

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	Ariel Isaias Ayma Romay
Project title	Restoration and management of Queñua (<i>Polylepis racemosa</i>) and Pino de Monte (<i>Podocarpus glomeratus</i>) woodlands in the Yungas of Independencia, Bolivia
RSG reference	14374-B
Reporting period	From February 2014 to Jun 2015
Amount of grant	£11,998
Your email address	ariel.isaias.aymar@gmail.com
Date of this report	14 th June 2015

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
<p>Promote the environmental education in schools, and communities</p>			x	<p>First, we carried out an evaluation of the environmental education situation of the in three public schools in Independencia. Many teachers are new each year, coming from other localities, and few teachers have lived in the municipality for a long time. Therefore, the principal limitations were that the teachers do not know the local environmental problems, and even less about the problems of the forest and their species. However, some of them had a lot of motivation to work in environmental education, but still without a lot of information and tools to teach to students (the environmental education had been reduced to recycle garbage and caring for the school). Thus, we carried out five workshops with them, to propose and design a curriculum to include main themes about environmental education in the class for the long-term (local extinction species, benefits and causes of overexploitation of native forest and trees, soil erosion, fertilisers and pesticides, and community norms to protect the forest). In addition, three guides with these specific contents were created and distributed in the school libraries. The guide will be used by them this year.</p> <p>We organised three environmental fairs in the main village (Villa Independencia) to teach the experiences of local policies, the use and protection of the forest, and reforestation, with teachers and students of schools.</p> <p>Then we carried out interviews with the people of the municipality (60 people), revealing that 30% of them, approximately 8000 children, teenagers and adults of the municipality, heard our nine radio programmes about conservation of the cloud forest, forestation, and local experiences in forest management. We received good comments about the programmes. Analysing their opinions, the programmes did not influence about the participation of the people on municipal policies for forest management, but we learned that farmers can give opinions more conservationists in communal</p>

				meetings, in order to reinforce the forest management.
Facilitate local agreements to the community-based forest management		x		<p>We carried out interviews to authorities and professionals of municipal government and two NGOs. Also, we carried out one focus group with professionals of the municipal government. Also, we had semi-structured interviews and workshops in three communities (Pajchanti, Salviani and Palermo). We have understood that the work among the local government, NGOs and local communities to conserve the forest is very important for them, but there exist organisational limitations among the organisations. The most important was that the municipal government changed personnel very frequently, and they did not have a great understanding of the problems of communities for use of the forest (control and monitoring of the forest were rarely carried out, and personnel did not know the local rules of forest use). Also, they had a lot time prioritised for agricultural practices, and little time for the forest. The communities still do not have enough trust in the NGO and municipal government to talk about their internal problems for forest use, and they know that the rules do not always work because not all people follow them. Therefore, sometimes they need the help of others to improve their rules and apply sanctions. Last, the NGOs work mostly in their specific projects, apart from the municipal context. The coordination and assistance to communities is not always a part of their projects. We did not achieve the goal to meet with the municipal government and improve local regulations at the municipal level. We did the workshops with them, but they failed to implement new activities and increase the budget for the forest. On the other hand, the communities had a better attitude; they evaluated the accomplishments of their regulations and analysed their weaknesses and strengths. They also asked for our cooperation in reinforcing the regulations again, and we accepted the request. Activities of unsuitable use of the forest by some families with power, and even some schools, were stopped after much discussion and debate with them. We also supported the print of the regulations for all members and the production of radio programmes to spread the new updated and extended regulations. We organised two workshops with leaders of communities of the municipality</p>

			together with FUPAGEMA in order to evaluate the work of the norms to use the forest (weakness and strengths). As result, proposals emerged to improve the forest control and strengthen the participation of local government and communities. Some of these ideas will be promoted by FUPAGEMA.
Recover the forest		x	<p>We produced 10,500 <i>P. glomeratus</i> and <i>P. racemosa</i> plants and other native species in the nursery. However only 7,000 seedlings were planted. Some <i>Polylepis</i> plants were attacked by the <i>Peronospora</i> sp. fungi (approximately 2,000 plants died) and other <i>Podocarpus</i> and <i>Polylepis</i> plants did not achieve a good size to plant (approximately 1,500 plants). The seedlings of <i>P. racemosa</i> were planted with different treatments of fertilisers, near and far from native shrubs. In two areas (In Salviani on grassland and in Palermo near two springs). Seedlings of <i>P. glomeratus</i> were planted in different microhabitats (grasslands, disturbed forest and old forest) in Pajchanti and Palermo. We produced plants through cuttings and seeds, these factors were also considered in experiments. Monitoring will be carried out each year with the FUPAGEMA organisation.</p> <p>We also evaluated the plantations in Pajchanti carried out earlier (in the year 2010). Currently, we have a 40% survival of <i>P. lanata</i> and 30% of <i>P. glomeratus</i>. The analysis of data suggests that the principal problems of survival and growth of plants were the altitude, microhabitats and nutrients. The new experiments and reforestation implemented this year considered these previous results. We hope that the new reforestation and experiments will have better results. Apart from that, we can assess how many can affect the nutrients and conditions of microhabitats in the reforestation.</p>

