The Rufford Foundation
Interim 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	Ignacio J. Rojido Nin
Project title	Linking biodiversity, ecosystem services and human well-being to conserve forests at the frontier of agricultural expansion in Argentina
RSG reference	20588-1
Reporting period	February 2017 – January 2019
Amount of grant	£5,000
Your email address	ignaciorojido@hotmail.com
Date of this report	02/01/2019

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Ecological characterization				From August 2017-February 2018, we selected 36 sites to characterise vegetation. We sampled rodents and medium-sized mammals from January-March 2018, and medium-sized mammals from November-January 2018-2019.
Social characterization				From March-April 2017, we identified 21 stakeholders linked directly and indirectly to the native forest within the study area. Of these we selected three key stakeholders for the management and conservation of the native forest (family livestock producers, researchers and government officials). From May – December 2017, we conducted 24 qualitative interviews with livestock producers (14), researchers (nine) and government officials (one). However, due to an increase on the sampling effort for medium mammals (in order to complete an adequate number of samples), we did not completed focus groups. Instead, we plan to use the information from the interviews to conduct quantitative surveys planned on a next stage of the project (Fall-Winter 2019).
Socio-ecological integration				In August 2017 and July 2018, we did two teamwork workshops. In the first nine people (researchers, extension worker and non-graduate student) participated. This meeting allowed the whole team to get to know each other and evaluate the work already done and plan future activities. In the second teamwork workshop, three researchers participated to analyse the information generated in the

				activities carried out and, based on that, prioritise future ones. Both the qualitative information from the interviews and the records of native mammals were synthesised and combined to develop an educational module (see additional material). Additionally, the integration of socio-ecological information supported a presentation during a meeting with farmers carried out in October 2018.

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

Overall, the project was carried out as planned and presented in the original application. During this time, we emphasised establishing the baseline necessary to conduct the broader and deeper interdisciplinary aspects of the proposal. For that reason, we prioritised the application of qualitative interviews that ensures us to establish an initial understanding of the social system. In addition, because we faced a small rate of capture of mammals (both rodents and medium-sized mammals) in the first field season, we decided to reassign the time and effort devoted to conduct focus groups to conduct a second field season focused on medium-sized mammals (the group with the better rate of capture on the first field season).

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

Scientific training: Nine undergraduate and one graduate assistant belonging to the National University of the Litoral (Santa Fe, Argentina) and to the Autonomous University of Entre Ríos (Entre Ríos, Argentina), were included in the project. These students were trained on mammal and vegetation sampling. In this way, we overcame the original training outcomes expected in the proposal, which was one student besides the project leader who is conducting his PhD.

Stakeholder uses and values of native forests: Through in-depth interviews we were able to recognise the values and uses of three groups of stakeholders (livestock producers, researchers and officials) involved on the management and conservation of native forests. This constitutes an initial point for constructing an understanding of how these stakeholders conceive the native forest and its relationship to their productive activities and their own wellbeing. This information is also crucial to be used in a second stage of the project (a quantitative survey), which will be developed not only on theoretical expectations, but also using the findings, language and understanding from the interviews. Furthermore, this contextualisation will aid us in making recommendations regarding integrated socio-ecological indicators that take into account the user rather than impose biologically-derived considerations of sustainability.

Mammal diversity: In the first field season, rodents and medium-sized mammals were sampled at eight field sites where cattle ranchers carry out the activity of cow raising based on native forests. These sites include "good quality states" (i.e. non-shrubby forest) and "degraded states" (i.e. shrubby forest). Practically no small mammals were detected on these sites (13 individuals belonging to two species) based on using a grid of Sherman live traps. Nonetheless, complementary methodology of camera traps has proven to be useful to capture medium-sized mammals. Based on the first sampling season, a second season was carried out, in which the sampling effort was extended to 36 sites (18 non-shrubby forest and 18 shrubby forest) where trap cameras were installed to record the presence of medium mammals.

