
DPR10S2\1005

Characterising the biodiversity of selected offshore seamounts to improve management

Seamount communities are closely related to oceanic islands and often act as important stepping stones connecting populations. The aim of this project is to characterize the biodiversity of benthic and pelagic communities at two unexplored offshore seamounts using a combination of in-situ surveys, photogrammetry, and eDNA. Public awareness of pressing threats will be increased through broad outreach and educational activities, and management strategies developed by contribution of a new section to the Cayman Islands Biodiversity Action Plan for offshore seamounts.

PRIMARY APPLICANT DETAILS

Title Dr
Name Gretchen
Surname Goodbody Gringley
Organisation Central Caribbean Marine
Institute

Website (Work) [REDACTED]
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Email (Work) [REDACTED]
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Section 1 - Contact Details

PRIMARY APPLICANT DETAILS

Title Dr
Name Gretchen
Surname Goodbody Gringley
Organisation Central Caribbean Marine Institute
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GMS ORGANISATION

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

Section 2 - Title, Dates & Budget Summary

Q3. Project title

Characterising the biodiversity of selected offshore seamounts to improve management

What was your Stage 1 reference number? e.g. DPR10S1\1123

DPR10S1\1010

Q4. UKOT(s)

Which UK Overseas Territory(ies) will your project be working in?

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

Q4b. In addition to the UKOTs you have indicated, will your project directly benefit any other Territories or country(ies)?

No

Q5. Project dates

Start date:

01 May 2022

End date:

31 March 2025

Duration (e.g. 2 years, 3 months):

2 years, 11 months

Q6. Budget summary

Year:	2022/23	2023/24	2024/25	Total request
Darwin funding request (Apr - Mar)	£157,837.00	£197,390.00	£135,157.00	£490,384.00

Q6a. Do you have proposed matched funding arrangements?

Yes

What matched funding arrangements are proposed?

In kind personnel time from the Cayman Islands Department of Environment and CCMI, in kind accommodation on Grand Cayman from the DOE, in kind intern housing and stipend from CCMI, outreach and communications support from private funding to CCMI, salary support for M. Leraf from the Smithsonian Tropical Research Institute.

Q6b. Proposed matched funding as % of total project cost (total cost is the Darwin request plus other funding required to run the project).

Q6c. If you have a significant amount of unconfirmed matched funding, please clarify how you fund the project if you don't manage to secure this?

matched funding is confirmed

Section 3 - Project Summary and Conventions

Q7. Summary of Project

Please provide a brief summary of your project, its aims, and the key activities you plan to undertake. Please note that if you are successful, this wording may be used by Defra in communications.

Please write this summary for a non-technical audience.

Seamount communities are closely related to oceanic islands and often act as important stepping stones connecting populations. The aim of this project is to characterize the biodiversity of benthic and pelagic communities at two unexplored offshore seamounts using a combination of in-situ surveys, photogrammetry, and eDNA. Public awareness of pressing threats will be increased through broad outreach and educational activities, and management strategies developed by contribution of a new section to the Cayman Islands Biodiversity Action Plan for offshore seamounts.

Q8. Environmental Conventions, Treaties and Agreements

Please detail how your project will contribute to the aims of the agreement(s) your project is targeting. What key OT

Government priorities and themes will it address and how? You should refer to Articles or Programmes of Work here. You should also consider local, territory specific agreements and action plans here.

Letters of support from UKOT Government partners/stakeholders should also make clear reference to the agreements/action plans your project is contributing towards.

The Cayman Islands and UK governments have been engaged in delimiting the Cayman Islands Exclusive Economic Zone and other areas of offshore control (possibly part of the Blue Belt Program), which would include these seamounts. The detailed biodiversity profiling will inform management to preserve the biodiversity, and economic and social utility, of these locally important but vulnerable marine ecosystems. One seamount, '12-Mile Bank', was identified as a key site in the 2009 Cayman Islands National Biodiversity Action Plan (part funded by DEFRA) however Pickle Bank was not included in that project due to practical limitations. These seamounts meet the FAO Vulnerable Marine Ecosystem criteria, with the exception of being in state waters, rather than high seas. This work also supports the Specially Protected Areas and Wildlife (SPA) Protocol of the Cartagena Convention to protect biodiversity through preservation and sustainable management of areas of particular ecological value.

Section 4 - Project Partners

Q9. Project Partners

Please list all the partners involved (including the Lead Partner) and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development.

This section should illustrate the capacity of partners to be involved in the project. Please provide Letters of Support for the lead partner and each partner or explain why this has not been included.

N.B: There is a file upload button at the bottom of this page for the upload of a cover letter and all letters of support.

Lead Partner name:	Central Caribbean Marine Institute
Website address:	www.reefresearch.org
Details (including roles and responsibilities and capacity to engage with the project):	CCMI will be responsible for planning and executing the project as described. CCMI scientists will participate in all research expeditions, data collections, analysis and manuscript preparation. They will also host the postdoctoral researcher and an undergraduate intern, providing mentorship and career guidance. CCMI will manage all reporting and financial management, including arranging for an independent audit. They will facilitate collaborations with project partners and be responsible for delivery of outreach and educational activities as well as scientific outcomes.
Have you included a Letter of Support from this organisation?	<input checked="" type="radio"/> Yes

Have you provided a cover letter to address your Stage 1 feedback? Yes

Do you have partners involved in the Project?

Yes

1. Partner Name: Cayman Islands Department of Environment

Website address: www.doe.ky

Details (including roles and responsibilities and capacity to engage with the project): The Cayman Islands Department of Environment (DOE) will participate in project planning and execution as well as data analysis and interpretation. They will participate in all expeditions and provide guidance to the Project Lead. They will also guide production of the Biodiversity Action Plan amendment with final approval for inclusion.

