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. 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. 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	O. Alejandra Vargas Fonseca
Project title	Role of marine protected areas in the population dynamics of Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) along the southeast coast of South Africa
RSG reference	13833-1
Reporting period	June 2013- November 2014
Amount of grant	£5976
Your email address	ale@earthcollective.net
Date of this report	8 December, 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
1. Abundance of *T. aduncus* in the study area		X		An extra year of data collection utilising boat-based surveys is required. Additional funding has been acquired to perform a year of aerial surveys in 2015 in order to address some of the shortcomings of boat-based surveys that have been identified. Data analyses for these complementary methods will be completed in 2016 to ensure this goal is fully achieved.
2. Identification of the spatial and temporal movement patterns of *T. aduncus*		X		As above. In addition, difficulties were experienced with deployment of satellite tracking instruments on study animals (see Section 2)
3. Identification of biodiversity hotspots through the dolphins' spatial distribution tendencies and the relation / importance of the current Marine Protected Areas (MPAs) zoning		X		As above
4. Identification of the genetic relationships of the pods visiting the select coastal areas at different times during the year		X		A total of 10 skin and blubber samples have been collected so far and further samples shall be acquired in 2015. Molecular analysis of all samples followed by the write up of this component of the project shall be completed by 2016.
5. Study the whistle vocalizations from the different pods visiting the research area during the year, and their acoustic relationships		X		Samples that have been collected using a hydrophone suspended from the survey boat will be analysed during 2015. Due to difficulties with this approach (see Section 2), this component of the project was bolstered in 2014 through the deployment of an array of three moored hydrophones in key locations, to collect data throughout 2015. Because the processing and analysis of recorded data is very time consuming, a student / intern has been identified to run with this component of the project (partially under my supervision), which shall be written up by the end of 2016.

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

Deployment of satellite tags on *T. aduncus* (Objectives 2 and 3) was more challenging than anticipated. This was attempted during a 3-week long field trip in April 2014, with personnel, equipment and a research vessel of the Department of Environmental Affairs, the principal collaborators on this project. Two capture methods were attempted, namely a hoop-net and a tail-grab approach. Each method requires that dolphins "bow-ride" the research vessel. However, due to a combination of factors, no dolphins could be captured during the field trip therefore no deployments could be made. Firstly, unusually low numbers of dolphins were encountered during the field trip. Secondly, virtually all the groups encountered were distributed within or just behind the wave-break zone, presenting a high-risk environment for capture attempts. Thirdly, the dolphins encountered very rarely bow-rode and when they did, they tended to surface for air beyond the reach of the capture equipment. Another attempt, probably in a different area, is being discussed for 2015.

Collecting quality acoustic data (Objective 5) from a portable hydrophone suspended from the boat was also extremely challenging because of *T. aduncus'* evasive behaviour and preference for the wave zone (see above), with associated risks for data collection, and noise interference. In order to obtain good recordings, the animals need to be in close proximity to the hydrophone and unfortunately this was rarely the case. To help achieve this goal and collect improved acoustic data, three moored hydrophones were deployed at key locations in the research area in February and April 2014. These devices constantly record the sounds of all marine animals in the vicinity. A challenge faced this year with the moored hydrophones is that regulations require that they be serviced by commercial divers, and the lack of such qualified personnel in this area makes this task more difficult. Currently, a team of commercial divers is being organised to perform these duties and the goal for 2015 is to have the equipment serviced every second month.

Similarly, given *T. aduncus* behaviour and habitat, it was also challenging to collect genetic samples. We have however collected 10 samples and are confident of collecting several more in 2015.

Originally two research areas were proposed for the project, namely Algoa Bay and Plettenberg Bay. Partly for logistical reasons, it was decided to focus on Plettenberg Bay and the surrounding areas, and to exclude Algoa Bay from the project. The modified research area is a continuous 170 km coastal stretch that includes three marine protected areas (MPAs), namely Tsitsikamma, Robberg and Goukamma MPAs; including Plettenberg Bay and excluding Algoa Bay. This design is likely to be more appropriate for assessing the effectiveness of an MPA network for dolphin conservation, than the earlier proposal.

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

- Cataloguing *T. aduncus* photographs accumulated by whale watching operators and research organizations as a matter of priority. During 2014 more than 70,000 photographs of *T. aduncus* were analysed and good progress was made in producing a fin profiling catalogue. This catalogue of historical photographs is scheduled to be completed during 2015 and will greatly improve understanding of the individuals and groups visiting the research area.
- Preliminary results from 50 boat surveys (2013-14) indicates that habitat use and preferred areas of *T. aduncus* has remained constant, relative to a previous assessment in 2002-03 but

there has been a decrease in the presence of *T. aduncus* in the research area concomitant with a decrease in average group size. Low resighting rates of known individuals based on fin characteristics seem to confirm that *T. aduncus* in the study area are migratory, however further validation is still required.

