

## THE WILD OYSTERS PROJECT IMPACT AND EVALUATION REPORT 2020-2024



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Project steering committee members and delivery partner leads:

- Alison Debney Zoological Society of London
- Celine Gamble Zoological Society of London
- Professor Joanne Preston University of Portsmouth
- Jenny Murray Blue Marine Foundation
- Matt Uttley Blue Marine Foundation
- James Scott Anderson Blue Parameters (formerly British Marine)
- Professor Lewis Le Vay Bangor University
- Maria Hayden-Hughes Bangor University
- Stephen Armstrong Groundwork North East and Cumbria
- Dr Ashleigh Tinlin-Mackenzie Groundwork North East and Cumbria

#### **FUNDERS**

Thank you to the generous funding raised by players of People's Postcode Lottery and awarded as part of the Dream Fund, which was matched by funders including Flotilla Foundation, Durham Blue Carbon Fund, and a donation from George Cornelius to the Blue Marine Foundation. For further information on our project funders and legacy funding please see page 29 and 30 respectively.

## **EXECUTIVE SUMMARY**

The Wild Oysters Project's three-year programme to restore native oyster populations in three restoration hubs across the United Kingdom has demonstrated the effectiveness of an innovative collaboration and delivery of ambitious restoration plans.

The project sought to kickstart wider efforts to restore native oyster populations in the U.K., with the population having collapsed across Europe by up to 95% since the 1800s.

The project installed oyster nurseries, previously developed by Blue Marine Foundation and University of Portsmouth, in marinas to facilitate the efficient, rapid growth of oysters, alongside restoring native oyster habitat nearby, aiding the overall recovery of the wider marine environment. Native oysters provide significant ecosystem service benefits and can aid wider nature recovery. The project created 141 oyster nurseries between three seabed restoration sites, housing approximately 4,000 oysters with larvae production totalling approximately 996 million.

At the Tyne and Wear restoration hub, 10,000 mature oysters have been released into a newly formed 7,500m<sup>2</sup>

living reef. A similar outcome is expected at the Conwy Bay site following its concluding phases in the summer of 2024.

Key elements of this project included the formal education programme and outreach and engagement activities. The project reached an impressive 30,535 students at various education levels with online materials, in-class sessions and site visits, inspiring a new generation of marine stewards to take forward the legacy of this project. In addition, over 400 citizen scientist volunteers were trained to collect scientific monitoring data, and over 82,000 people were informed of project ambitions, emphasising why the restoration work was important for the future of our marine environment. These activities helped to empower local communities and the wider public with the knowledge and skills to contribute to similar projects in future.





## INTRODUCTION

This report seeks to share the environmental and societal impacts experienced by the coastal communities within the surrounding area of our Wild Oysters Project sites and beyond. By analysing the successes and shortcomings of the project, this report aims to inform future similar habitat restoration initiatives.

The Wild Oysters Project is an innovative collaboration between project lead ZSL (Zoological Society of London), the Blue Marine Foundation and British Marine, made possible thanks to  $\pounds1.18$  million of funding raised by players of the People's Postcode Lottery (PPL).

ZSL is an international conservation charity, driven by science, working to restore wildlife in the UK and around the world; by protecting species, restoring ecosystems, helping people and wildlife live together and inspiring support for nature. Through our leading conservation zoos, London and Whipsnade, we bring people closer to nature and use our expertise to protect wildlife today, while inspiring a lifelong love of animals in the conservationists of tomorrow. Blue Marine Foundation (Blue Marine) is a marine conservation charity dedicated to securing effective protection of the ocean, tackling overfishing, overexploitation and other damaging activities, supporting low-impact fishing, and restoring vital ecosystems. British Marine is a membership trade association for the UK leisure, superyacht and small commercial marine industry.

