ecosur.mx
Date of this report	02/2022

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
To analyze the current knowledge, use and perception of bats in San Miguel Lachiguiri and Santa María Huatulco, Oaxaca, Mexico.				The interviews and workshops to obtain the data and fulfill the objective were carried out successfully.
Evaluate the impact that the COVID-19 pandemic has had on the perception of mammals, mainly bats.				Data collection was successful.
Implement educational activities that generate the exchange of knowledge and changes in the perception of people that allow the development of capacities and that help the conservation of mammals.				The set of practical activities (use of ultrasonic detectors, capturing bats with mist nets and harp traps, operation of photo traps) was successfully carried out during the workshops. Curiosity about the unknown generated greater participation in children than in adults.
Generate a baseline of the diversity of mammals present in the two sites to help generate the action plan with long-term conservation strategies for bats.				The monitoring of the diversity of bats was carried out in the two study sites and we have the list of the species of bats present. Regarding the monitoring of terrestrial mammals, photo-trapping was carried out with people during the workshops, but it was not possible to carry out a more intensive monitoring because it was not possible to obtain the necessary photo-traps. The data obtained allowed to generate the proposal of the action plan for bats.

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

In one study site, San Miguel Lachiguiri, due to the fact that it is a more isolated locality and that it had not presented cases of COVID-19 until July 2021, there were greater restrictions on holding meetings, compared to Santa María Huatulco, which is an area that receives tourists throughout the year and where people perceive a lower risk and danger towards COVID-19. However, during the months of August and September 2021, some workshops that had been planned with local authorities in advance in Santa María Huatulco, were cancelled at the last minute due to the increase in the number of cases of COVID-19. The workshops were postponed for a while but were held when indicated by local authorities.

In June and July 2021, when some workshops were planned, fewer activities were carried out because it coincided with the federal electoral process. The municipal authorities recommended that the work team avoid meeting with supporters of political parties.

The participation of adults during the workshops was not as expected because they perceive a higher risk of contagion by COVID-19 if they attended the workshops.

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

- ✓ Carrying out 213 interviews in San Miguel Lachiguiri and Santa María Huatulco, Oaxaca, Mexico allowed to generate information to know the current perception towards bats and to be able to evaluate how this has changed compared to the group of species to which a role in bats is attributed the current COVID-19 pandemic.

- ✓ The participation of 267 people during the theoretical workshops, mammal monitoring practices (capturing bats with mist nets and harp traps, use of ultrasonic detectors, and use and operation of photo traps) and personal training for local authorities helped generate the exchange of knowledge, changes in the perception of bats and capacity building so that soon, community monitoring committees can be created to help conserve bat species in the area.

- ✓ Carrying out 13 samples from January 2021 to February 2022 allowed for a baseline of the bat species present in both municipalities. This helped to generate an action plan with conservation strategies for bats in the area.

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

The communities of the two study sites were involved in all phases of the project from the presentation of the project to the generation of the proposal for the conservation strategies.

Because during this project we used methodologies based on participatory action research, where there is no researcher versus researched subject relationship but rather a horizontal relationship of joint learning, we involved the local inhabitants in all the activities that were carried out during the project. At the end of each interview, feedback was given to each person interviewed depending on their biological knowledge about bats, emphasising the ecosystem services they provide and emphasising that bats do not transmit the SARS-CoV-2 virus and that they should always be handled with protection if you have an encounter with them. During the workshops, feedback was also given to the children and during the practical activities, people were trained on how to use ultrasonic detectors, how to place mist nets and harp traps to capture bats, and how photo traps work.

During the monthly bat sampling, people who showed interest in the project and who could possibly form a community committee for future wildlife monitoring were invited to participate. They were shown how to use a GPS, how to differentiate between hematophagous bats from insectivores, frugivores and bats that feed on honey from flowers.

5. Are there any plans to continue this work?

Yes, we were able to identify possible community leaders who could continue with the execution of the action plan that contains conservation strategies for bats in the area. For example, in Santa María Huatulco, where there is a cave inhabited by approximately more than 50,000 bats, the owner of the farm where the cave is located would like to install a fence or fence that prevents, or at least regulates, the extraction of guano in the cave that is used to make fertilisers, since it is a common practice that could affect bat populations due to human disturbance. In addition, the owner wants the bat exit to be included as a tourist attraction for tourists who already visit a botanical garden that is very close to the cave. In San Miguel Lachiguiri, we presented the inhabitants with photos of the germinated seeds in a cave near the town to raise awareness of the importance of bats as seed dispersers and people are very interested in knowing if the seeds that bats deposit in the cave germinate better than others that are not consumed by bats. The inhabitants are also interested in knowing what diseases the bats could have and that they could potentially transmit to humans, so they propose to carry out more research in this regard.

