DPLR3\1038

Darwin Plus Local - Final Report (1)

Officer: Linzi Ogden

Section 1 - Darwin Plus Local Project Information (Essential)

Project Reference Number

DPL00070

Q1. Project Title

No Response

Overseas Territory(ies)

☑ Cayman Islands

Lead Organisation or Individual

Central Caribbean Marine Institute

Partner Organisation(s)

None

Value of Darwin Plus Local Grant Award

£48,564.00

Project Start Date

01 April 2024

Project End Date

31 March 2025

Project Leader Name

Jack Johnson

Project Website/Twitter/Blog etc.

reefresearch.org

Report Author(s)

Jack Johnson

Report Date

22 April 2025

Project Summary

No Response

Project Outcomes

Checked	**Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;**
Checked	**Climate Change: responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;**
Checked	**Environmental quality: improving the condition and protection of the natural environment;**
Checked	**Capability and capacity building: enhancing the capacity within OTs, including through community engagement and awareness, to support the environment in the short- and long-term.**

Section 2 - Project Outcomes (Essential)

On a scale of 1 (high – outcome substantially exceeded) to 5 (low – outcome substantially did not meet expectation), how successful do you think your project has been?

⦿ 2 - Outcome moderately exceeded

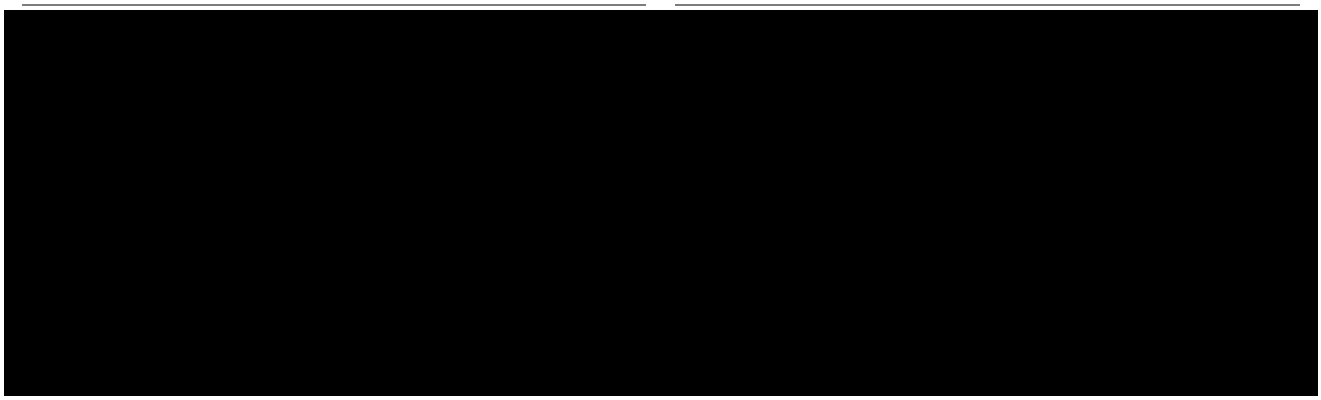
Project outcomes and justification for rating above

We believe our project has met expectations for the following key reasons.
1. Production of the booklet and map is what we planned for show casing these corals to the public and provide general information on these evolutionary distinct and globally endangered (EDGE) species.
2. We obtained a holistic quantification of coral recruits at every site in Little Cayman following on from the 2023 bleaching event, providing a new baseline for contemporary coral recruitment processes in Little Cayman
3. Publication of our coral photomosaics allows coral enthusiasts to interact with 3-dimensional models of these EDGE species from their computers.
We also believe the following points justify our score of moderately exceeding the expected outcomes:
4. Finding 13 pillar corals around Little Cayman exceeded our expectations for the number of colonies left based on our own expertise, and experience of long-term dive masters in Little Cayman. Ten of these colonies were found at dive sites, while three more were found in areas where there are no dive moorings.
5. The extirpation of shallow water Acropora around Little Cayman's dive sites. We knew populations of A.palmata and A.cervicornis were already low because of disease before the 2023 bleaching. However, the

