The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants 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	Francisco Mora Ardila
Project title	Assessing the conservation value of tropical dry forests under different management activities in the Chamela-Cuixmala region, Mexican Pacific coast
RSG reference	12858-1
Reporting period	12 months
Amount of grant	£5513
Your email address	fmora@cieco.unam.mx
Date of this report	April 4rd, 2014

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
1. Identification and mapping of types of forest covers on a property scale		X		• Identification of forest types was achieved due to the simple local classification scheme of forest covers. Three main forest covers were identified: early successional ("barbecho joven"), late successional ("barbecho viejo"), and old-growth ("monte alto"). • On the contrary, mapping location of different forests covers at property scale was not possible. The original proposal was to do participatory mapping through field surveys across the whole properties, to identify limits of different covers. After mapping five properties, we decided not to continue because: 1. Properties in the region are so large (at least 40-50 ha) and commonly have a complex spatial mosaic of forest covers, that completing field surveys take a long time and spatial limits of forest covers are not accurate enough. 2. The alternative of using satellite imagery was neither feasible, due to peasants not feeling comfortable (understanding) satellite imagery on which mapping was based on, but also due to the low spatial resolution, making location of types of forests very inaccurate.
2. Characterisation of management under different forest covers			X	An in-depth characterisation of the management history was done for one location in each of the 38 properties included in the study. Each location had one of the tree main forest covers identified. Characterisation was done through direct interviews with landowners at the site. We asked for a description of the past management activities, of the actual uses of the site, and in particular of the use of plant species in particular. Finally, we constructed a "management model of the forest" based on the information obtained, yet more time is needed to fine tune the model. Some factors affecting the quality of the information gathered were: 1) the time of ownership of the land, since change in

				ownership of the property limited the reconstruction of the management history to the period of the actual owners ownership, and 2) the time elapsed since management began, since accuracy of the information obtained seems to reduce as time elapsed increases.
3. Evaluating the conservation value of different forest covers			X	We sampled 38 sites (four more than initially proposed) all around the Chamela-Cuixmala Reserve, so we ended up with an interesting characterisation of managed forests at a regional scale. We are highly confident in the characterisation of the biological biodiversity due to our experience in botanical identification, but also to the help of local people in the identification of trees through vernacular names. Although tune of the databases is still in progress, preliminary analysis shows that species richness is highest in managed old-growth forests and lowest in early successional ones, as expected. Also, it seems that presence of species used for timber is the highest under late successional cover. Further analysis on differences in species composition, the presence of rare species, and the density of useful species are still to be made.
4. Identification of the expected management strategy and their willingness to participate in alternative management activities		X		A final workshop was held at Chamela Biological Station (UNAM) to share results from forest and management assessments with local people and the academic sector working in the station, and to assess expectations on plot management in the near future. The "forest management model" and the results on species richness and timber species were presented and discussed. A general agreement on the management model was achieved. By implementing an activity called "the game of future management", we were able to identify the expectations and planned management of properties and assess the possible changes that forest covers, at the property scale would have during the next 5 years. Finally, payment for ecosystem services and silvicultural practices were presented by other local communities or people who have implemented this kind of alternative management strategies, and further discussed with all the participants in the workshop.

				One factor affecting the discussion of alternative management strategies was the time available, which was not enough. An additional workshop for a more in-depth discussion on alternative management strategies is needed.

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

Few difficulties were present during project development. The most important of them was the initial difficulty to approach local people due to their distrust towards biologists. It seems that local people associates biologists to governmental officers who supervise accomplishment of environmental laws, including prohibitions on clear-cutting the forest, on the use of fire, or on the extraction of forest products without permission. Also, some projects which would have brought regional and local economic growth (particularly tourism megaprojects), have been stopped by environmental authorities. So, when asking for permission to work in their properties, many people denied at first, while others felt uncertain about the possibility of future use of those sites.

We managed this difficulty by: 1) being explicit about the objectives and scope of the project, particularly about the use of the results for research purposes only; 2) stating clear, when asking for permission to work, the terms of the deal (particularly that they could continue using their land as before); 3) asking for their companionship during fieldwork, so they could see and learn what we were doing; and 4) presenting and giving back to them the results of the assessment and the information obtained. By doing the work this way, we think we have build confidence with local people, who now understand better the project and feel more confident on working with us.

