

DPLR2\1036

Darwin Plus Local - Final Report (1)

Officer: Jessica Magnus

Section 1 - Darwin Plus Local Project Information (Essential)

Project Reference Number

DPLR2\1036

Q1. Project Title

Oyster restoration in British Gibraltar Territorial Waters: locating suitable sites

Overseas Territory(ies)

Gibraltar

Lead Organisation or Individual

Research Office, University of Gibraltar

Partner Organisation(s)

HM Department of Environment, Sustainability, Climate Change and Heritage (DESCCH), NORA (Nature Oyster Restoration Alliance)

Value of Darwin Plus Local Grant Award

██████████

Project Start Date

01 October 2023

Project End Date

31 March 2024

Project Leader Name

Dr Darren Fa

Project Website/Twitter/Blog etc.

<https://darwinplus.org.uk/project/DPL00057>

Report Author(s)

Report Date

24 April 2024

Project Summary

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.

Project Outcomes

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.

Section 2 - Project Outcomes (Essential)

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

3 - Outcome met expectation

Project outcomes and justification for rating above

This report highlights the progress made in assessing the feasibility of oyster restoration in Gibraltar waters, with significant contributions from both local and international stakeholders. Local partners include Gibraltar-based diving associations and the HM Government of Gibraltar's Department of the Environment, Sustainability, Climate Change, and Heritage (DESCCH). Internationally, collaboration with UK-based oyster experts and specialists from the Native Oyster Restoration Alliance (NORA) was crucial in achieving project objectives.

Engaging with local recreational divers was an essential initial step. Through interactive sessions, the importance of oysters in the marine ecosystem was explained, encouraging their active participation in the project. Their

involvement led to the identification of potential oyster habitats and the creation of a growing database of oyster sightings in British Gibraltar Territorial Waters (BGTW), expanding known distributions and densities of *O. edulis* around Gibraltar.

Feedback from local divers indicates increased awareness and enthusiasm for oyster restoration. Many reported seeing oysters for the first time after participating in the project's workshops, despite decades of diving experience.

Collaboration with UK experts and NORA provided critical insights into oyster ecology and restoration techniques. Two Communities of Practice (CoP) sessions, one virtual and one in-person, facilitated knowledge exchange and consensus on the best location for future restoration efforts in Gibraltar.

A comprehensive survey, considering parameters like water depth, temperature, salinity, and water clarity, was conducted to identify the optimal site for oyster restoration. This assessment, supported by local knowledge and expert guidance, pinpointed the area off Rosia Bay on the western side of the Rock as the most suitable location for restoration.





The project also addressed the assessment of Bonamiasis, a disease affecting oyster populations, demonstrating a commitment to holistic ecological management.





While the project met its expectations, some aspects, such as capacity building within the DESCCH, could have benefited from earlier engagement. External factors led to a reduced level of training than initially anticipated. However, new training dates have been agreed upon to compensate for this.





Additionally, team members were trained in new techniques, including sampling, dissection, and fixing, to address the issue of potential *Bonamia* infestation, which compensates for the reduced training in other areas.





In conclusion, the project has established the viability of a future *O. edulis* restoration programme in BGTW and garnered ongoing support from local and international stakeholders committed to future restoration efforts, aiming to improve the local marine environment.





Supporting Evidence - file(s) upload





 [DPLR21036 Short report on common European oyster *Ostrea edulis* restoration pilot in Gibraltar waters](#)
 30/04/2024
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 pdf 1.06 MB





 [DPLR21036 Presentation Oyster Restoration for Gibraltar BSAC Diving Clubs and Associations.pdf](#)
 26/04/2024
 12:27:01
 pdf 4.41 MB





 [DPLR21036 Report on benthic bedforms and granulometry from Lucy v1.pdf](#)
 26/04/2024
 12:27:01
 pdf 397.27 KB

 [DPLR21036 Water Quality \(Xavi's 3MT Presentation\)](#)
 26/04/2024
 12:27:00
 pdf 4.01 MB

