

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	Antonia Barreau Daly
Project title	Revitalising biocultural diversity and plant conservation through traditional food systems in the Andean temperate forests of Patagonia, Chile.
RSG reference	12367-1
Reporting period	October 2012- November 2013
Amount of grant	£ 4541
Your email address	abarreau@gmail.com
Date of this report	25/06/2014

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
i. Document traditional ethnobotanical knowledge of wild edibles of the temperate forests.			X	<p>We have been able to document wild edibles present in the Andean mountains near the Pucón municipality. Because traditional knowledge is always local, the information recorded represents the local knowledge of a Mapuche community of the surrounding landscape and their long term interaction with its constituents. Over the period of 6 months living with the community, 47 wild edibles belonging to 45 genera and 34 families were identified and specific information on each species was also recorded (origin, abundance, gathering season, life form, edible part and preparation). The 20 most salient species (Smith's Index) were studied in depth to understand their importance to strengthen the community's food sovereignty and to reconstruct local memories and history in relation to edible plants and the landscape. For these species, also harvesting techniques, habitat, traditional preparations, and other uses like medicinal, handicrafts, magical, natural dyes and tools were recorded. Though we found comprehensive ethno-botanical knowledge of wild edibles and medicinal plants available in the area, preliminary results indicate that this body of knowledge is almost certainly facing a process of erosion as it was mostly held by elders and some adults. According to participants, the reasons for the obstruction of transmission of environmental knowledge to children and youngsters were associated with a limited access to and the lack of daily interaction with forests, which is a matter of concern and further exploration. As Mapuche pedagogy is oral and foremost <i>in situ</i>, forests have been for generations a physical learning place for children to gain environmental skills as reported in interviews. However, due to historical land grabbing in their territories, most forests</p>

				surrounding the communities currently belong to non-Mapuche landowners or are part of private and public protected areas which follow strict preservationist paradigms. Restricted access to forests not only prevents the consumption of wild edibles undermining food sovereignty of communities but it has also implications for reaffirming traditional beliefs, social cohesion and Mapuche identity as intergenerational environmental learning is interrupted.
ii. Explore the current consumption and use of forest foods			X	<p>Through participant observation and weekly food diaries conducted by children in the community we were able to explore the actual use and frequency of consumption of these wild edibles by the local people between mid-October and late April. We still need to explore the species that are available the rest of the year, which was not possible due to time constraints. Through the use of oral history, it was possible to identify the species that are not consumed anymore and to relate changes in the land use and land tenure to their reduced availability or accessibility.</p> <p>Some species were prepared to be marketed during summer time for tourists, but some other species, due to the Mapuche cosmovision, were forbidden to be merchandised. Market prices and seasonal variability were also recorded in the local market.</p> <p>As wool handicrafts is very important as a source of income for most families, the use of plant species as natural dyes was also documented, many of which were also edible.</p>
iii. Explore the heterogeneity of ethnobotanical knowledge within communities with different access to forest products.	X			<p>Because the Mapuche people have been historically abused in terms of indigenous rights and land tenure, today most Mapuche people feel great distrust from <i>winkas</i> (non-Mapuche or white people). Therefore, it took us almost 1 month in gaining the trust of one community in order to conduct the study. It would have been very challenging and time consuming to try to gain rapport in different communities, as trust was gained day by day. While on the</p>