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

- The most important outcome is the finding that, old growth forest managed for cattle browsing, timber and fuelwood extraction ("monte alto"), have species richness similar to that reported from conserved forest inside the Chamela-Cuixmala Biosphere Reserve. Moreover, finding that there is an apparent greater density of plants reported as useful in late successional ("barbecho viejo") forests suggest that part of that diversity has been enhanced or is related to management (Figure 1). If we confirm these results after tuning databases, we would be showing that forest under local management can have a high conservation value, at the same time that provide resources and support livelihoods to their owners.
- Another relevant and surprising result was the positive projections towards forest maintenance in managed lands (Figure 2). The projections of landowners about the management of their properties for the next 5 years imply the conservation of 50% (on average) of their lands as forested, mainly "monte alto". This projection occurred even under the "best" economic scenario, which could foster the conversion of forest to pastures. This is associated to the high value of use that forest resources and forest cover have for local people. So, at least on the short term, managed lands could play an important role in conserving dry forests of the region.
- The third important outcome was building confidence with local people. By introducing the project with no hide information nor objective, by including people in the project activities directly (forest measurements, interviews), and by presenting and discussing the results of the project with them (retrieving the information back), we have shown them that our work does

not constitute a threat. Also, talking with them openly about their activities and their way of life during the interviews allowed us to create a close relationship. We think this relationship of trust would serve to continue working together in the region.

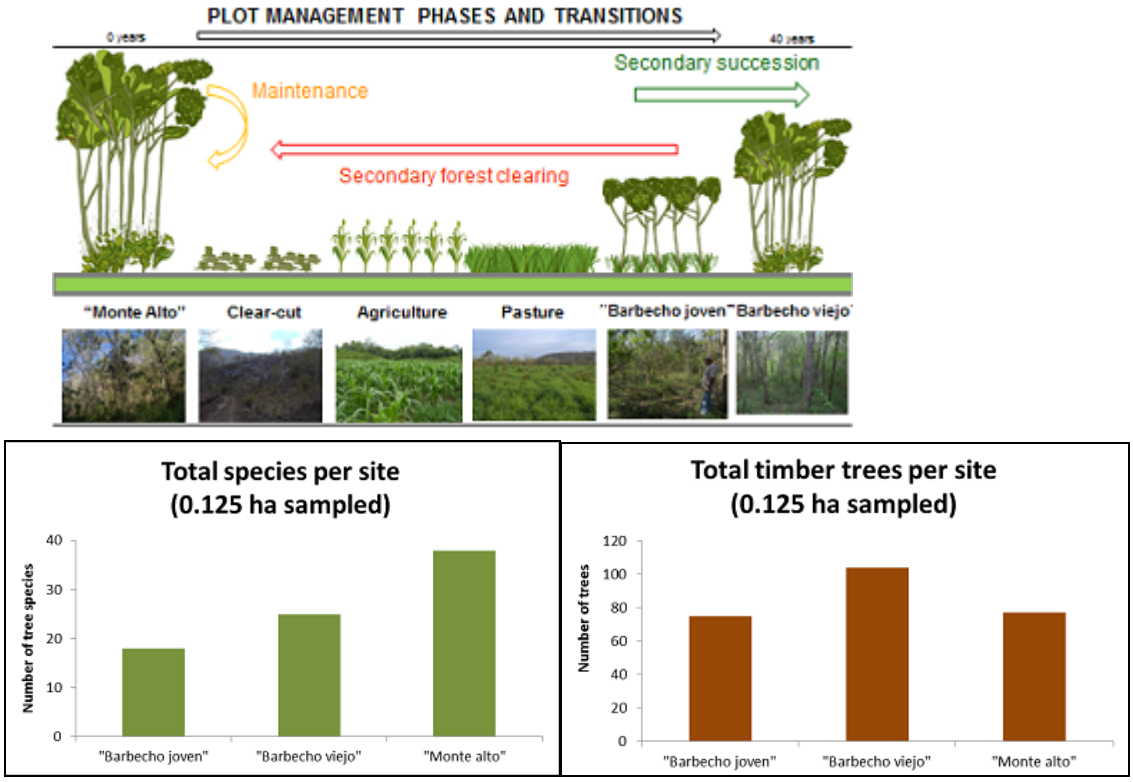

Figure 1. Forest management model and tree species diversity related to the three different kind of forest types resulting from management.