The Wild Oysters Project collaborated with local delivery partners Groundwork North East and Cumbria, Bangor University and Clyde Porpoise Community Interest Company (CIC) to deliver restoration hubs around the U.K.. The success of this project is borne out of the unique area of expertise each partner organisation provided, with Figure 2 on Page 7 outlining the core responsibilities undertaken by each. The project's mission is to restore Britain's seas to health through the restoration of native oyster populations, set against the collapse of these populations across Europe since the 1800s, where they are estimated to have declined by up to 95%<sup>1</sup>. Native oysters have a substantial beneficial impact on marine coastal environments; such as providing essential habitat for other marine species and they're capable of filtering approximately 200 litres of water a day<sup>2</sup>, which in turn contributes towards improving our coastal water quality shown in the infographic below.

The project was delivered over three and a half years, between June 2020 and November 2023, and focused on restoring native oyster habitat at three locations and installing oyster nurseries across two marina sites in each of those locations across all three constituent countries of Great Britain. An education and local community engagement programme underpinned the project, with the recruitment of local volunteers to monitor sites and outreach into schools to inspire a new generation of marine stewards to nurture and develop initiatives like these in the future.



## 66

Through volunteering with The Wild Oysters Project, I was introduced to fisheries science. The project has reinforced to me the importance of conserving keystone species, which provide the foundation for marine systems and are often socially and culturally valued too.

**Cat Elson** 

**"** 

#### ECOSYSTEM SERVICES PROVIDED BY NATIVE OYSTERS OSTREA EDULIS



<sup>1</sup> Lown et al., 2021; Helmer et al., 2019; Beck et al., 2011. <sup>2</sup> Lown et al., 2021; Thomas et al., 2022.



Figure 1. Map showing The Wild Oysters Project sites, based in Tyne and Wear in North East England, Conwy Bay in North Wales, and Firth of Clyde in Scotland.

Local delivery partners have been critical in the delivery of this project. In Conwy Bay, North Wales, we worked alongside Bangor University. Its School of Ocean Sciences has an international reputation in multi and interdisciplinary research in the areas of earth system science, climate change and marine conservation and resource management.

In Tyne and Wear, North East England, the project was delivered by Groundwork North East and Cumbria, a member of the Groundwork federation of charities, mobilising practical community action on poverty and the environment across the UK.

In the Firth of Clyde on the West Coast of Scotland, the project team partnered with Clyde Porpoise CIC, an organisation focused on the research and conservation of marine species in the Clyde and surrounding seas.

The project also developed a local working group at each site, with representatives from key organisations, who fed into the project delivery and development.

- Firth of Clyde (Farlie Quay Marina and Largs Marina)
- Tyne and Wear (Port of Blyth in Northumberland and Sunderland Marina)
- Conwy Bay (Conwy Marina and Deganwy Marina)
- **London** (ZSL and Blue Marine Foundation)



#### PROJECT PARTNERSHIP Collaboration Model

#### INTERNATIONAL Conservation Charity

Expertise with marine habitat restoration, science and citizen science.

• Project grant and partnership management.

• Education team developed The Wild Oysters Project Education Programme.

• Project communications lead.

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#### BLUE MARINE FOUNDATION

#### MARINE Conservation charity

#### Expertise with native oyster restoration.

• Technical lead for the project, including marine licencing, permissions, data analysis and report writing.

Media unit providing communication
materials for the project.

#### MEMBERSHIP TRADE Association for the marine industry

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BRITISH

- Interest in environmental issues.
- Facilitated introductions with marina sites to host oyster nurseries.
- Provided technical advice for working within marina sites.
- Communication support with marine industry, e.g. Southampton Boat Show.



#### WORLD-LEADING UNIVERSITY Research and teaching

A multidisciplinary marine science department – School of Ocean Sciences. • Aquaculture and fisheries research expertise.

• Knowledge and previous research within the Conwy catchment and North Wales.

- University student projects supporting the project.
- Local delivery partner for the Conwy Bay restoration hub.

CHANGING PLACES CHANGING LIVES

#### ENVIRONMENTAL Sustainability Charity

Dedicated to environmental sustainability, community development and promoting greener lifestyles.

A key theme of work is nature-based solutions.

• Knowledge and connections within the Tyne and Wear area.

• Local delivery partner for the Tyne and Wear restoration hub.