 [DPLR21036 Oyster Presentation-CoP 2.pdf](#)
 26/04/2024
 12:27:00
 pdf 1.89 MB

 [DPLR21036 Xavi's 3MT](#)
 26/04/2024
 12:27:00
 jpg 142.12 KB

 [DPLR21036 CoP2 Short Report XVB.pdf](#)
 26/04/2024
 12:27:00
 pdf 367.35 KB

 [DPLR21036 2024-01-16 UniGib CoP - Agenda](#)
 26/04/2024
 12:26:07
 pdf 2.58 MB

Supporting Evidence - links to published document/online materials

DPLR21036 Short report on common European oyster_*Ostrea edulis*_restoration pilot in Gibraltar waters.pdf

DPLR21036_Presentation Oyster Restoration for Gibraltar BSAC Diving Clubs and Associations.pdf - Presentation slides for workshop with divers from local diving associations.

DPLR21036_Report on benthic bedforms and granulometry from Lucy v1.pdf – Report on benthic bedforms and granulometry – Lucy Darby.

DPLR21036_Water Quality (Xavi's 3MT Presentation)- Slide from three-minute thesis presented at the Research That Benefits Gibraltar (RTBG) conference in April 2024 hosted by University of Gibraltar – (Gibraltar) - Xavier Villar-Buzo.

DPLR21036_Oyster Presentation-CoP 2.pdf – Presentation slides for second Community of Practice meeting -.

DPLR21036_Xavi's 3MT- Xavier Villar-Buzo presenting his three-minute thesis at the Research That Benefits Gibraltar (RTBG) conference in April 2024 hosted by University of Gibraltar – (Gibraltar) – Dr Darren Fa

DPLR21036_CoP2 Short Report XVB.pdf – Short report summarising second Community of Practice meeting – Xavier Villar-Buzo.

DPLR21036_2024-01-16 UniGib CoP – Agenda – Agenda for first Community of Practice Meeting.

SEAHAWK-2024-04-10-07-59-19 from BD –Underwater video of oyster- Sea Hawk shipwreck, British Gibraltar Territorial Waters (Gibraltar) - Bianca Daniell. - <https://universityofgibraltar->

Project Challenges

The main challenge encountered during the project pertained to the detection of Bonamiasis within Gibraltar's waters, which had not been considered in the initial submission. To overcome this hurdle, a systematic approach was adopted, involving engaging with relevant literature as well as specialists that had been engaged to participate in the project. These helped to identify the steps to follow, including agreeing on various outcome scenarios to follow depending on the results of the Bonamia tests. New methods were incorporated to collect and analyse oysters from various locations around Gibraltar. This was achieved with the help of local divers and researchers. Tissue samples extracted from these oysters were sent to Dr Sharon Lynch at University College Cork in the Republic of Ireland for expert assessment regarding the presence of the Bonamia spp. parasite. This proactive measure underscores our commitment to addressing obstacles through collaboration with specialised entities and local stakeholders, thus ensuring the efficacy of our oyster restoration efforts.

Lessons Learned

Notable insights have emerged across various aspects of the project.

Effective partner and stakeholder engagement, particularly with DESCCH, local divers, and oyster restoration experts from NORA and the UK, proved instrumental to the successful delivery of the project. Their support, which ranged from sharing water quality data to offering insights on potential restoration sites, significantly bolstered project efficacy.

However, challenges arose with project timelines, particularly with regard to arranging training sessions with project partners. This was largely due to the nature and workload of key individuals within DESCCH, as well as weather conditions (given that the project spanned winter months which restricted field opportunities). This underscores the importance of timetabling project activities carefully and well in advance to ensure a streamlined project delivery. This is particularly true for projects such as this, which have a relatively short duration.

Enhanced communication and thorough pre-project research are important ways to maximise project success. In addition, proactive engagement with experts and stakeholders, coupled with careful advanced planning has emerged as a key recommendation for similar projects.

Section 3 - Project Finance (Essential)

Project Expenditure

Project Spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Staff Costs	████████	████████	█	<i>No Response</i>
Consultancy Costs	£0.00	£0.00	0	<i>No Response</i>
Overhead Costs	████████	████████	█	<i>No Response</i>

Travel and Subsistence	██████	██████	██	Travel from Edinburgh and Berlin to Gibraltar for CoP attendees were slightly more expensive than originally budgeted.
Operating Costs	██████	██████	█	<i>No Response</i>
Capital Items	██████	██████	██	The sampling equipment, cameras and laptop were not as expensive as we originally budgeted for.
Others	██████	██████	██	Anticipated archival costs were not necessary for this project however the money was still used for public liability insurance and shipping samples off to the University College Cork, Republic of Ireland.
Total	██████	██████	██	

Please provide a short narrative summary on project finances.

