Applicant: **Noyes, Timothy**
Organisation: **Bermuda Institute of Ocean Sciences**
Funding Sought: **£316,829.00**

DPR9S2\1013

Assessing the mobile fish biodiversity of Bermuda’s deep seas

Though the use of innovative methodologies, this project will fill critical knowledge gaps on Bermuda’s mobile deep-sea biodiversity and support both the Bermuda and UK Government’s strategic biodiversity conservation priorities. The complimentary use of environmental DNA metabarcoding and baited cameras will generate baseline data to feed into the nascent MPA network as the Government develops spatial protection measures under the Bermuda Ocean Prosperity Programme (BOPP). This work will focus on species of highly migratory and mobile predatory fishes.

Section 1 - Contact Details

PRIMARY APPLICANT DETAILS

Name	Timothy
Surname	Noyes
Organisation	Bermuda Institute of Ocean Sciences
Website (Work)	www.bios.edu
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

CONTACT DETAILS

Title	Dr
Name	Austin
Surname	Gallagher
Website (Work)	https://www.beneaththewaves.org
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

GMS ORGANISATION

Type	**Organisation**
Name	Bermuda Institute of Ocean Sciences
Phone	[redacted]
Email	[redacted]
Website	[redacted]
Address	[redacted]

Section 2 - Title, Dates & Budget Summary

Q3a. Project title

Assessing the mobile fish biodiversity of Bermuda's deep seas

Q3b. What was your Stage 1 reference number? e.g. DPR9S1\10008

DPR9S1\1068

Q4. UKOT(s)

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

☑ Bermuda

*** 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:	End date:	Duration (e.g. 2 years, 3 months):
01 August 2021	31 March 2023	1 year, 8 months

Q6. Budget summary

Year:	2021/22	2022/23	2023/24	2024/25	Total request
Darwin funding request (Apr - Mar)	£181,737.00	£135,092.00	£0.00	£0.00	**£** 316,829.00

Q6a. Do you have proposed matched funding arrangements?

⦿ Yes

What matched funding arrangements are proposed?

1. BIOS – existing camera and sampling equipment (£[redacted]
2. BIOS - Bermuda Programme Internship, one student per each year of the project - £[redacted]

3. University of Rhode Island – existing camera and sampling equipment (£[redacted]
4. Department of Environment and Natural Resources – JP salary and workplace support will be provided in kind by the Bermuda Government (£[redacted]
5. Waitt Institute – Curation and production of multimedia on deep-sea biodiversity (£[redacted]

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

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 working may be used by Defra in communications e.g. as a short description of the project on GOV.UK.

Please write this summary for a non-technical audience.

Though the use of innovative methodologies, this project will fill critical knowledge gaps on Bermuda's mobile deep-sea biodiversity and support both the Bermuda and UK Government's strategic biodiversity conservation priorities. The complimentary use of environmental DNA metabarcoding and baited cameras will generate baseline data to feed into the nascent MPA network as the Government develops spatial protection measures under the Bermuda Ocean Prosperity Programme (BOPP). This work will focus on species of highly migratory and mobile predatory fishes.

Q8. Biodiversity 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? You should refer to Articles or Programmes of Work here. You should also consider local, territory specific agreements and action plans here.

This project will support and contribute to the following local, regional and global biodiversity

Local
• Bermuda Biodiversity Action Plan objectives A (support of coordination, collaboration, communication of efficient biodiversity conservation), D (increase public awareness of biodiversity), I (re-designation of existing protected areas), J (support key species and habitat management plans) and K (increase research and monitoring of Bermuda's biodiversity)
• Bermuda Ocean Prosperity Programme (expanded on in Q12,13 and 22b).
• Outputs of this project will support the Bermuda Government's 2010 Strategy for the sustainable use of living marine resources and the implementation of the Shark Management Action Plan through the provision of elasmobranch biodiversity assessments.
• Biodiversity data collected by this project could provide baseline data to enable the ratification of territorial Key Biodiversity Areas (KBAs). At present the two KBAs focus on terrestrial areas.

Regional
• Sargasso Sea is designated an Ecologically or Biologically Significant Marine Area (EBSA), this project will give a greater understanding of the biodiversity founds within this EBSA.
• Hamilton Declaration on the Collaboration for the Conservation of the Sargasso Sea (2014). Whilst the Bermuda Exclusive Economic Zone is excluded from this declaration, these waters are physically part of the Sargasso Sea. This project supports the Commission's stewardship role to encourage and facilitate the conservation of the Sargasso Sea.

Global
• The project will directly support the Memorandum of Understanding on the Conservation of Migratory Sharks (UK signatory and extended to Bermuda) through identifying elasmobranch biodiversity found within Bermuda's EEZ.

• Bermuda is not a signatory to the Convention on Biological Diversity 2010, however, this project specifically contributes to Aichi Biodiversity Targets 10 (management of fish stocks), 11 (10% of oceans protected by marine protected areas), 19 (increasing biodiversity knowledge).

• United Nations Sustainable Development Goals: Goal 14: Conserve and sustainably use the oceans, seas and marine resources.

Section 4 - Lead Organisation Summary

Q9. Lead organisation summary

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

⦿ No

If no, please provide the below information on the lead organisation.

What year was your organisation established/ incorporated/registered?	The Bermuda Institute of Ocean Sciences, formally the Bermuda Biological Station for Research was established in 1903, incorporated in New York as a US not-for-profit organization in 1926 and registered as a Bermuda charity in 1976
What is the legal status of your organisation?	⦿ Other (if selected, please explain below)
Other explained	BIOS is an independent U.S. incorporated 501(c)(3) and not-for-profit marine research and education organization with 501(c)(3) status and a Bermuda registered Charity#116

How is your organisation currently funded?	The Bermuda Institute of Ocean Sciences is funded Revenue and support is derived from grants and contracts received through the U.S. and Bermuda governments and gifts; individual, corporate and foundation donors. Additional sources of support are tuition and fees for the use of BIOS's various scientific, marine and housing facilities and attendance at our many educational programs, and investment return pertaining to endowment funds.

