

## 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	
<b>Your name</b>	Marcela Yilotl Cazares Sanchez
<b>Project title</b>	Vulnerability of Quercus spp (Oaks) at the Valle de Jovel basin-Chiapas, Mexico: conservation implications
<b>RSG reference</b>	25636-1
<b>Reporting period</b>	2018 May 18- May 2019
<b>Amount of grant</b>	£3232
<b>Your email address</b>	yilotlcazsan9@gmail.com
<b>Date of this report</b>	

**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
Bimестrial Measure: growth and survival of sapling through the basin gradient.				Growth data (diameter above root collar and height) of 1456 saplings on 14 plots were obtained for a half year. In addition, the environmental variables that affect the sapling survival (mortality, depredation, extraction and light canopy) were collected. Based on this data we obtained: a) The plant growth rate for testing relationships between growth and fitness. b) Survival Kaplan-Meir function Therefore, we know which species are appropriate to be used in the forest recovery, taking into account the environmental variables and the basin gradient.
Remote sensing analysis of oaks' fragments and their adjacent landscape over a period of eight years (2010-2018).				Land cover classification by classes and landscape level of two sentinel images (2015 & 2018) were analysed by using five images to create a vegetation cover map that reflects physical changes of oak patches. To verify the presence of oak areas that were classified by remote sensing, we made identification fieldwork within the Valle de Jovel basin. Finally, physical changes were analysed by landscape metrics to obtain the Valle de Jovel basin transformation over time.
Diversity and natural regeneration of oak species				Oak sapling and oak trees were inventoried in four sites of the Valle de Jovel basin, namely: Reserva Moxviquil, Reserva Ecológica del Huitepec, Parque Natural El Encuentro y El ejido La Albarrada, Aguaje. These sites were chosen due to the local inhabitants' allowance,

				land tenure and internal regulations. Each site has eight transects with a total of 32 transects. All inventoried oaks (transects) were georeferenced by GPS. Diameter at breast height (dbh) of saplings/trees oaks was measured, additionally, the immediate environment of the fragments was generally described. As a result, we can improve the abundance and diversity estimation of oak saplings and trees with occurrence and diversity analysis. This objective and the first should be complemented by using drones, however, its use was restricted to avoid conflicts with local Mayan groups.
Social analysis of the Valle de Jovel basin				The cultural and social analysis was carried out from September to November 2018, unfortunately, due to the lack of communication and interest among the main members of the team, fieldwork was not concluded.
Vulnerability statistical analysis				The Multivariate Bayesian model based on geographic, social and ecological variables was impossible to create, due to the lack of social variables, but geographic and ecological variables will be used in the future to design a vulnerability model.
Oaks Distribution cartography				The distribution of the oak within the study area and the country were carried out based on the project data, tropics organisation and colleague's databases.

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

- a) The culture clash of the Mayan groups with the members of the team. This occurred by different points of view on conservation, as the communities were interested in knowing the composition of their stands, as well as knowing the profit from them. Another proposition was to carry out social interviews in dangerous areas, stating questions that were considered invasive to the communities. One of the team members wanted to create interviews using

'easy language', terribly underestimating locals on their knowledge; therefore social fieldwork was not addressed.

- b) The intrusion to inhabitant's privacy and the different perspectives of the members when using drones to assess the forest matrix and vegetation composition. This situation restricted the complement of traditional methods with innovative tools to measure diversity and vegetation composition of the landscape. For these reasons, diversity and natural regeneration of oak species, as well as landscape verification and classification methods were modified. Cover classes verification was carried out directly by fieldwork, coupled with the assessment of diversity, occurrence and structure by transects.
- c) The change of the land use and the sale of the private land where our plots were established, made us short the monitoring term.
- d) The lack of social variables made changes on the oak vulnerability model, so the statistical analysis will have to be modified using the ecological and geographical variables.

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

1. Current land use map of the Valle de Jovel Basin, which is important to know the distribution and physical extension of the oak fragments.
2. The diversity and regeneration of oak species in fragments with oaks dominant canopy cover.
3. The appropriate species to use in the rehabilitation of oak fragments, taking into account land use, basin gradient and ecological variables.