#### CLYDE PORPOISE CIC

A not-for-profit community interest company, focused on the research and conservation of marine species in the Clyde and surrounding seas.

• Environmental education and outreach.

- Marine surveys of the Clyde and surrounding areas. • Marine mammal distribution and
  - abundance monitoring.
  - Local delivery partner for the Firth of Clyde restoration hub.

## **THE HEADLINES**

#### HEADLINE RESULTS TRACKED AGAINST KEY PERFORMANCE INDICATORS (KPIs)

These headline statistics cover the impact of the three restoration hubs, Conwy Bay, North Wales, Tyne and Wear, North East England and Firth of Clyde, Scotland.

CATEGORY	TARGET KPIs	RESULTS
Installation of new oyster nurseries	126 nurseries	141 nurseries
Restoration of seabed sites for each restoration hub	3 sites	2 sites
Number of students reached with the delivery of educational outreach /learning modules	12,000 students	30,535 students
Training of citizen scientists in native oyster restoration and monitoring	150 volunteers	428 volunteers
Engagement of the general public across the project	38,000 people	82,127 people
Media and press reach	No target set	96,000,000 people



In October 2023 we added

## 10,000

mature native oysters onto our newly created reef at the Tyne and Wear restoration hub. Citizen scientists recorded over

## 29,000

marine organisms in oyster nurseries at the Conwy Bay restoration hub!

#### **OYSTER NURSERY MONITORING RESULTS**

These statistics have been calculated with monitoring data from Tyne and Wear and Conwy Bay site's between the period of March 2021–November 2023.

CATEGORY	RESULTS
Oyster larvae released	~ 996,000,000 larvae*
Average annual oyster survival rate	78 % survival
Number of litres of water filtered	~ 148,700,000 litres
Unique species recorded within biodiversity sampling	86 different species

\*The oyster larvae release estimate was calculated using monitoring data collected at Sunderland Marina and Conwy Marina in 2022 and 2023 and extrapolated to represent all sites (Sunderland Marina, Port of Blyth, Conwy Marina and Deganwy Marina). Monitoring sessions were completed weekly during the spawning season, and samples were taken from brooding oysters and the average number of oyster larvae released per oyster was calculated.



#### WHAT WE HAVE ACHIEVED

One of the key goals of this project was the restoration of native oyster habitats in close proximity to each of the three restoration hubs.

The project successfully constructed a native oyster reef at the Tyne and Wear site, and construction is still underway at the Conwy Bay site. However, due to challenges with logistics and site selection, the project did not deploy cultch material to restore native oyster habitat within the third site in the Firth of Clyde.

The project sought to install an ambitious target of 126 oyster nurseries across three restoration hubs and exceeded this goal by 15, with 141 nurseries successfully established. Survival rates were analysed over the period between May 2022 and April 2023 at the English and Welsh sites and were measured at an average annual oyster survival rate of 78%, demonstrating the efficacy of the technique of installing nurseries suspended underneath marina pontoons. Building upon the oyster nursery design and development work previously carried out by Blue Marine Foundation and the University of Portsmouth in the Solent. It's estimated that the mature native oysters housed in the nurseries have released a total of 996 million larvae.

But it was not just oysters found to be thriving in the nurseries, with 86 species recorded whilst monitoring the oyster nurseries, including butter fish, blue mussels, shore crabs, common prawns, brittle star species and nudibranchs. There were also 84 sightings of the Critically Endangered European eel – indicating that the restoration project is helping more than just oysters.

The project had the aspiration to contribute to the longterm future and legacy of the project sites, by inspiring the next generation of marine stewards through an education programme. The project reached 30,535 students, more than 2.5 times the target figure of 12,000 students.

To help regularly monitor the nurseries the project recruited a team of citizen scientist volunteers. Reflecting the enthusiasm of local residents to pitch into ecological

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restoration within their communities, the initial aim of recruiting 150 volunteers was exceeded by 248 giving a total of 428. Another goal was the engagement of the public, familiarising them with and garnering support for the recovery work. A total of 82,127 people were reached. Staggeringly, this was more than double the target, with 48,000 more people interacting with the project than originally aimed for.