Describe briefly the aims, activities and achievements of your organisation. Large organisations please note that this should describe your unit or department.

Aims	BIOS's mission is to seek and share fundamental knowledge of the oceans through state-of-the-art scientific research, world-class field expeditions and comprehensive educational experiences.
Activities	BIOS's researchers utilize the marine environment surrounding Bermuda to study life in the ocean, conducting fieldwork and deploying a wide array of scientific tools. Education is a key aspect of BIOS's mission, directly linking scientific research to hands-on learning opportunities for students in Bermuda and those visiting from abroad.
Achievements	Having grown and diversified impressively over the past century, the Institute has now achieved the longest set of ocean observations available anywhere in the world, operates a 170-ft world-class research vessel, and supports a faculty of exceptional scientists from around the globe.

Provide details of 3 contracts/projects held by the lead organisation that demonstrate your credibility as an organisation and provide a track record relevant to the project proposed. These contracts/awards should have been held in the last 5 years and be of a similar size to the grant requested in your Darwin application.

Contract/Project 1 Title	The Oleander project: High-resolution observations of the dynamic ocean between New Jersey and Bermuda
Contract Value/Project budget (include currency)	$[redacted] (USD)
Duration (e.g. 2 years 3 months)	6 years 2 weeks

Role of organisation in project	BIOS is the lead organisation in this collaborative project and is responsible for overseeing the management and delivery of the project as a whole. BIOS is responsible for all of the project financial management including subawards to project partners.
Brief summary of the aims, objectives and outcomes of the project	This project extends the multi-decadal oceanographic observations from the MV Oleander container vessel that crosses four distinct regions, the continental shelf, Slope Sea, Gulf Stream and Sargasso Sea on its route between New Jersey and Bermuda. Acoustic Doppler current profilers (ADCP) provide direct measurement of the currents through the base of the thermocline to approximately 1200 m depth in the open, and high vertical resolution profiling of the upper. In addition, the high horizontal resolution of surface salinity, temperature and velocity afforded by individual tracks enables continued investigation into sub-mesoscale processes. Data is publicly available after processing and quality-control.
Client/independent reference contact details (Name, e-mail)	Bari Uz, Program Director, US National Science Foundation [redacted]

Contract/Project 2 Title	Fall Semester Student Research in Oceanography and Marine Science at BIOS
Contract Value/Project budget (include currency)	$[redacted] (USD)
Duration (e.g. 2 years, 3 months)	3 years 4 months
Role of organisation in project	BIOS is the sole organisation in this educational grant and responsible for implementation, delivery and oversight programme as a whole. BIOS is solely responsible for all of the financial management of the project.
Brief summary of the aims, objectives and outcomes of the project	(Max 100 words) The Research Experiences for Undergraduates (REU) program at the Bermuda Institute of Ocean Sciences (BIOS) provides undergraduate students with experiential research training in the ocean sciences during the fall semester in Bermuda. The program introduces eight undergraduate students per year to the techniques, skills and intellectual processes required to conduct research in oceanography and the marine sciences, including projects with long-term, ocean observation programs and near-shore projects based in ecology and molecular biology. This project supports the US national goals of developing the next generation of scientists and the scientific workforce and has done since 1991.
Client/independent reference contact details (Name, e-mail)	Elizabeth Rom, Program Director, US National Science Foundation [redacted]

Contract/Project 3 Title	Assessing the utility of lionfish traps for preserving biodiversity by managing invasive populations
Contract Value/Project budget (include currency)	€ [redacted] (EUR)
Duration (e.g. 2 years, 3 months)	1 year
Role of organisation in project	(Max 50 words) BIOS was the lead organisation in this project and responsible for overseeing the management and delivery of the project as a whole. BIOS was responsible for all of the financial management including subawards to project partners.
Brief summary of the aims, objectives and outcomes of the project.	The project aimed to determine the utility of a lionfish specific trap, developed by the U.S. National Oceanographic and Atmospheric Association (NOAA), at known lionfish hotspots in Bermuda. The findings were compared to lionfish removal efforts led by technical divers funded through BEST 2.0 in 2016. The combined results provided resource managers with tangible results for determining the most efficient method for invasive species removal and preservation of biodiversity. The project concluded the trap designed was not effective for deployments in deep coral reef environments. Second, in situ culling of lionfish was significantly more effective at lionfish removal.
Client/independent reference contact details (Name, e-mail).	Anna Rosenberg, Senior Finance Officer, IUCN BEST 2.0 [redacted]

Have you provided the requested signed audited/independently examined accounts? If you select "yes" you will be able to upload these. Note that this is not required from Government Agencies.

⦿ Yes

Please attach the requested signed audited/independently examined accounts.

BIOS 2019-and-2018-financial-report-in-accordance-with-uniform-guidelines
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Section 5 - Project Partners

Q10. Project Partners

Please list all the partners involved (including the Lead Organisation) 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 Organisation 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 (if applicable) and all letters of support.

