

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	Alexandre Douglas Paro
Project title	Population size and site fidelity of the estuarine dolphin (<i>Sotalia guianensis</i>) in south Rio Grande do Norte state, Northeast Brazil - Implications for conservation
RSG reference	31.11.07
Reporting period	February 2008 – March 2009
Amount of grant	£3210
Your email address	alebioacustica@hotmail.com
Date of this report	November 2009

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
Population abundance of dolphins in the study area			√	<p>Periodic boat surveys were made to four locations of concentration of dolphins for photo-identification purposes. Surveys were design to apply capture-recapture analysis and gave us population size estimation for our study area.</p> <p>The total surveys were: 21 for Tabatinga, 23 for Pipa, 20 for Baía Formosa and 23 for Guaraíras Lagoon. A total of 87 field trips.</p> <p>Partial analyses indicate a population size of 223 animals along 40km of south coast</p>
Individual preferences of animals for particular areas			√	<p>Movements of individually identified dolphins were investigated to give us an idea of the degree of residence of the population in the different localities as well as the area as a whole.</p> <p>Based on analyses of re-sightings of individuals in different bays we are suggesting these 223 individuals as distributed in two sub-populations - sub-pop 1: Tabatinga, Guaraíras Lagoon and Pipa and sub-pop 2: Baía Formosa with low degree of movement between them.</p>
Investigate differences in the habitat use of the different study areas			√	<p>Data on group size, group composition, behaviour and GPS location were registered during each sighting. We are currently concluding analyses comparing type of group/behaviour and area.</p>
Identify the potential impacts that <i>Sotalia guianensis</i> population is suffering in south Rio Grande do Norte state		√		<p>During the field work we were able to witness some potential impacts that dolphins are suffering in each area along this coast, such as intense tourism boat traffic, fishing nets that can cause dolphin by catch, uncontrolled urbanization and pollution of water trough sewage and shrimp farms. However, only a more focused analysis will reveal the real impacts and actions needed for mitigation.</p>

Participation of volunteers			√	During the project many volunteers participated, including biology students from our University or other Universities as well as foreign volunteers from Lattitude program (held by the Ecological Sanctuary of Pipa), during which volunteers remain 3 months working together with our group.
Educational presentations		√		We participated in two environmental events (during 5 th June weeks) where we could give talks about our project. Besides that, during the summer season of 2009 our volunteers gave periodic presentations about dolphin conservation while in the dolphin-watch tours which the public enjoyed very much. However, a more consistent educational programme is needed, continuing the presentations in the boats but also with regular presentations on land that could involve not just the tourists but also the local community.
Regulation of dolphin-watch	√			In 2006 a Coastal Wildlife Reserve of Tibau do Sul was created with the main objective of protection of the marine life, mainly the dolphins. Regulation of dolphin watching is therefore a matter of a council decision. Unfortunately, a period of mayoral elections and afterwards a change in political leadership caused a delay and then a pause in all council meetings since in August 2008! This pause lasts until today. In summer 2008 we saw 7 boats inside one of the bays. That encouraged us to start the presentations on the boats and we also put signs on the beaches informing people about the reserve and the code of conduct. Much work remains to be done to put the code in practice.
Establish a relationship with local authorities	√			Local relationships with politicians at Tibau do Sul are established but, as explained before, lack of regularity in council meetings and political changes had made our actions very much

				<p>ineffective.</p> <p>Besides that, we conducted a survey with fishers along the 3 bays of this coast. A total of 49 interviews were conducted. Data are under analyses.</p> <p>Local relationships with politicians at the other two counties (Tabatinga and Baia Formosa) are non-existent. Only in Pipa we could discuss important actions such as the possibility of application of fees for boat tour owners that use the reserve.</p>
--	--	--	--	--

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

When we rented our research boat we had to accept the conditions of the contract imposed by the owner. At first he agreed a monthly charge of £ 271 with all maintenance, fuel and crew expenses included. But by the time to sign the contract he changed his mind and decided to charge £ 176 only for the boat rental and we should cover all other expenses. This made the cost rises much higher as we had to pay further £ 147 for the boat driver plus expenses with the fuel and maintenance like cleaning, painting and oil change of the boat. Besides, whenever the boat broke we had to fix it, spending more time and money to buy the equipments. In conclusion, we had to spend more time and money to maintain the boat then expected. Our final budget increased dramatically because the owner of the boat did not keep his word when he found out we had been awarded this grant! Better planning for next period of data collection is needed in this matter.

Fortunately we got more financial support from a local resort enterprise that got interested in our research and also from Cetacean Society International who has now partially funded our research.