The project dominated press headlines right from the start, reaching 96 million people through national, regional and trade press and another 6,000 through social media channels. Throughout the coverage, the People's Postcode Lottery was mentioned through quotes, referenced as a thanks to players of the People's Postcode Lottery for their support and as a funder.

We hosted site visits and away days from local government agencies, such as the Environment Agency, Defra and Marine Management Organisation (MMO) at the Tyne and Wear site and Natural Resources Wales at the Conwy Bay site. Furthermore, we hosted knowledge exchange meetings and visits from other conservation charities interested in setting up similar oyster nursery sites, for example, the Ulster Wildlife Trust, Tees Rivers Trust, Nature am Byth, and the Restoration Forth Team from WWF and Royal Botanic Garden Edinburgh.

A hugely significant endorsement of the impact made by The Wild Oysters Project is the winning of the British and Irish Association of Zoos and Aquarium's inaugural Great British Wildlife Restoration (GBWR) Award in 2024 coming out on top against 21 other native species projects.

The Award seeks to raise awareness among politicians of the work carried out by a diverse profile of conservationists to create thriving wildlife habitats in the UK. The Project, which was noted for its ambitious targets, which it outperformed, won the vote of parliamentarians. The Award will help to raise the profile of The Wild Oysters Project and the issue of native oyster depletion among the country's top decision-makers.



**Top image**: Volunteers at Deganwy Marina restocking oysters. **Centre left image**: Juvenile shore crab on top of a fan worm attached to an oyster nursery. **Centre right image**: Volunteers identifying species and recording data at the Conwy Bay restoration hub. **Credits**: ZSL. **Bottom left image**: Members of Cofnod on a team day monitoring at Deganwy Marina. **Credit**: Cofnod. **Bottom right image**: Shrimp found inside oyster nursery. **Credit**: ZSL.



## NATIVE OYSTER HABITAT RESTORATION AND INSTALLATION OF OYSTER NURSERIES

Restoration of native oysters is complex, with many life cycle stages needed for a new generation to emerge.

Substrate and recruitment can be limiting to restoration efforts:

- Substrate-limited refers to an environment with a lack of suitable habitat for larvae to settle upon.
- Recruitment-limited refers to a system with a lack of broodstock to supply enough larvae to the area to enable settlement and further recruitment.

The project, therefore, was primarily focused on delivering two activities:

#### 1. Restoration of native oyster habitat

Oysters are gregarious, and have a preference towards settling and growing on hard, calcareous substrates, such as old shells, other oysters and stone, known as cultch which is how they form their reefs. Therefore, by deploying cultch material onto the seabed, along with thousands of mature native oysters, we are providing a suitable habitat for oyster larvae to settle on and grow. Following similar to work undertaken by the Essex Native Oysters Restoration Initiative (ENORI).

#### 2. Installation of oyster nurseries in marina sites

By housing oysters close together in oyster nurseries, it is understood they find it much easier to reproduce and can release millions of larvae into the surrounding waters.

With the support of British Marine and our local delivery partners, two marina sites were identified in each of the three restoration hub locations:

- Conwy Bay, North Wales: Conwy Marina and Deganwy Marina
- Tyne and Wear, North England: Sunderland Marina and Port of Blyth (located in Northumberland)
- Firth of Clyde, West of Scotland: Fairlie Quay Marina and Largs Marina

The marina sites were assessed for suitability, based on a series of environmental factors such as water temperature, salinity and depth, as well as logistical concerns such as

obtaining permission and licences and ensuring regular access to pontoons for monitoring activities.

141 oyster nurseries were installed across the three sites between March and May 2021, and monitored over the following two and a half years, with the assistance of 428 volunteers and 7 undergraduate and postgraduate students. In total, these nurseries contained approximately 4,000 oysters. With monitoring data collected from the Tyne and Wear and Conwy Bay restoration hubs during spawning seasons 2022 and 2023, we estimate a total larvae release of ~996 million larvae across the two sites, based on an average of 1.8 million larvae per spawning oyster.