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

Last year, the teachers had many activities. For example, sport championships, training programmes for Bolivia's new education reform, and other religious and patriotic cultural activities. These reduced the time to plan workshops and it reduced the time to teach the students. However, we made an agreement with another local organisation "Proyecto de Alcantarillado y Manejo de Agua - PAMA" that also wanted to include in their planning curriculum the themes of the environment and management of potable water in the main village. Therefore, we worked together to carry out the workshops with the teachers, the content being curriculum planning for on environmental conservation (including both perspectives). Although PAMA already had a guide for teachers

(provided by the Ministry of Environment and Water of Bolivia), we preferred to design a guide with various topics about local problems of the forests of Independencia, prioritised by the teachers.

In the nursery, the biggest problem was the harvest of seedlings and vegetative material of both species, because there was poor regeneration in the forest. Later, the attack of *Peronospora* (September to December) killed many plants, but we achieved to control it with care and fungicides. Also, there was a problem with the slow growth of *Podocarpus* plants. These problems caused the delay of the plantations in the communities. Because of this, the reforestation took place in February and March of this year. The leaders of Fupagema were motivated to produce the native plants, but the people working in the nursery were not as capable and motivated to produce the plants with special care. So, the volunteers had to provide more support to produce and look after the plants, reducing time to work in others objectives of the project.

The community of Pajchanti had new conflicts and problems with use of the *Podocarpus* forest. When we did the interviews, they spoke to us about their problems openly, but some did not tell us the main problems of the forest, due to fear of accusing other powerful members of the community. During the workshops, they debated various topics, but the key problems were not being touched. Then, we started to introduce problematic themes respecting the anonymity of the community members in the interviews (informants) and to think of new norms and arrangements to manage the forest. For example, some members of Pajchanti did cut the forest of *P. glomeratus* outside of the limits of the community, and others did not like this, but nobody made the accusation until we spoke of the problem at the meeting. So, the interviews were very important to get to know the social and ecological situations of each community better, and to treat relevant problems in communities. To speak about identified polemic topics at the meetings caused a loss of confidence with some members.

The communities have some problems for their regulations to work effectively. The main causes were: a) Sometimes they do not accuse powerful members of wrong activities, due to fear or embarrassment. We treated this problem and consequences in the compliance of the norms, but this not will be sufficient; b) They did not always observe changes in the forest in a similar manner, and good decisions were not always made because of this. We wanted to carry out a forest census to improve the perception of abundance of trees in the forest, but they did not accept the idea; and c) The norms are not valued in the same manner by all the members. Most of the people abide by the regulations, but a minority do not. This causes problems in the effectiveness of the norms. It is clear that our participation among them facilitated motivation, but we are worried, because who will make this work in the future, if they will not overcome these organisational problems. However, we observed an improved learning about the forest in these last years.

The municipal government had interest in participating in workshops to debate the problems of the forest at the municipal level at the start of the project. However, it was difficult to programme days and hours to carry out the workshops. During this project, three professionals were changed. Sometimes not all participants came to the meeting because they were out at the communities. The poor organisation of the municipal government did not help either. We also tried having these workshops together with the NGO FUPAGEMA, but the problem was the same. After having the workshops, the follow-up was not taken seriously, in order to modify the organisational structure and the internal rules and functions to improve the work in communities with forests. The reasons for this situation were the poor prioritisation of the native forests, few capable staff managing the forest, and the uncertainty that they would continue in the same post. Together with other

organisations, we participated in some meetings with the favourite candidate for the municipal government, with the objective of initiating the proposal to reorganise the structure and functions of the “Department of Natural Resources and Environment” of the municipal government. These ideas were included in the municipal plan (2015 - 2019). Currently, this political party won the elections. We have a window open to work with them in the future. Maybe the future will hold the most important to work, with a perspective more political than technical, if we want influence in the municipal policies.

