

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 | Lais de Carvalho Teixeira Chaves |
| Project title | The lionfish invasion: management strategies for the Southern Caribbean Sea |
| RSG reference | 14517-1 |
| Reporting period | November 2013-November 2014 |
| Amount of grant | £5347 |
| Your email address | lctchaves@gmail.com |
| Date of this report | December, 1, 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 |
|--|--------------|--------------------|----------------|---|
| Lionfish re-colonisation experiment | X | | | After assessing lionfish population over 60 sites, ideal replication sites for conducting the experiment was not found. |
| Assessment of lionfish invasion | | | X | Assessing over 60 sites throughout Bocas del Toro archipelago allowed us to establish priority areas for invasion management and control. |
| Design cost effective lionfish removal programme | | | X | ARAP currently promotes regular removals, however through our study we could identify the effectiveness of removals (HIGH) and that time between current derbies can be prolonged. Nevertheless, removals should be continuous (e.g. stimulate public consumption) |
| Community outreach (school)~60 students (K4-10) | | | X | A day at local elementary school, where biology undergraduates volunteered for the project (separated file). Production of a small presentation about the lionfish invasion and bingo session where marine animals were presented (~4h) |
| Community outreach (TV) | | | X | Invited Interview by ARAP to discuss the lionfish issue on the local news for the whole community and invite general public for a meeting (~20 min) |
| Development of the lionfish management plan | | | X | During a small workshop with the local Authority (ARAP) and other locals, we shared information and helped establishing priority areas for removals as much as the maintenance of a monitoring programme. link at: http://www.arap.gob.pa/index.php?option=com_content&view=article&id=568:encuentro-regional-sobre-el-pez-leon&catid=35:hot-news |
| Promotion material | | | X | The lionfish patrol logo was created and t-shirts and stickers were distributed throughout the community. |
| Educational material | | X | | A waterproof slate was created, where most common lionfish prey found in the area is presented. It also includes information on where the venomous spines are located and the timeline of the invasion in the Caribbean. (separate file), We still need funds to print it on a plastic material. |

| | | | | |
|--|--|---|---|--|
| Communication to scientific community /local fishers | | | X | Results were presented at the 67 th GCFI (oral presentation) in Barbados. (separate file) |
| Extended partnerships | | | X | ARAP, Creho, Cendah, Other Rufford awardee (Luis Malpica Cruz) |
| Publication (full manuscript) | | X | | A full manuscript for submission with our results on the effects of lionfish removals is in preparation |
| Publication (short communication) | | X | | A new method involving local community for studying lionfish populations is suggested (in preparation) |
| Video Clip | | | X | a video clip with our activities is available at https://vimeo.com/99697507 |

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

1. The main difficulty arose from the fact that we could not find enough sites to replicate the experiment concerning the lionfish recolonisation rates. This would be a matter of concern if there wasn't any type of population control being currently developed in the archipelago. We were able to assess the whole archipelago and therefore, identify priority sites to keep our monitoring programme (e.g. The Bastimentos Marine Park and mangrove islands within the park) and conduct focused removals (e.g. Tiger Rocks, group of small rocky formations, a 2 hour boat drive from the main island). This work allowed us to have a full picture of the invasion status and address management specifics.
2. Another issue was to contact the extinct 'I Spear Lionfish' organisers to continue their past work. We circumvented this limitation by creating our own campaign "Lionfish Patrol" and logo, presented to RSGF on our project update in August 2014.

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

- Assessment of the invasion status and of the effectiveness of removals. We were also able to assess the restaurant owner's interest in incorporate lionfish on their menu. This will result on scientific publications as well as help managers to direct efforts on lionfish control.
- Community outreach activities (school, TV), largely supported by the local authority (ARAP). This partnership will allow us to share efforts and raise funds. As the agents are community-based they will be continuously address the outreach needs and organise derbies.
- A partnership with the Guna (Kuna) indigenous group to start a lionfish management plan in Guna Yala, encouraged by the positive outcomes of this project so far.

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

Local community members were largely involved with the project activities since before we reached funding for this project. As the educational activities held by our NGO helped us being based in Panama throughout the year, we created a trust relationship with key members and included and connect locals in all the activities related to the project. For instance, local restaurant owners and school teachers were invited and actively participated on the discussion about the lionfish invasion. Their opinions were incorporated during the activities held with the children and general community. For dive operations, we hired local boat drivers and also arranged accommodations for team members within the community.

In conclusion, the local community members benefitted from this project in several aspects, either by training, by salaries or increasing their awareness on local marine environments and their resources.

5. Are there any plans to continue this work?

Yes. First of all, our organization (Tropical Conservation Consortium-TCC) will maintain the monitoring programme in the archipelago in order to support community outreach and promote an alliance between local fishers (mainly from the Ngobe indigenous group) and restaurants willing to incorporate lionfish on their menu. These responsibilities will be shared with the locals, which will be self-sustainable within a short period. Additional funding for a derby will be pursued in order to include recreational divers. TCC members will volunteer. Currently, lionfish derbies have the participation of local fishers, and therefore deeper reefs are not being accessed on these events.