Have you included a Letter of Support from this organisation? Yes

2. Partner Name: Guy Harvey Ocean Foundation

Website address: www.ghof.org

Details (including roles and responsibilities and capacity to engage with the project): Dr. Guy Harvey and his team at the Guy Harvey Ocean Foundation (GHOF) will participate in all expeditions to the offshore seamounts, during which they will assist with development of educational materials, including creating content for broadcasting to schools. They will also develop outreach materials, such as short films and imagery, that will be distributed on their website. They will assist with local outreach and educational initiatives related to the project and ensure broad dissemination through their global network. They will contribute to the final report.

Have you included a Letter of Support from this organisation? Yes

3. Partner Name: Smithsonian Tropical Research Institute

Website address: www.stri.si.edu

Details (including roles and responsibilities and capacity to engage with the project): Dr. Mathieu Leray will lead the eDNA aspects of the project, including participation in all expeditions, collection and processing of water samples, sequencing and data analysis. He will also contribute to all resulting scientific publications. He will also mentor an undergraduate student to assist lab work at the STRI facility in Panama.

Have you included a Letter of Support from this organisation? Yes

4. Partner Name: *No Response*

Website address: *No Response*

Details (including roles and responsibilities and capacity to engage with the project): *No Response*

Have you included a Letter of Support from this organisation? Yes No

5. Partner Name: *No Response*

Website address: *No Response*

Details (including roles and responsibilities and capacity to engage with the project): *No Response*

Have you included a Letter of Support from this organisation? Yes No

6. Partner Name: *No Response*

Website address: *No Response*

Details (including roles and responsibilities and capacity to engage with the project): *No Response*

Have you included a Letter of Support from this organisation? Yes No

If you require more space to enter details regarding Partners involved in the Project, please use the text field below.

No Response

Please provide a cover letter responding to feedback received at Stage 1 if applicable and a combined PDF of all Letters of Support.

 [Darwin Round 10 cover letter](#)
 09/01/2022
 15:13:04
 pdf 199.1 KB

 [CCMI Darwin Plus letters of support 2021](#)
 09/01/2022
 15:06:55
 pdf 941.76 KB

Section 5 - Project Staff

Q10. Project Staff

Please identify the key staff on this project, their role and what % of their time they will be working on the project. Further information on who should be classified as key project staff can be found in the guidance.

Please provide 1 page CVs for these staff, or a 1 page job description or Terms of Reference for roles yet to be filled. These should match the names and roles in the budget spreadsheet. If your team is larger than 12 people please review if they are key project staff, or whether you can merge roles (e.g. 'admin and finance support') below, but provide a full table based on this template in the PDF of CVs you provide.

Name (First name, Surname)	Role	Organisation	% time on project	1 page CV or job description attached?
Gretchen Goodbody-Gringley	Project Leader	CCMI	10	Checked
Timothy Austin	Partner	CIG DOE	3	Checked
Mathieu Leray	Partner	STRI	17	Checked
Guy Harvey	Partner	GHOF	8	Checked

Do you require more fields?

Yes

Name (First name, Surname)	Role	Organisation	% time on project	1 page CV or job description attached?
Alexander Chequer	Research Manager	CCMI	17	Checked
Jessica Bellworthy	Postdoctoral Researcher	CCMI	83	Checked
Elizabeth Chafin	Outreach and Communications Manager	CCMI	5	Checked
TBD	Undergraduate Research Assistant	STRI	42	Checked
<i>No Response</i>	<i>No Response</i>	<i>No Response</i>	0	Unchecked
<i>No Response</i>	<i>No Response</i>	<i>No Response</i>	0	Unchecked
<i>No Response</i>	<i>No Response</i>	<i>No Response</i>	0	Unchecked
<i>No Response</i>	<i>No Response</i>	<i>No Response</i>	0	Unchecked

Please provide 1 page CVs (or job description if yet to be recruited) for the Project staff listed above as a combined PDF.

Ensure the file is named clearly, consistent with the named individual and role above.

 [Darwin CVs](#)
 09/01/2022
 15:14:57
 pdf 1.29 MB

Have you attached all Project staff CVs?

Yes

Section 6 - Background & Methodology

Q11. Problems the project is trying to address

Please describe the problem your project is trying to address in terms of environment and climate issues in the UKOTs.

For example, what are the specific threats to the environment that the project will attempt to address? Why are they relevant, for whom? How did you identify these problems? How will your proposed project help?

Please cite the evidence you are using to support your assessment of the problem (references can be listed in your additional attached PDF document which can be uploaded at the bottom of the page).

Coral reefs have global ecological, structural, social, and economic importance that is disproportionately large relative to their areal extent. They are a fundamental component of marine ecosystems and a major locus of global biodiversity, providing an ecological reserve of genetic complexity [1]. Coral reef systems are increasingly threatened by local and global impacts, including overfishing and climate change [2]. Nearshore ecosystems are particularly vulnerable due to their proximity to humans and longer residence times of water, resulting in higher frequency of thermal anomalies. Offshore seamounts however, are increasingly targeted for commercial and recreational fishing and thus may suffer from greater impacts of overfishing. In the archipelago of the Galapagos Islands, for example, international commercial fishing fleets

line the border of the marine protected area to take advantage of these highly productive seamounts. Yet, seamounts often serve as critical stepping-stones, connecting oceanic islands and shaping community composition and distribution across broad geographic scales [3]. In the Cayman Islands, two seamounts (12-Mile Bank and Pickle Bank) rise above the 30m depth contour and likely serve as important stepping-stone communities. Both seamounts are frequently visited by recreational and commercial fisherman as prime locations for catching large pelagic species, yet characterization of the biological communities and physical environments remains limited. The proposed study will use advanced technologies and the proven strength of project partners to create precise, high-resolution characterization of these understudied ecosystems as well as generate outreach and educational content that will be distributed globally, highlighting the importance of protecting these valuable resources through sustainable management. Coupled with data generated by DPLUS140 of pelagic fish communities in deeper regions of the main platform around Grand Cayman, this project will increase understanding of how these unique ecosystems function and maintain biodiversity, and the importance of connectivity among and between seamounts and nearshore communities. As such, this project will help guide future management of offshore seamounts and assist with marine spatial planning for offshore zones and the Blue Belt. This work is relevant to fisherman who use the banks as a resource, and to conservation groups that aim to support the persistence of coral reefs and pelagic and predatory species. Marine Spatial planning and territorial claims require, as a basic starting point, a precise and high-resolution set of baseline data from which to assess and manage resources and particularly for Pickle Bank this baseline information is lacking and will be addressed by this study.