Our plan for field assistance was to pay a scholarship to one biology student to help in the field work. But the students could not help in all field trips because most of it was done in week days and they could not miss the classes at the University. Fortunately, through the support of the Ecological Sanctuary of Pipa we received volunteers from the Lattitude Program (volunteers from Great Britain and Australia that work in foreign countries in environmental or social programmes during they gap between school and college). The volunteers received a preparatory training and helped not just in the boat but also in monitoring the dolphins from a cliff in Pipa. In total two groups of volunteers participated in our research. It was a successful partnership as they helped us with the problem of field assistance and were satisfied to have a chance to participate in a dolphin research programme. Biology students from our university also participated in the field trips whenever they could and we covered their expenses on travel and meals with this money. In summer 2009 we received volunteers from other universities; they were accommodated in the Ecological Sanctuary of Pipa and worked exclusively for the project as a part of a trainee programme.

In Pipa we had to face the mistrust of the boat tours. There was a pressure for the boats to follow the code of conduct, such as the number of boats inside the bays and the prohibition of chasing the dolphins. Due to the nature of our research we had to approach dolphins for photo-identification purposes and boat owners and tourists could sometimes be willing to break the code of conduct

with a sort of thinking like: “if they can do it, so do I”. We acted by painting our boat with big letters “RESEARCH” so people could know that it was not a recreational boat. Also we mentioned in the meetings with the boat owners the nature of our activities and the importance of our research to the contribution of the knowledge of dolphins’ biology in the area.

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

First, the scientific outcome. Our fieldwork made it possible to build a catalogue of 136 individually identified dolphins and the systematic data collection permitted the application of capture-recapture analysis that was used for population size estimation. Very few population estimation studies have been done for that species of dolphin; we expect to contribute to fill this gap and work with other colleagues to propose the change of the conservation status of the species (actually it is classified as Data Deficient by IUCN). Also the study of movements of the animals through different locations on the shore line and the identification of the main possible impacts suffered by the dolphins can shed light on how the conservation efforts should be conducted to efficiently conserve the species and its habitat. The investigation of habitat use is also very important for conservation purposes as it can indicate how animals are distributed in the area and its relationship with ecological factors such as the type of area (open areas x protected areas), group size, presence of calves and behaviour.

Second, the establishment of a research group committed to dolphin conservation in the area, the MARN project (Aquatic Mammals of Rio Grande do Norte), supervised by Dr. Renata G. Ferreira from Universidade Federal do Rio Grande do Norte (UFRN). Our research highlighted the necessity of actions to preserve the dolphins and as a consequence the maintenance of a healthy ecosystem on the coast line. As a famous touristic place, Rio Grande do Norte faces the challenge of the development of a sustainable tourism and a responsible and organized growth. Focusing on dolphin ecology and the human impact on these animals, those issues were highlighted through our talks with touristic boat owners, the tourists themselves and the local community, mainly in Pipa, a famous international touristic destination in Brazil.

Third is the perspective of a continuation of the work that has started. Through our research and educational programme many partnerships were made. The Ecologic Sanctuary of Pipa gave us logistic support and the help of their volunteer programme. At the Federal University of Rio Grande do Norte two trainees are working with us and a PhD student joined our project working on the behavioural impact of boats on the dolphins through observations from a cliff. In summer 2009 we also open opportunities for biology students to get experience working on our project. In Pipa there is a request from the local journal to start periodic talks. Finally, we had financial support from a resort enterprise interest in our work at the estuarine ecosystem of Guarairas Lagoon, next to Pipa. Also we had support from a local cottage to make t-shirts of the MARN project and build signals warning about the reserve and the code of conduct (both in Portuguese and English) on the beaches where dolphins are frequently found in Pipa.

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

The boat driver was an local fisherman from Tibau do Sul municipality that directly benefited working for our project. Also he recommended all sorts of services from the local community such as a boat mechanic, painter and local commercial sellers for the maintenance of the boat.

The main involvement of the local communities was actually their recognition of the importance of our work. It was a possibility for them to realize that it's important to conserve and keep a healthy environment not just for the local fauna but also for their own benefit. The local fisherman from all localities where we worked often came to us curious about our research and described their perspective of dolphin behaviour and reports of their sighting of dolphins in their areas.

We recognized that our educational actions were concentrated in Pipa but must be expanded to the other communities, namely Tabatinga, Baia Formosa and Tibau do Sul.

We believe that benefits will come in a long term through the continuation of our project, since dolphins are charismatic animals; the work has social-economic implications to the localities where they live. In Pipa, for example, there are a lot of references to the presence of dolphins in the area such as name of streets, statues, public telephones and souvenirs. Also the dolphin watching industry is very active in the area. So it brings all the issues of dolphin and coastal ecosystem conservation as a benefit for all the community.

5. Are there any plans to continue this work?

Yes, our research group has big expectations to continue our work. We came out with a population size estimation of dolphins in our study area, so making others estimations in the future can indicate if there are any trends in the population. Data collected for a longer period can make it possible to estimate other population parameters like survival and population growth. That is a very important data to access: if dolphins are suffering any kind of pressure and what is the predictions for population viability.