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

For first time, we were able to include a proposal of planning curriculum for environmental education, together with the teachers. The environmental education guides included the knowledge of organisations that have worked for many years in the municipality about the extinction of species, distribution and ecology of native forest, causes of the degradation and overexploitation of the soil, the forest, and species such as the *Podocarpus* and *Polylepis* trees. In addition, we provide fun learning methodologies to teach to children and youth of rural areas. Link: <https://sites.google.com/site/conservacionbosquesneblina/guia-educacion-ambiental-para-profesores-de-independencia-ayopaya-cochabamba>

Nine radio programmes were broadcast in station radio “Domingo Savio”. Also we intensified the dissemination of all the radio programmes produced by the RSG project in other local radio station “Guerreros de Independencia” in order to reach more listeners and have more impact. We have included real cases and this was liked by lot of the people. For example, leaders of communities of Pajchanti and Salviani went to the recording studio to record four stories in their own words about the cutting and burning of forest and the regulations of their communities. Also, we identified other local cases through of interviews of local people, and these were converted into radio programmes as well.

We worked together with the communities (Pajchanti and Salviani) to make sure that the majority of their norms and arrangements for forest use are fulfilled. The burning of the forest and grassland has been reduced to zero in the last years, *P. racemosa* have been protected, and no one cuts down within the communities, and the commercial use of the wood of *Podocarpus* and other native trees were forbidden. In Pajchanti, the rate of harvest of *P. glomeratus* has been reduced, no one has cut one tree without a communal authorisation, among other norms. Their new norms look to regulate the cutting and burning of the forest outside of the community, optimise the quantity of wood harvested depending on requirements by the families, reduce the waste of wood and cut trees of different areas for reducing the impact in a same area. These regulations will help the internal demand of the community of Pajchanti do not affect so much at forest. In Salviani, the norms have reduced the quantity of cattle inside the forest, the burning of old forest and the plantation of such exotics trees as *Eucaliptus globulus* and *Pinus radiata*. The protected area was respected, too. The new norms look to reinforce the organisational systems in order to facilitate the accusation and sanctions of people of the community and neighbours that not comply with the norm, and establish explicit functions for members and authorities of the community. In the community of Palermo, the situation was different. They had some norms to use the forest, and these were valued and reinforced with others that look to protect the *Polylepis* forest in a similar manner as that in Salviani and Pajchanti. We learned that new problems for the forest can arise and that the communities should learn to adapt their rules and decisions without outside help, and alternatively, have links with other local organisations that could mediate conflicts and monitor the behaviour of them with

their forest and norms. Pajchanti and Salviani put up signs to inform the sanctions for the burning, felling, hunting or littering in the forest. This will avoid the farmers and students from other communities commit these offences.

Previous forestations were evaluated "in situ". We have a high mortality of plants, among 60 to 70% of plants. Conditions are optimal for altitude, nutrients, and microhabitats, and this seems to be the explanation for this result (a statistical analysis was carried out with previous experiments). The new forestations were carried out together with the experiments that will monitor the survival and growth of plants in different microhabitats, nutrients and type of reproductive material (vegetative or generative), considering previous results. The data will be taken the next years and we will expect better results.

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

Until now, all of our principal results were made with the beneficiaries. The teachers participated in curriculum planning and fairs with us. The environmental education guides and bibliographic material was donated to the three schools by those with whom we worked. The communities of Pajchanti, Salviani, and a little less Palermo (this was the new community that we recently started to work with), participated with the interviews, by debating problems, and by approving the evaluations and new rules or adaptations for forest use. Therefore, I think that the rules and experience will stay in the communities. Also, we distributed sufficient copies of the updated norms for each person of the communities and other neighbours, as well as banners with all the norms for their meeting house. The work with the local radio was carried out for all the people of Independencia and we confirmed that at least 30% of all the population of the municipality listened the programmes. The reforestations were carried out with communities, they know their location and the experiments, and will observe the differences among treatments, too.

5. Are there any plans to continue this work?

I think I will continue this work next year in order to have more time to evaluate reforestations and social processes in the communities.

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

I am writing small articles to circulate results and experiences in reforestation, environmental education, and community forest management, in order to teach other local organisations and communities. However, these experiences also should be shared at the state, national and international level, and for this, I am creating a web page to upload all this material to. Also, I am preparing scientific articles of the best experiments and evaluations carried out. Link: <https://sites.google.com/site/conservacionbosquesneblina/home>

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

I used the funding of RSG from February 2014 until now. I estimate the project has 95% percent of the activities finished. The diffusion activities are not completed yet and will be finished by May 2015.

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.