Q12. Methodology

Describe the methods and approach you will use to achieve your intended Outcome and contribute towards your Impact. Provide information on:

- How you have analysed historical and existing initiatives and are building on or taking work already done into account in project design. Please cite evidence where appropriate.
- The rationale for carrying out this work and a justification of your proposed methodology.
- How you will undertake the work (materials and methods).
- How you will manage the work (role and responsibilities, project management tools etc.)

(This may be a repeat from Stage 1 but you may update or refine as necessary)

Habitat characterization, patterns of biodiversity, and genetic diversity will be conducted at two offshore seamounts: 12-Mile Bank, located 12-miles west of Grand Cayman; and Pickle Bank, located 45-miles north of Little Cayman (S1/Fig.1). Expeditions to 12-Mile Bank will occur in Year 1, and Pickle Bank in Year 2.

At each seamount, we will conduct in-situ surveys of fish communities by identifying and estimating the size of all fish encountered within 1m of either side of a 30m transect within a vertical height of 2m (120m³) [e.g.4], repeated along a minimum of 12 replicate transects per seamount. Fish communities will be analyzed for density, biomass, richness/diversity, as well as trophic guild and species contributions, and will be compared among the seamounts and with previous nearshore fish community data (CCMI; DOE DPLUS140). Biodiversity of fish communities has been assessed using similar methods on offshore seamounts near Brazil [5] and along a depth gradient in nearshore habitats by the PI (e.g.DPLUS001;6;7).

We will create 5 replicate high-resolution benthic photomosaics at each seamount using overlapping photographs covering a 100m² area (Fig.2) using AgiSoft photogrammetry software. These will be established as permanent quadrats for future monitoring. Photomosaics will be analyzed using TagLab and QGIS software to characterize percent contribution of key functional groups and demographic features of individual species.

CCMI's team of trained technical divers have substantial experience conducting scientific dives to depths up to 100m that have included fish surveys and photogrammetry. We have facilities and equipment required to conduct these types of dives (i.e. mixed-gas and rebreathers). This work builds on a similar approach that was successfully used by the PI using technical diving to describe variations in invasive lionfish and fish community composition in Bermuda (DPLUS001). Likewise, nearshore habitat data available as part of the long-term monitoring study conducted by CCMI at Little Cayman and fish community surveys conducted by CCMI at both Little Cayman and Grand Cayman, as well as fish population data collected as part of DPLUS140, will be used to determine connectivity between nearshore reefs and offshore seamounts. Nearshore marine spatial planning maps available from the DOE for the three islands will also guide interpretations for amendments to the Biodiversity Action Plan.

Environmental DNA (eDNA) metabarcoding will be used to estimate biodiversity at the population scale. eDNA is a relatively new approach for assessing biodiversity that has become increasingly popular as it is non-invasive and can complement traditional biodiversity assessments. In recent years, eDNA has been used to assess biodiversity in a variety of marine ecosystems, including nearshore, open ocean, and abyssal plains [8;9;10], as well as a recent expedition to seamounts in the Gulf of Mexico. This work will incorporate techniques developed by STRI collaborator M. Leray to estimate biodiversity using eDNA. Replicate water and sediment samples will be collected by divers during research dives and frozen immediately upon return to the vessel. Following protocols outlined by Nguyen et al. (2020) we will assess benthic and pelagic diversity and identify cryptic species [8]. Estimates of diversity within the eDNA samples will be compared between seamounts for both fish and benthic communities. Moreover, variations in species composition will be compared between visual census and metabarcoding data. Specific attention will be focused on pelagic fish communities and cryptic benthic fauna as these are often missed by visual surveys given the depth of the water column and difficulty finding cryptic species by visual assessment. Combinations of eDNA with visual surveys and photogrammetry, therefore, provides the highest possible resolution for complete characterization of the community.

To understand driving forces leading to patterns in community composition and biodiversity, we will deploy 3 replicate light (PAR) and temperature sensors onto the seafloor at each seamount (Fig.3). Arrays will be deployed for a minimum of 1 month. Differences in physical characteristics will be compared to patterns of biological community composition.

With the GHOF we will create outreach and educational content that can be delivered online with global reach including: 2+ education modules; 1 short film; 2 public seminars; 2 youth lectures; 2 workshops with relevant stakeholders (commercial fishermen & DOA); and an online Expedition Notebook. CCMI will capitalize on their existing Reefs-Go-Live program to broadcast pre-recorded videos of the expeditions into classrooms integrated with live Q&A sessions with the scientists.

Finally, with the DOE we will develop an offshore seamount section to the CIBAP and provide guidance for new legislation for expansion of the MPA network that includes seamounts. The DOE will also arrange required meetings with relevant government departments to disseminate project findings and recommendations.

If necessary, please provide supporting documentation e.g. maps, diagrams, and references etc., as a PDF using the File Upload below.

 [Darwin Round 10 Supplement Docs and references](#)
 07/01/2022
 18:26:32
 pdf 661.13 KB

Section 7 - Stakeholders and Beneficiaries

Q13. Project Stakeholders

Who are the stakeholders for this project and how have they been consulted (include local or host government support/engagement where relevant)? Briefly describe what support they will provide and how the project will engage with them.