Lead Organisation name:	Bermuda Institute of Ocean Sciences
Website address:	www.bios.edu
Details (including roles and responsibilities and capacity to engage with the project):	BIOS maintains state of the art research facilities for field and laboratory studies and has the capacity to conduct research from coastal environments and beyond. The BIOS mission is to transform the fields of oceanography, marine science, and ocean health through a blend of cutting-edge research, comprehensive educational experiences and a commitment to share our knowledge internationally. BIOS has extensive grant and project management experience which ranges from US National Science Foundation funded grants to EU BEST 2.0 funded projects. Timothy Noyes is a Research Specialist and has managed various projected and is experienced in utilising environmental DNA metabarcoding and baited camera technology for ichthyofauna biodiversity assessments. In addition, he is knowledgeable on historical biodiversity assessments, local habitats and species. Kaitlin Noyes is the Director of Education and Community Engagement at BIOS and works across disciplinary silos to cultivate and maintain relationships with schools, professional associations and non-profit organizations locally and internationally. BIOS is the lead partner and will be responsible for overseeing the management and delivery of the project as a whole. BIOS will also be responsible for all the projects financial management.
Have you included a Letter of Support from this organisation?	⦿ 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:	Beneath the Waves (BTW)
Website address:	www.beneaththewaves.org
Details (including roles and responsibilities and capacity to engage with the project):	Beneath The Waves (BTW) is a non-profit research institute dedicated to promoting ocean health through cutting-edge science. Through the use of advanced technology, including innovative instruments such as deep-sea drop cameras and animal telemetry they aim to produce research findings that supports conservation policies. BTW is specifically focused on threatened species and marine protected areas, with an emphasis on sharks and other deep-sea fishes. Dr. Austin Gallagher is the Chief Executive and lead scientist at Beneath the Waves and will be the Project Leader for this initiative. He will be involved in all aspects of the project overseeing the management and delivery of the project as a whole.
Have you included a Letter of Support from this organisation?	⦿ Yes

Do you have more than one partner involved in the Project?

⦿ Yes

2. Partner Name:	Government of Bermuda, Department of Environment and Natural Resources (DENR)
Website address:	www.environment.bm
Details (including roles and responsibilities and capacity to engage with the project):	The Marine Management team of the Bermuda Government Department of Environment and Natural Resources (DENR) is responsible for fisheries and marine conservation legislation, policy and management. It conducts applied research and monitoring on a wide range of marine species of local, regional, and international importance. Team members will carry forward the data acquired by the project to inform the Marine Spatial Planning process and the shark management action plan, and develop a Deepwater Fisheries Management Plan. Dr. Joanna Pitt of DENR will provide local fisheries, management expertise, facilitate permitting, and work with colleagues to update the Bermuda Shark Management Plan. She will also liaise with the DENR Marine Conservation Section and the science committee that is working with the BOPP steering committee on the marine spatial plan and MPA network.

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

3. Partner Name:	University of Rhode Island (URI)
Website address:	https://web.uri.edu/uril/
Details (including roles and responsibilities and capacity to engage with the project):	Dr. Brennan Phillips specializes in the development and application of novel instrumentation for oceanographic research. His current research topics include low-light imaging of deep-sea biology and bioluminescence, soft robotic manipulators, hydraulic systems, distributed sensing, and low-cost, lightweight methods for ocean exploration. Dr. Phillips is a National Geographic Explorer and has participated in and/or lead dozens of oceanographic research expeditions around the world.
Have you included a Letter of Support from this organisation?	⦿ Yes

4. Partner Name:	Waitt Institute
Website address:	www.waittinstitute.org
Details (including roles and responsibilities and capacity to engage with the project):	Shayna Brody of Waitt Institute will provide scientific outreach expertise and will produce outreach material on deep-sea biodiversity.
Have you included a Letter of Support from this organisation?	⦿ Yes

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.

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Section 6 - Project Staff

Q11. Project Staff

Please identify the core 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 core 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 core 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	% time on project	1 page CV or job description attached?
Austin, Gallagher	**Project Leader**	30	Checked
Timothy Noyes	co-Project Leader	47	Checked

Kaitlin Noyes	Local Community Engagement and Outreach Lead	8	Checked
Jonna Pitt	Governmental Advisor, Fisheries management expertise	8	Checked

Do you require more fields?

◉ Yes

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Brennan Phillips	Expert in deep-sea imaging technology	17	Checked
Shayna Brody	Scientific Outreach expert, creation of outreach material	1	Checked
No Response	*No Response*	0	Unchecked
No Response	*No Response*	0	Unchecked
No Response	*No Response*	0	Unchecked
No Response	*No Response*	0	Unchecked
No Response	*No Response*	0	Unchecked
No Response	*No Response*	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.

All_Project_Staff_CVs_DPR9S2_1013
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Have you attached all Project staff CVs?

◉ Yes

Section 7 - Background & Methodology

Q12. 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).

Western Atlantic UKOTs are highly biodiverse regions that commonly encompass ecosystems that extend from shallow reef environments extending to the deep ocean (≥ 1000 m) over small spatial scales. Despite these relatively small spatial scales (5–10 km), these deeper habitats are largely overlooked in discussions of ecosystem-based initiatives (Aichi Target 6) for the conservation and sustainable use of the marine resources present. The logistical challenges of obtaining these data on the location and status of biodiversity limit the capacity of resource managers and policy makers to make sound ecosystem-based decisions.

Bermuda's location and geomorphology result in a convergence zone for threatened migratory fish and a model location for studying deep-sea biodiversity in the Atlantic Ocean. The territory is currently developing a marine spatial plan that will include a network of protected areas covering 20% of the EEZ. For context, the Bermuda reef platform (≤ 200 m) equates to < 1% of the total EEZ coverage. Whilst data are available to inform this initiative in the shallow waters, there are significant knowledge gaps for areas deeper than 30 m. In addition to the strategic expansion of the MPA network, specific protective measures for sharks are also being enacted. Sharks remain highly threatened in most of the region despite existing MPAs. The majority of these protective measures do not take into account the full representation of ocean habitats and connectivity required to encompass the space use of sharks.

