

## 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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
<b>Your name</b>	Erika Piedad Cardenas Murillo
<b>Project title</b>	Impacts of macro-grazer (fish) on the growth of the corals <i>Posillopora damicornis</i> and <i>Posillopora capitata</i> on Isla de la Plata, Machalilla National Park
<b>RSG reference</b>	13401-1
<b>Reporting period</b>	Final Report
<b>Amount of grant</b>	£10,000
<b>Your email address</b>	erikacardenas39@gmail.com
<b>Date of this report</b>	30 November 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
Assess the role of herbivorous fish in controlling algal species			X	Herbivorous fish efficiently controlled algal growth. During the study year I observed slow growth of algae and healthy corals inside the boxes. It was also observed that the micro herbivores play a key role in this ecosystem because even in the cages completely enclosed, where the light was poor and did not allow the entry of macro herbivores, we observed a healthy growth of coral. During the course of the project we observed a wide variety of micro herbivores living in cages which are believed to keep coral healthy, while they were protected and had food.
Identify and determine the abundance of grazers that affect the local coral communities			X	The bad weather in some months of the year hampered visibility when taking photographs to identify species, but was no impediment in the identification. So far we have been able to identify most species that affect or influence the survival of coral communities in the area. Unable to find many studies about the area and its abundance of species, which makes comparison of the current status of the island, most studies talk about Galapagos but we believe that this ecosystem has a better system algae control than
Assess if the impact of fish on corals influences the diversity of the flora and fauna associated with these coral communities.			X	Definitely herbivores influence the diversity of flora and fauna in the coral communities. The cages where corals remained healthy harboured a greater amount of micro invertebrates. The experiment offered protection and nourishment to the fish and micro herbivores, while they also kept the health of coral.

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

Temperature gauges at one of the study sites were lost due to rough conditions, but the Oceanographic Institute of the Navy of Ecuador (INOCAR) permanently monitors the temperature and other oceanic factors, which will help us complete the data lost during the study.

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

1. The micro herbivores control a part of the growth of algae in the area. I now believe that the micro herbivores have greater control over the algae because there is a greater abundance of them in the area. As found in the cages and video cameras coral health in the cages was maintained thanks to the micro herbivores.
2. The health and growth of *Posillopora* was good during the year of study, preliminary results showed 0% mortality in all types of cases and 0% bleach, and an annual growth of 32%.
3. The cages that were closed completely showed the highest growth rates, thus negating our hypothesis, where it was assumed that in these cages coral mortality would increase due to the lack of light and absence of macro herbivores, but the opposite happened, because the abundance of micro herbivores within them.

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

A part of the project was installed in a busy area for tour operators. It became known to fishermen and tourism operators about our study and they collaborated with us to prevent tourists from manipulating the cages. The locals seemed worried about the current state of the island and many cooperated with us for data collection, which helped people to meddle in the project and be kept informed about what was happening.

**5. Are there any plans to continue this work?**

We plan to retake the project next year to address some concerns that arose during the analysis of the data. We also wants to know what the true roll of the micro herbivores are in this ecosystem. It was a surprise in how there was no loss of corals, although some experiments lacked sufficient light and did not allow access to large fish.

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

When the analysis of the data will be released to the community of Puerto Lopez and Machalilla National Park on the current status of the island, the risks for the future and that the community can do to minimise the impact that suffer daily. I will also speak to the Universidad San Francisco de Quito students of Biological Sciences and teachers about the project so that people know more about what is currently happening and students wishing to join or help with the project due to a number questions that were generated during the course of it.

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

The scholarship was used from September 2013 to March 2014. The project lasted exactly one year beginning in March 2013, there was no problem and was able to get the expected results. The grant funds were used in what is planned to use and no problems due to lack of funds.

**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
Housing (104 nights)	750	781	31	I had to make more dives during the project and for that reason I had to stay four more days
Food (104 days)	474	495	21	
Transportation (60 bus tickets)	493	488		
Scuba gear (tanks, wetsuits, regulator, BC vest, boat) (80 dives)	2764	2930	166	In some months the sea conditions was rough and I had to make four more dives
Canon Powershot G1X camera	395	326		
Canon G1X underwater housing	197	195		
Gloves (4 pairs)	18	18		
GoPro HERO3 Silver edition camera (2 units)	198	196		
Fins (1 pair)	66	0	0	I wore fins from the scuba diving centre
Marine epoxy (20 cans)	39	0	0	The marine epoxy that sold in Ecuador didn't work under water, I had to bought more cable ties
Cable ties (100 bags)	165	215	50	
PVC pipe and fittings	105	104		
Asorted tools for work (i.e. wire brush, file, carabiners, chisel, hammer, scissors, etc.)	135	134		
Acrylic plates (800 units)	132	0	0	The Aquatic laboratory from San Francisco University gave to me the acrylic plates and I didn't have to buy these
Educational supplies	132	131		
<b>Total</b>	<b>6063</b>	<b>6012</b>		

The exchange rates was: 1 british pounds = 1.53555 USD. The 12 british pounds of the 6012 total amount I paid out of pocket. When I began with my project the exchange rate was 1 british pounds= 1.5194

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

To show the current health status of the island to government institutions such as the Machalilla Park which are in charge of the area, so they can take steps to maintain the health of the area. We are also planning to start a process of regeneration in certain areas of the island where overfishing and bad practices have affected several patches of coral and appears like its population is being affected.

**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?**

The logo of the scholarship was used when released to the community of Puerto Lopez and Machalilla Park on what was planned to investigate on the Island.