These data were partially analysed, showing, up to now, the records of 10 species of medium mammals (eight native and two exotic) for the entire study area, of which seven were identified In the non-shrubby states (two registered exclusively in this states) and eight species were identified in shrubby states (three registered exclusively in this state). The species with the highest number of records were zorro gris (*Lycalopex gymnocercus*), mulita grande (*Dasypus novemcinctus*), gato montés (*Leopardus geoffroyi*) and guazuncho (*Mazama gouazuobira*). For more detail see additional material: "Partial report of survey of medium mammals in livestock farms with native forest of the La Paz department - 2018/2019"

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

Based on the semi-structured interviews with 14 familiar livestock producers who carry out their activity in native forest, we began to develop contacts with this key stakeholder in the Espinal forest. The qualitative information generated also allowed us to elucidate their links with this ecosystem. We have found that both productive benefits obtained from the native forest (e.g., shelter for livestock) and non-productive benefits (e.g., firewood for cooking food) were recognised. At the same time, we recognised that the degradation of the native forest affects the ability to provide benefits. The information obtained will be disseminated in such a way that the perception and evaluation of the benefits that the producers have, are considered by the authorities in the management guidelines of the Espinal native forests, rather than simply a biology-oriented focus of native forests and their conservation.

On the other hand, during this project the mammal sampling were located on 14 familiar livestock producers farms of that own native forests. In all cases, the producers expressed their interest in knowing the species of medium mammals present in their farms, so that after the sampling, we prepared presentation documents with outstanding images and we made particular encounters in their houses with much of them where the results of the mammal records were shared and a copy was delivered. Having achieved a close relationship between us (researchers and extensionists) and producers, seems to us a very important fact, but not very common for the academic field.

5. Are there any plans to continue this work?

Based on the initial Rufford project, we plan to continue the work started by complementing the qualitative surveys conducted on this project with quantitative surveys conducted during the Fall-Winter of 2019. These complementary surveys will allow us to explore the uses and values established on this project for a wider population of livestock producers, increasing in this way the power of inference of the information. Additionally, we will be able test also causal relationships (social and ecological factors) between how people value the benefits of the forest, rather than test theoretical aspects developed from other systems.

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

Scientific communication: The tasks and outcomes of this Rufford project are a discrete 2-year period in a 5-year PhD programme and the results will be communicated through two thesis chapters and their subsequent scientific publications. Specifically, there will be a chapter/paper on the interview data and another chapter/paper on the mammal surveys.

Public communication:

a) Media-releases: During the team meeting in August 2017, we produced several media releases via the INTA-Paraná's communication outlets, including print, internet and video materials (see http://inta.gob.ar/noticias/relacion-del-bosque-nativo-con-el-bienestar-social-y-los-mamiferos-silvestres-se-realizo-un-taller-en-inta-parana; http://inta.gob.ar/videos/taller-relacion-bosque-nativo-con-el-bienestar-social).

b) Public presentations: In October 2018, we also held a meeting with cattle producers from the Feliciano Department. In this meeting, managed by INTA, FONTAGRO (https://www.fontagro.org/es/) and the Rufford Foundation, a synthesis of the socio-ecological information collected through this project was presented. At the same time, a dissemination video was generated, summarising what was discussed during the day (see https://inta.gob.ar/videos/inta-eea-parana-integrando-la-produccion-y-el-ambiente-en-la-cria-vacuna-en-campo-natural-beneficios-del-monte-nativo-y-evaluacion-de-la-condicion-corporal-en-el-rodeo).

c) Educational module: We have also prepared an educational module about the native forest of Entre Ríos to be used in the province's educational establishments, especially rural or agro-technical schools. The main objective of this educational module is to expand the influence of our study beyond our own ability to make presentations and prepare a document that can be used by other educators to highlight, explain and promote the various values that the educational community (teachers and students) recognise and assign to the native forest of Entre Ríos (See additional materials).