				field site, we thought it was more prudent to focus on one community, which was a good reflection of a greater reality (communal), so we visited several indigenous communities willing to participate and chose the most representative. This method helped us to make a thorough ethnobotanic study with good qualitative data, rather than prioritising the amount of data, which did not make sense to be a study based on ethnography and environmental-anthropological methods. The heterogeneity of the knowledge was explored within the community, mainly among different age groups (as explained above).
iv. Reconstruct local memories and history in relation to edible plants and the landscape.			X	Through formal and informal interviews on the subject of wild foods and changes in traditional food systems, it was possible to collect personal accounts, narratives and local stories. This in addition to rebuilding the collective memory, allowed us to understand the human-forest and community-forest relationship and its changes over time. Oral histories offered insights on how traditional practices as gathering wild edibles, designed over centuries of community-nature relations, may result in biodiversity conservation. This is the case of taboos, like the <i>Ngen mawida</i> (owner or protective spirit of the mountains), that have protected the monkey puzzle trees from overexploitation as people can be punished by this entity. Also reflecting with community members on their own stories of close relation with the environment helped them visualise the impacts of forest loss on their lifeways, food systems, knowledge loss and wellbeing of their families and indigenous community.
v. Generate, along with community members, a field guide on forest wild edibles including species identification, conservation status		X		This objective was considered partly achieved because the ethnobotanical guide has turned into a bigger project itself, which is to publish a more complete and illustrated book. Due to the quantity and quality of the information collected during the project, a small guide seemed insufficient in terms of content and the idea

(if known), sustainable harvesting techniques and preparation methods, as well as local narratives from the communities in relation to each plant and their landscape.				<p>of a book grew as a collective project. A book with 21 species is being prepared and hopefully will be soon published. Geraldine MacKinnon, a Chilean botanical artist, was invited to join this project as illustrator. She is currently working in full colour illustrations of 21 species that will be included in the book. Each realistic illustration will help the reader identify the species of wild foods for proper gathering. Her web page: http://www.minaturalismo.com/</p> <p>Each species will be described in terms of habitat and botanical characteristics and recipes will be included to encourage the reader to prepare them and try them. The text of the book is simultaneously being written.</p> <p>The central aim of the book, in addition to documenting traditional Mapuche knowledge of these wild foods, is to encourage the use of these non-timber forest products, and the revalue the products that the temperate forests, an increasingly threatened ecosystem, provide. Copies will be returned to the community and will hopefully be given to local schools for outreach and environmental education. I have recently been awarded the Darrell Posey Fellowship for Master students which will also contribute to the publication of this book, as well as the Namkoong Family Fellowship (granted between 2012 and 2013).</p> <p>A final copy will be sent to Rufford Small Grants as soon as possible.</p>
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

Gaining rapport: Because it is essential to gain people's trust to conduct a reliable and in-depth study, we needed to assign many days for obtaining permission to conduct our research in the community. We based our research on participant observation, a method derived from ecological anthropology, in order to capture local communities' traditional knowledge and perceptions on the subject. Participant observation requires that the researcher immerses herself in the social setting under study. To do so, we needed to have the approval of the chief and of each adult member to allow us to conduct the research and move to live in the indigenous community, which was not an easy task due to their distrust from outsiders. Even though, I (project leader) was presented to the *Lonko* (Chief) by the head of the Indigenous Programme of the municipality, and he accepted me, I

spent almost a month calling and visiting every single household to finally receive their consent. Before beginning any research, community members were convened to a meeting to educate about the research and carry out the process of prior informed consent. In order to tackle this difficulty, the fieldwork season was extended in approximately a month.

Time constraints in anthropological research: because methods used need plenty of time for conversation and informal interviews, it was decided to focus on one community instead of compare different communities as was proposed. We decided to do a deeper study than give priority to quantity but less quality of data.

