

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	Jorge Adilson Pinedo Escatel
Project title	Use of Leafhoppers as Biodiversity Indicators in Endangered Forests of the Sierra Madre Del Sur, Mexico
RSG reference	25290-1
Reporting period	August 2018-August 2019
Amount of grant	£5000
Your email address	adilson1030@gmail.com
Date of this report	August 02, 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
Workshops to communities				All planned workshops were done.
Manual of leafhoppers and host plants per type of forest				Being edited, including comments on species and associated habitats.
Maps of localities sampled				All localities sampled are shown in a map.
Endemic leafhoppers species list				List of species is done.
Description of endemic new genera and species				Currently under description.
Conservation strategy				Under development; we need more data on leafhoppers and forest.
Deposit entomological material to institutions				Sent to University of Guadalajara, and preparing vouchers to send to others.
Map of potential species distribution				Under construction.

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

During our research, five unforeseen difficulties were faced

- *Language of region.* In many communities the common language is not similar in any way to Spanish and we spent time looking for people who could help us, explain our project to everyone in assembly and invite to collaborate with us in the fieldwork. In some places, we could not find Spanish speakers but communities wanted to know about our objective and requested information that benefits their people, while others rejected us.
- *Access.* Getting permission to sample the region was a hard activity; even some villages didn't accept our proposal and others only with conditions. We followed rules and manners to respect their internal law to develop the fieldwork and we always invited people to work shoulder with shoulder, more than five occasions we worked in a group with native people.
- *Drive.* We drove 25,978 km along the Sierra Madre del Sur. To get some places we spent 12 hours driving. Selected sites to be sampled sometimes were 6-8 hours apart. Also, on occasion vehicle needed repairs in the middle of the

Sierra but nothing that I could not handle. Once we reached our destination for fieldwork is euphoric each occasion.

- *Sampling.* Selecting spaces to set up traps without human perturbation to get data of healthy forests, in some cases mainly Guerrero even through mountains and five hours from small villages, there are agricultural waste or forest felling that unfortunately we never expected.
- *Shipping.* Just big cities had ship service, we had to drive many times until next to do it.

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

First. We appreciate many species of leafhoppers are being pressed by habitat reduction due to human activities such as livestock, deforestation, unregulated use of pesticides and bad management of forest. These conditions are presented for lack of knowledge about the associated importance of forests to herbivore insects. We categorised using follow four parameters: a) conserved, b) partially conserved, c) perturbed "not conserved", and d) changed "forest removed". Of the 75 sites visited frequently only 15 can be considered as conserved, 21 as partially conserved, 30 as perturbed and nine without presence of forest as shown in database of country use of resources. Unfortunately, 50% of the supposed area conserved and protected is perturbed. Bad management is reflected in leafhopper populations and in habitats affect tightly distribution and abundance of species. Leafhoppers species were categorised according to observations using rules of NOM-059: protection of native fauna, of which 22% are subjects of special protection, 30% as data deficient and 48% without a defined status. Following IUCN rules 20% of them can be considered as least concern and rest of species as data deficient but more efforts are requested to better understanding of population status.

Second. Since the 1930s there no a list of endemic leafhoppers species residing in the Sierra Madre del Sur, thus this is the first list species confirmed. And for the first time the list of known habitat with particularities of host plants in each zone. Biodiversity enlisted is substantially less than expected and reported during 1930s, sadly appears to be going down but this is the reasoning to continue working on it and generate a plan of conservation where involve both forest and leafhoppers.

Third. All information we are producing right now will share it and invite to communities, scientists, volunteers, conservationists, and government institutions in Mexico to join us and use this case of study as one example in good progress in conservation using leafhoppers as a model of habitat quality of endangered forests within Sierra Madre del Sur.

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

We did have a strong relationship and good collaboration with local communities because without them the project would never have been carried out successfully on time. Many activities depend on all of the people such as adequate sites to sample, common names of plants and use of forest. One example is in Yoloxóchtitl,

where people are thinking of opening an ecotourism project for tourism and our data about endemic leafhoppers was the door to get facilitation of government to pay for it. In other zones of Oaxaca the benefits of our project will reflect in payment for protecting natural resources.