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 Rufford Foundation grant was used for 2 years of a 5-year PhD. During the 1st year of the project, the award financed a large part of the field research (e.g., presentation brochure for interviews, mammal sampling). During the 2nd year, the grant was used mainly to hold the team workshop, for the meeting with the producers in Feliciano and for the medium-sized mammal sampling. It was anticipated that the project would last approximately 2 years, a period that could be satisfactorily fulfilled, but it will also obtain greater value as establishing the baseline for the entire study that will be completed over the course of the next 2 years.

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 £	Budgeted Amount Pesos	Actual Amount Pesos	Difference Pesos	Comments
Paraná - Study area 282 km/travel x 7 travel round trip = 3948 Km	500	10002	19967	-9965	We increased the number of sampling trips.
Ushuaia - Córdoba round trip + Córdoba - Paraná round trip	1001	20004	6203	13801	
Undergraduate field assistant	651	13003	33005	-20002	
Food	300	6001	10000	-3999	In September 2016, we estimate ARS 6000, but due to price inflation we spend ARS 10000.
Trip fuel	150	3000	5990	-2990	In the same way that the fuel anticipated for the travel to the study sites, the increase in the cost of the fuel, distorted the expenses of trip fuel.
Field/camping supplies	100	2000	11997	-9997	Unforeseen materials were required (e.g., shipping / handling and small animal tag to mark the captured individuals)
Baits small mammals	102	2028	968	1060	

NVivo Qualitative Data Software	76	1521		1521	We decided to use alternative methods to conduct qualitative analysis based on free software. This amount of money had to be redistributed for the mammals sampling.
Camera tramps batteries	685	13692	4947	8745	We were able to economize this item to use it in other parts of the budget that were in deficit.
Audiorecorder	127	2536	1741	795	We were able to economize this item to use it in other parts of the budget that were in deficit.
JMP statistical software	38	761		791	This statistical package was not purchased, and instead we are using another software, which is free. This amount of money had to be redistributed for the mammals sampling.
Books and other materials	76	1521		1521	It was not necessary to buy books or other materials for workshop team-partner.
Coffee breaks	102	2028	1245	-2217	This was partially financed with resources from INTA, which we did not know would be available. This amount of money had to be redistributed for the mammals sampling.
Local transportation for participants	177	3546		3546	Local transport of participants for meetings was completely funded with resources from INTA, which we did not know would be available. This amount of money had to be redistributed for the mammals sampling.
Catering	152	3043		3043	This was completely financed with resources from INTA, which we did not know would be available. This amount of money had to be

					redistributed for the mammals sampling.
Brochures, primer, posters	610	12171	837	11334	We use that amount of money to prepare presentation brochures for interviews. The remaining sum of money had to be redistributed for the mammals sampling.
Catering	153		153		It was not necessary to make this expense. This amount of money had to be redistributed for the mammals sampling (e.g. fuel and field assistants).
TOTAL	**5000**	**99900**	**99900**		

As clarified in the comments, while the exchange rate between the pound sterling and the Argentine peso (GBP to ARS) was 1 = 19.98 on September 12, 2016, on January 4, 2019 is 1 = 47.13. The Argentine problem with inflation and devaluation of the peso distorts the differences between the amount budgeted and the actual amount used. However, in spite of high inflation of prices, particularly in fuels and food, we were able to reallocate funds to meet the overall goals and only moderately affect the original budget.

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

The next most important steps are:

1) Conduct the surveys of the social actors linked to the native forest of north-central Entre Ríos.
2) Once the surveys have been completed, determine causal relationships between people's activities and relationships with forests and their understanding of its value to their well-being.
3) Carry out an integration and complete synthesis of the socio-ecological information.
4) Generate more dissemination materials and public presentation.

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?

The Rufford Foundation logo has been used to:

1) Presentation brochures during interviews (this material is uploaded on the Rufford Foundation project page).
2) Communication video prepared by INTA, after the meeting with cattle producers of the Department of Feliciano in October 2018 (see https://inta.gob.ar/videos/inta-eea-parana-integrando-la-produccion-y-el-

ambiente-en-la-cria-vacuna-en-campo-natural-beneficios-del-monte-nativo-y-evaluacion-de-la-condicion-corporal-en-el-rodeo).