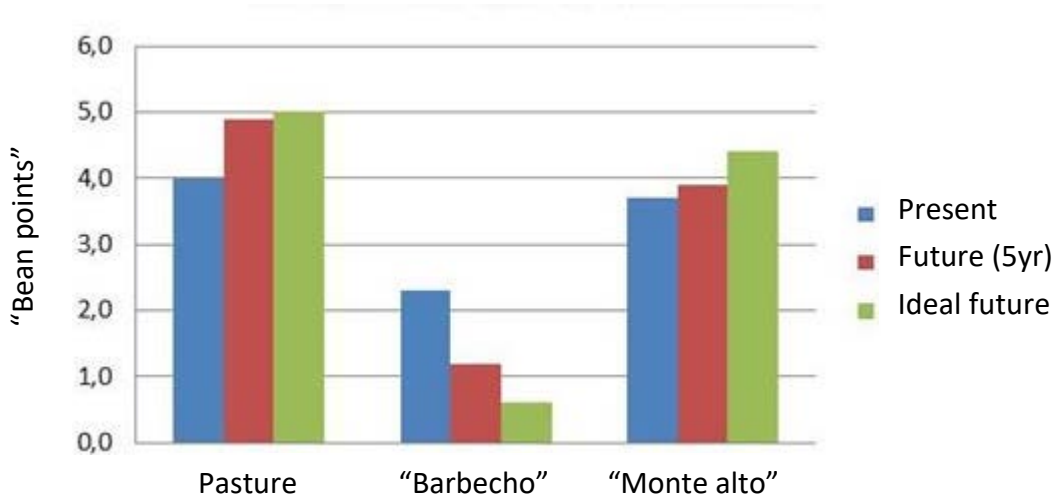

Figure 2. Forest cover under three different conditions. Present: actual condition, Future (5 year): the short term future condition if economic and social scenarios continue as they are at this time,

and Ideal future: the short term future condition if there would not be any kind of economic or social limitation to productive activities.

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

Local people involved in the project by:

- Borrowing their properties to conduct forest assessments, and by providing information on management of these forest.
- Helping us during the forest measurements in their properties (22 of the landowners).
- Participating on the final meeting were results were presented and discussed (35 attendees).

The major benefits for local communities were:

- An economic benefit, since those landowners who came with us for forests measurements (22) were hired as field-assistants and so received a payment for their labour-day. One person (José Gómez) was also hired throughout most of the fieldwork (55 out of 76 days) for helping us in locating people and sites, and doing measurements. He is now trained in identifying trees using scientific names, so we hope this will serve him as a tool in future jobs with biologists.
- The exchange of experiences among local communities or people on alternative management strategies. Although the time was not enough for an in-depth discussion, most of the attendees to the final workshop were interested in asking questions and discussing implications of these alternatives, and some expressed explicitly their interest on implementing them. So, we think we are beginning to foster a process of change in management strategy towards an even higher conservation of forest covers.
- Finally, we think the major benefit local communities (and us as a team) got from this project was the establishment of the relationship of trust. We think now both local communities and we see each other as “work-partners”. Since our intention is to continue working in this region with this and other projects aimed at benefiting local income and biological conservation (see below), this relationship of trust is essential for continued work.

5. Are there any plans to continue this work?

Yes, absolutely. First, although we sampled more sites than previously planned, these are not enough to cover variation in biophysical and management conditions of the forest present in the region. We need to include more late successional (“barbecho viejo”) and old-growth forest (“monte alto”) sites under management to confirm our hypothesis of equal or greater diversity influenced by management. Also, sites along riversides, near streams, or in flood plains are underrepresented and so their potential for diversity conservation is not well assessed yet.

