Applicant: **Goodbody-Gringley, Gretchen**
Organisation: **Central Caribbean Marine Institute**
Funding Sought: **£49,955.00**

DPLR4\1045

Increasing Reef Resilience through Climate-Smart Restoration in a Changing Ocean

CCMI has been undertaking coral restoration since 2012, with great success. Unfortunately, the unprecedented ocean warming of 2023 caused extensive loss within the nursery and on the reefs. However, 22 fragments in the nursery survived the extreme heat, presenting hope for resilient restoration practices.

CCMI pioneers science-based restoration, researching how to improve resilience of restoration. This project will strategically stock CCMI's coral nursery, incorporating cutting-edge research into how genotypes impact resilience for climate-smart restoration.

DPLR4\1045

Increasing Reef Resilience through Climate-Smart Restoration in a Changing Ocean

Section 1 - Project Title & Contact Details

Q1. Project Title

Increasing Reef Resilience through Climate-Smart Restoration in a Changing Ocean

Q2. Please select whether you are applying as an organisation or as an individual **(Guidance section 3 and Guidance Glossary)**

⦿ Organisation

PRIMARY APPLICANT DETAILS

Title	Ms
Name	Abbie
Surname	Dosell
Organisation	[redacted]
Website (Work)	[redacted]
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

CONTACT DETAILS

Title	Dr
Name	Gretchen
Surname	Goodbody-Gringley
Organisation	[redacted]
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

GMS ORGANISATION

Type	Organisation
Name	Central Caribbean Marine Institute
Phone (Work)	[redacted]
Email (Work)	[redacted]
Website (Work)	[redacted]
Address	[redacted]

Section 2 - Overseas Territory(ies)

Q3. Please state whether the same (or similar) project proposal has previously been submitted to the UK Government for funding, including through Darwin Plus Local, Defra's other Darwin Plus grant schemes or other UK Government funding mechanisms. Failure to do so may result in the application being ineligible.

⦿ No

Q4. Overseas Territory (Guidance section 1.3):

Which UK Overseas Territory(ies) will your project be working in? Please note that in case of a non-permanent resident population you need to demonstrate a clear, meaningful, long-term link to the territory.

☑ Cayman Islands

*** if you have indicated a territory group with an asterisk, please give detail on which territories you are working on here:**

No Response

In addition to the UKOT(s) you have indicated, will your project directly benefit any other UK OT(s) or country(ies)?

⦿ No

Section 3 - Project Partners

Q5. Project partners (Guidance section 3.2)

In this section, please give details of all the partners involved (including the Lead Organisation) and provide a summary of their roles.

Project Leader name (Guidance section 3.1):	Dr Gretchen Goodbody-Gringley
Lead Organisation name (if applying as an organisation; Guidance section 3.1):	Central Caribbean Marine Institute
Lead Organisation Website (if applicable):	reefresearch.org
Is the Lead Organisation based in a UKOT where the project is working (Guidance section 3.1)?	⦿ Yes

List other partners involved and where are they based:	N/A
Summary of roles and responsibilities of each partner in the project:	Central Caribbean Marine Institute (CCMI) is the lead organisation that will oversee and deliver the project activities, both in the field and in the lab. CCMI will be responsible for restoration work, financial management, reporting and disseminating project findings to the public, funders and academic/restoration community.
I confirm that all listed partners are aware of this application and have indicated support:	Checked

Attach a Cover Letter for your application (Guidance section 4.2).

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Section 4 - Project Summary & Description

Q6. Project Summary (Guidance section 3.8)

Please provide a brief summary of your project. This may be used in communication activities and/or published online, if your application is successful.

CCMI has been undertaking coral restoration since 2012, with great success. Unfortunately, the unprecedented ocean warming of 2023 caused extensive loss within the nursery and on the reefs. However, 22 fragments in the nursery survived the extreme heat, presenting hope for resilient restoration practices.

CCMI pioneers science-based restoration, researching how to improve resilience of restoration. This project will strategically stock CCMI's coral nursery, incorporating cutting-edge research into how genotypes impact resilience for climate-smart restoration.