- Organising diverse stakeholders and engaging various local organisations, businesses and governmental entities to effectively collaborate toward the project has been a learning experience for all parties involved. An important outcome is that at least 10 different stakeholders are currently engaged with this project and are willing to support and be actively involved with furthering related research and education in the study area.

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

While based at a local volunteer organisation (ORCA foundation - Ocean Research Conservation Africa) for the initial 18 months of the project I was able to assist with building capacity through the training and guidance of staff and in teaching and sharing knowledge with volunteers. I also gave formal and informal presentations to interested local community members and international volunteers visiting the area.

In addition, I have placed two articles in a regional newspaper (CXpress) which justified both the relevance of the research to local conservation interests as well as the approach (i.e. ethics concerning the methods used) for the deployment of satellite tags and hydrophones.

5. Are there any plans to continue this work?

An extra year of field work utilising boat-based surveys is required to complete the collection of *T. aduncus* fin identification photographs, genetic samples and acoustic recordings. A year of aerial surveys (counting and distribution for abundance estimates) that will complement the boat-based surveys is scheduled to run concurrently. The deployment of the hydrophone array and initial analysis and interpretation of data collected potentially will serve as the foundation for a long-term passive acoustic monitoring program in the research area.

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

Results will be disseminated through publications of thesis chapters as papers in peer-reviewed journals and presentations at national and international symposia. During July 2014, preliminary results on the abundance, distribution and habitat use of *T. aduncus* were presented at the South African Marine Science Symposium (SAMSS).

A hardcopy colour info-brochure has recently been completed outlining the nature of the research, its objectives, anticipated outcomes as well as preliminary results. This brochure has been distributed to both stakeholders and as counter display (i.e. look-and-take) material to various local organisations (e.g. parks agencies, whale watching operators, dive companies, retail outlets). More public talks at various locales across the research area as well as popular publications in local magazines and newspapers are also planned.

A new website is being developed which will provide updates about the project, audio samples as collected from the hydrophones and eventual summaries of peer-reviewed scientific publications.

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 for a total of 18 months (2013-2014), the field work will be expanded to an extra year (2015) in order to be able to compare > 2 years of data. The total length of the project for my current PhD is 4 years (2013-2016), however, it is intended that aspects of the project will provide that basis for continued long term monitoring. For 2016, low cost fieldwork is planned that includes land-based surveys and acoustic monitoring utilizing the deployed moored hydrophones.

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
Land transportation	£ 576	£ 600	£ 24	The land transportation was between research sites (Storms River, Plettenberg Bay and Knysna), Department of Environmental Affairs (Cape Town) and Nelson Mandela Metropolitan University (Port Elizabeth).
Boat running costs	£ 5400	£ 5376	£ -24	The money was used to help cover the cost of boat-based research surveys (a total of 50 research surveys were done in these 18 months)
TOTAL	£ 5976	£ 5976	£ 0	

The local exchange rate at the moment of the proposal was £1 = 14.85 ZAR.

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

The first year and a half of the project was a success in terms of finalising a robust spatio-temporal study design for the boat-based survey aspect of the project; commencing a fin profiling catalogue utilising 20 years of photographic data accumulated from research organisations and whale watching operators, which is near completion; and forging new stakeholder collaborations.

The next steps for the project are to complete the fin profiling catalogue, perform more rigorous data collection and proceed with data analysis and interpretation to meet with the projects objectives of furthering understanding of the abundance, distribution, acoustics characteristics and genetic structure of *T. aduncus* present in the research area. Ultimately, it is intended to make the findings available to the scientific community through publication of thesis chapters in respected peer-reviewed journals, and presentations at scientific symposia. Public outreach materials will also be produced for both stakeholders and the broader community.

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, the RSGF logo was used for the following presentations:

- Poster presentation at the Southern African Marine Science Symposium (July 2014)

"Preliminary results of the abundance, distribution and habitat use of the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) along the southeast coast of South Africa."

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- PhD proposal colloquium, Nelson Mandela Metropolitan University, Port Elizabeth (August 2014)

"Behaviour, demographics and conservation of Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) along the southeast coast of South Africa"

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[3]Centre for Dolphin Studies; PO Box 1856, Plettenberg Bay 6600

- "Rufford Foundation" was listed as a sponsor on the aforementioned information brochure distributed to local stakeholders and available at various public and retail outlets (December 2014).

11. Any other comments?

I am highly grateful for the grant provided. It has been very encouraging and of immense value to have had the support of the Rufford Foundation for the past 18 months. Thank you very much!