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	Adrián B. Azpiroz
Project title	Pampas Meadowlark: using a flagship species to promote conservation in South American grasslands
RSG reference	1105-C
Reporting period	October 2015-June 2018
Amount of grant	£15,000
Your email address	avesuru_1999@yahoo.com
Date of this report	July 4, 2018

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
Habitat characterization				Meadowlark populations disappeared from known breeding grounds in 2016. The planned research could not be carried out (details below, section 2).
Population data assessment				The objective had two components: field ecology and genetics. Only the second one was achieved (details below, section 2).
Management and conservation of grassland bird populations				Drastic meadowlark population changes precluded some research activities that affected conservation outcomes (details below, section 2).
Public education and awareness				As in previous phases, educational and outreach activities included talks and presentations and the production of technical and non-technical materials (details below, section 6).

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

In the spring of 2016 we found most of the Pampas Meadowlark breeding sites empty. This was the first time we witness a situation like this in the last 15 years. We were not sure if most of the Arerunguá population of Pampas Meadowlarks was lost or if the birds have moved elsewhere.

First, we searched for the birds in nearby fields. We were able to find six breeding pairs in a paddock were some birds had bred during previous seasons (additional searches were carried out in other areas with no positive results). The main paddock (which consistently held 100-150 pairs every season from 2008 to 2015) remained empty for the rest of the 2016-breeding season. During the following non-breeding season (winter 2017) we conducted field surveys in the same "empty" paddock and less than 25 individuals were located. Non-breeding flocks at this site usually involved some 120-150 individuals. These winter observations confirmed our concerns. The presence of other threatened grassland birds (e.g., Ochre-breasted Pipit) in the same affected paddock suggested that the problem was specific to Pampas Meadowlark and not a more general issue such as habitat modification (e.g, increased grazing pressure).

After considering and eliminating other possibilities we were able to link the supposed population crash with the application of a broad-spectrum antiparasitic medicine. This veterinary drug was applied to cattle in the affected paddock to control an unusual tick infestation. The single application occurred in fall 2016, just a few months before the Pampas Meadowlark breeding season. Although not yet formally quantified, Pampas Meadowlarks do search for dung entomofauna on the underside of dung pats on a regular basis.

After this link was identified more information on the possible effects of this type of drugs was gathered. During the process, we contacted both national and international experts (entomologists, veterinarians, ecologists, etc.) and several relevant points were identified: a) The drug involved affects populations of dung entomofauna; b) To date, evidence of negative consequences on populations of vertebrate species (bats, birds), seem to be limited to indirect effects related to depletion of key food resources; c) Although direct impact (mortality) on birds has not been demonstrated, there are still very few studies that have explicitly investigated this possibility; d) The type of drug involved is widely used in Uruguay and throughout the Pampas. In northern Uruguay (where the Pampas Meadowlark population inhabits), tick infestations that impact cattle represent a steadily growing problem (probably related to climate change). The issue is being counteracted with the use of ever increasing drug dosages; veterinarian (tick) experts suspect that this arms race will only worsen in the future.

As part of field activities carried out during 2017, 10 dung pat samples were obtained at the treated paddock. These samples are currently being analyzed to test for the presence of antiparasitic drugs. Results will be available in September 2018.

In spring 2017 (second breeding season after the drug application) some pairs of Pampas Meadowlarks reoccupied the treated paddock. Numbers, however, were still far lower than those recorded on previous years (2008-2015). Finally, in December 2017 a large post-breeding group (ca. 100-120 individuals) was located relatively close to the treated paddock. Although this flock included a large proportion of juveniles (many of which will not survive their first winter), this represents a very good signal that suggests that the population seems to be recovering.

In sum, we identified a possible new threat to the Pampas Meadowlark population. Although the evidence is circumstantial, all the available information supports the idea that a veterinary drug affected the birds. The drug may have: a) resulted in adult mortality or b) forced the birds somewhere else. Both of these possibilities may have occurred; in fact, the observation of a diminished post-breeding flock near the affected area in late 2017 is in line with the idea of a combined effect. If the “drug-bird impact” link is confirmed, the new threat may have widespread conservation implications for grassland birds in the Pampas. We tackled this unforeseen situation by contacting experts on the matter, gathering information, searching for the “lost” birds, monitoring historic breeding grounds and identifying both research priorities as well as key actors to undertake future actions.

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

a) THREATS: The identification of a possible new threat to the Pampas Meadowlark populations with broad potential conservation implications for birds inhabiting native grasslands in cattle-raising areas.

b) RESPONSE TO THREAT: The identification of a "response team" with the needed technical background to address the problem from a research (and management) point of view.

c) POPULATION GENETICS: The genetic study (PhD dissertation) showed that both Pampas Meadowlark populations (Argentinean and Uruguayan) still hold good levels of genetic diversity. This means that there is still a great opportunity to apply management and conservation measures in order to preserve the species' evolutionary potential.

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

In Arerunguá (study area), the involvement of members of the local community was key. The possible connection of the meadowlark disappearance with the application of the veterinary drug was made due to the exchange of information with the local veterinarian of the ranch that holds the bulk of the meadowlark population. During 2017, when the possible threat was identified, this technician took a precautionary approach and decided not to apply the drug anymore. As more information is gathered in a systematic way (see following section) we believe ranchers from Arerunguá and elsewhere will benefit from these results and will have the chance to evaluate and adopt alternative treatments with innocuous effects on animal consumers of dung entomofauna. In the Pampas region there is an increasing number of technicians (vets, agricultural engineers) that question current agricultural production beliefs, in particular the idea that the only way to carry out agriculture business involves a high input of agrochemicals. If we can provide a sound example of how this approach may affect (endangered) wildlife in unforeseen ways, we will be able to contribute to the "intensification" vs. "ecological" farming debate.