Q7a. Description (Guidance section 2.1 and 6)

Please provide a description of your project, including:

- **the overall objective**
- **the current situation and the problem the project is trying to address**
- **what success will look like and how you will measure it.**

Please be as specific as possible when describing the project, using quantified data and evidence where available. You may wish to consider: what are the specific threats to the environment that the project will attempt to address, and what should we know about these threats? What does your successful project look like? And how will you demonstrate whether and how your project has been successful?

The project will strategically stock CCMI's 12-year-old coral nursery based upon CCMI's recent genetic resilience findings from the 2022-2023 RESEMBID project: Increasing Coral Resilience with assisted evolution via selective restoration, improving the likelihood of restoration success under increasing climate-change associated pressures.

The recent RESEMBID project assessed how different Acropora genotypes respond to both warmer waters and coral disease, focusing on identifying highly tolerant genotypes or 'super corals'. The results confirmed that no specific Acropora genotype displayed all desirable traits that would constitute a highly resilient coral. Instead, different genotypes displayed higher thermal tolerance or disease resistance or faster growth rates. As such, to plan for resilience within coral restoration, incorporating as much genetic diversity as possible is essential to hedge-bets against the complex stressors that face today's coral reefs. These results were the outcome of both lab-based experiments and in-field fate-tracking of outplanted corals over the 2023 mass coral bleaching event. This event confirmed the lab results, highlighting only 3 out of 12 genotypes that survived the extreme and extended warmer waters in Little Cayman.

As a result of the 2023 bleaching event, over 95% of CCMI's coral nursery bleached and died and coral cover of Little Cayman's reefs reduced from 27% to roughly 12%. This highlights the pressing need to turn research into action and incorporate resilience into restoration activities. There is an urgent need implement a climate-smart restoration programme and develop the CCMI nursery accordingly, to allow continuation of essential resilience-based restoration to maintain and restore biodiversity on Little Cayman's reefs. CCMI's coral reef monitoring data indicate that Little Cayman traditionally has some of the most biodiverse and healthy coral reefs in the Caribbean. The impact of the 2023 mass bleaching event was severe, as such, urgent intervention is required to mitigate the impact of this event and support the recovery of such valuable and rare ecosystems and biodiversity.

This project intends to develop a climate-smart restoration strategy and implement this in the CCMI coral nursery, strategically stocking the nursery with wild Acropora fragments and aiming to increase the total number of fragments to 100, representing as many different genotypes as possible. This project will assume that unique wild colonies are independent genotypes and not clones for genetic diversity.

Restoration is needed now more than ever. Although, after 2023's extreme coral bleaching event and the record-breaking ocean temperatures already recorded in 2024, it is crucial that restoration is resilience-based and uses the most up-to-date science to inform strategy. Similarly, restoration efforts must continue to work towards a greater understanding of coral resilience to improve success in the face of climate-extremes. This is the approach that the proposed project will undertake, ensuring that CCMI's restoration efforts are evidence-based and more likely to withstand a multitude of stressors, including extreme heat and coral disease outbreaks.

Project success will be measured in both the total number of coral fragments in the CCMI nursery, and the number of genotypes included. Over the 6-month project we aim to bring the total number of fragments in the nursery to 100. A total increase of 78 fragments, dependent on availability in the wild. We are also aiming for the

highest possible number of Acropora genotypes in the nursery to implement the key recommendations from the RESEMBID project that genetic diversity is essential for resilience to multiple stressors. As such, we will aim to include a minimum of 7-8 genotypes in the coral nursery, bringing the total number of genotypes in the nursery to 10.

Q7b. Long-term sustainability (Guidance section 2.1 and 6)

Please describe the long-term benefits of the project and the change it will bring about. How will the outcomes of the project be sustained after the funding is finished?