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

- Documentation of traditional ethnobotanical knowledge of wild edibles.
We were able to record a total of 47 wild edibles belonging to 45 genera and 34 families. Rosaceae was the most represented family with five species, while Asteraceae and Cyttariaceae were represented by three. About 60 % of families were represented by single species only and almost 28% were introduced or exotic. For each species we documented the following information: scientific name, Mapuche name, English name (when existing), origin (whether native or introduced), life form, edible part and gathering season. For the twenty most salient species (according to the Smith's Saliency Index) we documented the following additional information: ecology of the species and habitat, conservation status (when available), other uses (other categories: medicinal, natural dye, toys, handicrafts, ritual or magical, construction and tools) and forms of preparation. Through photo-elicitation interviews and informal oral history, narratives around people-plants relations through time were record and analyse to understand how this relation, and finally consumption, has changes through time due to restrictions of access to forest ecosystems, scarcity, changes in food preferences and erosion of knowledge. Many of these species are not consumed anymore and some others, especially recently introduced species, are increasingly being consumed. All this information is being captured in an **ethnobotanical illustrated book** that we hope will encourage the local community to sustainably collect, prepare and eat these wild foods for their own benefit, for food sovereignty and for the conservation of biological diversity.
- Identification of current limitation to forest edibles consumption for further action and applied research.
By analysing the state of ethnobotanical knowledge of wild edibles in the community, we realised that this knowledge was not being passed on to the youth and children. The elderly and most adults have a comprehensive knowledge of the local flora and their uses, but not the younger generations who have a limited as they lack practical component of the traditional knowledge (according to Toledo 2002; corpus or body of empirical knowledge, praxis or experienced knowledge and cosmos or beliefs associated to the knowledge). Our results suggest that the main constraints for the maintenance and transfer of this knowledge are: (a) restricted access that families have to forests ecosystems which have been for generations the physical place for the transfer of environmental skills and knowledge and for self-learning; (b) the historical land grabbing in addition to the continuous land inheritance through generations, has resulted in small farms (< 4 ha in average per family) where cleared areas have been prioritised over forests to meet their minimum subsistence needs, mainly for sowing grains and raising livestock. As a consequence, this has left just remnants of forests in their hands; (c) the national schooling programme requires that children from

seventh grade onwards migrate to urban centres to attend boarding schools, as local schools offer only until sixth grade. This system has reduced the daily interaction between children, parents and forests; therefore, limiting the knowledge transmission as Mapuche pedagogy is oral and foremost *in situ*. These findings open new questions as to the role of national and private protected areas and the role of the Chilean state in policies of returning indigenous lands for community's wellbeing and biocultural conservation. It also brings new insights into how to approach both biological and cultural diversity conservation strategies in the near future when ecosystems and resources are restricted to local people.

- Applied research for reconnecting local people to forest foods and traditional food systems: during the fieldwork, and through the research methods chosen, the local community was actively involved in the study, searching to create consciousness and advance in solutions to the current issues of knowledge loss and lack of accessibility to forest products.
 - (a) **Gathering field trips:** we had the opportunity to visit traditional sites of wild food gathering, guided by many families who wanted to share their knowledge and childhood memories about wild foods and gathering trips as a traditional social act. Also many women, excited about the study, invited us to observe how they cooked these forest foods and later to taste their preparations. Many expressed great joy in cooking again as in the old times and also retesting almost forgotten flavours. Children had also the chance to try, sometimes for the first time, wild food preparations and get to know how delicious and healthy they are. For our part, we took them to the only private conservation park that allows the extraction of non-timber forest products to local communities, as a way to show them that there are alternatives to access these foods and medicines. We provide transportation and economic support when needed, to encourage and carry out these trips. These experiences were not only fruitful for our research, but it proved to be important for participants to rethink the importance of forests and their products for their own welfare, cultural preservation and social cohesion.
 - (b) **Cooking workshop:** as informed in our second update report, we successfully organised a 3-day cooking workshop directed to the women of the community titled "From forests and home-gardens: Cooking with Wild Edibles". The purpose of the workshop was to encourage the use of wild edibles and the revitalisation of lost traditional food practices, but also as a way to give back to the community. It was guided by a local Mapuche cook, Sonia Aliante, who has for some years been collecting traditional recipes, as also creating some new ones, to encourage the use of local foods. The result was a very participative cooking workshop, where home-grown vegetables and gathered wild edibles were brought by women to collectively prepare and enjoy afterwards with stories and narratives about forest foods and Mapuche traditional gastronomy. We received a very positive evaluation from the participants, and encouragement to keep expanding this workshop as an educational program into the surrounding communities.
 - (c) **Future steps for continuing the efforts in the area:** we are currently drafting a conservation project in collaboration with Mr. Jeremy Murray, the North Carolina Zoo's Curator of Interior Horticulture, entitled *Conserving Cultural Foodscapes of the Southern Andean Temperate Forests, Chile*. The general objective will be to facilitate a community-based conservation initiative which seeks to reconnect local indigenous groups with native forest edibles in order to conserve remaining forests through propagation and replanting; both within the forest and in the community. If everything works out, we hope to begin working on the project of wild edibles propagation and restoration at the end of next year. Our expected outcomes are to: (a) gain knowledge on the interconnectedness of forest edibles and the need for their protection and forest repair; (b) improve forest ecosystem; (c)