Second, we are already interested in mapping distribution of the different type of forest, but also in evaluating other features of the forest landscape, such as size of mature forest and connectivity through a matrix of secondary forests. We are interested in trying again a local, participatory approach for mapping, linked with the use of high resolution of satellite imagery to generate maps that allow us to identify the value of each type of forest based on their representativeness at the

landscape level, but also in constituting a forest matrix possibly favouring the conservation of other biological groups.

Finally, we are also interested in developing projects on two main topics that arose from interviews and during the final workshop, linking biodiversity conservation and local management. The first topic is the active introduction of native species for the establishment of silvopastoral systems on already present pastures or for secondary or mature forest enrichment. This kind of alternative management strategy would serve as areas favouring conservation of local species through its active management and valuing local resources. The second topic of interest for local people was their warning about the illegal use of certain forest timber resources like "Zangualica" (*Dalbergia congestiflora*) and "Granadillo" (*Platymiscium lasiocarpum*). Those species are listed as threatened species under Mexican law, and subjected to illegal logging in the region. People showed interest in introducing them in forest plantations or for forest enrichment, but there is no local ecological knowledge for their management (collection of seeds, germination requirements, growth).

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

First, we want to emphasise that the first main results from the project have been already shared with local communities during the final workshop. We also want to further share the results of our work by:

- Presenting final results (once all data is analysed) to the local communities through flayers (possibly entitled: "Did you know that your forest…?") summarising the most relevant results of the project.
- Presenting results to the academic community at Morelia campus of the National Autonomous University of Mexico, on May 14th 2014.
- Presenting a formal report of the project to communities through their local authorities, so that it can be further used as a technical document to sustain applications for Payment for Ecosystem Services (by September 2014)
- Communicating the results of these project, through a formal report to academic groups and managers involved in Chamela-Cuixmala Biosphere Reserve Administration
- Writing an academic publication to be published on a conservation journal (probably Conservation Biology or Biological Conservation), relating forest management to tree species conservation and carbon pools (by December 2014)
- Presenting results in an academic congress (most probably Mexican ecological society congress, during 2015)
- Finally, if a meeting on the projects sponsored by Rufford is held in Mexico (as is expected from the convocatoria opened at Rufford´s webpage), it would be very interesting to share experiences with people from other similar projects.

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

The grant was used for a period of 9 months, between July 2013 and March 2014. In the first version of the project, it was planned for 40 weeks (10 months approx.), so we had no problem with the length of the period. However, the fieldwork for forest assessment and interviews with landowners began later than previously thought (by the end of November), due to the lengthening the rainy

season during this year (it was longer than on an average year), ending by early March. This delayed the travel to Mexico City for plant identification until the end of March.

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.

It is worth to say that the budget on the initial (submitted) version was planned in relation to objectives that were subsequently modified when we were asked for modifications of the project after reviewers comments. Since the last, approved version was not accompanied by a new version of the budget, there will be important differences between the original and the actual budgets.

So, actual expenditures can be divided in three main items: 1) fieldwork for forest assessment and management characterisation, originally proposed as separate activities but actually done at the same time; 2) Travel to Mexico City to identification of botanical material at the national Herbarium; and 3) Organisation of the final workshop to present results and assessment of future management and alternative management strategies. These three main items are indicated by different colours in the budget table.

The budgeted amount refers to the RSGF amount in the original budget (i.e., we did not included here other amounts budgeted to other sources that also appeared on the original proposal). The assumed exchange from Sterling pounds to Mexican Peso is 21.79MXN per 1GBP.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Transportation Morelia-Chamela-Morelia to fieldwork (forest assessment and management characterization)	1318 (310 + 1008)	1206	+112	Includes the sum of the transport budget for workshops for characterisation of management and establishment of monitoring system on the original proposal. A total of three trips were done.
Food for staff during the travel Morelia-Chamela-Morelia to fieldwork	245 (115 +130)	258	-13	Includes the sum of the food budget for workshops for characterisation of management and establishment of monitoring system on the original proposal. A total of three trips were done, £86 each.
Accommodation for staff during fieldwork	1904 (232 + 1672)	1750	154	Includes the sum of the accommodation budget for workshops for characterisation of management and establishment of monitoring system on the original proposal. Because these two