Successful coral restoration provides significant long-term benefits to the marine environment and the societies that rely upon it, by supporting natural coral and reef-fish populations, in turn providing key services to communities such as coastal protection and food provision. This project will build upon over 12 years of coral restoration at CCMI, which is a crucial tool to aid reef recovery. Now more than ever, coral reefs globally, but particularly the Caribbean, need support to recover, as highlighted through global calls to restore 30% of degraded reefs through climate smart designs that support coral adaptation by 2030 (Global Coral Breakthrough, 2023).
Recent literature (Suggett et al., 2024) re-iterates the urgency for investment into coral restoration, particularly resilience-based restoration, in connection with emission reductions to fight reef degradation and mitigate the impacts of climate change.

Ongoing maintenance of the coral nursery, coral outplanting and resilience research is part of CCMI's core remit, which CCMI has successfully secured funding to maintain for over 12 years. Once the nursery is fully stocked, CCMI will continue to seek and secure funds for the maintenance, upkeep and continued development of the coral nursery and outplanting activities, through private sponsorship, long-term donors, earned revenue and grants.

(Optional) Please upload any additional and supporting materials or files (such as maps of project sites, etc) below. Maximum of 5 sides of A4, and is combined as a single PDF:

CCMI_Resembid_Summary
24/06/2024
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pdf 1.05 MB

Section 5 - Project Outcome(s)

Q8. Project Outcome(s) (Guidance section 1.2)

Successful Darwin Plus Local projects must demonstrate measurable outcomes in at least one of the themes of Darwin Plus with a clear focus on biodiversity and the natural environment, either by the end of the project or soon after through a credible plan.

Please note: Any proposals including research or monitoring are required to demonstrate a clear link to tangible outcomes for conservation of biodiversity and the natural environment. Please explain how any new research will be applied to drive environmental outcomes on the ground.

Please confirm that your project has a clear focus on biodiversity and the natural environment.

Checked	**Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;**

Please tick which additional theme(s) of Darwin Plus your project contributes to (if relevant):

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**
Unchecked	**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.**

Please justify your selection. Please use quantitative information where possible here.

Over 12 years, CCMI has outplanted over 1,500 corals or 70m2 of coral. This project will support the continuation through strategic climate-smart stocking of the coral nursery, following the hottest year on record. This will incorporate the latest science on coral resilience to increase the likelihood of restoration survival when faced with climate change. Coral restoration directly reverses degradation and loss of endangered coral species and also provides habitat for biodiversity. We aim to add 78 new fragments to CCMI's coral nursery (at least 7-8 genotypes), depending on the number found in the wild for resilient outplanting in the future.

Section 6 - Workplan

Q9. Workplan (Guidance section 2.2)

Please provide anticipated dates for the start and end of your planned project here. Please use the Darwin Plus Local Project Workplan (available at: https://darwinplus.org.uk/apply/local-applications/**) to provide a list of the individual activities you have planned for this project, a brief description of what each activity entails, and the months in which the activities will be carried out. If the project involves only one activity (e.g. a purchase), please still provide project start and end dates (noting estimated times for procurement). Please note that your project must start after 1 October 2024 and be completed by 31 March 2025.**

Start date:	End date:	Duration (e.g. 3 months):
01 October 2024	31 March 2025	6 months

Please upload the completed Darwin Plus Local Project Workplan with your proposed project activities here

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23/06/2024
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docx 28.74 KB

Section 7 - Costs

Q10. Costs (Guidance section 2.2 and please read the Finance Guidance)

Please provide a breakdown of costs to be funded through Darwin Plus Local (in GBP).

Are you seeking any matched funding for this project?

⦿ No

Budget line	Explanation	Cost in GBP
Staff costs:	Staff time for half of a research technician's position for project delivery and 4% of Gretchen Goodbody-Gringley's time as scientific and overall project oversight, including science QA, project management, financial management, monitoring and evaluation and reporting.	£[redacted]
Consultancy costs:	N/A	£0.00
Overhead costs:	Overhead costs charged at 20% of project value	£[redacted]
Travel & subsistence costs:	N/A	£0.00
Operating costs:	Operating costs include boat fees for nursery stocking, bench fees in the CCMI lab, housing for Dr Goodbody-Gringley to be at the research station and lab and field supplies.	£[redacted]
Capital equipment:	N/A	£0.00
Other Costs	Costs for project communications and PR time, including creating collateral for including in CCMI's annual fundraising gala, regular public project updates, and including in CCMI's Reefs Go Live season 2025.	£[redacted]
Total:		49,955.00

This section provides more information on the budget to help evaluators understand how you will use the funds you are requesting. You do not need to list all costs, but please list and detail costs of more than £1,000 per item below, under the appropriate budget line.