improve knowledge of propagation, recovery and replanting; (d) increased access to forest edibles for local people; and (e) locally led educational programmes geared towards reconnecting younger generations with the forest, its wild edibles and their uses.

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

The local community was involved in most stages of the research and as an overall benefit was the reconnection to forest foods and traditional ways of using forest products mainly for food and medicine. On a more practical sphere, women had the opportunity to discuss and decide what activities they wanted to carry out as part of the community-based research and as a way to fulfil with the ethical principle of reciprocity. They benefitted from cooking workshops, facilitation of transportation to gathering sites, documentation of traditional knowledge for further reference and also the creation of an ethnobotanical guide of wild edibles with traditional recipes which is still in process but will be of great use when finished and given back to the communities for their use. Children were also included in most gathering fieldtrips and were the ones 'hired' to conduct the weekly food diaries in their homes. Compensation was given in school supplies for their coming school year (for approximately 20 U\$ per children). As a way to give back to the community, some mothers petitioned for their children English and maths reinforcement classes during summer vacations. Classes were given by the main researcher during the week to interested youngsters and children.

5. Are there any plans to continue this work?

Yes, we are currently putting together a biocultural conservation project in collaboration with the North Carolina Zoo and its Curator of Interior Horticulture (Mr Jeremy Murray) for nurseries of wild edible species. The main objective is to reconnect local indigenous groups with forest edibles and educate them to conserve remaining forests while propagating and replanting useful species; both in the forest and in the community. The programme would begin mid-2015 and would last for a minimum 3 years. We would also like to expand the Cooking Workshop based on wild edibles to other communities interested, which was very successful in connecting people to forest foods and traditional ways of preparing them.

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

We have planned different ways to share our results with different stakeholders as within the scientific or academic arena and also within regional institutions and informal spaces. It is crucial the delivery of the thesis project, scientific papers, congress presentations and extension articles to the scientific community in order to open new discussions, research questions and initiatives that can follow up our effort. We have also prepared a report for a more general audience to be delivered to regional and municipal institutions that deal with conservation efforts and indigenous development programmes like the Chilean Forestry Service (CONAF), the municipality's Indigenous Affairs Department and local NGO's. In this sense, the results will be presented in a colloquial language and strategies for biocultural diversity conservation will be suggested for consideration and future application. Soon, through the delivery of ethnobotanical book and the gathering-calendar poster to indigenous families, our results will be disseminated not only among the local community with which we worked, but also to adjacent communities also interested in reviving the use of forest wild edibles. Also, this will be a way to leave an important part of their traditional knowledge of forest foods and their uses registered as a reference for future generations.

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

The RSG was used between November 2011 and November 2012. Our project is thought to be a long-term commitment with local Mapuche families for biocultural conservation of the Andean Temperate Forests. So this specific project was a crucial starting point for future research in the area.