complete eradication of colonies myself, colleagues, and dive instructors knew of (over 30 years' experience here), were all dead. Absence of evidence is not generally evidence of absence. But our findings in Little Cayman on Acropora populations strongly suggest immediate intervention is needed to assess if this genus is functionally extinct in Little Cayman.
6. Lastly, we believe our project moderately exceeded expectations by not only disseminating our results in Little Cayman as we planned (evidence 4), but we also shared these findings regionally at the Gulf and Caribbean Fisheries Institute meeting (evidence 5). Additionally, CCMI will be broadcasting these findings to the general audience in their Reefs Go Live series on the 9th of May, which will be a live broadcast and published YouTube video. This opens our project findings to a global audience, appropriate for all ages.

Reflecting on the objectives our project, our big picture goals included: 1) enhancing the protection of coral species. 2) Building capacity for conversation with outreach by engaging the dive community – specifically dive shops and their long-term staff about these EDGE corals and their declines. And 3) Inform policy and management for coral species around Little Cayman by providing high resolution data on coral demographics, and the location of these critically endangered species. For all these objectives, our mapping of these pillar corals has helped enhanced protection for these species by making active intervention if disturbance event (i.e. Stony Coral Tissue Loss Disease), far easier. Our booklet with the map is available to Little Caymans dive shops via our website, and previous drafts were well received, with our findings being shared by dive instructors during dive briefings (anecdotally).

Supporting Evidence - file(s) upload



Supporting Evidence - links to published document/online materials

https://sketchfab.com/jackvjohnson/collections/pillar-corals-little-cayman-b066dcafadc247b38158f3c7bb4a02e5

https://reefresearch.org/our-work/research/reef-ecology/ - link to the attached booklet. Please go to Darwin Plus tab to see where we published our booklet.

Project Challenges

The project encountered very few problems as logistics were well planned out, with project lead living full time on island.
The only problem that occurred, which was anticipated, was the acquisition of a PC to run photomosaics being purchased in the Cayman Islands. There were a few glitches with the PC that needed to be fixed, and given we are based in Little Cayman, this involved time (and money) flying back to Grand Cayman. However, this was budgeted for so problems with the PCs adapters were initially mitigated (June – September), then fixed from September.
Not finding any live Acropora at any dive site could appear to be a problem. But we argue as that is a finding in itself. We knew the 2023 bleaching event was devastating, with 30 A.palmata colonies on my (project leads) reef

all dying. But it was surprising to find NO LIVE Acropora at any dive site, around the whole island. Rubbles patches and graveyards of Acropora were located across many dive sites where they were known to persist for generations. However, not even live fragments remained.

Lessons Learned

i) Using acquired knowledge from living full time in Little Cayman for two years. This includes the network I have built up with dive instructors from the past 30(!) years to locate where colonies of Dendrogyra and Acropora have historically existed.
ii) Not finding any Acropora alive was surprising to us. We knew the bleaching event of 2023 was catastrophic, but the loss of all live colonies for both species below 60ft at dive sites around Little Cayman was still disappointing, and meant we could not produce photomosaics of these species or map their location.
iii) For a future effort of a similar project, we would implement other roving survey techniques such as manta-tows, and the use of underwater DPV (scooters) to increase our coverage at dive sites, and also between dive sites.
iv) Use local advice as much as possible, seek answers from the older dive instructors hiding away, and know the natural history/ecology of species you are looking for.

Section 3 - Project Finance (Essential)

Project Expenditure

Project Spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Staff Costs	[redacted]			
Consultancy Costs				
Overhead Costs				
Travel and Subsistence				
Operating Costs				
Capital Items				
Others				
Total	48,564.00	48,592.80	-0.06	

Please provide a short narrative summary on project finances.

