

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	María Laura Agüero
Project title	Population ecology of the endemic flightless Chubut Steamerduck in Patagonia, Argentina (<i>Tachyeres leucocephalus</i>): conservation and management implications
RSG reference	RSG 17689-1
Reporting period	September 2015 - December 2016
Amount of grant	£5000
Your email address	aguero@cenpat-conicet.gob.ar laguerocnp@gmail.com
Date of this report	28/12/2016

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
Asses temporal habitat use and identify key areas to breeding, moulting and resting.				
Describe local movements of Chubut steamerducks along the year following radio-marked individuals (adults and juveniles).				
Explore techniques and feasibility to assess breeding success and estimate rates of annual territories fidelity.				
Determine the current spatial and temporal magnitude of each threat given the new scenario to evaluate potential impact in Chubut steamerducks				
Design a population monitoring programme to better understand population ecology and dynamics				
Involve biology students and decision makers (staff from the Chubut Province Wildlife Bureau and National Park Authorities) in the activities, to improve their ability to conduct research and conservation activities				
Increase awareness of local inhabitants of the importance of protecting this flightless duck, not only in terms of its conservation but also because it could represent an exclusive tourist value that could become a source of incomes for them. We will transmit this message during our interviews				
We will also work in cooperation with other initiatives in the area in order to improve the design and implementation of the Management Plan of this Interjurisdictional Marine Park in San Jorge Gulf				

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

Overall, the weather in South America during 2015 and half of 2016 has been under the influence of El Niño Southern Oscillation (ENSO). The Patagonian coasts have not been free from these weather fluctuations, characterised by unpredictable storm winds. This unexpected condition made navigation difficult and hazardous to access the islands and accomplish surveys. This scenario has been completely changed by mid-2016, which has allowed us to survey a great deal of kilometres inside the national marine park. Now, we continue working on the surveys outside the geographic limits of the national park to complete the database and estimate the whole population size. In this way, we'll could realize the population trend curve for this species for the first time.

GPS devices acquired in 2015 have been returned to the company as it failed to pass the customs security check. Unfortunately, they have recently implemented an unprecedented strict control policy for battery product, so the delivery hasn't been possible. Procedures and negotiations are being carried out to release devices or acquire new ones.

Finally, my national research institute has suffered some accidents and breaks in the truck fleet, reducing considerable the amount of available vehicles. Fortunately, we were able to tackle this unforeseen using our personal vehicles, rent trucks in agencies, and national park authorities gave at our service their 4x4 vehicles and watercraft.

Summarising, these have been the main difficulties during the project. Some minor unforeseen, such as break down in the electronic equipment (camera traps and thermistor probes) have been quickly solved. However, this will imply a greater detail of data analysis in the future.

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

1- Breeding biology

We obtained unprecedented information about nest attendance, incubation behaviour and breeding biology parameters of Chubut steamerducks, using (and tightening up) techniques with a minimum of disturbance.

Chubut steamerducks build their nests on the ground and we figured out that the first eggs are semi-buried covered with a few pieces of bush branches. The amount of down feather increased as laying progressed. Females have a laying-egg frequency of 0.8 eggs.day-1 and apparently they complete clutch size (averaging

5.7 eggs) in one week. Females increase time spend on the nest with laying stage. Incubation constancy (percentage of all records during which the female was on the nest) averaged 77%, incubation period averaged 33 days and incubation temperature was 30.76°C in average.

Recess frequency averaged 2.day-1 with an average length of 263 min. Most recessed occurred between 22:00 and midnight; and 03:00 and 05:30. During nesting season, we visited each nest just 4 times and females returned to the nest around 4 horas later. Hatching success was 0.87% and chick's survival 0.95%.

We realised that nest abandonment probabilities are high during laying-stage and "freezing" behaviour increase as incubation progressed. Ducklings leave the nest no more than 2 days after hatching and the females drives them to the shallow water in front of the nest. We could observe bi-parental attendance of brood. Foraging ducklings are very vulnerable to attacks by several avian species including kelp gull (*Larus dominicanus*), skua (*Catharacta skua*), and giant petrel (*Macronectes giganteus*). In this way, laying stage, incubation and brood rearing period are very vulnerable periods for this particular marine duck.





2- Identification of main real and potential threats to its conservation

The area has got a relatively low stable population with two main localities: Camarones and Bahía Bustamante. There are 13 estancias (ranches) along the study area and some of the landowners have expressed interest in developing touristic activities. At Estancia Las Margaritas, Caleta Malaspina, where a main breeding area is located, an ecotourism exploitation is taking place. There are also different artisanal fisheries along the coast of San Jorge Gulf. At two important breeding areas for the steamerducks (Caleta Malspina and Bahía Melo) there are activities related mainly to macroalgae extraction and aquaculture, and some landowners expressed their intentions to extract salt marsh plants (*Salicornia* sp.). There are recreational activities concentrated mainly at Cabo Dos Bahías-Camarones sector. Two important petroleum harbours operate from Caleta Olivia and Comodoro Rivadavia, the largest city of coastal Patagonia. New oil exploration and development plans in the San Jorge Gulf area have been announced. This will increase risks of pollution in an extremely important breeding area for steamer ducks and many other coastal/marine species.