This project will produce baseline measures of deep-sea biodiversity around Bermuda, from depths of 30–2,000 m. It will focus on mobile predatory fishes, which are either threatened or associated with commercial fisheries. Baseline biodiversity data for deep areas of Bermuda's nascent MPA network will allow for more robust spatial designation and future evaluation of effectiveness and outcomes of the network.

Q13. Methodology

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

- **How you have analysed historical and existing initatives 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.)**

Please make sure you read the Guidance Notes **before answering this question.**

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

Five of the investigators in this proposal have collaborated in one or more of the listed initiatives. All of

these initiatives have limited spatial coverage of Bermuda's deep-sea biodiversity.

2016 – Nekton Misson completed the XL Catlin Deep Ocean Surveys in Bermuda at 5 locales (JP).
2017 – 2018 Management of invasive species on Bermudan mesophotic reefs (EU BEST 2.0 Project 1634 & 2274; TN).
2019 – Bermuda Mesophotic Coral Ecosystems special publication (TN)
2019 – Deep-sea baited cameras (BP,AG,TN & KN)
2019 - Bermuda Ocean Prosperity Programme (BOPP). The goal of the programme is to fully protect 20% of Bermuda's EEZ by 2022 while sustainably developing Bermuda's Blue Economy (JP).

Phase 1
Acquisition of baseline data and sampling equipment:

Lead – BIOS
• Create baseline maps (GIS) of historic biodiversity surveys including current MPA zoning.
• Purchase survey equipment and laboratory consumables for eDNA metabarcoding.

Lead – DENR
• Consult with BOPP MSP steering committee to determine areas of interest to provide maximum benefit for the marine spatial planning process.
• Provide details of commercial fishing activities highlighting areas targeted for deep water fishing / vertical longlining.

Phase 2

Biodiversity assessments:

Monitoring of fish populations biodiversity and distribution has historically utilized invasive methods. Non-invasive approaches have been developed to minimize disturbance whilst allowing in situ monitoring and observations. Two such methodologies are baited remote underwater video systems (BRUVs; (Cappo, Harvey and Shortis, 2007)) and environmental DNA metabarcoding (eDNA; (Thomsen and Willerslev, 2015)). The combination of methodologies has been shown to provide a more holistic view of marine communities (Kelly et al., 2017; Stat et al., 2019) therefore minimizing the limitations and biases intrinsic to a particular methodology.

Lead – BTW
BRUVs are highly effective at sampling ichthyofauna and were adopted as the primary methodology for the Global FinPrint research initiative on elasmobranch populations. The use of bait provides greater statistical power by aggregating fish through olfactory, auditory and behavioural cues. Despite these benefits, the method primarily samples visually conspicuous species, therefore some taxa (cryptic) can be under represented or missed completely.

Lead -BIOS
Advancements in high-throughput sequencing (HTS) have fundamentally changed approaches to biodiversity assessments allowing the taxonomic identification of multiple species from an environmental sample of mixed DNA i.e., environmental DNA (e.g. feces, mucus). Vertebrate eDNA will be amplified using MiFish universal fish primers (Miya et al., 2015) which have successfully been used for assessing elasmobranch (Truelove, Andruszkiewicz and Block, 2019) and deep ocean biodiversity (McClenaghan et al., 2020).

Paired eDNA and BRUVs samples will be collected at study locations. Mesophotic BRUVs (n = 48) will survey during a 60-min recording period. Deep BRUVs will survey for 6–7 hour recording period (n = 96).

DENR will lead the integration of biodiversity data into BOPP marine spatial planning initiative.

Waitt will produce outreach material on deep-sea biodiversity.

BIOS will create eDNA digital resources for incorporation into BIOS Ocean Academy (OA) curriculum. The Academy's mission is to provide innovative experiential STEM training for Bermuda's students, teachers, and mentors.

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

BIOS_Supplimental_References_DPR9S2_1013_Final
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pdf 131.71 KB

Section 8 - Stakeholders and Beneficiaries

Q14. 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 Bermuda Government Department of Environment and Natural Resources (DENR) and the Bermuda Ocean Prosperity Programme (BOPP) represent key stakeholders in Bermuda's marine environment and have identified data on deep-sea biodiversity, particularly of fishes, as a key knowledge gap that impacts both marine conservation and fisheries management. DENR has sought to rectify this gap through the collaborative submission of this proposal with JP as a project partner. JP is a member of the DENR Marine Management Team, which is responsible for managing Bermuda's fisheries and wider marine environment, and will serve as a liaison with the BOPP Marine Spatial Planning team and local stakeholder bodies such as the Marine Resources Board (MRB) and Commercial Fisheries Council (CFC). The MRB has been made aware of this proposal and is supportive of this project. The CFC has responsibility for approving special licences for the deep vertical line fishery, and welcomes additional data to inform decision-making. TN of BIOS, also a BOPP partner, has experience with BRUVs and eDNA and is co-leading the project, providing matching costs for BRUVs and eDNA equipment and 11 months of his time.
BP brings technical expertise to this project, along with essential equipment for conducting deep biodiversity surveys, and has committed 2 months per year. AG is the Project Leader and has committed 7 months to the project. This project represents a synergistic effort to focus on the exploration of the deep-sea and support local, region and international effects to conserve deep-sea biodiversity.

Q15. Institutional Capacity

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

The Bermuda Institute of Ocean Sciences (BIOS) is a prominent oceanographic research institution, founded in 1903. It maintains facilities for field and laboratory studies that encompass the proposed project

activities. BIOS maintains state of the art research laboratory space, including a facilities for environmental DNA assessments. BIOS works with the local community through its suite of five educational programs, collectively known as Ocean Academy (OA). The Academy's mission is to provide innovative experiential STEM training for Bermuda's students, teachers, and mentors
Beneath The Waves (BTW) is a non-profit research institute dedicated to promoting ocean health through cutting-edge science. Through the use of advanced technology, including innovative instruments such as deep-sea drop cameras and animal telemetry they aim to produce research findings that supports conservation policies. BTW is specifically focused on threatened species and marine protected areas, with an emphasis on sharks and other deep-sea fishes.