				activities took place at the same time, the number of nights of accommodation decreased from 248 to 228. Cost per night was £7.68.
Field Assistants	0	929	-929	This item was not originally considered in the budget. However, hiring them was necessary as a strategy to build confidence with local people and to accomplish fieldwork properly. A total of 77 work-days were paid, £12.07 each.
Transport Morelia-Mexico City-Morelia for identification of botanical specimens in Mexico City	87	91.5	-4.5	Difference due to exchange rate difference relative to original proposal
Food for staff during identification of botanical specimens in Mexico City	203	187	+16	Difference due mainly to the reduction in the number of days spent in this activity
Accommodation for staff during identification of botanical specimens in Mexico City	169	157	+12	Difference due mainly to the reduction in the number of days spent in this activity
Transportation Morelia-Chamela-Morelia for data analysis	165	0	165	Not done because of change in project objectives/activities. Re-budgeted to organisation of workshop
Accommodation for staff during data analysis	478	0	478	Not done because of change in project objectives/activities. Re-budgeted to organisation of workshop
Accommodation for staff during workshops for elaboration of products for continued monitoring	586	0	586	Not done because of change in project objectives/activities. Re-budgeted to organisation of workshop
Organization of final workshop for socialization of the project	358	975	-617	The actual amount is considerably greater than the budgeted because of re-assignation of the previous three budget items to this one. Organisation of the workshop was much more costly than previously though because: 1) it took place at Chamela Field Biological Station, were dinner was offered to all

				participants; 2) payment for transport was required for giving them the invitations, but also for taking them to the Biological Station; and 3) Because of the high assistance to the workshop, a bigger staff was required, increasing the costs of accommodation.
Total	5513	**5553.5**	-40.5	

The difference between the budgeted and actual amounts was covered by the research grant given to Dr. Patricia Balvanera (my PhD advisor), along with the costs of materials for fieldwork and the workshop (not shown here).

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

- Finish data analysis
- Present the final results to local communities and academic groups involved in management of the biosphere reserve
- Applying for new funding for developing at least one of the three items defined in point 5. Most probably, we would like to:

    - Increasing the sampling of forests types that are under-represented under our actual sample, especially those on plain sites and old-growth forests under management.
    - Develop projects aimed to generate conservation strategies and tools towards for the two heavily extracted and also endangered species in the region: *Dalbergia congestiflora* ("Tampicirán","Zangualica"), and *Platymiscium lasiocarpum* ("Granadillo").
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10. Did you use the RSGF logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

Yes. When presenting the project to local communities, we always made clear that we were sponsored by Rufford Foundation. Also the logo was used in the material elaborated for the final meeting: invitations, presentations and diplomas, all included the Rufford´s logo.

We are also planning to continue using the logo in each of the activities planned for sharing the results of the work (see Point 6).