The main stakeholder for this project is the Cayman Islands Department of Environment (DOE). This proposal was developed in direct collaboration with the DOE following several consultations to identify key outcomes that would benefit local marine spatial planning, while capitalizing on the key strengths of all partners. For this project, the DOE will make their vessel, SeaKeeper, available for day trips to 12-Mile Bank as well as occasional trips to Pickle Bank. They will provide a captain for these trips. They will also make housing available on Grand Cayman for visiting project participants. Finally, they will be directly involved with data interpretation, outreach initiatives, and development of the CIBAP chapter as well as any proposed legislation. The second main stakeholder is the local commercial and recreational fishing community. To include this stakeholder group, we are collaborating directly with the Guy Harvey Ocean Foundation (GHOF). Dr. Harvey is best known locally as an avid recreational fisherman and has strong ties with the fishing community. The GHOF will support this project by disseminating our project intent, activities, and results directly to the fishing community. Another main stakeholder group is the local public. This group will be engaged with the project through our extensive outreach and education initiatives developed and delivered by CCMI and GHOF. Finally, the scientific community will be included with the project through presentation of project results at international scientific symposia, peer-reviewed publications, and mentorship of undergraduate and post-graduate research participants at STRI and CCMI.

Q14. Institutional Capacity

Describe the Lead Partner's capacity (and that of partner organisations where relevant) to deliver the project.

CCMI established the Little Cayman Research Centre in 2005 and has consistently developed our research, education and conservation capabilities. CCMI has a history of managing grants to the highest expected level with clear research outcomes, including grants from Darwin Plus (DPLUS 010, 061, Rapid Response CV19RR/1036), the U.S National Science Foundation and BEST2.0. We aim to progress our understanding of coral reef resilience under the guidance of Research Director, Dr Gretchen Goodbody-Gringley, and Research Manager, Alex Chequer. Both are experienced research scientists, seasoned at running scientific technical diving operations under the auspices of the AAUS, having successfully lead and/or collaborated on previous Darwin Plus funded projects (DPLUS 001, 064 & CV19RR/1036). The project team are further supported by a fully operational field marine research station, excellent experience and knowledge of the local marine environment.

The Cayman Islands Department of Environment (DOE) has a rich and verifiable background in developing region-leading conservation policy and progressing key species biodiversity planning, such as turtles, Nassau grouper and sharks.

The Guy Harvey Ocean Foundation (GHOF) is a successful advocate of ocean conservation in the Cayman Islands, with international reach and expertise in partnering research with engaging outreach opportunities.

The Smithsonian Tropical Research Institution (STRI) is a long-term partner of CCMI. Dr. Leray specializes in experimental and metagenomic approaches to understanding how species interactions structure natural communities on coral reefs. His expertise in eDNA methods and access to the molecular facility at STRI greatly strengthens our capacity to deliver this critical research component.

Q15. Project beneficiaries

Who will your project benefit? You should consider the direct benefits as a result of your project as well as the broader indirect benefits which may come about as a result of your project achieving its Outputs and Outcome. The measurement of any benefits should be included in your project logframe.

There will be two clear direct stakeholder groups to benefit from this project:

1) The Cayman Islands Government – who is responsible for the management and sustainable use of the natural environment and natural resources within the Cayman Islands.

2) The local community – there are a multitude of stakeholder groups within the local community that will directly benefit from the outcomes of this project, including local fishermen, the tourism industry, and students that CCMI engage with as part of our commitment to ocean literacy.

Broader stakeholder groups will include:

Regional stakeholders – the Cayman Islands is intricately connected to the entire Caribbean region, via the shared ocean. Results will be scalable and relevant to the wider Caribbean and UKOTs within the region and impacts will be relevant via connectivity of fish stocks and pelagic oceans.

The UK – furthering our understanding of Caribbean biodiversity protect the UKs biodiversity directly, and this project will be communicated to our extensive network of overseas territories and UK contacts.

Future generations – protecting key species will impact our children, and their children and improved knowledge of connected ocean ecosystems is a stakeholder consideration for intergenerational injustice.

Section 8 - Gender and Change Expected

Q16. Gender (optional)

How is your project working to reduce inequality between persons of different gender? At the very least, you should

be able to provide reassurance that your proposed work is not increasing inequality. Have you analysed the context in which you are working to see how gender and other aspects of social inclusion might interact with the work you are proposing?

CCMI is a female led organization, with the top two positions in the organization held by females, both of whom are parents. CCMI is highly attuned to the issue of gender inequality, particularly in the sciences. We value gender equality as is evident in our predominately female staff and inclusion of non-binary individuals, with equitable pay scales among genders. CCMI also runs a Women in Ocean Sciences Award to support early career scientists and has a rich history in supporting female interns, MSc and PhD students. We strive to ensure that our primarily female staff are treated fairly and pay particular attention to issues such as mobility of our staff that have children and encourage our staff to work remotely when applicable. This project promotes women's empowerment, as outreach initiatives will showcase a female lead scientist, and gender equality, as key decisions for conservation policies will be led by the female Director of the DOE. Moreover, in recruiting project participants, gender equality will be at the forefront. The health of the coral reef, however, impacts all genders and thus the success of this project has no restrictions or biases in who will ultimately benefit from its success.

Q17. Change expected

Detail the expected changes this work will deliver. You should identify what will change and who will benefit a) in short-term (i.e. during the life of the project) and b) in the long-term (after the project has ended). Please describe the changes for the environment and, where relevant, for people in the OTs, and how they are linked.

