

DPLR2\1036

Oyster restoration in British Gibraltar Territorial Waters: locating suitable sites

The European Native Oyster was once abundant in British Gibraltar Territorial Waters (BGTW) but suffered a dramatic decline during the 19th Century, likely due to overfishing. This project will assess the feasibility of restoring oyster populations to BGTW by compiling local knowledge and sampling potential habitats to identify sites that are suitable for oyster restoration. Outcomes will include establishment of a citizen science, local stakeholder and community network that will support future restoration efforts, and in-territory training and capacity building.

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Oyster restoration in British Gibraltar Territorial Waters: locating suitable sites

Section 1 - Project Title & Contact Details

Q1. Project Title

Oyster restoration in British Gibraltar Territorial Waters: locating suitable sites

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

Organisation

PRIMARY APPLICANT DETAILS

Name Research
Surname Office
Website [Redacted]
Tel (Work) [Redacted]
Email (Work) [Redacted]
Address [Redacted]
[Redacted]
[Redacted]

CONTACT DETAILS

Title Dr
Name Darren
Surname Fa
Organisation University of Gibraltar
Website (Work) [Redacted]
[Redacted]
Tel (Work) [Redacted]
Tel (Fax) [Redacted]
Email [Redacted]
Address [Redacted]
[Redacted]
[Redacted]

GMS ORGANISATION

| Type | Organisation |
|----------------|-------------------------|
| Name | University of Gibraltar |
| Phone (Work) | [REDACTED] |
| Email (Work) | [REDACTED] |
| Website (Work) | [REDACTED] |
| Address | [REDACTED] |

Section 2 - Overseas Territory(ies)

Q3. Overseas Territory (Guidance section 1.3):

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

Gibraltar

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

n/a

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

No

Section 3 - Project Partners

Q4. Project partners (Guidance section 3.2)

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

Project Leader name (Guidance section 3.1): Dr Darren Fa

Lead Partner name (if applying as an organisation; Guidance section 3.1): University of Gibraltar (UniGib)

Lead Partner Website (if applicable): www.unigib.edu.gi

Is the Lead Partner based in a UKOT where the project is working (Guidance section 3.1)?

Yes

List other partners involved and where are they based (Guidance section 3.2):

In-territory partners, Gibraltar:
HM Department of Environment, Sustainability, Climate Change and Heritage (DESCCH).
UK advisors. Based on the extensive work that has been carried out in the UK in the field of oyster restoration, we will establish contact with some of those leading UK institutions to learn from their experiences.


Summary of roles and responsibilities of each partner in the project:


Provision of necessary permits required. Support in logistics. Support in outreach activities and in liaising with key stakeholders and local NGOs, including Gibraltar's Environmental Safety Group (ESG), Gibraltar Ornithological & Natural History Society (GONHS), Environmental Agency, Gibraltar Port Department, local SCUBA diving organisations. Assistance in long-term monitoring and building critical mass of trained environment officers. Stephen Warr (Senior Environment Officer) and Clive Crisp (Environment Officer) will be regular collaborators.


I confirm that all listed partners are aware of this application and have indicated support:


Checked

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

 [DPLR2_1036_Cover-letter](#)

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Section 4 - Project Summary & Description

Q5. Project Summary (Guidance section 3.8)

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

The European Native Oyster was once abundant in British Gibraltar Territorial Waters (BGTW) but suffered a dramatic decline during the 19th Century, likely due to overfishing. This project will assess the feasibility of restoring oyster populations to BGTW by compiling local knowledge and sampling potential habitats to identify sites that are suitable for oyster restoration. Outcomes will include establishment of a citizen science, local stakeholder and community network that will support future restoration efforts, and in-territory training and capacity building.

Q6a. Description (Guidance section 2.1 and 6)

Please provide a description of your project, including:

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

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

Overall Impact: Broad-scale, sustainable marine habitat restoration in BGTW;

Project aim: Identify suitable sites for oyster restoration in BGTW;

Project objective: Measure the status of oyster populations in BGTW and evaluate site suitability for oyster restoration.

The European Native Oyster, *Ostrea edulis* Linnaeus 1758, has suffered a global decline in population size and habitat extent during past decades. Once abundant in the Bay of Gibraltar, *Ostrea edulis* suffered a dramatic decline during the 19th Century, probably due to over-fishing (Shaw, 1997; Finlayson and Finlayson, 1999). This oyster has been found in archaeological deposits on the Rock (Colonese et al., 2011; Fa et al., 2016), and its presence along the neighbouring Mediterranean coast and from the Norwegian Sea to Morocco's Atlantic coast, indicates that restoration in BGTW is possible.