An important potential threat corresponds to the finding of two accidentally introduced invasive species within the breeding area: the green crab (*Carcinus maenus*) and the Asian kelp (*Undaria pinnatifida*). Both species have been reported

to cause severe impacts and modifications of the native ecosystems, with the former altering intertidal rocky shore ecosystems where steamerducks feed.

3-Population Monitoring Program

We designed a Population Monitoring Program (PMP) to better understand population ecology and dynamics of Chubut steamerducks. We describe in detail the standardised methods to survey individuals along the whole distribution range. This document provides information and recommendations about requirements on equipment, personnel, resources and conditions to carry out the individual surveys.

There is a section where recording of data are explained in details and a template are provided as an appendix. Distribution range was divided in different sections and ordered by priority in order to assist logistical planning.

Finally we provided recommendations about nest census, and how to obtain information on habitat general characteristics. A template is provided as an appendix.



This document was shared with national park personnel, who used it for the first time, as a guide to survey Chubut steamerduck within the national park marine coasts. This allowed to obtain standardised information that will be added to database of Chubut steamerduck, and then estimate the first population trend curve.

We are convinced that this PMP will be useful tool to obtain more key and standardised information about ecology and population trend of Chubut steamerducks setting bases for long-term studies.

Preliminary population estimation shows a total of 1243 adults and 985 juveniles within the National Marine Park. Surveys outside National Park limits are still underway.



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

We had meetings with some of the Estancias (Ranches) landowners and inhabitants of Camarones Town to make them aware of the particular features of this species. They were very surprised to know that steamerducks do only occur at this restricted coastal sector where they live and in general showed a positive attitude. We offered talks in local schools and made field trips with students to identify the species in their natural habitat.



Since some of them are receiving tourists, we are providing information to transmit the need to protect the species and its habitat. The use of the steamerduck as an eco-touristic highlight represents an alternative activity that will produce a source of incomes for them while increasing their interest in its conservation. We are offering training to use the PMP and identify the species in the field. This interest and positive attitude showed by

local people has increased the records of new nesting sites along continental marine coast.

5. Are there any plans to continue this work?

We are looking for new financial sources to get:

- tracking devices to finally achieve the aim of describe local movements of Chubut steamerducks along the year;
- new camera traps to continue the study about natural predators of nest and adults. This arose from some records of nest predation by crested caracara (*Polyborus plancus*) and grey fox (*Pseudalopex griseus*); and from one particular



event where we found 10 adults bodies beheaded in one island that connect with mainland in low tide. We supposed that adults are predated by

Patagonian ferret (*Galictis cuja*), grey fox (*Pseudalopex griseus*) or Geoffroy's cat (*Felis geoffroyi*).

- print 100 copies of PMP to distribute in libraries, schools, NGO's, Wildlife Bureau staff, national park authorities, etc.
- design informative signs and brochures, showing key pieces of information of this duck species and its importance in terms of conservation.
- design the "Chubut steamerduck book" with high definition pictures, key and general information, conservation and management implications, and may be a kid section; as a popular tool of knowledge and awareness.

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

We have submitted technical reports to the Wildlife Bureau, the Secretary of Tourism and Protected Areas of the Chubut Province, and national park authorities. The information produced here will be used for the design of the management plan of the existing Interjurisdictional Marine Park.

We are planning to conduct further analysis with the data, present a thesis for one of the students involved and submit a manuscript with the information obtained to International Journals. Moreover we would like to present our findings at the 6th International Sea Duck Conference scheduled for February 6th-12th 2017 in San Francisco, CA.

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 RSG funds were used between September 2015 to December 2016. We had to request a time extension of 3 months because some drawbacks made it difficult to achieve some main objectives.

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
Truck rental	230	463	233	Because accidents and breaks suffered in the truck fleet of my Research Institute we have to rent trucks in agencies that

				result more expensive than the rent cost of trucks in my Institute. The annual inflation of 30% last (and this) year, have increased the rent costs exponentially, worsening the financial planning.
Fuel	766	766	0	
Lodging and food	766	300	466	We rent a house for a week. The rest of the time we camped in front of the islands to make easier the logistic. The surplus money not used here was distributed among the items Truck rental, Insurance and Thermistor probes where an extra money was needed.
Insurance	115	148	33	We have to pay insurance for one student more during the field season.
Field equipment (GPS, electronic device, PC-Box, card memories, batteries, binoculars, telescope, nets)	1422	1422	0	The amount of money doesn't change but, because we couldn't acquire GPS devices, we decided to use that money to buy camera traps.
Thermistor probes	322	522	200	We found thermistor probes with better performance in the market, then more expensive.
Inflatable boat	1379	1379	0	
Total				

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

In brief, we are really satisfied with the goals achieved and the results obtained. We have detected key stages of high vulnerability for this species and this information will contribute to our conservation programme for the Flag Species of the Interjurisdictional Marine Park in San Jorge Gulf: CHUBUT STEAMERDUCK and its habitat. We feel that is a proper time to actively participate and contribute to the underway management plan.

Therefore we have new goals and appealing challenges to follow related to other gaps of information (genetic, demography, epidemiology, etc.) that will undoubtedly contribute to create greater conservation awareness.

We are very grateful to Rufford Foundation and its Rufford Small Grants Programme.

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 used the RSGF logo in our power point presentations to give local and school talks, in our population monitoring programme (digital version), national and international conferences (posters or power points presentations), technical reports and papers. We plan to use it in future signs, brochures and printed documents.

11. Any other comments?

None.