The proposed project will provide critical baseline information on biodiversity and characterization of unique offshore seamount ecosystems that will be used to add a new chapter to the CIBAP to inform data-driven management strategies and provide guidance for future legislation. Thus, in the short term, the Cayman Islands Government will benefit from the results of the project as it will add knowledge to their management strategies. In the long-term, stakeholders including both recreational and commercial fisherman, as well as conservation groups, will ultimately benefit from improved management of unique offshore seamounts resulting from this study. The project will also engage the public to increase local, regional and global awareness of the coral reef crisis and to garner support for the conservation of unique offshore habitats through collaboration with the Guy Harvey Ocean Foundation (GHOF). The GHOF has a varied portfolio of educational and outreach content, including a local youth lecture series, an online Expedition Notebook, and a dedicated Guy Harvey Channel on Discovery Education. Their extensive global audience will ensure that the project reaches a diverse and broad array of stakeholders. In addition, CCMI will recruit and train local interns, disseminate knowledge through lectures, integrate findings into our education programs, and create media content that will be shared locally and online. This educational and outreach campaign will immediately benefit local, regional and global stakeholders, particularly the Cayman Islands youth. Education of the next generation to the importance of sustaining biodiversity will ultimately benefit society in the long run as protection of key ecosystems is an issue of cultural importance.

Q18. Pathway to change

Detail the expected changes this work will deliver. You should identify what will change and who will benefit a) in the short-term (i.e. during the life of the project) and b) in the long-term (after the project has ended). Please describe the changes for the environment and, where relevant, for people in the OTs, and how they are linked.

The proposed project will result in detailed characterization of benthic and pelagic biodiversity at unique offshore seamounts that will be coupled with targeted educational and outreach activities to foster and guide future management strategies. High-resolution photogrammetry and in situ visual surveys will be used to describe benthic habitat, biodiversity and community ecology at both 12-Mile and Pickle Bank. Coupled with non-invasive eDNA analysis, these methods will result in a thorough assessment of biodiversity at these offshore seamounts, which is currently lacking. These data will contribute to conservation and management by inclusion in the Cayman Islands Government Biodiversity Action Plan and providing guidance for future marine spatial planning legislation for the Cayman Islands EEZ. A strategic educational and outreach campaign will increase public awareness of biological importance of offshore seamounts and environmental protection initiatives. Specific activities will include live educational broadcasts via CCMI's well established Reefs-Go-Live program, development of educational modules delivered to local and regional schools, creation of a short educational video, and delivery of a live public webinar. Impacts of our initiatives will be evaluated through documentation of public engagement, surveys to gauge public perception, and final incorporation into the CIBAP.

Q19. Exit strategy

State how the project will reach a stable and sustainable end point, and explain how the outcomes will be sustained, either through a continuation of activities, funding and support from other sources or because the activities will be mainstreamed in to “business as usual”. Where individuals receive advanced training, for example, what will happen should that individual leave?

The proposed project has a clear end point, with data obtained incorporated into a new section of the CIBAP and suggestions provided to the Cayman Islands Government for future legislation related to marine spatial planning. However, photomosaic quadrats will be marked and established as permanent quadrats that can be monitored in the future pending available funding. Light (PAR) and temperature sensors acquired by this project will be made available for future projects in the Cayman Islands that require physical data. The PI will provide guidance to the postdoctoral researcher to assist them with career development and expansion of similar conservation themed projects into their future research goals.

Q20. Ethics

Outline your approach to meeting Darwin's key principles for ethics as outlined in the guidance note. Additionally, are there any human rights and/or international humanitarian law risks in relation to your project? If there are, have you carried out an assessment of the impact of those risks, and of measures that may be taken in order to mitigate them?

Through direct collaboration with the Cayman Islands Government, we will ensure the project meets all legal and ethical obligations of the countries involved. Specifically, all activities will be approved by the DOE via their standard research permit approval process. Likewise, all water samples obtained for eDNA will be done under the auspices of an approved collection and export permit, and genetic results will be publicly available on the online genetic database, GenBank, following conclusion of the project. All ecological and environmental data will also be made publicly available at the end of the project. The project will be inclusive of strong local participation and leadership through our collaborative partners at the DOE and GHOF, who will be directly involved with project planning and outreach. This project was developed based primarily on local knowledge of fishing activity at the offshore seamounts and thus their guidance on best strategies will be incorporated into project planning and their best interests taken into consideration when drafting any suggested changes to management legislation. The health and safety of project staff and participants will be paramount given the risks involved with offshore expeditions and technical diving. CCMI is a member of the AAUS and will therefore follow the diving regulations outlined in the approved dive safety manual. Importantly, CCMI's diving safety officer will participate in every trip to ensure diving protocols meet these regulations. Finally, results of the project will be published in open access peer reviewed journals to ensure the findings are freely available.

Section 9 - Budget, Risk Management & Funding

Q21. Budget

Please complete the appropriate Excel spreadsheet, which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet. Note that there are different budget templates for grant requests under £100,000 and over £100,000.

- [Budget form for projects under £100,000](#)
- [Budget form for projects over £100,000](#)

Please refer to the [Finance Guidance](#) for more information.

Please ensure you include any co-financing figures in the Budget spreadsheet to clarify the full budget required to deliver this project.

NB: Please state all costs by financial year (1 April to 31 March) and in GBP. Darwin Plus cannot agree any increase in grants once awarded.

 [Budget over 100K Aug21 Final CCMI](#)

 09/01/2022

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Q22. Financial Risk Management

This question considers the financial risks to the project. Explain how you have considered the risks and threats that may be relevant to the successful financial delivery of this project. This includes risks such as fraud, bribery or corruption, but may also include the risk of fluctuating foreign exchange, delays in procurement or recruitment and internal financial processes such as storage of financial data.

CCMI operates to the highest degree of governance. As a multi-jurisdictional organisation, we align to the UK Charity Commission Governance Code (2017), the Cayman Islands non-profit organisations law (2016) and 501 (c) 3 IRS check in the United States. CCMI is professionally audited each year (BDO Cayman Islands).

CCMI's financial governance is managed pro-actively, underpinned by our company policies and controls, utilizing well-established professional systems. Project financial risk is managed via quarterly cashflow forecasting, highlighting issues such as potential exchange rate changes, delays in payment, or delays in project milestones (weather delays are the biggest risk to this project). The executive management team report financial activity on a monthly basis to our Board of Trustees, ensuring full transparency and oversight.