In 2016, Gibraltar's Department of the Environment, Sustainability, Climate Change and Heritage (DESCCH) attempted to reintroduce oysters to protected areas within Gibraltar's Marine Reserve, using specimens harvested from nearby Spain (HMGoG, 2016). This effort was limited in scope and unfortunately, reasons beyond DESCCH'S control restricted necessary follow-up monitoring. This attempt did however, provide valuable lessons for subsequent reintroduction attempts, including the need for adequate implementation and long-term monitoring. Any future restoration effort will therefore benefit from continued support and established legal and enforcement frameworks that ensure overfishing does not hamper future restoration efforts (see Q6b).

Oyster restoration is increasing globally and awareness of associated ecosystem services is growing. Benefits within BGTW would include enhanced biodiversity, water quality, ecosystem support, coastline diversity, and carbon capture and storage. Restoration would also contribute cultural value, with historic evidence of oysters within BGTW revealed by local archaeological excavations, including their use as building materials within the city walls, and listing of "Oystermen" as a trade in 18th Century censuses of Gibraltar (Shaw, 1997).

This project aims to identify sites for successful restoration of European Native Oysters to BGTW and to establish baselines for future restoration efforts. We note current guidance (e.g., following UK & Ireland's Native Oyster Network and Native Oyster Restoration Alliance), and will utilise suggested approaches as relevant for BGTW. This feasibility study will therefore:

1. Determine whether restoration is possible, and if so at which sites
2. Establish ecosystem targets for future restoration
3. Engage with key stakeholders to initiate community buy-in at the earliest possible stage.

Activities:

A1 Compile and assess existing information (citizen science and local expert knowledge) for current oyster

populations in BGTW and surrounding area.

Output: Known population extent and habitat characteristics collected and stored.

A2 Stemming from A1, identify and survey locations around Gibraltar to determine baselines and identify suitable sites for oyster restoration, to be assessed in A3 and A4.

Output: Location maps and site characteristics assessed and stored.

A3 Assess abiotic habitat suitability by measuring (and compiling from existing data): water depth; water temperature; salinity; dissolved oxygen concentration; water clarity, turbulence, current velocity, bed shear stress, sea bed mobility, chlorophyll A concentration (following Preston et al., 2020).

Output: Quantitative, comparable site-specific data that can be compared against optimum and viable ranges for oyster restoration (Table 1).

A4 Assess biotic habitat suitability by measuring (and compiling from existing data): competitive species; predators; pests.

Output: Distribution maps and risk analysis for future oyster populations.

A5 Stakeholder and Public engagement forums. Two meetings (pre-project and end-project) with local stakeholders, SCUBA organisations, NGOs, etc., to explore prospects for oyster and marine habitat restoration.

Output: Meeting reports and action plans produced.

A6 Capability and Capacity. Training and upskilling of project partner personnel in sampling and monitoring techniques, delivered in month two.

Output: Training materials produced; at least five personnel trained.

Q6b. Long-term sustainability (Guidance section 2.1 and 6)

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

By enabling primary investigation and establishment of current baselines, this project will directly facilitate the identification of suitable sites for oyster restoration in BGTW and subsequently underpin their successful restoration, including long-term monitoring and management. All sites will benefit from current legal and enforcement frameworks initiated by DESCCH to prevent overfishing.

The proposed project will provide training for UniGib and DESCCH staff on various aspects of habitat monitoring, which will greatly strengthen local capability and capacity.


UniGib will provide future support by providing monitoring assistance by Masters students from both its MSc in Marine and Environmental Science programmes. Effective monitoring of the health of oyster habitats will be vital to establishment of thriving communities. Continuous monitoring will ensure impacts to oyster habitats can be minimised.

Monitoring programmes developed during and after this project will be included and enshrined into Gibraltar's Marine monitoring programme and rolled out to existing citizen science projects between


DESCCH, local SCUBA diving clubs and associated NGOs. Science communication outputs will be developed for community buy-in and engagement.


UniGib is committed to promoting equality, diversity and inclusion; our Equality and Diversity Policy Statement goes beyond legal requirements and would apply to this project and resultant partnerships.

(Optional) Please upload any additional and supporting materials or files (such as maps of project sites, etc) below. Maximum of 5 pages:

 [DPLR2 1036 Annex](#)

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Section 5 - Project Outcome(s)

Q7. Project Outcome(s) (Guidance section 1.2)

Successful Darwin Plus Local projects must demonstrate measurable outcomes in at least one of the themes of Darwin Plus, either by the end of the project or soon after through a credible plan.