The Bermuda Government Department of Environment and Natural Resources (DENR) is responsible for fisheries and marine resources legislation, policy and management. It conducts applied research and monitoring on a wide range of marine species of local, regional, and international importance. The Department also provides extension services to the fishing industry thus providing synergy with an additional stakeholder group.

Undersea Robotics and Imaging Laboratory (URIL) at URI specializes in the development and application of novel instrumentation for oceanographic research. Current research projects include low-light imaging of deep-sea biology and bioluminescence, soft robotic manipulators, hydraulic systems, distributed sensing, and low-cost, lightweight methods for ocean exploration.

Q16. 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.

The direct beneficiaries of the project will be the Marine Management team of DENR and, more specifically, BOPP, who will utilise the baseline data on deep-sea biodiversity generated by this project through the following outputs
1. GIS database of deep-sea biodiversity
2. Status report on deep-sea biodiversity with management recommendations
3. Elasmobranch centric status report with management recommendations
4. Development of a new management plan for the deep vertical line fishery

These outputs will enable the Marine Management team to more sustainably manage deepwater fishery resources and will contribute to the BOPP marine spatial plan, as well as contributing to the overall aim of BOPP to foster sustainable, profitable, and enjoyable use of Bermuda's ocean resources for present and future generations. Broader benefits will be the support of local, regional and global marine conservation and management priorities as outlined in Q8.
Local capacity will be enhanced through the mentorship and training of two Bermudian undergraduate students participating in the BIOS Bermuda Program Internship, a long standing program with demonstrated value to the local science community that counts JP amongst its alumni, and via the training of additional DENR personnel in field sampling techniques.

Section 9 - Gender and Change Expected

Q17. 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?

The applicants do not perceive the work proposed in this project to cause increased disparity in gender equality. Ultimately the project seeks to provide equal benefit for all residents of Bermuda by providing criterial data on fish biodiversity to fisheries managers and policy makers to allow informed management decisions. More sustainable management of marine resources will preserve both the direct (market value of fish catch) and indirect (cultural and recreational importance of fishing in Bermuda) value associated with fisheries resources.
The proposed broader impacts of this work include the support of two internship positions for Bermudian students. We propose to support applicants for this internship opportunity from underrepresented minorities in STEM fields. Students will be actively involved in field and lab work, and will have the opportunity to present their research findings to the BIOS scientific community. We additionally propose that interns have the opportunity to share their project with younger students attending programming at BIOS to inspire the next generation of researchers.

Q18. Change expected

Detail the expected changed 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.

This project will add to the inventory of biodiversity in Bermuda's mesophotic zone and create a first-ever inventory of biodiversity in the abyssal zone which will feed into and inform future management via the nascent MPA initiative (BBOP).
Bermuda stakeholders will have a greater awareness of deepwater biodiversity, which will engender support measures to conserve and protect these vulnerable species.
Baseline biodiversity data across mesophotic and abyssal depths for areas inside and outside of a newly established marine protected area network will be created.
Methods and local capacity will be developed to facilitate resurveying of these areas in 5-7 years' time in order to inform evaluations of the effectiveness of the MPA network and, in turn, make recommendations for any rezoning that may be necessary during the next iteration of Bermuda's Marine Spatial Plan.
Over the longer term, these data will improve our understanding of the resilience of deep-sea habitats and species, which will inform future risk assessments to fishing and future industrial activities (e.g., mining).
Information on the areas of overlap between fishery target species and other large, long-lived mobile predators that may be vulnerable to bycatch pressures will facilitate improved management of deepwater fisheries. In particular, data on the distribution and relative abundance of poorly understood, slow-growing elasmobranch species, including six gill sharks and other species that are caught occasionally as bycatch, will help drive spatial and gear-related measures aimed at bycatch reduction.

Q19. Pathway to change

Please outline your project's expected pathway to change. This should be an overview of the overall project logic and outline how you expect your Outputs to contribute towards you overall Outcome, and, longer term, your expected Impact.

This project will utilise underwater video and environmental DNA technologies to create a georeferenced inventory of mobile fish and macrobenthic biodiversity in Bermuda's mesophotic zone and abyssal zones.
The DENR Marine Management team will use data on the relative abundance and distribution of various mobile predators to develop a management plan for the deepwater vertical line fishery that operates

around the edge of the Bermuda platform. This will result in more sustainable management of fisheries for deep-dwelling species while minimizing impacts on vulnerable non-target species such as sharks.
DENR will use data on deep biodiversity to inform future management measures and the iterative review of Bermuda's Marine Spatial Plan.
The Waitt Institute will utilize high-definition video footage from this project to develop outreach materials to educate Bermuda stakeholders on deep-water biodiversity and the need to conserve it. This will contribute to wider outreach on the goals of marine spatial planning and marine protected areas, engaging stakeholders and promoting support for this important conservation initiative.
The BIOS education team will develop an open educational resource dataset with supporting media featuring Bermuda's deep-sea fishes and a practical lab-based program about environmental DNA for local and international teachers, further developing local capacity.