No significant variation between the allocation of budget items, and budget spent exists. No co-financing was secured for this project.

Section 4 - Contribution of Project to Darwin Plus Programme Objectives

Please select up to **one** indicator that applies within **each group/indicator list (A, B, C, D)** and report your results for that indicator in the text box underneath. If you do not have relevant results to report for any of the indicators in a particular group, you can leave them blank.

Please also submit some form of evidence (above) to demonstrate any results you list below, where possible.

Group A: Capability and Capacity - Core Darwin Plus Standard Indicators (select one)

Checked	**DPLUS-A01: Number of people from key national and local stakeholder groups completing structured and relevant training.**
Unchecked	**DPLUS-A02: Number of secondments or placements completed by individuals of key local and national stakeholders.**
Checked	**DPLUS-A03: Number of local/national organisations with improved capability and capacity as a result of project.**
Checked	**DPLUS-A04: Number of people reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training.**
Unchecked	**DPLUS-A05: Number of trainers trained reporting to have delivered further training by the end of the project.**

Group A Indicator Results

A01: Research intern teaching project lead and RA based at CCMI in Little Cayman photomosaics production with Agisoft A03: baseline data of coral recruits, and demographics of these 3 species at LC dive sites A04: Use of photomosaic training applied for other projects at CCMI by RA and project lead

Group B: Policies, Practices and Management- Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-B01: Number of new/improved habitat management plans available and endorsed.**
Unchecked	**DPLUS-B02: Number of new/improved species management plans available and endorsed.**
Unchecked	**DPLUS-B03: Number of new/improved community management plans available and endorsed.**

Unchecked	**DPLUS-B04: Number of new/improved sustainable enterprises/ community benefits management plans available and endorsed.**
Checked	**DPLUS-B05: Number of people with increased participation in local communities / local management organisations (i.e., participation in Governance/citizen engagement).**
Unchecked	**DPLUS-B06: Number of Local Stakeholders and Local Communities (people) with strengthened (recognised/clarified) tenure and/or rights.**

Group B Indicator Results

B05: Photomosaics shared online, with photos of pillar corals shared with Cayman Islands Government Department of Environment

Group C: Evidence and Best Practices - Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-C01: Number of best practice guides and knowledge products published and endorsed.**
Unchecked	**DPLUS-C02: Number of new conservation or species stock assessments published.**
Unchecked	**DPLUS-C03: New assessments of habitat conservation action needs published.**
Unchecked	**DPLUS-C04: New assessments of community use of biodiversity resources published.**
Checked	**DPLUS-C05: Number of projects contributing data, insights, and case studies to national Multilateral Environmental Agreements (MEAs) related reporting processes and calls for evidence.**

Group C Indicator Results

C05: These recruits data will be uploaded upon publication, and can be used by organisations such as Global Coral Reef Monitoring Network, or IUCN for reef level an species level assessments. These data will also be uploaded to the Global Biodiversity Information Framework.

Group D: Sustainable Benefits to People, Biodiversity and Climate - Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-D01 Hectares of habitat under sustainable management practices.**
Unchecked	**DPLUS-D02: Number of people whose disaster/climate resilience has been improved.**
Unchecked	**DPLUS-D03: Number of policies with biodiversity provisions that have been enacted or amended.**

Group D Indicator Results

None.

Section 5 - Project Partnerships, Wider Impacts and Contributions

Project Partnerships

i) CCMI lead and implemented all aspects of the project from locating endangered corals, to conducting surveys, and presenting findings (see all evidence above).
ii) This project could not have been completed without approval from the Cayman Islands Government Department of Environment (DoE). The booklet will be shared with DoE upon publication, while photos of Dendrogyra have already been shared with DoE (evidence: Tissue loss Dendrogyra).
iii) –
iv) This project had great help from the local community, specifically dive instructors and dive charter companies. E.g. knowledge of where these species use to survive, and technical specialist assistance such as creation and publication of photomosaics.