The monitoring of other terrestrial mammals was no longer possible due to the fact that we do not have a considerable number of photo traps and that some hunters have not thought photo trapping a good idea, but in general, in both study sites there is an interest in knowing what species of mammals inhabit its territory. For example, in San Miguel Lachiguiri there is interest in knowing if tapirs could still be recorded, since they have not been seen for years, and if jaguars are found near the town or pastures, since attacks have increased in recent years to cattle in nearby communities.

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

Since the project activities have just concluded in February 2022, the results that were presented in both communities were preliminary. It is planned to present the final results on the dates of the patron saint festivities in both sites (May and July 2022) since there is a greater influx of people and visitors from other neighboring communities. A photographic exhibition of the species of bats that inhabit its territory will be held and the relevant results will be presented through posters.

We present the preliminary results of the interviews on the current perception towards bats on May 20, 2021, within the framework of the International Day for Biological Diversity organised by the Ministry of the Environment, Energy and Sustainable Development. We plan to present the results at local, regional, and national conferences such as the National Congress of Ecology, the National Congress of Mammalogy, and the Latin American and Caribbean Bat Congress. As well as participating in the next Rufford Small Grant Conference in April 2022.

The results will also be disseminated on the social networks and personal pages of the members of the work team. Finally, the results of the study will be analysed in detail and published in a national or international journal focused on Ethnobiology and Conservation issues.

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 grant was transferred in January 2021 to El Colegio de la Frontera Sur, the institution that received and administered the funds. In that same month, activities began at the two study sites. The study was planned with a duration of 12 months, from February 2021 to January 2022; however, the Rufford Foundation grant was used over the course of the entire project, which was from January 2021 to February 2022.

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
Meals	835	1196	+361	The proposal considered 12 field trips; however, we made one more outing and this generated extra costs. The proposal did not consider the food expenses of the driver in charge of moving us to the study sites, of other students who were

				supporting the conduct of interviews and workshops, or of the guides who accompanied us during the project activities.
Fuel	1668	2152	+484	We spent more than budgeted because the price of gasoline has been increasing in 2021. In the proposal the cost of gasoline was 0.7 £ and currently it is 0.82 £. We spend on average 165.5 £ each month. In addition, there were months in which we visited a greater number of communities to carry out workshops and capture bats.
Workshop costs	1206	554	-652	We spent less than budgeted because much of the material for the workshops could be recycled. Many of the interviews were conducted from the KoboToolbox app on mobile and tablet and no further printouts were required. In addition, we received the donation of a printer by the Telmex Foundation, and this helped to minimize printing costs.
Accommodation	1044	1332	+288	There were months in which, due to adverse weather conditions, we spent more days in the field than scheduled. In addition to the fact that the proposal considered 12 field trips and we carried out 13, which generated extra costs.
Outreach material	482		-482	1800 pieces of outreach material were budgeted but only 515 brochures were delivered to interviews participants, workshops, and local authorities. The prints were made on the printer donated by the Telmex Foundation.
Overhead cost	765	761	-4	This item was used exclusively for the payment of field guides' wages in both study sites. Paid 63 £ every month for 13 months.
Sub-total	**6000**	**5995**	**-5**	
Payment to driver for transportation to study sites		648	+648	We do not contemplate in the budget the payment of wages for the person who would transfer us to the study sites. He paid 54 £ per

				month.
Vehicle service payment		143	+143	Although we have a private vehicle to carry out the project, the payment of two maintenance services for the truck was not included in the budget.
Other expenses		129	+129	Due to the fact that the project was executed in the state of Oaxaca and the institution that administered the resources is in Chiapas, the parcel service was required monthly to send the supporting documents of the expenses.
Total	**6000**	**6915**	**+915**	The extra expenses were covered thanks to the CONACyT Supplementary Support Scholarship for indigenous women, the Excellence Scholarship that the Telmex Foundation awarded to the team leader, the 211053-project awarded to C. Lorenzo by CONACyT, and the SIP project 20210956 of A. Santos Moreno by the Instituto Politecnico Nacional.

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

It is necessary to continue disseminating true information about bats and their null participation in the direct transmission of SARS-CoV-2. Therefore, the workshops and monitoring practices should be expanded to other neighboring communities. In addition, greater participation and training in adults should be sought, since for fear of catching COVID-19 there was not much participation during the workshops.

The next step is to disseminate the relevant results of this study. In the two study sites, the execution of the action plan of conservation strategies for bats will continue.

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?