Q20. 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 primary objectives of this project are to provide baseline information on the status of deep-sea biodiversity around Bermuda, with a focus on elasmobranchs and species of commercial interest. The DENR Marine Management team will move forward with a plan for the sustainable management of these resources at the completion of this project.
As part of BOPP, the Government of Bermuda is committed to the reevaluation of the effectiveness of the zoning designations. These data may highlight previously unknown areas of important deep biodiversity that could benefit from protection in future iterations of the marine spatial plan or via other legal measures, and will inform environmental impacts assessments for other proposed ocean uses. Subsequent surveys will be required to evaluate any changes that may occur as a result of protective measures put in place. These evaluation activities will build upon the baseline data collected by this project, and will be facilitated in part by field sampling training provided to DENR and other local personnel during the project. As such, it should be possible to accomplish similar data collection in the future at a slightly reduced cost, although advance in technology will likely still require contributions from external experts.

Section 10 - Funding and Budget

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 templates for projects requesting over and under £100,000 from the Darwin Plus budget.

- R9 D+ Budget form for projects under £100,000
- R9 D+ Budget form for projects over £100,000

Please refer to the Finance Guidance for Darwin/IWT **for more information.**

N.B: 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.

Budgets submitted in other currencies will not be accepted. Use current prices – and include anticipated inflation, as appropriate, up to 3% per annum. The Darwin Initiative cannot agree any increase in grants once awarded.

BIOS_Budget_DPR9S2_1013_final
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xlsx 68.29 KB

Q22. Funding

Q22a. Is this a new initiative or a development of existing work (funded through any source)?

⦿ Development of existing work

Please provide details:

While this project will build on some existing knowledge of deep-sea biodiversity around Bermuda, it differs from previous work because of the greater range of depths covered and in its broad spatial coverage, as compared to previous studies that focused on particular sites. Importantly, this project specifically focuses on assessing mobile deep-sea fish biodiversity for incorporation into the BOPP marine spatial planning initiative and to inform the management of deepwater fisheries. In contrast, the two EU BEST 2.0 funded projects (1634 and 2274) assessed biodiversity responses to differing invasive species management practices, and utilized the same three mesophotic reef study locations, providing extremely limited depth and spatial coverage. The XL Catlin Deep Ocean Surveys explored depths down to 300 m, but were conducted at only 5 locations around Bermuda. This project is proposing to conduct surveys at 48 mesophotic and 96 deep-sea locations with depths ranging between 30 – 2000 m.

Q22b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?

⦿ No

Q23. Co-financing

Are you proposing co-financing?

⦿ Yes

Q23a. Secured

Provide details of all funding successfully levered (and identified in the Budget) towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity, as well as any your own organisation(s) will be committing.

(See Finance for Darwin/IWT **and** Guidance Notes**)**

Donor organisation	Amount	Currency code	Comments
Government of Bermuda, Department of Environment and Natural Resources	[redacted]	GDP	Salary support for JP for 1 month in Year 1 and Year 2 of the project.
BIOS	[redacted]	GDP	2-month internship for 1 Bermudian student in Year 1 and Year 2 of the project. Mesophotic baited camera and eDNA sampling equipment in Year 1 and Year 2 of the project.
URI	[redacted]	GDP	Salary support for BP 2 months in Year 1 and 2 months in Year 2. Deep baited camera equipment in Year 1 and Year 2 of the project.
Wait Institute	[redacted]	GDP	Salary support for SB in Year 1 and Year 2 of the project.

Q23b. Unsecured

Provide details of any matched funding where an application has been submitted, or that you intend applying for during the course of the project. This could include matched funding from the private sector, charitable organisations or other public sector schemes. This should also include any additional funds required where a donor has not yet been identified.

Date applied for	Donor organisation	Amount	Currency code	Comments
No Response	*No Response*	0	*No Response*	*No Response*
No Response	*No Response*	0	*No Response*	*No Response*
No Response	*No Response*	0	*No Response*	*No Response*
No Response	*No Response*	0	*No Response*	*No Response*

Do you require more fields?

⦿ No

Section 11 - 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?

The BIOS Finance office is comprised of 5 team members including 2 qualified accountants (1 CPA & 1 CA). With the assistance of the BIOS Finance office, TN will manage the expenditure associated with this project. Noyes managed the funds for EU BEST 2.0 # 2274 (EUR [redacted] and co-managed BEST 2.0 # 1634 (EUR [redacted] In addition, he has managed various projects on behalf of Government of Bermuda through the BIOS Marine Environmental Program ($[redacted] Project Investigators/Leaders receive summary and detailed monthly reporting to ensure incurred expenditures are recorded as budgeted and designated. BIOS is audited annually by the accounting firm of PKF O'Conner Davies. Audit procedures are employed for two separate audit reports under US GAAP and Government Auditing Standards. Annual and Audit reports can be downloaded from: http://www.bios.edu/about/annual-reports/

Q25. Financial Management Risk

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 or bribery, but may also include the risk of fluctuating foreign exchange and internal financial processes such as storage of financial data.

The primary financial risk to the project is the loss or failure of underwater equipment. Insurance costs have been included for these unforeseen circumstances. The BIOS Finance Office accounting system maintains individual cost centres managed through the Abila MIP 2017 – Version 17.1.1.0 accounting software to separately track income and expenditure of individual projects. All the organisational financial transactions recorded into this system are overseen by qualified full-time finance personnel including 2 qualified accountants (1 CPA & 1 CA). Dual authorization by two signatories is required for all financial payments.

Potential fluctuations of foreign exchange have been assessed and taken into consideration for the duration of the project. In response to the Global pandemic COVID-19, additional funds have been included in the Stage 2 budget to allow COVID-19 testing and quarantining requirements associated with international travel for AG and BP (£[redacted] Under current guidelines, visitors are required to have a pre-arrival test (negative COVID-19 test prior to travel) and quarantine for 9 days (Day 0 – 8) before they are able to attend work in person.