Local exchange rate used: £ sterling = 10, 28 bolivianos

Item	Budgeted Amount	Actual Amount	Difference	Comments
70 bus tickets (Cochabamba - Independencia)	210,0	227	-17	I bought bus tickets for volunteers and me. I still have to buy some more.
Food and lodging in Independencia (350 days). I will eat in local restaurants and I will stay in a small hotel in the principal village (Villa Independencia)	2870,0	2130	740,0	I rented two rooms for 12 months (March 2014 to March 2015) and bought two beds, 2 chairs, 6 blankets, and other accessories to furnish the rooms. Only 38 days in lodging were used. I ate in restaurants in Villa de la Independencia.
Food and lodging for volunteers in Independencia (200 Days). They will help with workshops and fieldwork	1640,0	2945	-1305,0	4 volunteers worked with me. Two of them were there 20-25 days per month during 10 months. The other two volunteers were there 3 - 5 days each month. This increased the cost of food. They also used the rented rooms, described above.
Recording of 10 radio environmental education programs.	300,0	300	0,0	1 radio program was not produced
Radio broadcasts (the radio station will transmit the programs 5 minutes per day during 12 months)	300,0	500	-200	The 9 radio programs were transmitted 5-10 minutes per day during 12 months (April 2014 to March 2015). I decided to diffuse all the programs produced by RSG again from April to July 2015, but in another local radio "Guerrilleros de Independencia" in order to reinforce the diffusion of programs.
Tables, chairs, and banners for the organization of 5 environmental fairs in Villa Independencia	400,0	400	0	These materials were donated to school participants in the fairs. And I bought school supplies for students that won the organized competitions.
Colour plates (3000) will be printed in print shop)	240,0	0	240,0	These activities were suspended because I think it was not as necessary for curriculum planning

Printing environmental education guide (500 copies of the guide will be printed in print shop)	1500,0	0	1500,0	We preferred not to give guides to the teachers, because most of them often change the school and municipality where they work. The guide prepared this year will be implemented. If we find positives results then we can print copies for all schools of Independencia.
Rent meeting room, buy meals and lodging for farmers and other participants visiting Villa Independencia to participate in 5 workshops	1500,0	1500	0	Workshops with farmers and professionals of the municipal government were carried out with normality. But, I spent less than I planned to.
Writing materials for workshops, interviews, focus groups (I will buy pencils, exercise books, cards, cardboard, colored pencils and paper)	150,0	250	-100,0	We led more workshops with communities and I needed to buy more materials.
Fuel for the operation of one motorcycle (250 litres)	125,0	300	-175,0	This year it was difficult to buy fuel in Independencia, due to new national regulations. The fuel cost per litre increased.
Use of motorcycle (50 days). I will rent one motorcycle to travel from the main village (Villa de Independencia) to the communities	500,0	500	0	I rented only 51 days of motorcycle up to now. I still will use a motorcycle to go to communities and reforestation areas.
Labor (150 days)	450,0	850	-400,0	The collection of seedlings, silviculture practices in the nursery, the evaluation and implementation of new experiments needed more labor.
Transportation of plants (5 Contracts). I will rent one truck to transport plants (from the nursery to communities)	400,0	520	-120,0	I had contracts to rent a truck. (2 contracts to Palermo, 2 to Pajchanti and 2 to Salviani).The distance to go to Palermo was longer and I paid a little more.
Materials to produce 10000 samplings (tools for nursery, water, gloves, topsoil, shade cloth)	300,0	450	-150,0	I bought more topsoil
Materials for reforestation (mesh, wire, support stakes for the protection of plants from domestic use, tree planting, bags, shovels, aluminum tags)	900,0	600	300,0	All budget was not needed to buy wire.
Materials to increase vigor of plants (fertilizers, biostimulants, mychorrizes)	88,0	120	-32,0	Bio-stimulants, fertilizers and fungicides to manage attack of <i>Peronospora</i> sp (fungi) on <i>Polylepis</i>

				were bought.
Tools to harvest seeds and cutting (scissors, bags, binoculars)	25,0	56	-31,0	I bought 2 scissors and a binocular to look for seeds
Products and services for project administration (Ink for printing, Cellular minutes, Paper, CD's)	100,0	350	-250,0	Also, I bought a printer to do office work in Independencia (I printed reports for volunteers, did planning, invitations, printing of documents, scientific articles, brochures, guides, primers and others)
Total	11998,0	11198,0	0	

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

I would like to continue the activities that were carried out, and implement future plans as well. I would like to participate in subsequent funds with RSGF and continue to look for more financing to do more projects. For example, share the experiences of reforestation and community forest management and environmental education in others communities where there is *Podocarpus* or *Polylepis* forest and where there is urgent work. Also, monitor experiments of reforestation and evaluate the work of schools with the guide, and of the norms of the communities.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

Yes, we always used the logo and name of RSGF in the reports, documents, printed materials, and with the workshop and meeting presentations.

11. Any other comments?

I feel that the resources donated by RSGF were invested very well and put to use. Until now, I think better results than anticipated were achieved. While some activities were not carried through to the end, they were compensated by other equally important activities.