We use Quickbooks and all expenditure is fully tracked at project level. CCMI has fully developed project management systems, that include time and effort, and monitoring and evaluation protocols to assess risk on an ongoing basis.

CCMI also has a well-established relationship with our funders, we understand when to communicate with the grantor on project changes or risk, ensuring that if and when issues arise, we engage the appropriate project partners as soon as possible to find a successful solution.

Q23. Funding

Q23a. Is this a new initiative or a development of existing work (funded through any source)?

New initiative

Please provide details:

The proposed project is a new initiative. While some matching funding is available to devote to outreach, the project was conceived and developed specifically for this proposal.

Q23b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?

No

Section 10 - Finance

Q24. Financial Controls

Please demonstrate your capacity to manage the level of funds you are requesting. Who is responsible for managing the funds? What experience do they have? What arrangements are in place for auditing expenditure?

CCMI is competent at handling large grants. We have a clear and strict fiduciary protocol within the organization, to support grants of this nature.

Internal controls are set up via accounting best practice. Separate accounting responsibilities within CCMI ensures we

manage project finances to the highest standard:

CCMI's Board of Directors and Trustees, and our Treasurer govern all financial activity.

The PI will have direct project oversight, allocating spend as per the project budget.

CCMI's Business Manager approves all company expenditure and will be responsible for claiming grant payments, forecasting project cashflow, and tracking all project finances.

The Operations Manager will ensure all approved day to day project costs, including time and effort reporting are tracked and provided to the Business Manager for reconciliation.

Monitoring and evaluation is conducted by an external accountant and the Advancement team.

Q25. Balance of budget spend

Defra are keen to see as much Darwin Plus funding as possible directly benefiting OT communities and economies. While it is appreciated that this is not always possible every effort should be made for funds to remain in territory.

Explain the thinking behind your budget in terms of where Darwin Plus funds will be spent. What benefits will the Territory/ies see from your budget? What level of the award do you expect will be spent locally? Please explain the decisions behind any Darwin Plus funding that will not be spent locally and how those costs are important for the project.

CCMI is a Cayman Islands operated institution, and over 80% of expenditure from the project will be spent in the Cayman Islands. Project partners are also located in the Cayman Islands, with the exception of the Smithsonian, who will travel to take part in the data collection and are required for laboratory analyses critical to the project. Less than 20% of the budget will therefore be spent outside of the Cayman Islands and this will be primarily related to purchase of equipment or services that cannot be obtained locally, which are critical to the project success. We have also requested funds to cover 2 local safety divers to assist with the field work, which will benefit the local economy as the diving industry was impacted dramatically during COVID. Costs associated with chartering vessels to access the offshore seamounts are based on quotes requested from several local charter operators and a mid-range price was included to ensure our research and safety needs are met. All consumables will be purchased locally unless unavailable. Costs of the laboratory assistant at STRI is included, and while this person will not reside in the OT, their participation is essential to processing the eDNA.

Q26. Capital Items

If you plan to purchase capital items with Darwin Plus funding, please indicate what you anticipate will happen to the items following project end. If you are requesting more than 10% capital costs, please provide your justification here.

We are requesting purchase of 4 PME MiniPAR loggers with automatic wipers for deployment on the seamounts to measure light and temperature. Each logger set up costs [REDACTED]. These loggers will remain at CCMI following project completion and made available to project partners for future research initiatives.

Q27. Value for Money

Please describe why you consider your application to be good value for money including justification of why the measures you will adopt will secure value for money.

While the funding requested for this project is on the upper end, the scope of the project is above and beyond what can be achieved by smaller levels of funding. Specifically, access to offshore seamounts requires a seaworthy vessel that can accommodate several technical divers along with all of their gear, as well as space for processing water samples, and the ability to film and broadcast from offshore. In terms of 12-Mile bank, its closer proximity to Grand Cayman will enable day trips, however, the distance to Pickle Bank will require a liveaboard vessel with access to a compressor. Thus, the costs of hiring these very specific vessels have deterred this type of research from occurring in the past. Likewise, the expertise of the technical diving team currently working at CCMI was previously unavailable, making this project extremely timely. The PI on the project and the lead organization have significant experience with budget forecasting and efficient use of funds

for these types of projects as is evident in our previous successful DarwinPlus projects (e.g. DPLUS001, DPLUS010, DPLUS061, DPLUS064 and CV19RR/1036). The matched funding provided by participating partners (26%) indicates the commitment of all partners to the success of the project and ensures funds will be managed appropriately. While the project has a clear end, equipment obtained will contribute to building local research capacity for future projects. Finally, results obtained will be broadly distributed via open access channels that will guarantee value for money.

Q28. Outputs of the project and Open Access

All outputs from Darwin Plus projects should be made available on-line and free to users whenever possible. Please outline how you will achieve this and detail any specific costs you are seeking from Darwin Plus to fund this.

Genetic data obtained from eDNA analysis will be uploaded to the public online genetic database, GenBank, after publication or within 2 years of project completion, whichever comes first (<https://www.ncbi.nlm.nih.gov/genbank/>). Environmental data (benthic and fish community composition) will be uploaded to the general-purpose open-access data repository, Zenodo, along with any code used for analysis immediately following publication or within 2 years of project completion, whichever comes first (www.zenodo.org). All scientific publications will be published in open-access journals, i.e. Scientific Reports. Costs for publishing in open-access journals is requested in proposed budget at an estimated cost of £2000 per publication in Year 3. All local public presentations, webinars, and broadcasts given by project partners will be recorded and made available on the CCMI and GHOF websites. Costs associated with filming, sharing, and storing content are included within the communications and outreach line item of the proposed budget and in kind support from the GHOF.

