Final Project Evaluation Report

Your Details	
Full Name	Megan Gabriela Chevis
Project Title	Marine Megafauna Monitoring in Bocas del Toro, Panama
Application ID	23033-2
Grant Amount	5000
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1. 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
Training of local fishers and students in monitoring methods			X	During this grant period we trained eight more local fishers and three university students in our monitoring methods as well in size and distance estimation and species identification. These fishers and students formed the majority of our field team during our field work and data collection.
Realization of fisheries-independent monitoring of marine megafauna around the Bocas del Toro islands			X	We were able to complete monitoring at all of our 45 stations using BRUVs and snorkelling transects in November/December 2017 and additionally in April 2018.
Sharing of results locally and nationally		X		Our monitoring work has been analysed and shared with stakeholders in Panama as well as internationally. We plan to complete the analysis of the recently acquired 2018 data and continue to present them locally and nationally in the coming months.

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

While weather conditions in Bocas can be very unpredictable and difficult during November/December, we were very lucky to have good water and weather conditions and were able to sample all of our planned locations last year. During our fieldwork earlier this year we were not so fortunate and had several days of poor water visibility, but were still able to complete all of our planned sites. Good communication with our captain as well as being adaptable and flexible to quickly changing conditions has been key to our work in Bocas.

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

a). Through the monitoring in Bocas we collected important and novel data on Endangered and Data Deficient elasmobranch species including great hammerheads (*Sphyrna mokarran*), scalloped hammerheads (*S. lewini*), the

longnose ray (*Hypanus guttatus*), and the Caribbean whiptail ray (*Styracura schmardae*).

b). This work allowed greater engagement and capacity building of important stakeholders such as local artisanal fishers, university students, local government leaders and even members of the private tourism sector.

c). With this work we have created greater awareness for Panama's sharks and rays and the research being done by Panamanians within the country.

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

Eight local fishers and three university students were trained and hired to form a large part of our monitoring team in the field. They are now able to identity all key megafauna species, accurately estimate the size and distance of individual animals, determine the gender of sharks, rays, and turtles by morphology, and deploy the Baited Underwater Remote Videos. During our 2018 field work they were also trained in the safe handling and release of sharks and rays. The trained fishers will continue to form a crucial part of our long-term field work in the area, and will be able to participate in exchanges to train fishers in other parts of Panama or neighbouring countries, and serve as ambassadors for elasmobranch conservation and research.

5. Are there any plans to continue this work?

Yes. This work is part of a long-term monitoring project for the Bocas del Toro islands to assess populations and changes in these populations over time. With multiple years of data collected using BRUVs and underwater visual census, we now plan to further assess the demographics of the shark and ray populations in the area by increasingly using scientific longline as successfully trialled in 2018. This method will give us further insight by allowing us to take precise measurements, individually tag animals, and collect tissue samples for genetic and heavy metal analysis.

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

At the end of 2017, we completed an Annual Report that was shared with government departments and key partners. We have shared basic results from our monitoring in Bocas with local fishers and community members, as well as shared some of our findings with students as part of our education programme. The results from our monitoring were also recently presented as a poster at the Sharks International conference held in Joao Pessoa, Brazil from 3-9 June 2018. We further plan to share this work at a national marine sciences conference in Panama City later this year.

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

This grant was used from October 2017 to June 2018.

8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Transect and BRUV equipment	140	100	+40	These funds were for in case any repairs were needed for existing equipment
Fisher stipends	1124	1124	0	
Bait and field supplies	156	174	-18	Needed for extra ice to preserve bait
Lodging	328	328	0	
Food	787	787	0	
Boat fuel	791	841	-50	Fuel prices fluctuated and we had to buy from different sellers
Boat rental/captains hire	1171	1171	0	
Local transport	503	475	+28	We were able to get discounts for transporting some of our equipment
Total	5000	5000	0	

*Exchange rate was 0.78 GBP=1USD based on April 26, 2017 exchange rate

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

The continuation of training local actors and monitoring using BRUVs and UVC as well as the addition of scientific longline will further engagement and stewardship for target species and provide more data on the megafauna around Bocas, especially for the less commonly encountered species such as hammerheads. More data from transects will also allow the creation of density estimates of key species that inhabit the archipelago as well as the further assessment of habitat use, especially in relation to the protected areas. Continued engagement with other stakeholders in government and the private sectors will also be key, as well as the incorporation of the data collected through this project into local and national management plans.

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

Yes, we have used the Rufford logo in all of our outreach materials created from this project including a video of highlights collected from BRUV footage, in presentations

given to stakeholders and during education talks, and in our Annual Report shared with government officials. Most recently, the Rufford Foundation logo was included in a scientific poster presenting the monitoring work being done in Panama that was presented at Sharks International in Joao Pessoa, Brazil (see attached) and which won the second overall prize for scientific posters amongst a field of over 250 submissions.

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

Carlos Pittersen is the main captain and lead fisher of our field team. He also coordinated some logistical aspects of our field work in Bocas.

Mervyng Archibald is a local fisher associate and has participated in monitoring the last 2 years. He is especially good at fish ID and size estimation on transects.

Ana Batista is a university student and assisted with monitoring field work, logistics, and data analysis.

Leyson Navarro is a university student and assisted with data collection and analysis.

Alexandra de Leon is a university student and assisted with data collection, equipment prep and maintenance, and data analysis.

Manuel Pittersen is a local fisher and assisted with monitoring field work.

Winston 'Darrien' Gonzalez is a local fisher who assisted with monitoring field work.

Roberto Georgett is a local fisher and student who assisted with monitoring field work.

Mariano Benitez is a local fisher and assisted with monitoring field work. He is an excellent free diver and is very good at setting the BRUVs.

Dr. Rachel Graham, Founder/Executive Director of MarAlliance who taught the team how to conduct scientific longline sampling and shark and ray handling and tagging as well as secured co-funding for the project and staff salaries.

12. Any other comments?

None other than this was a very successful project that managed to leverage other funds and has created interest and support for elasmobranchs in the Bocas del Toro region, nationally, and internationally. We are very grateful to the Rufford Foundation for their support of this project.