Details of staff costs over £1,000 (if relevant)

[redacted] Goodbody-Gringley's staff time and salary: £[redacted] to oversee project delivery, provide scientific expertise, ensure robust methodologies are in place and oversee reporting and management.
[redacted] of new research technician's time and salary: £[redacted] to manage the delivery of the project activities, including restoration and data collection and contribute to project communications and disseminating scientific information and project reporting.

Details of overhead costs over £1,000 (if relevant):

Overhead costs are charged at [redacted] of total project cost.

Details of travel and subsistence costs over £1,000 (if relevant):

N/A

Details of operating costs over £1,000 (if relevant):

Boat fees (20 days) – £[redacted] to conduct the necessary fieldwork required to stock the coral nursery.
Bench fees (20 days) – £[redacted] to use lab and office space at LCRC

Supplies – £[redacted] including consumables for lab work and fieldwork.

Little Cayman Research Centre housing for GGG (21 days) – £[redacted]

Details of capital equipment costs over £1,000 (if relevant):

N/A

Details of consultancy costs over £1,000 (if relevant):

N/A

Details of other costs over £1,000 (if relevant)

£[redacted] outreach costs, including printing, website updates, collateral development, and incorporation into CCMI's Reefs Go Live programme 2025.

If your project budget was prepared in another currency and converted to GBP, please provide the exchange rate, its source, and the date it was accessed:

Other currency:	Exchange rate:	Source of this exchange rate:	Date exchange rate accessed:
USD	0.79	xe.com	09 April 2024

Darwin Plus Local has been created to build capacity and contribute to local economies in-territory.

What % of the total will be spent in the OTs?	[redacted]

If less than 80% of the total project spend is to be spent within the OT(s), please explain why.

N/A

Section 8 - Local and National Priorities

Q11. Local and national priorities

Please explain how this project aligns with local and national priorities? You may wish to consider the project in the context of national environmental laws, objectives, strategies, territory specific agreements, action plans or policies.

The first goal of the Cayman Islands Climate Change Policy is to Reduce Cayman's vulnerability and enhance our resiliency to climate change through adaptation. This project aims to enhance both the resiliency of coral restoration efforts and the more long-term goal of supporting enhanced coastal resilience through restoration and healthy coral reefs in Little Cayman. Little Cayman Island is low-lying and highly vulnerable to the impacts of natural disasters, this is compounded by the lack of emergency services, resources and networks available on the island. Healthy coral reef systems are one of the most effective nature-based solutions to improve the resilience of coastlines. The policy also references the importance of coral nurseries and restoration to support harmony with nature.

The Cayman Islands National Conservation Law highlights the importance of restoration of habitats and their associated ecological systems in addition to examples of representative or unique ecological systems and their physical environment of adequate size to ensure their long-term viability and to maintain biological and genetic diversity. This project is designed specifically to support this objective both through the restoration of the unique coral reefs on Little Cayman and the focus on maintaining genetic diversity through restoration activities.

Will the project take place on Government owned land or water or involve biocontrol, invasive alien species control or eradication?

⦿ Yes

Please attach evidence that you have Government support for this project i.e. a Letter of Support. Applications which indicate that they do not take place on Government land or water, but which propose work that appears to the reviewers would be difficult/impossible to carry out without working on government land or waters may be ineligible if no Letter of Support is provided.

DoE Darwin Recomendation CCMI Coral Nursery TJA Signed
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20/06/2024
16:27:06
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Section 9 - Project Risks

Q12. Project Risks

Please demonstrate your consideration of any risks involved in this project and how you intend to manage them. Please note the importance of health and safety and environmental risk assessment in the design of your project. If there is any possibility that your project may have negative impacts on the environment or human health, it is important that you provide a comprehensive analysis of potential environmental and human health risks, and the prevention measures you will take to ensure the work does not cause harm.