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 for 6 months	980	624	356	A small house was rented to a community member and a room was rented in Pucón outside the community.
Food and subsistence	1020	1016	105	This includes bills (electricity and gas), gasoline and materials for cooking workshop.
Subsistence payments for local team	450	300	150	Children conducting weekly food diaries were paid with school supplies for an amount of £10.5 each (x 7 = £73, 5). Also the instructor for guiding the cooking workshop was paid £ 160. The remaining amount was spent on working hours of community members as local guides.
Digital voice recorder for interviews	116	259	-143	Spent on one voice recorder, two lapel microphones, memory cards and one basic photographic camera used by children for conducting weekly food diaries.
Tent, sleeping bag	400	31	369	Only a duvet was bought for the cabin. Tent and sleeping bag was not needed.
Camping stove and utensils (cookware and water purification system)	110	105	5	Cooking utensils were bought for the cabin (it was rented unequipped) as well as a water purification system (£54).
Office supplies (Field notebooks, permanent ink pens, printer ink, printing paper, folders, etc.)	100	100	0	Includes office supplies and a working desk and chair for the cabin.
Batteries	100	40	60	Rechargeable batteries.
Cell phone and pay-as	140	81	59	A 6 month cell phone plan was taken

you go cards (£10/card X 10 cards)				on instead (£13.5 monthly).
Economy fare flight Canada-Chile for project leader	980	879	101	Cheaper fare available.
Interurban transportation and local buses in Araucanía Region	145	70	75	Two round trip bus tickets from Pucón to Santiago.
Wild Edible Plants of the Andean Temperate Forests Field guide	0	1050	-1050	Most of the differences in what was budgeted and was actually spent was used for partly affording the publication of the book, which is in process. This total amount was allocated to the book illustrator, whom is paid for each finished illustration (21 species). *Some final illustrations attached
Total	4541	4555		

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

The Andean temperate forests of Chile, as well as traditional practices of local communities linked to these ecosystems are in imminent threat. This is why it is necessary to bring closer and reconnect more local communities, especially the younger generations, to forests to appreciate them as sources of food, medicine, between other uses. We also need more participatory approaches to implement communities' values and better understand their perceptions for local conservation efforts. We feel that efforts to reconnecting people to their land and traditions and comprehending people-plant interactions in a rapid changing environment, together with environmental education strategies, could benefit forest biodiversity and cultural conservation. As access to forest ecosystems is a major limiting we need to: (a) encourage the restoration of forest remnants in indigenous farms; (b) build relationships and dialogue between indigenous people and non-indigenous owners of well conserved forests adjacent to communities in order to ensure accessibility to forests as the physical place for knowledge transmission and permission for sustainable extraction of non-timber forest products; (c) rethink and discuss with institutions the preservationist approach of national and private protected areas to enable local communities to maintain their traditions linked to forests (especially with such a silent labour as gathering wild foods and medicines); (d) incorporate outdoor environmental education in local schools or as a parallel programme to slow the strong process of erosion that ethnobotanical knowledge is facing.

We would like to take a further step into action and applied research to find practical ways of addressing the problems and issues that our findings suggest are of urgent need.

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. We gave a talk, presented in an international congress (oral presentation and poster) and organised a cooking workshop using the RSG logo. We are also elaborating an illustrated ethnobotanical book of forest foods of the South-American Temperate Forests and a collection calendar poster of wild edibles for further outreach.

In each of the above activities we have used the RSGF logo and will continue using it in the next steps related to this initial project.

11. Any other comments?

We are deeply grateful for the support of RSGF in our research project, and we also like to congratulate you for supporting projects that not only seek to protect biodiversity, but also the biocultural conservation, which is so important and necessary.

As soon as we can, we will send you scientific and non-scientific articles and outreach material as they are available or published.

Probably in the near future we would like to apply to the extension of the grant to continue this effort already begun to respond to new questions, concerns and support local initiatives that help preserve our Andean temperate forests and promote a fruitful relationship between local communities, forests and forests products.

Additionally, the main researcher would like to thanks for the flexibility and understanding to combine pregnancy and motherhood with the research process.