Section 11 - Safeguarding

Q29. Safeguarding

Projects funded through Darwin Plus must fully protect vulnerable people all of the time, wherever they work. In order to provide assurance of this, projects are required to have appropriate safeguarding policies in place. Please confirm the lead organisation has the following policies in place and that these are available on request:

Please upload the lead partner's Safeguarding Policy as a PDF on the certification page.

We have a safeguarding policy, which includes a statement of our commitment to safeguarding and a zero tolerance statement on bullying, harassment and sexual exploitation and abuse	Checked
We have attached a copy of our safeguarding policy to this application	Checked
We keep a detailed register of safeguarding issues raised and how they were dealt with	Checked
We have clear investigation and disciplinary procedures to use when allegations and complaints are made, and have clear processes in place for when a disclosure is made	Checked
We share our safeguarding policy with downstream partners	Checked
We have a whistle-blowing policy which protects whistle-blowers from reprisals and includes clear processes for dealing with concerns raised	Checked
We have a Code of Conduct in place for staff and volunteers that sets out clear expectations of behaviors - inside and outside of the work place - and make clear what will happen in the event of non-compliance or breach of these standards	Checked

Please outline how you will implement your policies in practice and ensure that downstream partners apply the same standards as the lead organisation.

CCMI is a fully functional marine research facility, this includes providing education programming from primary to tertiary level students in a residential situation. Safeguarding and protecting diversity is at the heart of what we do, for both humans and the environment.

This project will align with CCMI's corporate approach to safeguarding. Our company handbook (safeguarding, corporate responsibility, diversity policy, code of ethics and code of conduct), CCMI's child safeguarding policy, as well as our operational policies to protect vulnerable people, including our media, dive, grievance and data protection policies, cover the range of standards that are set to ensure residents and stakeholders are treated with the utmost care and consideration during their time on the project.

CCMI's staff conduct national safeguarding courses, as outlined by the local education ministry and the CCMI team will be responsible for all project partners while taking part in field or residential activity.

At the beginning of the project, CCMI will conduct both a safeguarding and risk assessment, including external project partner roles and responsibilities.

Section 12 - Logical Framework

Q30. Logical Framework

Darwin Plus projects will be required to monitor (and report against) their progress towards their expected Outputs and Outcome. This section sets out the expected Outputs and Outcome of your project, how you expect to measure progress against these and how we can verify this.

- [Stage 2 Logframe Template](#)

Please complete your full logframe in the separate Word template and upload as a PDF using the file upload below – **please do not edit the template structure other than adding additional Outputs if needed as a logframe submitted in a different format may make your application ineligible**. Copy your Impact, Outcome and Output statements and your activities below - these should be the same as in your uploaded logframe.

Please upload your logframe as a PDF document.

-  [R10 DPlus St2 Logical Framework Template FINAL](#)
-  09/01/2022
-  15:28:40
-  pdf 108.8 KB

Impact:

Increase protection and public awareness of unique offshore seamount ecosystems in the Cayman Islands.

Outcome:

Detailed baseline data on benthic and pelagic biodiversity at offshore seamounts coupled with targeted educational and outreach activities will foster and guide future management strategies.

Project Outputs

Output 1:

Baseline assessment of benthic and pelagic biodiversity at 12-Mile and Pickle Banks

Output 2:

Project specific educational and outreach programmes

Output 3:

New section for offshore seamounts included in the Cayman Islands Biodiversity Action Plan

Output 4:

No Response

Output 5:

No Response

Do you require more Output fields?

It is advised to have less than 6 Outputs since this level of detail can be provided at the Activity level.

No

Activities

Each activity is numbered according to the Output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1.

- 1.1 12 in-situ fish surveys completed at each seamount (June – December 2022 & 2023)
- 1.2 5 benthic photomosaics generated from each seamount (June – December 2022 & 2023)
- 1.3 Fish and benthic data analyzed (January – July 2023 & 2024)
- 1.4 Water and sediment samples collected from each seamount (June – December 2022 & 2023)
- 1.5 Water samples analyzed for eDNA (January – July 2023-2024)
- 1.6 3 replicate light and temperature loggers deployed at each seamount for 1 month (July – December 2022 & 2023)
- 1.7 Data consolidated and results published (June 2024 – March 2025)
- 2.1 Interactive video with scientist filmed while diving on each seamount (June – December 2022 & 2023)
- 2.1 Video incorporated into a live broadcasted Q&A session with scientists (October/November each year)
- 2.2 Education modules created related to the project and delivered locally and regionally (1 per year)
- 2.3 Short educational video developed and broadcast online by December 2024
- 2.4 One webinar delivered locally each project year
- 3.1 Consultations with DOE regarding interpretation of results and development of CIBAP chapter (Year 3)
- 3.2. Recommendations and data consolidated into new CIBAP chapter on seamounts (Year 3)
- 3.3. Chapter approved and consultations held with relevant government agencies to discuss implications and potential changes to legislation (Year 3).

Section 13 - Implementation Timetable

Q31. Provide a project implementation timetable that shows the key milestones in project activities

Provide a project implementation timetable that shows the key milestones in project activities. Complete the Word template as appropriate to describe the intended workplan for your project, and upload as a PDF.

[Implementation Timetable Template](#)

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 fill/shade only the quarters in which an activity will be carried out.

-  [R10 DPlus Implementation Timetable Template FIN](#)
- [AL \(1\)](#)
-  07/01/2022
-  19:05:45
-  pdf 153.51 KB

Section 14 - Monitoring and Evaluation

Q32. Monitoring and evaluation (M&E)

Describe, referring to the Indicators, how the progress of the project will be monitored and evaluated, making reference to who is responsible for the project's M&E.

Darwin Initiative projects are expected to be adaptive and you should detail how the monitoring and evaluation will feed into the delivery of the project including its management. M&E is expected to be built into the project and not an 'add' on. It is as important to measure for negative impacts as it is for positive impact. Additionally, please indicate an approximate budget and level of effort (person days) to be spent on M&E (see [Finance Guidance](#)).