We lived, ate and slept with people in their own houses and my team is indebted for their hospitality, kind help, and lovely people. I will come back to continue working closely with them to finishing to large scale my project in the region. Commonly communities requested information such how to use both resources correctly, forest and insects (leafhoppers), and I will provide always the information.

5. Are there any plans to continue this work?

Yes, I will continue working with this project. Several fieldtrips are still needed to get a better understanding of forest-insects inner mountains. I will add a student to the project to cover more area and more data processing. The cultural, biological and little knowledge about leafhoppers in the Sierra Madre del Sur is obligated to future research. If it is properly, I am request again the support of Rufford Fund to complete in a bigger scale.

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

1. The first step and my major priority is to share information with communities in the Sierra Madre del Sur working close to them and planning next workshops and practical fieldwork. Communities in Guerrero demand more assistance because most threatened habitats were located there. Frequently I will continue going to the assembly in Yoloxochitl to show data compiled. There some more talks to share in Oaxaca communities but I am waiting for dates of assembly.
2. To present a talk in next National Congress of Entomology about our data of this research.
3. Talk in the next edition of the Mexican Association of Systems of Arthropods.
4. Workshop and talk to students in the next Symposium of Zoology at the University of Guadalajara.
5. Articles of dissemination in local journals of Mexico in Spanish to share to communities in a colloquial language to be more understanding.
6. To publish in international journals to share worldwide our impact with this research: diversity of leafhoppers in endangered forest, proposes of conservation, species descriptions, and use-impact of local communities using leafhoppers and forest as sustainable resources.
7. To share my research in next RSG conference if fund request.
8. Start projects of undergrad or graduate thesis.

All products arising from this research are of high quality, reliability and impact not only national even international. The support of Rufford is the basis to continue keep going the fieldwork along threatened forests.

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 timescale was minor than we anticipated because we were able to handle obstacles during fieldwork and helped by communities. I started using the grant from August 2018-August 2019.

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
Flight interception trap (1)	200	200		
Malaise trap (1)	360	360		
Workshop material	100	100		
Local guide payment	188	188		
Vehicle reparations, oil, bands, and flat tires	243	243		
Shipping cost	101	101		
Gasoline	1100	1300	+200	The movement between locations was more expensive than thought, the current rate per litre is \$19-20 MXN
Food	700	700		
Accommodation	798	598	-200	To save money for gasoline we camping many times in villages
Entomological material	235	235		
Ethanol 99% (50 L)	56	56		
Light trap (1)	750	750		
Entomological aspirator (2)	57	57		
Entomological sweep net (2)	112	112		
TOTAL	5000	5000		

Notes on the budgeted.

- The extra amount was covered by University of Guadalajara and CONACYT by PhD student fellowship.
- Inscription to talks in National and International Congress were covered by me.

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

Share publicity information generated and already in process to local and international audience. Continue working with communities, think about our challenges of next fieldwork. Invite people to join us, go to other villages where we cannot access and showed benefits. Document the new genera and species endemic from Sierra Madre del Sur. And submit species to be included under "special protection" of NOM-059 in Mexico.

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, in all material shared to communities. Yes, I always used logo in every talk or workshop.

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

Adilson Pinedo, (University of Guadalajara). Head of project, fieldwork, identification of specimens and analysis of data

Gustavo Moya Raygoza (University of Guadalajara). Ecologist, did statistical recommendations and design quantitative methods of sampling

James N. Zahniser (USDA, APHIS, PPQ, Washington, USA). Identification of specimens

Liberato Portillo (University of Guadalajara). Ecologist, and did design of not quantitative methods of collect.

Mildred Torres (University of Enrique Diaz de Leon). Assistance in database and archive information.

J. Guillermo Rodríguez (University of Simón Bolívar). Sampling assistance.

Edith Blanco Rodríguez (Colegio de Postgraduados, Edo Mexico, Mexico). Assistance in identification

Institute of Botanic of the University of Guadalajara, identification of plant in sites.

12. Any other comments?

On behalf of the teamwork, we really appreciate this substantial support of the Rufford Foundation. With your help, we ran a big project unique in its type around the world. We will continue working on the region. Any comments, recommendation, and invitation will always open to you.