Travel and subsistence for some of our Community of Practice meeting attendees was slightly more expensive than originally budgeted. Fortunately, the costs for our equipment (capital items), and 'Other' costs were less expensive than what we had budgeted for. This resulted in the project overall remaining below budget in expenses.

Section 4 - Contribution of Project to Darwin Plus Programme Objectives

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

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

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

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

Group A Indicator Results

Engagement of local Diving Associations proved a highly effective way of extending project objectives whilst educating and empowering stakeholders. Divers were not only provided with detailed information regarding oysters, rationales for reintroduction, and their life cycles, but also historical context and methods for in-field identification and data collection.

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

Unchecked	DPLUS-B01: Number of new/improved habitat management plans available and endorsed.
Unchecked	DPLUS-B02: Number of new/improved species management plans available and endorsed.
Unchecked	DPLUS-B03: Number of new/improved community management plans available and endorsed.
Unchecked	DPLUS-B04: Number of new/improved sustainable enterprises/ community benefits management plans available and endorsed.
Checked	DPLUS-B05: Number of people with increased participation in local communities / local management organisations (i.e., participation in Governance/citizen engagement).

Unchecked **DPLUS-B06: Number of Local Stakeholders and Local Communities (people) with strengthened (recognised/clarified) tenure and/or rights.**

Group B Indicator Results

12 recreational BSAC club divers attended training on oyster identification and data collection. These divers now contribute to a University of Gibraltar database of local sightings, which has broadened known oyster numbers and distributions in Gibraltar waters. Collaboration between the local diving association and DESCCH has also been enhanced.

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

Unchecked **DPLUS-C01: Number of best practice guides and knowledge products published and endorsed.**

Unchecked **DPLUS-C02: Number of new conservation or species stock assessments published.**

Unchecked **DPLUS-C03: New assessments of habitat conservation action needs published.**

Unchecked **DPLUS-C04: New assessments of community use of biodiversity resources published.**

Unchecked **DPLUS-C05: Number of projects contributing data, insights, and case studies to national Multilateral Environmental Agreements (MEAs) related reporting processes and calls for evidence.**

Group C Indicator Results

n/a

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

Unchecked **DPLUS-D01 Hectares of habitat under sustainable management practices.**

Unchecked **DPLUS-D02: Number of people whose disaster/climate resilience has been improved.**

Unchecked **DPLUS-D03: Number of policies with biodiversity provisions that have been enacted or amended.**

Group D Indicator Results

n/a

Section 5 - Project Partnerships, Wider Impacts and Contributions

Project Partnerships

In this project, collaboration among diverse partners was key to its success. Local divers, with their knowledge of the marine ecosystem, provided data that assisted in selecting the best location for restoration. NORA, a notable marine conservation organisation specialising in oyster restoration, brought additional expertise to the project, aiding in site assessments, and identifying critical metrics for project feasibility. University researchers, in collaboration with DESCCH personnel and invited external experts, assessed, and analysed the available data to agree on the best site for an oyster restoration initiative, taking into consideration multiple factors including physical, biological, and social.

Additionally, the Government of the Territory, represented by the Department of Environment, Sustainability, Climate Change and Heritage (DESCCH), played a vital role. They furnished invaluable data on abiotic factors, crucial for informed decision-making, and provided essential logistical support, such as boats for site assessments, facilitating fieldwork and data collection.

This collaborative effort produced notable achievements, including a comprehensive approach to planning and implementation, enhancing community involvement, and fostering a synergy of skills and resources. Key lessons emerged, emphasising the significance of integrating local knowledge into scientific projects. Challenges, such as resource constraints and conflicting interests, were navigated through effective communication and adaptive management strategies. The partnership exemplifies how leveraging diverse expertise and resources can lead to impactful conservation initiatives, laying a robust foundation for future activities.