3) Educational module on the native forest prepared for educational establishments in Entre Ríos Province (See additional materials).
4) "Partial report of survey of medium mammals in livestock farms with native forest of the La Paz department - 2018/2019" (see additional materials)

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

Ignacio Rojido: Lic. Rojido was the leader of the project. In this sense, he has participated in all aspects of intellectual development and project execution. Command the selection of sites, the planning and taking of data in the field of vegetation sampling and the taking of field data from the sampling of mammals (grid of traps and trap-camera). In turn, he led the methodological aspects and the execution of the interviews. On the other hand, he made the synthesis of socio-ecological information for the preparation of dissemination materials. Finally, he coordinated both meetings of the work team.

Sonia Canavelli: Dr Canavelli is thesis mentor to the project leader and as such was involved in all aspects of the project's intellectual development and execution, including the selection of sites and the planning of vegetation sampling. In addition, she participated in the preparation of the interviews and helped conduct some of them. Furthermore, she was part of the team-partner workshop, helping develop the project leader learn skills of meeting coordination and dynamics.

Christopher B. Anderson: Dr Anderson is thesis mentor to the project leader and as such was involved in most aspects of the project, including contributing to the identification of the relevant social actors for the study. Plus, he participated in the preparation of the interviews and was part of the team-partner workshop.

Noelia Calamari: Dr Calamari participated in the selection of sampling sites. In addition, she collaborated with the methodological design of vegetation and mammal sampling. Plus, she was part of the team-partner workshop.

Julieta Decarre: Dr Decarre participated in the methodological design of mammalian samplings. In addition, he provided essential material to carry out such samplings. Plus, she was part of the team-partner workshop.

Jorge Dupleich: Mr Dupleich collaborated with the identification of the relevant social actors for the project. In addition, he contributed to the contact with the livestock producers.

Juan Fonseca: Mr Fonseca collaborated with the identification of the relevant social actors for the project. In addition, he contributed to the contact with the livestock producers. In turn, he participated in the execution of some interviews.

Susana Boffa: Ms Boffa is an extension agent of INTA of the La Paz department, who collaborated with the identification of the relevant social actors. In turn, she participated in the execution of several interviews. Plus, she participated in the team-partner workshop.

Undergraduate/Graduate Field Assistants: **Cristian Walker** (FHUC, Universidad Nacional del Litoral), **Marcelo Juani** (FHUC, Universidad Nacional del Litoral), **Juan Francisco Cataudela** (FHUC, Universidad Nacional del Litoral), **Elian Staffolani** (FHUC, Universidad Nacional del Litoral), **Santiago Truchet** (FHUC, Universidad Nacional del Litoral), **Tamara Martinez** (FHUC, Universidad Nacional del Litoral), **Paula Anabel Martin** (FHUC, Universidad Nacional del Litoral), Lic. en Biodiversidad Mariano Balboni (FHUC, Universidad Nacional del Litoral), **Gabriel Gareis** (FCyT, Universidad Autónoma de Entre Ríos), and **Valentin Guarascio Vergara** (FCyT, Universidad Autónoma de Entre Ríos) participated in the sampling of mammals and vegetation. Plus, **Cristian Walker** was part of one team-partner workshop.

12. Any other comments?

Overall, this project has proven crucial as the seed-funding to start a novel line of inquiry in the agricultural systems of north-eastern Argentina. As a rapidly transforming landscape, where agricultural expansion has been the principal development model, native forests are under critical pressure. Therefore, it is fundamental to understand not only the ecology of these forests but also their social relationships. In this case, we have prioritised ranchers who use the native forests as part of their productive activities. Rather than deforesting it, they have chosen to maintain this ecosystem, and understand how and why they value it can prove crucial to better managing these as socio-ecological systems. Therefore, having this opportunity to conduct a preliminary 2-year study to establish a baseline understanding has allowed the training of a graduate student, in addition to obtaining new results. Taken together, these can now be applied in the next stage of the research to obtain more a mechanistic and predictive understanding of the human/nature relationship in these forests.