Depending on your project, you may wish to consider:

- **Biosecurity risks – particularly for projects involving external equipment.**
- **Safeguarding risks – particularly for projects involving vulnerable groups such as children, older people or people with disabilities.**

Risk	Mitigation

Boat safety risks	CCMI staff, interns, volunteers and visiting students adhere to comprehensive boat safety procedures at all times when operating or aboard vessels. The CCMI vessel is also maintained to high standards at all times and equipped with all legally required safety equipment, including life jackets, radio, flares and first aid equipment. A copy of CCMI's boat safety procedures can be provided upon request.
Dive safety risks	CCMI is an American Academy of Underwater Sciences (AAUS) scientific-diving certified organisation, with comprehensive diving procedures in place for maximum safety. All staff and interns must be AAUS certified to dive with CCMI, ensuring a high level of competency and training for all. In addition to AAUS, CCMI has robust independent diving protocols that all staff and interns agree to when joining CCMI.
Extensive coral bleaching in 2024	Should further coral bleaching occur in the summer of 2024 before the project commences, this could pose a risk to finding enough wild corals to source nursery fragments from. CCMI has recent began another Darwin Local project to locate and map the endangered coral species around Little Cayman. The outputs will feed into the fieldwork strategy for this project, allowing staff to find suitably colonies easier and generate efficiencies in the field, even in spite of potential summer bleaching. By project commencement in October, any bleaching should be subsiding or gone which will increase the number of healthy colonies sources.

Do you require more fields?

⦿ Yes

Risk	Mitigation

Extensive coral bleaching or disease outbreak after project	Another bleaching event or outbreak of coral disease after project completion poses risk to the coral restoration effort. However, this is the exact risk that is built into the design of the project, including resilience-based principles into the coral restoration strategy. Actions such as including high genetic diversity will boost resilience and increase the likelihood of outcomes surviving bleaching, disease outbreaks or other stressors. Furthermore, CCMI will continue to monitor scientific developments and continue research into coral resilience, adapting our restoration strategy and practices to ensure that they remain informed by latest available science and understanding of coral resilience.
No Response	*No Response*
No Response	*No Response*
No Response	*No Response*
No Response	*No Response*

Section 10 - Terms & Conditions

Q12. Terms and conditions (Guidance section 3.10)

By applying for Darwin Plus Local you are adhering in full to the grant Terms and Conditions in full (available at: Darwin Plus website **and as referenced in the Guidance at section 3.10). For information, the Terms and Conditions include requirements for all applicants to (amongst other requirements as per the full Terms and Conditions):**

- **Uphold a zero tolerance for inaction approach to tackling sexual exploitation, abuse, and harassment.**
- **Where appropriate, make all reasonable and adequate efforts to address gender inequality and other power imbalances.**
- **Notify all cases of fraud and theft (whether proven or suspected) relating to the project to the Grant Administrator as soon as they identified.**

Please indicate you have read, and understood, and will adhere to the Terms and Conditions.

Checked

Supporting documents list (please have these ready to attach with application)

- **Cover Letter of no more than two A4 pages. (Guidance section: 4.2 has information on what this cover letter should include).**
- **If the project takes place on public land or water or is addressing invasive alien species, a Letter of support from OT Government.**
- **Project Workplan in the template provided for Darwin Plus Local (available at:** https://darwinplus.org.uk/apply/local-applications/**).**
- **Map and additional information (optional) maximum five additional pages.**

If your application is successful

If your project application is successful, the Fund Administrator (NIRAS) will ask you to provide some financial evidence for due diligence checks before you receive your project grant. (Please see section 3.3 of the Darwin Plus Local Finance Guidance). Please be ready to provide this evidence promptly.

