

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 | Natalia Rivas Escobar |
| Project title | Population Status of Parrotfishes (<i>Scarus</i> And <i>Sparisoma</i>) and its Relation with Human Population in the Seaflower Biosphere Reserve: Key Species under Threat. |
| RSG reference | 25323-1 |
| Reporting period | |
| Amount of grant | £5,000 |
| Your email address | nrivase@unal.edu.co |
| Date of this report | 08/08/2019 |

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 |
|---|--------------|--------------------|----------------|--|
| To determine changes in size structure of parrotfish populations in localities with different human population. | | | | Change on sites sampled by the research called for a modification in objectives where the main difference among the localities being compared was level of fishing pressure. This pressure was determined by not only differences in human population densities but also in number of fishing vessels acting in each locality. |
| To establish changes on the abundances, maturity phases and the composition of the assemblage of the species evaluated in sites with different human population. | | | | |
| To present a characterization of <i>Scarus</i> and <i>Sparisoma</i> populations with quantifiable and replicable data in sites with different human population of the Seaflower Biosphere reserve | | | | |

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

During the project, the major difficulty was the change of location of the Seaflower Scientific Expedition 2018. The initial idea, contemplated in the design of the project, was to visit Bajo Nuevo Cay (the most northern area of the reserve). However, because of internal decisions among the institutions in charge of the logistics of the expedition, the location we ended it up visiting was Albuquerque Cays (the most southern area of the reserve).

Although this was a big change, the design of the project was not altered and it was possible to maintain the gradient of locations with high, medium and low fishing pressure (San Andrés, Albuquerque Cays and Old Providence respectively) to compare with the characteristics of the parrotfishes communities.

As presented in the proposal, the project was expecting another grant to complete the field work and later work with the data obtain, however the delay on this other grant slow down the process extending the time in which it was expected to present results.

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

- a. The size structure comparison among sites showed very interesting results. When comparing species sizes we found that big size species such as *Scarus vetula*, *Sparisoma aurofrenatum* and *Sparisoma viride* (up to 53, 34 and 55 cm in total length respectively) showed a negative relationship with fishing pressure, with statistically bigger size individuals of this species in Old Providence, followed by Albuquerque Cays and San Andres Island. In contrast, the smallest species evaluated in this study (*Sparisoma atomarium*, *Scarus iseri* and *Scarus taeniopterus*) did not showed any statistical difference among sites.
When contrasting sizes among sites, taking into account colour phases of each species, we found out the difference in *Scarus vetula*, *Sparisoma aurofrenatum* and *Sparisoma viride* was given by the terminal and/or initial phases but not by the juvenile phases (smallest) were there was no statistical difference found among sites.
With this data we demonstrate that fishing pressure is having an effect on parrotfish populations, even in species such as *Sparisoma aurofrenatum* that is not considered in the red book of marine fishes of Colombia and, according to our results, should be given more attention.
- b. An extensive database with over 6000 individuals of 11 species of parrotfishes were censused and sized. This database in its own represent a baseline information from which to continue to monitored parrotfishes populations in the sampled areas, essential for their conservation. For six species we present size ranges for their different colour phases (maturity phases) for the three localities, emphasising the statistical difference between the size rates of each phase among their populations.
- c. The biggest species of parrotfishes (*Scarus guacamaia* and *Scarus coeruleus*) were only seen and measured in Old Providence Island, reason why they were excluded from the size structure comparison among sites. This is a concerning result that clearly suggest the high impact of overfishing on this species even in Old Providence were only two individuals of rainbow parrotfish (*Scarus guacamaia*) and nine of blue parrotfish (*Scarus coeruleus*) were seen during sampling.

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

The information this project gathered will be shared with the Seaflower Foundation (San Andres Island) as an input to a media-based conservation strategy using parrotfishes as an umbrella species to protect coral reefs and beaches in the San Andres, Providencia and Santa Catalina Archipelago.

5. Are there any plans to continue this work?

Later this year more sampling efforts will be directed to evaluate parrotfish population in coral reefs and mangrove ecosystems in San Andres and Old Providence Islands with special interest in the rainbow and blue parrotfish populations. In the future we plan to expand the study to other groups of fishes and other sites of the Archipelago.

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

In September 2019, the information collected by the project will be presented in local schools of Old Providence during the Seaflower Scientific Expedition 2019 which is going to be held in this island. In October 2019, it will be presented to scientific community during a congress of marine science in Colombia. And in November 2019 to the academic community during my Master degree thesis dissertation. At least one scientific article will come out from this project and will be submitted in an index journal by November 2019.

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 Rufford Foundation grant was used as anticipated in the proposal. The grant was used at the beginning of the project (August 2018) to purchase the Swimmable Stereo Video system, calibration system and software licenses without which this research would not have been possible. For the field work in September- November 2018 part of the grant was used to get to the sampling sites in San Andres and Old Providence Islands. The software licenses purchased with The Rufford grant were used until March 2019 to process all the videos collected during the fieldwork in 2018.

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 |
|--|-----------------|---------------|------------|--|
| Equipment purchase | 3000 | 3194 | +194 | More than calculated for shipment case to protect the system. |
| Eventmeasure and CAL software short licenses | 1000 | 1000 | | |
| Fieldwork | 1000 | 800 | -200 | Transportation to the sampling sites in Old Providence and San Andres island (marine and |

| | | | | |
|--------------|-------------|-------------|-----------|---|
| | | | | terrestrial) (extra budget used to complete first item) |
| TOTAL | 5000 | 4994 | -6 | |

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

To disseminate the results collected as much as possible and to use the database and method to continue the monitoring of this and other species among the different sites of the archipelago.

To disseminate the results among the locals to raise awareness and hopefully to get this information collected to be used as an input to future conservation strategies.

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

During the Seaflower scientific expedition and seminars held in 2018 we recognised the Rufford Foundation crucial role in making this research possible. However most of the recognition is yet to come in the different scenarios the results are planned to be presented to the scientific and non-scientific community (question 6).

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

Arturo Acero Pizarro, diving partner during the fieldwork in Albuquerque Cays.

Alejandra Puentes Sayo, diving partner during the fieldwork in San Andres and Old Providence Islands

John Carvajal Gil, diving partner during the fieldwork in San Andres Island.

12. Any other comments?

For the amount and value of the data collected we will continue working on the analysis of the results to get out as much information as possible about the species populations evaluated.

The stereo video system obtain thanks to this grant proved its potential in this kind of research and we look forward to continue using it and implementing new technologies and sampling techniques in our country.