5. Are there any plans to continue this work?

Yes, a cooperation initiative is underway. During the process of searching for information on the effects of veterinary drugs on wild animals, several experts have been contacted. Andrea Caselli (Veterinarian, Natural Resources and Sustainability Division, National University of Central Buenos Aires Province, "UNICEN") made further connections with specialists working on the effects of veterinary drugs on wildlife in Argentina (Dr. Luis Álvarez and Dr. Adrián Lifschitz (Pharmacology Lab, UNICEN) who provided their expertise and support for preliminary dung sample analyses (results will be available in September 2018). We plan to search for funding to carry out a series of experiments in order to characterize the effects of the veterinary drug on invertebrate and bird populations. This study will likely be

implemented as a PhD dissertation (possible academic advisors and candidate students have been identified) and both Argentinean and Uruguayan researchers will be involved.

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

The results of our work have been shared through publications, presentations and meetings:

a) A non-technical article on the conservation situation of the Pampas Meadowlark was published in well-known wildlife conservation magazine ("Aves Argentinas") in 2017. This contribution was prepared in collaboration with Argentinean researchers (http://www.avesargentinas.org.ar/aves-argentinas-n°-48).

b) Specific management and conservation recommendations were included in the "Pampas Meadowlark" chapter of the Red Data Book of Uruguayan Birds (http://www.mvotma.gub.uy/portal/ciudadania/biblioteca/documentos-de-ambiente/item/10009678-libro-rojo-de-las-aves-del-uruguay-biologia-y-conservacion-de-las-aves-en-peligro-de-extincion-a-nivel-nacional.html). The printed version of this publication (produced with the support of the National Environmental Bureau of Uruguay and TRF (and others), has been distributed among many individuals and organizations involved in agriculture/cattle raising, wildlife management and conservation.

c) Two technical articles were published. The first contribution focuses on the role of vegetation structure in shaping Pampas grassland bird communities (The Condor Ornithological Applications 118: 12-23). The second publication examines the threat of brood parasitism to several endangered grassland birds, including the Pampas Meadowlark (Wilson Journal of Ornithology: 127: 746-752). Insights from both of these articles were incorporated into the Red Data Book described above.

d) A technical article that describes the main results of the population genetics dissertation is under preparation (Dr. Leticia Repetto).

e) Meetings were held with government officials and other key actors in order to share research results. Additional meetings and presentations will be held and delivered during 2018.

We are also evaluating the possibility of organizing a Rufford Conference in Uruguay next year (see section 11, below). This will be a great opportunity to share experiences related to adaptive management and the challenges of conservation in private lands.

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 funds granted by TRF were used from October 2015 to June 2018. The original length of the project was 15 months (October 2015 to December 2016). Because of

unforeseen difficulties explained in section 2, we asked TRF authorities for a project extension to carry out more fieldwork in order to investigate the new problem and delineate a strategy for action.

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
Lodging	630	762	-132	Due to changes implemen-ted after 2016, some more funds for accommodation were needed.
Transportation	5025	6431	-1406	Difference mainly stems from extended fieldwork. (1)
Meals	2400	2832	-432	Difference mainly stems from extended fieldwork (1)
Coordinator Stipends	500	230	270	Stipends were used in 2016 but not afterwards, when planned research activities were modified.
Field Equipment	1738	1846	-108	Some additional field materials were needed for new research activities.
Outreach Materials	904	724	180	Funds budgeted for website maintenance were not used because the site will be redesigned to reflect project's new challenges and aims.
Conservation Materials	3200	1400	1800	Funds planned for the conservation plan were reallocated to fieldwork. (1)
Project Administration	600	600	0	
Total	**14997**	**14825**	**172** (2)	Exchange Rate: 1 £ = 39 Uruguayan Pesos

(1) Due to the unexpected events of 2016 (described in section 5, above), we asked the TRF for a reallocation of funds and this was conceded. On one hand, some activities and products could not be produced because of the unforeseen conditions, and on the other hand, new priorities had to be delineated. Funds were redistributed accordingly.

(2) There is a small amount of unused funds (£ 172). If possible, these funds will be used to cover part of travel costs to participate in a conservation meeting in Argentina in November 2018. During this event a presentation will be delivered and meetings to advance towards the new project's objectives will be held.

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

The most important next steps are:

a) Consolidate a team of experts that will delineate a sound plan to tackle the key research questions and identify all relevant stakeholders associated with the new potential threat identified.

b) Prepare proposals to seek funds to support future research and conservation work.

c) Carry out experiments to determine whether the veterinary drug has (direct or indirect) effects on the Pampas Meadowlark or other species.

d) Based on results, approach all relevant stakeholders to minimize the impacts of these drugs. Scientific data will be used to promote low impact/innocuous practices among ranchers and to advocate for complementary precautionary public policy.

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

The logo was included in both the digital and printed versions of the Red Data Book of the Birds of Uruguay. TRF's support was acknowledged in talks and presentations delivered in Uruguay and Argentina and in all technical and non-technical materials produced (described in section 6).

11. Any other comments?

Together with Dr. Susana González (Clemente Estable Biological Research Institute, Montevideo) we are preparing a proposal to organize a Rufford Conference in Uruguay in 2019. We are currently seeking local support and assessing the number of participants. The application will soon be submitted to TRF.