

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	Alfonsina ARRIAGA JIMENEZ
Project title	Diversity of dung beetles in high mountains of Oaxaca
RSG reference	20054-1
Reporting period	August 2016- August 2017
Amount of grant	£5000
Your email address	ponchis.arriaga@gmail.com
Date of this report	25 August 2017

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
Dung beetle species list				Field work was finished recently, so we have not been able to finish determining all the material.
New species description				One article describing one new species is already under revision. However it is possible that there are more new species, we need to check a lot of entomological material to be sure.
Maps of the species distribution, and conservation evaluation				We cannot finish the maps until having all the information, as at the first point.
Divulgate article of Oaxaca mountain fauna				This article is in process with one student, she is from one of the communities, so we will have the information that we possessed plus her information about the culture.
Comparison of these mountains with other mountains in Mexico				A first paper of comparing mountains is under revision, we will need the final data of these mountains to compare it with the other ones.
Sharing entomological material with different Institutions				We already started to share entomological material with the CIIDIR and the INECOL, A.C. We will send some material to France and Brazil too.
Teaching students				I have several students under my supervision, two for social service and co-directing their thesis, and two volunteers (with one of them I'm writing the divulgation paper).
Evaluation of the conservation of the sites, helping the decision makers to make the right programs (conservation decision				Also a paper is in process (with M. Segarra and C. Perez) about the difference in conservation actions in both communities, we might finish the article at the end of the year to present it our results to the communities next year in January

of the areas).			or February.
Contribute to the knowledge of the mountains biodiversity			We already started the contribution with the description of the species and the lists that we made. But this will continue until the final analysis of all the data and all the insects.

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

The first difficulty we faced was obtaining permission from the communities in which we conducted the research. At first, the objective was to work in three different sites, two communities in the Sierra Norte de Oaxaca and one in the Sierra Sur.

We ask for permission to local authorities in order to access into their mountains, and to carry out our investigation. With one community of the Sierra Norte (San Pablo Etla) and the one from Sierra Sur (San Juan Ozoletepec), the entrance, permissions, and communication with the people and authorities were easy and without any problem. But with the community of Santa Maria Tlahuitoltepec (Sierra Norte) it was harder. They still have their own language (mixe) and a very deep-rooted culture, in addition, the mountain of our interest is a sacred one for them (Zempoaltépetl). We had to request several hearings to convince the authorities and bring a student with us (Citlali Pérez) to help us with translation and to explain them the details of our work. At the end, and after a lot of lobbying they agreed to allows us to work there, but they asked us first to climb into their sacred mountain as they do, carrying an offering (mezcal and food)to ask for permission of the God Kondoy (the good God of nature).

The other difficulty we went through was the Tropical Storm "Beatriz", which brought heavy rains in Oaxaca State, and a lot of mudslides and damages in the Sierra Sur. So even with the permits and the previous work with the community, we were not being able to do our research there. The access roads to the mountain were closed and it was dangerous to go, so finally, we decided to stay just with the two communities of the Sierra Norte.

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

I think the first important outcome is the entomological and cultural information we obtained from these communities and mountains, which are little known in the state and in the country. Also the collaboration with communities, training of people, and giving back the information to the communities (e.g. new species, conservation status of their forest, etc.).

These mountains entomofauna is really interesting, and even if we still do not have all the information (field work just finished 1 week ago) and the taxonomic identification of all the specimens, we already described one new dung beetle species for San

Pablo Etna (paper submitted). Probably there are more, but we are still reviewing the entomological material.

I have two students that made their social service with this project, and they are doing their undergraduate thesis with my project. Also I had to volunteers that help me with the field work and with one of them I working in the "social" papers, when we talk about the culture and the difference in conservation management.

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

In all the communities we involve people since the beginning. We always hire guides and persons to come with us and help us. And if there are persons, students or kids interested, we take them with us into the mountain to show them our work, and to explain them more about the entomology in general, and specifically about dung beetles and their importance. For us is really important that they know we are in the field, and what is our goal, that is why each time we have meetings with the authorities to let them know about our progress.

The ecoturistic project of San Pablo Etna, will benefit more immediately from our project. Because they have 5 years with their project, and we are going to advertise in the city and in the state the data found (e.g. new species) and the evaluation of the good quality of forest that they have. This will help them in order to have more people knowing them and coming to the centre. And with a group of students from Bard College, we are going next January to take a course in their facilities.