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

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

Unchecked **Climate change: responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;**

Unchecked **Environmental quality: improving the condition and protection of the natural environment**

Checked **Capability and capacity building: enhancing the capacity within OTs, including through community engagement and awareness, to support the environment in the short- and long-term.**

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

This feasibility study will enhance local capability and capacity by providing in-territory partners with the necessary knowledge, data and skills to maximise the chance of future marine environment restoration success. Should this project identify a suitable site(s) for restoration, our intention would be to apply for a Darwin Plus Main Award for a broader restoration project that would contribute to all four themes. Importantly, this feasibility study will engage local stakeholders and citizen scientists at the very start of the process and provide a framework for community buy-in for a broader restoration project.





Section 6 - Workplan

Q8. Workplan (Guidance section 2.2)

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

| Start date: | End date: | Duration (e.g. 3 months): |
|-----------------|---------------|---------------------------|
| 01 October 2023 | 31 March 2024 | 6 months |

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

-  [DPLR2 1036 Oysters Workplan](#)
-  26/06/2023
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Section 7 - Costs

Q9. Costs (Guidance section 2.2 and please read the Finance Guidance)

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

Are you seeking any matched funding for this project? (Please note that this is optional and there is no requirement to seek matched funding for Darwin Plus Local projects).

Yes

How much matched funding are you seeking and where from?

Pro-bono time from in-territory partners:

DESCCH - [REDACTED]. As per their Letter of Support, DESCCH will support the project with a combination of staff time, including the approval and issuing of relevant permits to access the study areas, as well as logistical support through their Environmental Protection Unit and other marine assets as required.

| Budget line | Explanation | Cost in GBP |
|--|-------------|-------------|
| Staff costs: | [REDACTED] | |
| Consultancy costs: | | |
| Overhead costs: | | |
| Travel & subsistence costs: | | |

| | |
|---------------------------|-----------|
| Operating costs: | |
| Capital equipment: | |
| Other Costs | |
| Total: | 37,245.47 |

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

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

Project Officer (new recruit). Responsible to the Project Lead. On-the-ground support for daily project administration. Support for marine surveys, data collection, evidence reporting and outreach activities. Project dedication: 180 days FTE £ [REDACTED]

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

Calculated as 30% of staff costs. £ [REDACTED]

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

Transport and accommodation for UK advisors to attend a project workshop and site visits. Up to three UK advisors could be invited depending on the project needs. £ [REDACTED]

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

Laboratory analysis for abiotic factors (granulometry, heavy metals, organic compounds); £ [REDACTED]
 Disposable material for fieldwork (probes); £ [REDACTED]
 Equipment calibration; £ [REDACTED]
 Diving kit hire; £ [REDACTED]
 Boat and Fuel expenses; £ [REDACTED]
 Local workshops; £ [REDACTED]

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

Water quality meter and related equipment; £ [REDACTED]
 Underwater camera; £ [REDACTED]
 A laptop; £ [REDACTED]

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

n/a

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

Small honorarium for UK advisors; £ [REDACTED]
 Access to archival records; £ [REDACTED]
 Insurance for fieldwork; £ [REDACTED]
 Shipping costs for samples; £ [REDACTED]
 Specific stationery for fieldwork; £ [REDACTED]

If your project budget was prepared in another currency and converted to GBP, please provide the

exchange rate, its source, and the date it was accessed:

| Other currency: | Exchange rate: | Source of this exchange rate: | Date exchange rate accessed: |
|-----------------|----------------|-------------------------------|------------------------------|
| No Response | No Response | No Response | No Response |

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

What % of the total will be spent in the OTs? ■

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

Due to lack of specialist laboratory facilities in Gibraltar, granulometry, heavy metals and organic compounds analysis will have to be done by a laboratory located outside Gibraltar. The costing of these analyses would be around ■ of the total budget.

Section 8 - Local and National Priorities

Q10. Local and national priorities

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

This feasibility study underpins the potential restoration of oysters in BGTW, which would contribute toward:

Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols (Barcelona Convention).

Marine Strategy Framework Directive (MSFD): Transposed into local law under the Marine Strategy Regulations 2011, the MSFD aims to ensure sustainable use of marine waters and achieve Good Environmental Status (GES) of European seas by protecting the marine environment, preventing its deterioration and restoring it where practical, while using marine resources sustainably.

Water Framework Directive (WFD): The WFD aims to achieve Good Ecological and Good Chemical Status. Restoration of oyster populations in BGTW would improve local water quality via the natural filtration of coastal waters by oyster populations.


Gibraltar's Climate Change Bill 2019 & Gibraltar Climate Change Strategy: Require policies, programmes and projects to contribute to the mitigation of, and adaption to, climate change. Oyster restoration extends beyond conservation of important marine ecosystems and may help mitigate climate change via increased carbon sequestration.


Convention on Biological Diversity (CBD) – Article 8(f): rehabilitate and restore degraded ecosystems and promote the recovery of threatened species through the development and implementation of plans and management strategies.