These outcomes are tools for future conservation planning by social actors, authorities and/or scientists.

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

Links were established with local community stakeholders, mentioned as follows:

Mayan people gave us the entrance permission to establish and monitor the plots and natural regeneration transects. They also accompanied us in some activities.

The indigenous people were directly benefited by acquiring new specimens in their plots, additionally, they could benefit from knowing which species it's ideal to maintain their oak stands without affecting negatively their activities

Private's owners allowed us to enter their land to establish and monitor saplings; some of them, such as the owners of Ecotourism Park, were interested in increasing the oak stand for their activities and knowing the diversity and conservation state of their land. Therefore, diversity and natural regeneration analysis applied in a

diagnosis of the forest state will benefit the productivity and conservation interests of the owners.

Civil organisations accompanied us in one fieldwork with the aim to know the conditions of oaks, as well as methods for evaluating their condition. Particularly, one organisation allowed us to enter to oaks conservation areas, for natural regeneration and diversity analysis, because they were interested in obtaining a report of the research outputs

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

From my personal standpoint, I don't have any intention to continue with this research and working again with the researcher members of the team.

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

I want to highlight two options for sharing these results: First, I would like to publish these data in an academic paper focusing on the potential of a conservation tool, useful to develop a management plan for the oaks as a local resource. Second, I would like to publish these results in a local or/and national divulgation journal with free access.

**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 of fieldwork was two years and a half, where the Rufford Foundation grant was used for the middle year of the total fieldwork.

**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
Drone backpack	93		-93	It was not necessary due to the change of techno to classic tools
Ios support device	300		-300	It was not necessary due to the change of techno to classic tools
Two intelligent flight batteries	248		-248	It was not necessary due to the change of techno to classic tools
Drone Dji Phantom 3	972		-972	It was not necessary due to the

pro for the analysis of oak cover in the whole basin				change of techno to classic tools
GPS Garmin GPSMAP 64s to georeference the established saplings plots, and point the transects in the fragments	272	240	-32	The most elementary GPS was used
Electronic digital Vernier calliper and two diameter tape to measure 1456 saplings in 14 plots	54	98	+44	It was necessary acquired more than one tool to make faster the fieldwork
Two measuring tape 50 meters and two tape measure of 25 ft.		54	+54	Tapes were necessary for the development of a classic method in fieldwork
Gasoline for the truck to use in the field	349	124	-225	Gasoline expenses were reduced when we decreased the social fieldwork
Food allowance for the team per six days every two months	629	162	-467	Food allowance was reduced for decreased social fieldwork.
Guide for field work per six days, every two months	315	247	-68	The guide expenses were diminished due to the decreasing of the fieldwork.
<b>Total</b>	<b>3 232</b>	<b>925</b>	<b>2 307</b>	The difficulties and the omitted social fieldwork were the reasons for not to use all the requested budget. Outstanding budget will be returned to The Rufford Foundation.

### Notes to budget

Assumed exchange rate: 1 GBP= 24. 38 MXN

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

The next step is to publish and divulge the results in different media (magazines, newspapers, brochures, talks, workshops, courses, congresses) where different stakeholders can have free access to these research results.

**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?**

I used The Rufford Foundation logo in my annual presentations of advances and in the pay sheet of my field team. However, any output published and divulgated will have the logo.

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

<b>Members</b>	<b>Role</b>
Héctor Sergio Cortina Villar	The social researcher who contributed to the development of the social method
Darío Alejandro Navarrete Gutiérrez	The researcher who contributed to the development of geographic information systems method.
Neptalí Ramírez Marcial	Senior tutor and principal researcher in the development of theory and fieldwork
Fabiola López Barrera	Second tutor researcher in the development of ecology method
Alfonso Luna Gómez	Principal technician and guide in the field work. He helped in the application and modification of the theory in the field.
Henry Eustorgio Castañeda Ocaña	Technician who helped in the fieldwork
Alí García Espinosa	Guide