Santa María Tlahuitoltepec and Santa María Yacochi, however, will take longer to have an impact of our project. The first will be with the results of our paper where we will talk about the loss of biodiversity and its influence on the loss of culture. This is particularly important because they are part of the mixe culture which is losing the language and other cultural features.

5. Are there any plans to continue this work?

Yes, maybe I will go to the field this month, into the Sierra Sur if the roads are in a better state. Because I do not want to leave the project with the community and I committed myself to the authorities to come back as soon as possible to do the research.

I also have my student (Axel Arenas) that is starting his undergraduate thesis, so we need to finish it. We will wait to the end of his work to present all the results for each community. This week I will present the preliminary results in the community assembly of San Pablo, especially the new species which will serve to make the brochures and promotion for the eco-tourism project.

It is worth mentioning that I am going to request again the support of this foundation, to continue with the field work in the Sierra Sur, and in the Mixteca next year. I will follow this project because the state of Oaxaca has much to offer, both biological

and cultural. And I'm sure that information of high quality can be found, besides several new species, as well as promoting different ways of management for communities.

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

There are several different ways to share the information.

The first step is to share the information with communities, I already started this week in San Pablo Etla assembly with the preliminary results, and it will continue in Santa Maria Tlahuitoltepec next month.

In June we went to the National Congress of Entomology in Oaxaca, to present the advances of the research.

We will wait until Axel Arenas finishes his thesis, to go again to each community in order to present the general results, and leaving several copies of the thesis, as well as some brochures and divulgation material we are working at.

In November I will share the information of my research in the RSG conference in Belize.

And finally, as a researcher, all the information will be written in scientific papers (species descriptions, ecological articles, socio-cultural and biological articles).

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

It was used from August 2016 to August 2017. I will try to continue with the field work but I have little resources, so I am looking for extra funding to continue with the project.

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
Accommodation	1000	900	-100	Several days camping, some others in villagers' houses and others in hotels. We were four people in general,
Food	1500	1700	200	Most of the time with food bought at the supermarket, sometimes with

				the villagers (include when accommodation with them), some restaurants in the highway. We paid for the guide's and companions meals.
Petrol	650	800	150	14 to 20 pesos (MXN) per litre
Booths, plus oil, car reparations (flat tires, etc)	850	700	-150	
GPS and other material	500	630	130	GPS 260; boxes, vials, cans, jars, etc. (50 libras), bags (50 libras); alcohol (32 euros per liter, around 10 liters); field material (shovels, wooden sticks, bars, etc, for around 100 libras).
Entomologic material	500	700	200	50 libras for every entomological kit (4), dissecting kit (12 libras), minitools (35 libras, 3) 15 or 20 libras per entomological box (10 boxes), labels and pins (between 6 to 10 libras each, 50 packages of different sizes), specialized tweezers (5 libras per 2), glasses (30 libras per 2). With all the students we needed to bought more entomological material in general
National Congress of Entomology	350		350	Inscription, transportation, accommodation and meals for me and two of my students.

*The surplus was financed by my postdoctoral project and the grant I have for the SNI (National Researchers System).

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

The first thing I will do is trying to go this month to the field in Sierra Sur. Then I will finish the examination of all material to being able to determine if there are more new species, and with a list of all species, we can start with the statistics. I'm working on two papers which address the social and cultural features of the communities altogether with the importance of biodiversity. It is important for me to compare the differences for the two different conservation measures, and how it is working both for the communities and for the biodiversity (using dung beetles as indicators).

I will proceed to ask again for funding, I'm interested in continue with this research, working with the communities, and to train and teaching students.

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 on the poster we presented at the National Congress of Entomology in Oaxaca. It was also present in the presentation of the seminars I gave in different institutes (e.g. CINEVESTAV Mérida, CIIDIR Oaxaca, and Bard College) and in the San Pablo Etla assembly. We thanked the Rufford Foundation in the paper (submitted) of the new species description. It will continue to appear in all the divulgation material we are planning to do (we are looking for funding), and in the acknowledgments of every scientific paper and presentation of the results.

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

Matthias Rös, Bert Kohlmann, Axel Arenas Parral, Mario Zunino, Marco Dellacasa, Citlali Pérez, Fernando Escobar and Gonzalo Halffter.

12. Any other comments?

I deeply appreciate (with all my team), the support of the Rufford Foundation for the grant. It really allows us to perform a great research and according to the preliminary results, the final data that we will obtain will be of great quality. The communities also will have access to data that we hop can improve their conservation methods. We will come back to you soon to ask for more help in order to continue with this great project.