



Darwin Initiative Main/Post/D+ Project Half Year Report (due 31st October 2018)

Project reference	DPLUS061
Project title	Protecting herbivorous fish to conserve Cayman Island coral reef biodiversity
Country(ies)/territory(ies)	Cayman Islands
Lead organisation	CCMI
Partner(s)	Cayman Islands Department of Environment, Smithsonian Institution, The Rare Organisation
Project leader	Carrie Manfrino PhD, Claire Dell PhD
Report date and number (e.g., HYR3)	Oct 2018 2 nd Half Year Report
Project website/blog/social media etc.	www.reefresearch.org

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

Over the past 6 months we have continued our progress with the grant and are reaching the various milestones on schedule.

In Q1, the reef surveys across the three islands were coordinated and concluded during Q2 marking a historic milestone for CCMI and for the project. We have begun analysing the data and drafting the Biodiversity Action Plan (outputs 1.1, 2.1 & 4.1); evidence of the preliminary analyses is included in Annex 1. Once these data are analysed, we will present the trends in coral, fish and algal populations to the community and project partners. The scientific publications are being outlined and the first will be submitted to an open access journal by the end of Y2.

We have also begun collecting samples for genetic analyses and are already half way to completing our target number (output 1.1). Analyses of these samples will take place in 2019 with our project partner Courtney Cox.

As noted in the Y1 report, tagging fish to determine their movements met various obstacles and it will not be possible to catch the Bermuda Chub alive to tag them (further details are in the section below). Instead, fin clips have been analysed for carbon and nitrogen isotopic ratios which will provide a greater resolution on their diet. The graph of the results is included in Annex 2.

Our interviews of fishermen, which were due to commence in the third year, have continued and we are close to completing them. This will provide critical information on the fishing practices, target species and favoured locations of the fishing community which we will use to determine impacts from fishing. We aim to have all interviews completed by the end of the second year. Evidence of this was included in the first annual report and we have continued to add to the interview library.

Educational goals of the grant included developing a lesson on herbivory for local K12 students based on the Darwin project. This was accomplished and delivered through the CCMI Reefs

Go Live underwater lesson. We now have the final results of the online metrics and the lesson had over 2500 video views and reached over 6000 people. This was a huge success as we had aimed to reach 300 students (output 1.3). This fulfils output 1.3 & 4.3 and the report of these results is included in Annex 3.

Our first presentation of results from the Darwin grant took place in Guadeloupe where Dr. Carrie Manfrino attended a regional conference hosted by the Caribaea Initiative (<http://caribaea.org/en/workshop-2018/>) and gave a keynote presentation. The conference programme is in Annex 4 and you will see the abstract for the presentation on p49. The second presentation of results from the grant took place at the American Folklore Society Meeting this month in Buffalo, New York, USA. Dr. Marilyn White and Hayley Kievman presented the results of the oral histories of the Caymanian fishermen. The itinerary from the conference is included in Annex 5 and you will see their abstract on p164. This fulfils outputs 3.2 and part of 4.1 in the logframe.

In the next few months our project partner from the Smithsonian/Rare, Courtney Cox, will begin using the survey data from 1999-2018 in a project that will contribute to a reef management tool. Genetic samples will be processed as part of the collaboration with Cox in 2019. Minutes from the meeting discussing these projects are included in Annex 6.

We continue to highlight the Darwin Initiative in the Cayman Islands and further afield through the media and CMI publications such as:

<https://conta.cc/2luQmj4>

An example of the most recent television interview is here:

<https://cayman27.ky/2018/08/ccmi-analysing-tissue-samples-of-reef-vegetarians-for-study/>

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

The main alteration that has occurred relates to the tagging section of the project. Our original question to address using tagging methods was to understand the movements of two groups of Kyphosids (Bermuda chub) that displayed different behaviours. We seem to find one behaviour exhibited by solitary Kyphosids residing in the shallows and another behaviour from schooling Kyphosids found in deep water where the reef ends. Our intention was to tag representatives from each of these behaviours and follow them acoustically to understand how far they travel and where they forage. However, it has only been possible to catch those in the deep water and keep them alive; in the shallow reef there are too many crevices and passageways in which the fish are able to hide so the only option for catching fish in these areas is spearfishing. Consequently, it does not seem possible to catch the fish in these areas and keep them alive. Additionally, there is also confusion as to which of the 3 species of Kyphosid are present in the Cayman Islands. All three are visually very similar and the exact species can only be determined by catching specimens and counting gill rakers or dorsal spines (or by analysing DNA). Consequently, a more important question to answer before elucidating their movements is which species are present in this area and how many of each are there? As a result, we are currently rethinking this section of the grant and are investigating the species-level genetics as well as the diet of the Kyphosids using stable isotope ratios. This information will be more useful to the Cayman Islands Department of Environment and may lead us in a slightly different direction than tagging.

Data to assess fish catch landings so far seems to be unavailable and it does not appear possible to collect satisfactory data on fish catch at landing sites as part of this grant for two reasons. Firstly, the majority of the community on the Sister Islands engage in fishing activities in addition to their full-time employment, a consequence of which is that fishing occurs at very variable times of day depending on when people finish work. Because there are no regular

fishing times it will require extensive waiting at sites to be there when the fishermen return. Secondly, there are multiple landing sites on each island; not one central site so collecting adequate data will require considerable people and time resources. After discussion with our project partner in the Department of Environment, we have determined that a far more economical and resource-efficient method will be asking the fishermen about their catch during the interviews.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS: Yes/No

Formal change request submitted: Yes/No

Received confirmation of change acceptance Yes/No

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?

Funding from LTS has been delayed for unknown reasons creating hardship for CCMI. Q2 and Q3 funding is currently overdue.

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R24 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also be raised with LTS International through a Change Request.**

Please send your **completed report by email** to Eilidh Young at Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 22-035 Darwin Half Year Report**