Our study was done in 4 areas along 40 km of shoreline and our investigations showed how dolphins move between these areas giving baselines for how conservation efforts should be taken. Our idea is to expand the study area as the dolphins might be using the areas outside it. We want to expand it both to the north in direction to Natal, the capital of Rio Grande do Norte state as well as south in direction to Paraíba state.

We are planning to start bioacoustics research with dolphins. We already have professional equipment to record dolphin's vocalizations through funds granted from Cetacean International Society and Society of Marine Mammalogy. The pilot work should start any time soon and it will be part of a behavioural study we want to conduct. Together with our research colleague that is studying dolphin behaviour from a cliff we want to correlate dolphin vocalization with their behaviour to understand better their sophisticated communication. Cetaceans in general rely on acoustics as a primary sense and dolphins specifically have a refined sonar system, known as echolocation, to explore their environment. That work also has the objective to access the impact of anthropogenic noise pollution from tour boats and perhaps reinforce the need of the code of conduct to watch dolphins.

We also feel that there is much remaining to be done considering the educational programme. We want to reinforce our actions in Pipa and also expand it to other communities.

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

Once all the data analysis is complete this work will be part of a Master thesis and presented to the academic community at the Federal University of Rio Grande do Norte. After that our plan is to write scientific articles to publish in ecology and conservation scientific publications.

The other part that we want to share the results with is the Tibau do Sul Coastal Wildlife Reserve Council, as a plan to activate the meetings and give directions for the management efforts.

We also consider it very important to share our results within the communities we work with. The plan is to prepare and announce presentations for the general public in public places as a part of our educational programme.

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

The grant was used through the period planned: the first pilot field trips started at February 2008 and continued all long the year and extended until March 2009. At first it was planned to have 10 months of field work but with new funds received we have done it for further 4 months. The total was 14 months of field work. The grant was all used in the field work.

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 (February 2008 to March 2009): 1 GBP = ~ 3.4 Brazilian Reais

Item	Budgeted Amount	Actual Amount	Difference	Comments
Boat Rental (£ 176 / month) for 14 months	-	£ 2464	-	By the time to sign the contract for boat rental we had to accept the new conditions of a monthly payment that did not include other boat expenses.
Boat driver salary (£ 147/ month)	-	£ 2058	-	The driver was responsible not just for drive the boat but also to the maintenance services of the boat.
Fuel for the boat	-	£ 1403	-	In order to survey the four areas established in 40 km of shore line, the fuel turned up to be a considerable expense during the project.
Boat equipment	-	£ 664	-	New equipment for the boat that broke and mechanical service for fixing it, cover for the boat, ropes, new anchor...
Boat maintenance	-	£ 405	-	Periodic change of lubricant oil and filter, cleaning of the boat

				hull and deck, painting of the boat...
Total for boat expenses	£ 2710	£ 6994	- £ 4284	As already explained new conditions for boat rental raised the total for boat expenses.
Support for 1 trainee	£ 500	0	+ £ 500	As already explained no field assistant committed with the field work as we would like was available so it was all in a volunteer basis.
Transport	0	£ 153	£ -153	Transport between Natal and Pipa. It was not included in the budget at first but by July 2008 it was included because of high costs as personal expenses.
Food expenses	0	£ 216	£ -216	Food during boat field trips. It was not included in the budget at first but was included since beginning as it covered food for main researcher, boat driver and field assistants.
Total	£ 3210	£ 7363	£ -4153	Difference covered by grants from Cetacean Society International and funds from a local Resort Enterprise.

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

First of all is finishing our data analysis, sending a detailed final report to RSGF and publishing our scientific findings. Also giving presentations of our results in the communities where we worked and, with the help of Doctor Renata G. Ferreira, reactivate the Tibau do Sul Wildlife Coastal Reserve Council.

In the near future our next step will be starting our bioacoustics research with the dolphins. We still have some funds for that purposes. We will try to negotiate a boat rental that would be charged by day of usage in order to try to save money with boat expenses.

The main step in the future would be plan and organize a calendar of activities that include our research and educational programme, make a budget and apply for new funds. Our desire is to establish our research group through a long term dolphin research committed with conservation and sustainable development.

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. In October 2008 I went to the Latin America Aquatic Mammals Society (SOLAMAC) Meeting held in Montevideo, Uruguay where I presented a poster with a RSGF logo on it and in April 2009 I

participated in the Northeast Brazilian Workshop For Research and Conservation of *Sotalia guianensis* where I had an oral presentation of some preliminary results of our work, where I also use the RSGF logo in the acknowledgements. All further reports, presentations and publications will have the credits from RSGF.

In summer 2009 we had financial support to manufacture T-shirts and signals to put on the beaches used by the dolphins. In both the T-shirts and the signals the RSGF logo was used. The T-shirts were used by the main research, volunteers and boat driver as a uniform during our work.

11. Any other comments?

I would like to congratulate RSGF and express my thanks for its support. Certainly it was fundamental to start our initiative. Our newly research group that has been created along the development of the project is very excited with the expectative of a continuation of our work and expansion of our activities.