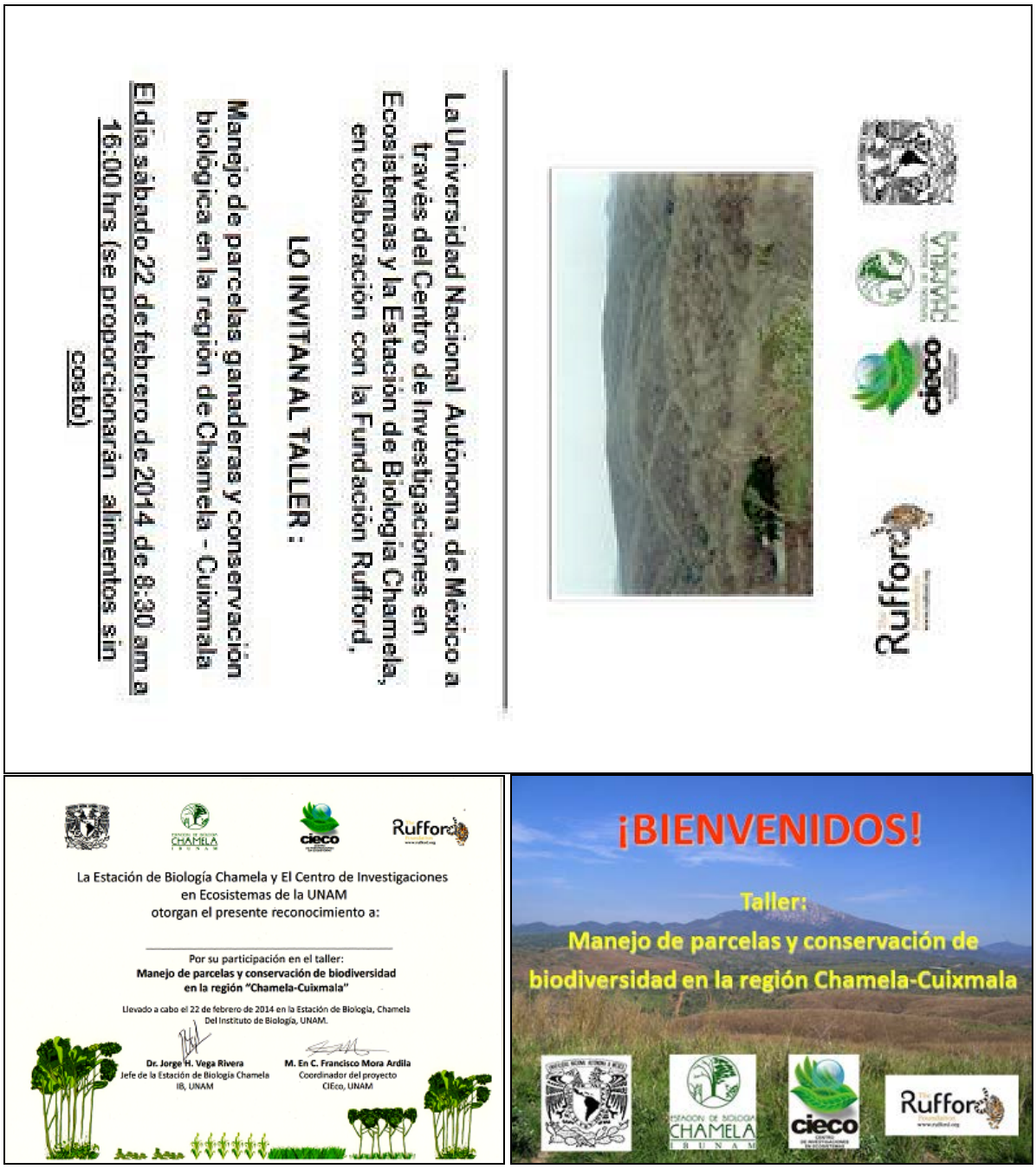

Figure 3. Materials produced during the course of the project where RSGF was used. Invitation to workshop (above), diploma for assistants (below left) and front slide of workshop presentation (below right).

11. Any other comments?

This project allowed us to assess the conservation value of forests managed by local people and adjacent to the Chamela-Cuixmala Biosphere Reserve. Our preliminary results indicate that those forest, because of the number of species present but also it's representatively at the property scale, are playing an important role in conserving biological diversity. But also, they are an active and

relevant part of the management and productive strategy of their owners, who wants to conserve them, at least in the near future. So, our work points towards the value of managed forests for both conserving biodiversity and sustaining local livelihoods. Finally, but not less important, this project allowed us to build confidence with local people, enabling continued work in the region through projects aimed at favouring biological conservation at the same time that try to improve local livelihoods.

We would like to acknowledge Rufford Small Grants for trusting on this project. First, as stated in the project, the grant let Francisco Mora accomplish the final part of the fieldwork associated to his PhD project. Also we would like to highlight the relevant role played by a team of collaborators who helped us with redefinition of the project (when asked by project reviewers), but also throughout its implementation: Dr. Andrés Camou, Dr. Alicia Castillo, BSc. Daniel Cohen, Dr. Eduardo Gacía-Frapolli, MSc. Ana Yésica Martínez, MSc.Tamara Ortíz, and BSc. Oscar Ugartechea. Many people helped us during fieldwork: Clarissa Guzmán, Daniela Arellano, Emiliano Guijosa, Erika Kuen, Karla Pérez, Laura Jiménez, María Fernanda Gallardo, and Paulina Reyes.

Special acknowledgments are given to all the people from the “Ejidos “were the project was undergone. Without all their willingness to help us and borrowing us their land and time, this work would not be possible.