Integrative and robust qualitative and quantitative monitoring by the project leader (Goodbody-Gringley) and project partners (DOE, Guy Harvey Ocean Foundation, Smithsonian) will take place throughout the project, allowing for inductive and adaptive change to ensure the best possible outcomes are achieved. Clear roles and responsibilities will be assigned at the beginning of the project, as well as an achievable and productive reporting structure, utilizing the SMART indicator protocol.

A total budget of █████ has been allocated to M&E, with 40 days (12 days per annum for Year 1 & 2 and 16 days per annum for year 3) on the project. We have also included an additional █████ budget for a financial audit at the end of the project.

CCMI conducts several stages of M&E, which can be split into the following categories, driven by project logframe and indicators:

Scoping - overall project objectives, outcomes, timescales, roles and responsibilities will be fully developed, leading to:

Project design confirmation – each stage of the project log frame and project indicators, which have been developed in principle via the methods and milestones, will be formalized with the project team.

Schedule of reporting – the PI will develop the schedule of reporting, with monthly input and validation from project partners, plus CCMI colleagues who oversee finance, operations and M&E. A reporting schedule to the CCMI board will also be developed, usually in line with our quarterly grant reporting requirements (including financial withdrawals/claims).

Final evaluation – final evaluation will include reporting and communications for project partners, grantor and local stakeholders. Project outcomes will be verified. A financial audit will be included in this stage. A visibility plan will also be delivered at this stage.

At each stage of the M&E, financial and milestone deliverables/responsibilities and project risk will be assessed, and proactively managed if required.

Total project budget for M&E in GBP (this may include Staff, Travel and Subsistence costs)

██████████

Number of days planned for M&E

██

Percentage of total project budget set aside for M&E (%)

█

Section 15 - Lead Partner Track Record

Q33. Lead Partner track record

Has your organisation been awarded a Darwin Initiative award before (for the purposes of this question, being a partner does not count)?

Yes

If yes, please provide details of the most recent awards (up to 6 examples).

Reference No	Project Leader	Title
CV19RR/1036	Gretchen Goodbody-Gringley	Quiet Oceans: Assessing and communicating COVID-19 impacts on reef biodiversity
DPLUS061	Carrie Manfrino	Protecting herbivorous fish to conserve Cayman Island coral reef biodiversity
DPLUS010	Carrie Manfrino	Coral nursery project in Little Cayman: enhancing resilience and natural
No Response	No Response	No Response
No Response	No Response	No Response
No Response	No Response	No Response

Have you provided the requested signed audited/independently examined accounts?

If yes, please upload these on the certification page. Note that this is not required from Government Agencies.

Yes

Section 16 - Certification

Certification

On behalf of the

trustees

of

Central Caribbean Marine Institute

I apply for a grant of



I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

(This form should be signed by an individual authorised by the applicant institution to submit applications and sign contracts on their behalf.)

- I have enclosed CVs for project key project personnel, letters of support, budget and project implementation timetable (uploaded at appropriate points in application).
- Our last two sets of signed audited/independently verified accounts and annual report are also enclosed.

Checked

Name

Gretchen Goodbody Gringley

Position in the organisation

Director of Research and Education

Signature (please upload e-signature)

 [ggg signature trans](#)
 09/01/2022
 15:33:12
 png 5.72 KB

Date

09 January 2022

Please upload the Lead Partner's Safeguarding Policy as a PDF.

 [CCMI Hanbook section 2.5 Safeguarding and child protection policy](#)
 07/01/2022
 19:30:43
 pdf 422.97 KB

Please attach the requested signed audited/independently examined accounts.

 [CCMI-Annual Report 2019 \(1\)](#)
 07/01/2022
 20:09:01
 pdf 2.09 MB

 [CCMI-Annual Report 2020 Final](#)
 07/01/2022
 20:08:46
 pdf 5.57 MB

 [2019 and 2018 - CCMI - Financial Statements - Final Signed](#)
 07/01/2022
 19:53:24
 pdf 1.93 MB

Section 17 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance documents, including the "Guidance Notes for Applicants" and "Finance Guidance" .	Checked
I have read, and can meet, the current Terms and Conditions for this fund.	Checked
I have provided actual start and end dates for this proposed project.	Checked
I have provided a budget based on UK government financial years i.e. 1 April - 31 March and in GBP.	Checked
I have checked that the budget is complete, correctly adds up and I have included the correct final total at the start of the application.	Checked
The application has been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked

I have attached my completed logframe and timeline as a PDF using the templates provided.	Checked
I have included a 1 page CV or job description for all the Project staff identified at Question 11, including the Project Leader, or provided an explanation of why not.	Checked
I have included a letter of support from the Lead Partner and main partner organisation(s) identified at Question 10, or an explanation of why not.	Checked
I have included a cover letter from the Lead Partner, outlining how any feedback at Stage 1 has been addressed where relevant.	Checked
I have included a signed copy of the last 2 years annual report and accounts for the Lead Partner, or provided an explanation if not.	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 the Darwin Initiative, Darwin Plus and our sister grant scheme, the IWT Challenge Fund. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share our quarterly project newsletter. You are free to unsubscribe at any time.

Unchecked

Data protection and use of personal data

Information supplied in this application form, including personal data, will be used by Defra as set out in the latest copy of the Privacy Notice for Darwin, Darwin Plus and the Illegal Wildlife Trade Challenge Fund available [here](#). This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information, but not personal data, may be used when publicising the Darwin Initiative including project details (usually title, lead partner, location, and total grant value) on the GOV.UK and other websites.

Information relating to the project or its results may also be released on request, including under the 2004 Environmental Information Regulations and the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality nor will we act in contravention of our obligations under the General Data Protection Regulation (Regulation (EU) 2016/679).