- **Financial evidence for organisations: Year-end financial statements, the latest management accounts or audited accounts (if you have these).**
- **Financial evidence for individuals: Proof of identity such as a passport, ID card or driving licence and solvency (such as bank statements) and a police check.**

Section 11 - Certification

Certification

I certify that, to the best of my knowledge and belief, the statements made in this application are true and the information provided is correct.

Checked

I have the authority to submit an application on behalf of my organisation.

Checked

Name:	Abbie Dosell
Position in the organisation: (if applicable)	Head of Fundraising and Engagement
Signature (please upload e-signature)	AD_Signature 24/06/2024 15:04:04 png 18.18 KB
Date:	24 June 2024

Section 12 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance **documents, including the "Darwin Plus Local Guidance" and the "Darwin Plus Local Finance Guidance".**	Checked
If my proposed project takes place on public lands or water or is addressing alien invasive species, I have uploaded a Letter of Support from Government.	Checked
I have uploaded a cover letter that details the information requested in the guidance (Guidance section 4.2 has information on what this cover letter should include).	Checked

I have read, and can meet, the current Terms and Conditions **for this fund (found at:** https://darwinplus.org.uk/apply/local-applications/**) for this fund.**	Checked
I have provided actual start and end dates **for my project that fit this Round.**	Checked
I have provided my summary budget based on UK government financial years **i.e. 1 April – 31 March and in GBP in the application form.**	Checked
I have uploaded my project workplan using the specific template provided (available at: https://darwinplus.org.uk/apply/local-applications/**).**	Checked
I have uploaded all supplementary documents if I have any.	Checked
(If copying and pasting into Flexi-Grant) I have checked that all my responses have been successfully copied into the online application form.	Checked
The application has been signed by a suitably authorised individual **(clear electronic or scanned signatures are acceptable).**	Checked
I have checked the Darwin Plus website **immediately prior to submission to ensure there are no late updates.**	Checked
I have read and understood the Privacy Notice on the Darwin Plus website**.**	Checked

We would like to keep in touch!

Please check this box if you would be happy for the lead applicant (Flexi-Grant Account Holder) and project leader (if different) to be added to our mailing list. Through our mailing list we share updates on upcoming and current application rounds under Darwin Plus. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share project news. You are free to unsubscribe at any time.

Checked

Data protection and use of personal data

Information supplied in the application form, including personal data, will be used by Defra as set out in the **Privacy Notice**, available from the Forms and Guidance Portal.

This **Privacy Notice must be provided to all individuals** whose personal data is supplied in the application form. Some information may be used when publicising Darwin Plus including project details (usually title, lead partner, project leader, location, and total grant value).

Darwin Plus Local

Provide a **Project Implementation Timetable** that shows the key milestones in project activities. Complete the following table as appropriate to describe the intended workplan for your project. Round 4 is for a **maximum of 6 months** with activities starting from 1 October 2024. All activities must be completed by 31 March 2025.

Please add/remove columns to reflect the length of your project. For each activity (add/remove rows as appropriate) indicate the number of months it will last, and shade only the months in which an activity will be carried out. The workplan can span multiple pages if necessary.

Activity #	Description (max 25 words)	No. of months	UK Financial Year 2024/25					
			Calendar Year 2024			Calendar Year 2025		
			Oct	Nov	Dec	Jan	Feb	Mar
1	Advertise research technician position	1						
2	Engage with and update CI Department of Environment	1						
3	Purchase necessary consumables for field and lab work	1						
4	Recruit research technician	1						
5	Field collections and coral nursery stocking	5						
6	Project communications: A day in the life – CCMI's coral nursery (social media)	2						
7	Project communications at CCMI fundraising gala – Festival of Seas	1						
8	Quarterly monitoring and evaluation, including fieldwork progress review, risk analysis and identification of key communications opportunities,	1						
9	End of project communications – results and outcomes	2						

Project Title: Increasing reef resilience through climate-smart restoration in a changing ocean

Activity #	Description (max 25 words)	No. of months	UK Financial Year 2024/25					
			Calendar Year 2024			Calendar Year 2025		
			Oct	Nov	Dec	Jan	Feb	Mar
10	End of project reporting and engagement with CI Department of Environment	1						