Wider Impacts and Decision Making

The results of this exercise have influenced wider governmental decision-making as the higher-than-expected numbers of oysters found by divers is being considered as evidence of a small-scale partial success of an earlier restoration attempt by HM GoG's DESCCH. By their presence, existing oysters - although relatively few in number - ratify the suitability of the selected site for a more comprehensive, higher-volume and better-managed attempt at a new restoration initiative in future. The DESCCH has confirmed support for this initiative, and will actively seek to incorporate protection for any future restoration efforts via enforcement of regulations and implementation of no-take zones.

In addition, the awareness-raising and outreach work undertaken has started to yield benefits in terms of increased interest by members of the public, especially the recreational diving community, which will feed into policy and in turn reinforce the need to embed such environmental work into local decision-making processes.

Sustainability and Legacy

The equipment purchased from the Darwin Plus grant will continue to be used for long-term monitoring by the University of Gibraltar students and researchers, as well as for related research and to support student learning as part of its academic programmes in marine and environmental science. The results of these efforts will continue to form a significant part of the University's community outreach and awareness-raising programmes, e.g. <https://www.unigib.edu.gi/rtbg-2024-conference/>.

We intend that these items of equipment will also be used for a subsequent oyster restoration initiative.

We also anticipate that one of the project staff will obtain an MPhil in Marine Science this academic year based in part on the results obtained from this venture, and skills achieved by the wider project team will stand them in good stead for future endeavours.

Furthermore, since our workshop with local BSAC branches, the divers have begun reporting back to project members with images of oyster presence and associated data. This has led to the beginnings of an open citizen science database project, as results are coming in with regards to other species under strict protection. This truly exemplifies the potential for a future citizen science project to be carried out in Gibraltar.

Section 6 - Communications & Publicity

Exceptional Outcomes and Achievements

The project involved a number of partners and stakeholders, each of which contributed in different ways;

The University of Gibraltar was the lead institution, providing academic staff to manage and coordinate project activities, as well as undertake most of the field sampling and laboratory analyses. The University team also led on community outreach and departmental training activities. It also organised and hosted the Community of Practice meeting.





The HM GoG's DESCCH actively participated in the project by providing institutional support and guidance with regard to conservation policies and implementation of environmental regulations, providing invaluable environmental data from their own long-term monitoring programmes, as well as direct support in the field, particularly in the use of their Environmental Protection vessel and crew.

The wider partnership that has resulted between the University of Gibraltar, DESCCH and local diving associations as well as wider international organizations (NORA, Zoological Society of London, Consejería Superior de Investigaciones Científicas - CSIC), and specialist academics from several Universities (Dr Zu Ermgassen - Edinburgh, Dr Sutherland - Heriot Watt, Dr Lynch - College Cork) was instrumental to the successful outcome of the project. They have all indicated their commitment to subsequent restoration efforts.

The mix of complementary inputs ensured effective decision-making, problem-solving and resource-sharing throughout the project cycle, and the rapid establishment of shared objectives, and mutual respect for each other's contributions made for effective and well-considered responses to challenges faced which in turn led to positive outcomes.

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

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

 [CoP2 attendees in GibraltarDPLR2_1036](#)
 24/04/2024
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Photo, video, and/or graphic captions and credits.

CoP2 attendees in GibraltarDPLR2_1036 - Attendees at the second Community of Practice meeting for the project – Europa Point Campus, University of Gibraltar (Gibraltar) – University of Gibraltar - photo credit: Samantha Slisarenko

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

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

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

The following are the University of Gibraltar socials:

Facebook: University of Gibraltar

Instagram: @uni_gib

LinkedIn: University of Gibraltar

X (Twitter): @uni_gib

Native Oyster Restoration Alliance (NORA) socials:

Facebook: Native Oyster Network - UK & Ireland

X (Twitter): @NORA_Europe

Section 7 - Darwin Plus Contacts

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

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

Project Contact Details

Project Contact Name	Dr Darren Fa
Role within Darwin Plus Project	Project Leader
Email	[REDACTED]
Phone	[REDACTED]
Do you need further sections to provide additional contact details?	<input checked="" type="radio"/> No