Secondly, our newly established partnership with CENDAH, an organisation driven by Guna members (a strong indigenous group), will allow us to outreach and potentially create a local management plan for Guna Yala (aka San Blas), on the eastern Caribbean side of Panama. A trip is scheduled for February, when the Guna people celebrates the 90th anniversary of their independence. An exploratory survey will be held. On a previous meeting the main concerns raised by the Guna people were the unknown impacts caused by lionfish invasion and the community needs for awareness, sustainability of the spiny lobster fisheries through creation of artificial refuges ('casitas cubanas') and the potential creation of a community-driven no-take zone, which would preclude fishermen from other regions to harvest their local resources.

Also, our NGO is currently creating a committee that will volunteer to help the organisers of the 68th GCFI meeting taking place in Panama City in November 2015. Our intention is that an opportunity is created to sponsor Panamanian fishers (mainly indigenous groups) to attend the meeting and participate on the lionfish session as well as other topics of the meeting (MPAs, Fisheries in general and, more).

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

Two manuscripts are currently in preparation and are expected to be submitted no later than January 2015. Another publication (TBA) is being planned as the PI of this project joined forces with another Rufford awardee (Luis Malpica Cruz) by suggestion of Rufford Foundation. This work will

incorporate our findings, both in Mexico and Panama, and currently we are gathering secondary data from the whole Caribbean region to support our results.

Also, besides sending feedback by email to the local authority (ARAP) meetings in Panama City are being planned as part of our team is expected to be in Panama City by February, 2015.

We also regularly update information on the project through our NGO website at: <http://www.tropicalcc.org/lionfish-control-management/> and also on our Facebook page (<https://www.facebook.com/pages/Tropical-Conservation-Consortium/324345074362624>)

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

At the initial stage, we had trouble with the transfer of the fund to the PI because of its country's law concerning money orders from international organisations. Therefore, funds were secured by the PI personal resources to buy the equipment needed, until the fund effectively covered the budgeted expenses. The fund started being used in February 2014 and was terminated by November 2014, with the PI attendance to the 67th GCFI meeting in Barbados, where some expenses were covered by Rufford. The project was expected to last for 18 months, where the experiment would be carried on monthly for a year and adjustments would be done through the following 6 months. As we were precluded of conducting the experiment (reasons aforementioned), we were able to achieve the other goals of our project earlier than predicted. Nonetheless, the results found were very promising and allowed us drawing strategies to be implemented by locals.

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 |
|--------------------------------------|-----------------|---------------|------------|--|
| Diving tanks (6) | 755 | 755 | | ok |
| Boat rental + fuel + tank fills (24) | 2268 | 1913 | -355 | covered by other fund |
| Subsistence payment for local team | 1638 | 1638 | | ok |
| promotion material | 441 | 441 | | 50 t-shirts + 200 stickers |
| food for team during fieldwork | 600 | 345 | -255 | Covered by other fund |
| Expenses 67 th GCFI | | 255 | +255 | After authorization by Rufford Foundation. |
| TOTAL | 5702 | 5347 | -355 | |

**US\$1=£0.63 obs: The amount requested on the final application differed £ 5347 from the original total expenses budget £ 5702, an error detected after the submission process (- £355). However, this did not precluded the success of the field work because additional funding was obtained. As a matter of fact, we were able to redirect the amount budgeted for food during fieldwork (£600) to partially cover the attendance to the 67th GCFI.*

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

For Bocas del Toro Archipelago, it is important to continue the main activities being currently developed (monitoring, outreach and derbies). Some will be continuously co-shared among our NGO, the local authority and community leaders. Future steps will be to promote an event where lionfish will be served to the local community to demystify the fact that lionfish are “poisonous” and cannot be eaten. Also we believe that formal training for local restaurant employees, would increase the willingness of owners to include lionfish on their menu. Such activities will only be possible upon receiving additional funding.

Considering the currently status of lionfish invasion, expanding our activities to another region within the country (Guna Yala) will increase our efforts to control lionfish on a regional basis.

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 printed on t-shirts, which were distributed to the main community leaders/ volunteers/ local authorities/bus drivers. Our team members used the t-shirts during fieldwork and outreach activities. We also acknowledged Rufford support at the end of any formal presentation (e.g. at the school, the meeting with the local authority-ARAP, the GCFI oral presentation in Barbados, a seminar at Simon Fraser University-Canada). Also, we cited the name of RSGF at the end of a video clip with our activities (<https://vimeo.com/99697507>). We also included the RF logo linked to its website, in our NGO website at: <http://www.tropicalcc.org/lionfish-control-management/> and cited the support on our Facebook page (<https://www.facebook.com/pages/Tropical-Conservation-Consortium/324345074362624>)

11. Any other comments?

We would like to acknowledge the major contribution of the Rufford Foundation for the successful outcomes of this project. It did not only provided us the funding necessary to start this initiative as also encouraged other partners to join us, such Idea Wild and the Percy Sladen Memorial Fund. We hope that we have reached Rufford expectations and that we can continue this partnership with the Second Rufford Small Grant.