Q26. Balance of budget spend

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

Funds will primarily provide support to the Bermuda based Bermuda Institute of Ocean Sciences, through salary support to TN and KN and the use of facilities (e.g., accommodation for AG and BP, laboratory space

and vessel rental). Salary support for AG and BP will be provided to their respective US based institutions as compensation for their expertise. As a small island nation, it is not feasible to procure the required camera equipment and laboratory consumables on island. Whilst BIOS has facilities for the collection of DNA, extractions and library preparation and bioinformatics it does not have sequencing facilities. These specialized services will need to be outsourced to an overseas laboratory. Due to the global pandemic, we are currently unable to determine a specific provider. However, costs are based on services provided by the University of Rochester, USA and comparable to the sequencing facilities of the Mariani Lab, Liverpool John Moores University, UK.

Q27. 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.

Acoustic releases are an integral component of deep-sea BRUVs with each system requiring a designated release and a single deck box control unit. This allows simultaneous deployments of multiple BRUVs (6–7-hour deployments) thus reducing field costs. They remove the requirements for extensive lines of rope, surface floats and heavy capacity winches and reduce the risk of entanglement by marine mammals and maritime traffic. The purchase of Star-ODDI mini CTDs are necessary to quantify survey and sampling water depth and provide basic environmental data at the survey sites. The electric reel is required for the deployment and recovery of the niskin water samplers used to collect eDNA samples at depth ranging from 30 - 2000 m. The capital equipment will remain at BIOS for use on future biodiversity assessments e.g., reevaluation of the Bermuda Ocean Prosperity Programme.

Q28. 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.

The project will enable a management shift from presumed areas of high biodiversity based on geomorphological features and fishing activities to georeferenced locations with quantified biodiversity. The project has been orchestrated to take advantage of personnel expertise and advances in technology (e.g., lower cost cameras, eDNA and High Throughput sequencing) to reduce costs whilst providing critical biodiversity data on Bermuda's understudied deep-sea environments. This approach allows the project to provide [redacted] in co-funding to the total cost of the project.
Equipment and analytical costs for deep BRUVs and eDNA metabarcoding techniques represent a fraction of the daily costs of traditional deep-sea exploration methods i.e. ocean going vessels and full ocean depth ROVs. For example, the approximate daily rate of the BIOS owned ocean going research vessel is £[redacted] K which would equate to £[redacted] K in vessel costs requested in support of this project.
. The project aims to support local biodiversity initiatives and global Darwin Plus objective to increase the area of coverage and effectiveness of MPA's in pursuit of global targets.

Q29. 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.

Technical reports will be made available through the DENR and Darwin webpages. Bioinformatic scripts will be made publicly available through github (www.github.com). A GIS database will be provided to DENR and BOPP. Any publications will be in Open Access to increase accessibility. Access.
BIOS works with the local community through its suite of five educational programs, collectively known as Ocean Academy (OA). The Academy's mission is to provide innovative experiential STEM training for Bermuda's students, teachers, and mentors, providing over 1,200 students (8 – 22 yrs.) and teachers across the island with globally-relevant STEM skills, utilizing the ocean as an organizing theme.
Broader impacts of this proposal would support the BIOS education team to develop the following outputs:

• The development of a curated dataset on Bermuda's deep sea fishes for BIOS Databytes, a free and open digital resource of curated oceanographic datasets and supporting media for educators.
• A hands-on molecular lab that will be developed around environmental DNA for BIOS summer programs and shared with local and international teachers through BIOS Educator Workshops.
Ocean Academy works with schools and funding agencies to ensure equity and inclusion. Of the students that OA serves ~60% attend public school, 54% identify as male and 46% as female, 55% are Black, 39% are White, 4% are Mixed and 2% identify as Other. All programs currently include bursaries, stipends or field trip grant opportunities to aide in participation. Student experiences are evaluated by way of pre-and post-end formative assessments utilizing Survey Monkey.

Section 12 - Safeguarding

Q30. 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 polices in place. Please confirm the lead organisation has the following policies in place and that these are available on request:

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.

Partners involved with this project will be provided with a copy of the BIOS Procedures and Policies Manuals and expected to adhere to the same standards required of BIOS employees whilst involved with this project.

Please upload the Lead Organisation's Safeguarding Policy as a PDF

BIOS FINAL Procedures Manual v4
02/02/2021
21:37:35
pdf 777.13 KB

BIOS Policy Manual v3
02/02/2021
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pdf 323.78 KB

Section 13 - Logical Framework

Q31. 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. 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.

BIOS R9 DPlus St2 Logical Framework DPR9S2_1013_Final
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pdf 126.02 KB

Impact:

Improved conservation and management of biodiversity, threatened species and fisheries resources in Bermuda's deep waters, and greater understanding of connectivity between these deep areas and shallow ecosystems.

Outcome:

The marine spatial plan for Bermuda is enhanced through quantitative establishment of baseline data for mobile deep-sea ichthyofauna, resulting in more comprehensive data-driven ecosystem management.

Project Outputs

Output 1:

GIS database of deep-sea biodiversity combining BRUVs observations, eDNA species detections and environmental layers.

Output 2:

Report describing the status of deep-sea biodiversity around Bermuda, with management recommendations.

Output 3:

Report on elasmobranch biodiversity and distribution, with management recommendations.

Output 4:

Management plan for Bermuda's deepwater vertical line fishery.

Output 5:

Research and multimedia outputs developed and shared with target audiences (included local and international teachers' local government and BOPP) to promote conservation of Deep-sea biodiversity.

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.

⦿ Yes

Output 6:

Local capacity enhanced via the training of two interns in project methodologies.