Wider Impacts and Decision Making

We hope this project will influence future decision making by providing a holistic baseline of pillar coral status in Little Cayman. If arrival of the devastating Stony Coral tissue Loss D Disease (SCTLD) occurs, we now have a baseline on the population number, location, and status of each pillar coral. This will enable an informed decision by the Department of Environment if active intervention (i.e. extraction to land based nursery) for these corals is required. The same principal can be applied for any future marine heatwaves or could be used to inform future marine park strategies. For example, divers can spread SCTLD, and the no dive zone could be extended to include located pillar corals.

Sustainability and Legacy

Research intern on the project will complete his master's thesis, and these data will be produced into a publication.
The PC and cameras purchased for producing photomosaics will remain with the project partner, and can be used for future, different projects that require production of photomosaics.

Section 6 - Communications & Publicity

Exceptional Outcomes and Achievements

We believe our project has provided a few exceptional outcomes and achievements. These are listed below:
1. We dove every dive site in Little Cayman (at east twice) to conduct roving surveys and coral recruit surveys
2. These findings were presented to the Little Cayman community through CCMIs reef lecture series programme by the research intern, providing the intern valuable scientific communication experience. Approximately 40 people were in attendance for their talk, which equates to around 25% of the islands population (~160).
3. The project lead Dr Jack Johnson presented these findings at the GCFI 77 conference in Guadeloupe to over stakeholders and partners throughout the Caribbean.
4. A Reefs Go Live episode – where CCMI present projects from underwater internationally, is due to be aired on this project on the 9th of May. This will be valuable on Instagram, Facebook, and Youtube.
5. Providing an updated baseline for all pillar corals, their locations, and photographs into the open access booklet can be a valuable tool for future researchers looking into the population status of these corals in Little Cayman, and how they will change as the ocean continues to change.

6. Lastly, the devastating realisation that no live Acropora below 60ft was found at any dive site in Little Cayman. Given Little Cayman does not experience local scale anthropogenic stress compared to the rest of the Caribbean, the potential extirpation of this genus may be occurring in real time due to global climate change.

Photo, video or graphic to be used for publicity and communications.

Please upload at least one relevant and engaging image, video or graphic that you consent to be used alongside the above text in Defra, JNCC or NIRAS communications material.

Photo, video, and/or graphic captions and credits.

LCtalk - Research intern Leon presenting our coral findings to the Little Cayman community. Little Cayman, Cayman Islands. Credit CCMI.
GCFI77talk - project lead Dr Jack Johnson presenting findings to the wider Caribbean region at the GCFI77 conference. Guadaloupe. Credit CCMI.
Booklet - Status of Pillar corals in Little Cayman. Cayman Islands. Credit CCMI.
Photogram - Example of researcher collecting photos to produce photomosaics from the Soto Trader Pillar coral. Cayman Islands. Credit CCMI.
deadpalmata - Dead Elkhorn coral - a common site on the south side of Little Cayman dive sites. Cayman Islands. Credit CCMI.

I agree for the Biodiversity Challenge Funds Secretariat, Administrator, and/or JNCC to publish the content of this section.

⦿ Yes, I agree for the BCFs Secretariat and/or JNCC to publish the content of this section.

Please list any accounts that you would like tagged in online posts here. This can include project pages, partners' pages or individuals' accounts for any of the following platforms: LinkedIn, Facebook, Twitter, or Instagram.

@reefresearch (Instagram, Facebook, Twitter, Youtube)

Section 7 - Darwin Plus Contacts

Please tick here to confirm that you have read and acknowledge the BCF's Privacy Notice on how contact details will be used and stored and that you have sought agreement from anyone that you are sharing personal details with us on their behalf.

⦿ I confirm I have read the Privacy Notice and have consent to share the following contact details

Project Contact Details

Project Contact Name	Jack Johnson
Role within Darwin Plus Project	Project lead
Email	[redacted]
Phone	[redacted]
Do you need further sections to provide additional contact details?	⦿ No