Yes, the Rufford Foundation logo was used in the header of the interviews and at the end of each interviews the interviewees were told that the interviews was part of a project financed by The Rufford Foundation, the objective of the study and the data of the leader were provided for any questions. The same information was provided at the beginning and end of each theoretical and practical workshop.

The logo was also used in the power point presentation where the preliminary results of the current perception towards bats were presented, within the framework of the

International Day for Biological Diversity that was organised by the Ministry of the Environment, Energy and Sustainable Development of Oaxaca.

The name of The Rufford Foundation was used on the Facebook social networks and official pages of El Colegio de la Frontera Sur, San Cristóbal unit, to recognise the team leader for having been awarded the grant.
https://www.ecosur.mx/estudiante-del-doctorado-en-ciencias-obtiene-beca-de-la-fundacion-britanica-the-rufford-foundation-2/
https://www.facebook.com/102499648051729/posts/268936478074711/

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

Dulce Itandehui Hernández Aguilar: She was the coordinator of the project and responsible for monitoring the activities in the field and office. She participated in the design, construction and conduct of the interviews, theoretical workshops, and monitoring practices. She coordinated the monthly outings to each study site and was in charge of bat handling in the field. She was in charge of administering the resources of the grant in the field. She participates in the dissemination of the results of the study and was the direct contact for the procedures with the Rufford Foundation. She will participate in the analysis of the data and in the preparation of the manuscript for the publication of the results.

Consuelo Lorenzo Monterrubio: She was directly responsible for the project at El Colegio de la Frontera Sur, the institution that administered the resources. She was in charge of managing the institution's resources prior to each field trip. She was also in charge of verifying the expenses upon returning from each outing. She provided material for the capture of bats. She will participate in the analysis of the data and in the preparation of the manuscript for the publication of the results.

Miguel Calixto Rojas M. Sc: He was a strong support during the field activities. He participated in the design, construction and conduct of the interviews. He was in charge of providing the interviews in the KoboToolbox application so that they could be filled out in the field from a cell phone or tablet. He managed some ultrasonic detectors for the workshops with the bats.

Diana Karen Diaz Rivera: Her experience as a preschool teacher helped create an environment of trust during the workshops. Because she knows the inhabitants of the community of San Miguel Lachiguiri, she facilitated the identification of key actors and that people agreed to answer the interviews. She contributed to the design and construction of the dynamics to be carried out in the theoretical workshops.

Enrique Rodríguez Garfias: He was the direct link with the authority in Santa María Huatulco. He was in charge of managing the permit with the local authorities and planned the logistics of the workshops.

For the success of the project, we also had the invaluable support of other people who are worth mentioning. Colleagues **Jorge Bolaños Citalán** and **Doris Castañeda**

García supported the necessary procedures for resource management before, during and after each field trip. **José Antonio Santos Moreno**, a researcher at the Centro Interdisciplinario de Investigación para el Desarrollo Integral Regional CIIDIR, Oaxaca Unit of the Instituto Politécnico Nacional, was an essential support throughout the project as he gave us his support, advice, invited his students to help in field trips and part of the extra expenses of the project were covered with its project SIP 20210956. It also supported us with material to carry out monitoring practices such as ultrasonic detectors, a harp trap and photo traps. **Gabriel Reyes Santos**, **Víctor Diego** and **Catalino Vásquez Hernández** served as field guides and supported us in all field activities. CIIDIR students **Alejo Díaz Ramos**, **Ivette Bautista Bautista**, **Roberto Flores Diego** and **Yoalli Zúñiga** supported the interviews, **Luis Cruz González**, **Irene Juárez Cortes**, **Daniel Peña Martínez**, **Karen Pacheco Valle**, and **Elba López Migue**l supported the workshops and bat samples. **Monserrat Castillo García** and **Marcela Hernández Pérez** carried out a summer of research in July 2021 at CIIDIR and supported us by taking photographs in the workshops.

12. Any other comments?

We thank each of the people and institutions that supported the different activities throughout the project. We thank The Rufford Foundation for the support provided to carry out this project and we hope to receive a second grant to continue with the pending activities. Many thanks to El Colegio de la Frontera Sur and its staff for managing the grant resources. Thanks to the Consejo Nacional de Ciencia y Tecnología (CONACyT) of México for providing a scholarship for doctoral studies and a complementary support scholarship for indigenous women to the team leader and to the project 211053 awarded to C. Lorenzo. To the Instituto Politécnico Nacional for the SIP 20210956 project of A. Santos Moreno and to the Telmex Foundation for granting a scholarship of excellence to Dulce Itandehui that allowed to cover the extra expenses that arose during the project and meet the objectives.