Output 7:

No Response

Output 8:

No Response

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 Purchase and assemble equipment for deep BRUVs.
1.2 Purchase eDNA laboratory consumables, software licenses and electric reel for niskin retrieval.
1.3 Meet with BBOP MSP steering committee to identify high value survey areas.
1.4 Determine which 2 fisheries wardens will participate in sampling and discuss availability.
1.5 Acquire and map baseline data from historic initiatives, and know fishing activities and overlay on sampling design (based on 1km2 grid).
1.6 Deploy BRUVs (MCE) 8 times per trip (2 days), 3 trips in year 1, and 3 trips in year 2 (n = 96).
1.7 Deploy BRUVs (deep-sea) 16 times per trip (4 days), 3 trips in year 1, and 3 trips in year 2 (n = 48).
1.8 Analyze camera footage using EventMeasure software to generate relative abundance and biodiversity metrics.
1.9 Year 1, collect replicate seawater samples (8L) from BRUVs survey sites with the addition of a shallow water sample take from deep-sea sites to detect oceanic shark species. Repeat in year 2 (MCE n = 48, deep-sea n = 120).
1.10 Filter samples, extract DNA from filter using EZNA OMEGA DNA extraction kit within 2 weeks, amplify mtDNA 12S region using MiFish primers (Miya et al. 2015) generating Illumina libraries in a two-step PCR

approach. Additional sequencing required for negative and positive controls.
1.11 Year 1 and year 2 libraries send for sequencing within 1 month of completing of third sampling trip.
1.12 Assign Molecular Operational Taxonomic Units (MOTUs) to species using pipeline script developed by TN
1.13 Overlay BRUVs observational data and MOTU eDNA dataset in GIS to visualize species distribution patterns.
1.14 Create GIS database of biodiversity database and incorporate environmental data, provide to DENR and BOPP
2
2.1 Analyze and interpret species diversity patterns and identify areas of high biodiversity and provide progress report to stakeholders end of year 1.
2.2 Incorporate year 2 data, reanalyze full data set to determine distribution patterns and areas of high biodiversity. Compare species compositions across depth ranges as a proxy for corridors of connectivity (caveat, populations genetics is outside of the scope of this project).
2.3 Write up advisory report identifying areas of greatest biodiversity, species of commercial interest and highlighting vulnerable species.
3
3.1 Analyse and interpret elasmobranch diversity patterns and identify areas of high biodiversity and probable connectivity between MCE and deep-sea environments.
3.2 Provide DENR, MRB, and BOPP progress report in year 1, full analysis with management recommendations in year 2 and a scientific publication on the status of Bermuda's deep-sea biodiversity.
4
4.1 Collate landings and other data on deepwater snappers and other fishery target species over time by August 2021.
4.2 Interview current and past holders of deepwater vertical line licences to gather insights on distribution of fishing effort in space and time over the years, and how this may have changed. Use this information to help plan project surveys by August 2021.
4.3 Evaluate project data on distribution and relative abundance of deepwater fishery target species, fish species of conversation concern, and any supplemental data on deepwater macrobenthos of conservation interest by March 2023.
4.4 Utilise existing legislation and the ongoing marine spatial planning process to develop an ecosystem-based management plan for the deepwater fishery by March 2023.
5
5.1 Select video footage from year 1 and year 2 BRUVs for inclusion in outreach video.
5.2 Develop curated and simplified eDNA dataset for BIOS Databytes utilized at educator workshops.
5.3 Lesson plan development for inquiry based eDNA lab.
5.4 In conjunction with section 1.12, develop bioinformatic scripts for publication on www.github.com and inclusion in stakeholder reports at the end of year 2.
6
6.1 Review of Bermuda Program internship applications for local student placements (year 1 and year 2).
6.2 Review of final reports submitted to BIOS OA and DENR, September 2021 and September 2022

Section 14 - Implementation Timetable

Q32. 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 Excel spreadsheet template as appropriate to describe the intended workplan for your project.

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.

BIOS R9 DPlus Implementation Timetable DPR 9S2_1013_Final
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Section 15 - Monitoring and Evaluation

Q33. Monitoring and evaluation (M&E)

Describe, referring to the Indicators above, 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 for Darwin/IWT**).**

A Memorandum of Understanding will be established between all the project partners.
AG is the Project Leader and will be responsible for the project's monitoring and evaluation, committing 31 days in total these efforts. These will be allocated at 1 day a month for the duration of the project, additional in person meetings during field trips (n = 6) and a final 5 days in Year 3. With the exception of the in-person meetings during field trips, AG will meet with project partners on a bi-monthly basis via Zoom/Skype to review project progression and identify any changes to the schedule and how to address such issues (0.5 day project partners per meeting).
TN will request monthly finance reports from the BIOS Finance Office and dedicate 1 day a month to the reconciliation of the project expenditure. This will ensure a timely reporting of the funds expended to date for the annual financial audit and at the conclusion of the project. In addition, TN will allocate 6 days for in person meetings and 4 days for budget reconciliation in Year 3.
Additional monitoring will be provided through JP's capacity as a Marine Resources Officer through monthly and quarterly reporting to the Bermuda Marine Resources Board (MRB) and the BOPP MSP steering committee (18.5 days supported by other funding sources). The MRB are an appointed advisory body of representatives from multiple marine stakeholder groups that advise the Bermuda Minister of Home Affairs on matters relating to the protection and use of marine natural resources.

Total project budget for M&E in GBP (this may include Staff, Travel and Subsistence costs)	£[redacted]
Number of days planned for M&E	114.50

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

Section 16 - Certification

Certification

On behalf of the

company

of

Bermuda Institute of Ocean Sciences

I apply for a grant of

£316,829.00

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	Wiiliam Curry
Position in the organisation	President and Chief Executive Officer
Signature (please upload e-signature)	William_Curry_Signature 02/02/2021 22:58:23 pdf 15.29 KB
Date	02 February 2021

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 Organisation 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 Organisation, 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 Organisation, 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 GOV.UK**.**	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.

Checked

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 organisation, 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).