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


Yes

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

 [DPLR2_1036 LoS DESCCH](#)

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Section 9 - Project Risks

Q11. Project Risks

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

Depending on your project, you may wish to consider:

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

| Risk | Mitigation |
|---------------------|--|
| Severe weather | The Gibraltar marine environment can be subject to adverse weather and marine conditions. Conditions will always be checked in advance of fieldwork and plans will be adapted if necessary to avoid any potential health and safety hazards. |
| Project Diving team | Suitably qualified and experienced personnel as per diving and sampling under DESCCH and UniGib procedures. |
| Data storage issues | Survey data and photos will be secured in password-protected servers at UniGib. Daily backups will be scheduled. |

Do you require more fields?

Yes

| Risk | Mitigation |
|----------------------|---|
| | We will show case studies implemented in the UK. |
| Low community uptake | Workshops will be an opportunity to incorporate NGOs and community views on to future restoration programmes. |
| <i>No Response</i> | <i>No Response</i> |
| <i>No Response</i> | <i>No Response</i> |
| <i>No Response</i> | <i>No Response</i> |
| <i>No Response</i> | <i>No Response</i> |

Section 10 - Terms & Conditions

Q12. Terms and conditions (Guidance section 3.10)

By applying for Darwin Plus Local you are adhering in full to the grant Terms and Conditions in full (available at: <https://dplus.darwininitiative.org.uk/apply> and as referenced in the Guidance at section 3.10). For information, the Terms and Conditions include requirements for all applicants to (amongst other requirements as per the full Terms and Conditions):

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

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

Checked

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

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

If your application is successful

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

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

solvency (such as bank statements) and a police check.

Section 11 - Certification





Certification

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

Checked

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

Checked

| | |
|--|--|
| Name: | Dr Darren Fa |
| Position in the organisation: (if applicable) | Director of Academic Programmes and Research |
| Signature (please upload e-signature) |   26/06/2023  13:14:33  png 13.54 KB |
| Date: | 26 June 2023 |

Section 12 - Submission Checklist

Checklist for submission

| | Check |
|---|---------|
| I have read the Guidance documents, including the “Darwin Plus Local Guidance” and the “Darwin Plus Local Finance Guidance”. | Checked |
| If my proposed project takes place on public lands or water or is addressing alien invasive species, I have uploaded a Letter of Support from Government. | Checked |
| I have uploaded a cover letter that details the information requested in the guidance (Guidance section 4.2 has information on what this cover letter should include). | Checked |
| I have read, and can meet, the current Terms and Conditions for this fund. | Checked |
| I have provided actual start and end dates for my project that fit this Round. | Checked |
| I have provided my summary budget based on UK government financial years i.e. 1 April – 31 March and in GBP in the application form. | Checked |

| | |
|--|---------|
| I have uploaded my project workplan using the specific template provided. | Checked |
| (If copying and pasting into Flexi-Grant) I have checked that all my responses have been successfully copied into the online application form. | Checked |
| The application has been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable). | Checked |
| I have checked the Darwin Plus website immediately prior to submission to ensure there are no late updates. | Checked |
| I have read and understood the Privacy Notice on the Darwin Plus website. | Checked |

We would like to keep in touch!

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

Checked

Data protection and use of personal data

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

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

Project Title: **Oyster restoration in British Gibraltar Territorial Waters: Locating suitable sites**

| Activity # | Description (max 25 words) | No. of months | UK Financial Years 2023/24 | | | | | |
|------------|--|---------------|----------------------------|-----|-----|--------------------|-----|-----|
| | | | Calendar Year 2023 | | | Calendar Year 2024 | | |
| | | | Oct | Nov | Dec | Jan | Feb | Mar |
| A1 | Compile & assess existing information (citizen science and local expert knowledge) for current oyster populations in BGTW and surrounding area. | 2 | | | | | | |
| A2 | Stemming from A1, identify and survey locations around Gibraltar to determine baselines and identify suitable sites for oyster restoration. | 2 | | | | | | |
| A3 | Assess abiotic habitat suitability by measuring (and compiling from existing data) key site characteristics (see Q6a and Table 1). | 5 | | | | | | |
| A4 | Assess biotic habitat suitability by measuring (and compiling from existing data) competitive species, predators, pests. | 5 | | | | | | |
| A5 | Stakeholder and public engagement forums. Two meetings (pre-project and end-project) with local stakeholders (see Q6a) to explore prospects for oyster and marine habitat restoration. | 2 | | | | | | |
| A6 | Capability and capacity. Training and upskilling of project partner personnel in sampling and monitoring techniques, delivered at project start. | 1 | | | | | | |