In terms of biodiversity monitoring data captured from the Tyne and Wear and Conwy Bay sites between March 2021 and November 2023, 86 different species were recorded within biodiversity sampling, and a total of 44,110 individual mobile organisms were identified by citizen scientists.

For more information on the results from our oyster nursery monitoring, please see <u>The Wild Oysters Project</u> <u>Native Oyster Nursery Science Report</u> (December 2023).

Individual mobile organisms identified by citizen scientists, per restoration hub:



12



oyster nurseries installed around the 3 restoration hubs

## 27 native oysters held in each nursery

~3,807 native oysters housed in nurseries across the three sites

estimated oyster larvae released in total

996

## 78%

average annual oyster survival rate

~148.7 MILLION estimated litres of water filtered by oysters 86

13

different species recorded within biodiversity sampling

Figure 3: Summary of oyster nursery monitoring statistics. Estimates of larval release, oyster survival, water filtration and biodiversity have been calculated with monitoring data from Tyne and Wear and Conwy Bay sites only. Photo: Underwater oyster nursery at Conwy Marina. Credit: ZSL.

Throughout 2021 and 2022, much of the work towards restoring native oyster habitat was focused on habitat suitability modelling, ground truthing surveys, procurement and submitting licensing applications.

Hydrodynamic and biophysical modelling work was conducted, which was overlaid with seabed habitat maps, to select potential areas with suitable habitat for improvement. Local working group members were consulted on suitable areas, and habitat scoping surveys were conducted to ground truth the modelling and mapping work. Survey results were shared with technical working groups, and a site selection matrix was used to inform preferred areas for reef creation, which were shared with the local working groups. It was also important, in advance, to procure scallop shells to use as cultch for the creation of the reefs and to find suitable locations for them to weather until their deployment. This information was incorporated into license applications to the Marine Management Organisation (MMO) for the Tyne and Wear site and Natural Resources Wales (NRW) for the Conwy Bay site. Subsequently, the project applied for Crown Estate leases for restoration activities at both sites.

2024

scheduled

#### TYNE AND WEAR RESTORATION HUB CONWY BAY RESTORATION HUB



In 2023, work began on restoring native oyster habitat at Tyne and Wear and Conwy Bay sites to establish restoration areas of 75 metres by 100 metres with a 10cm height from the seabed floor. The following sections summarise the localised details of the restoration process.

#### **CONWY BAY**

The Conwy Bay site had a marine licence approved in April 2023, following this a pre-reef survey was completed and restoration activity plans put into place.

In June 2023 the restoration activities began with a layer of 650 tonnes of locally sourced gravel. The purpose of the gravel was to provide an even base for subsequent cultch deployment, and to provide suitable calcium carbonate settlement material similar to that of shells. The method of gravel deployment involved using a multipurpose landing craft with a hydraulic crane to deploy builders' bags filled with gravel.

The Bangor University research vessel, the Macoma, conducted a multibeam sonar survey to assess the coverage of the base material. The survey showed some distinct peaks in the gravel. All relevant regulators were provided with the survey data, and discussions began with the local working group on methods to level the material. This delayed subsequent restoration activities including the deployment of scallop shells and cockle shells and ultimately the release of oysters until 2024, whilst a new marine licence to level the gravel was acquired.

#### **TYNE AND WEAR**

Following the successful award of a marine licence in August 2023, the project team proceeded with collecting baseline monitoring data.

In September, 150 tonnes of scallop shell and 650 tonnes of local stone was deployed approximately 1 mile offshore using a 45m split hopper barge. The material was deployed using an excavator arm which allowed for scattering over the water surface. Early inspections using underwater cameras returned promising results on the even spread of the cultch.

This was followed in October by the release of 10,000 mature native oysters within a 25-metre by 25-metre box in the middle of the newly created reef, with a density of 16 oysters per square metre, accounting for the potential of a low retention rate.

The reef restoration and deployment of oysters is the biggest milestone achieved by the project, a culmination of three years of planning to achieve the successful outcome of a thriving, new oyster habitat.



Figure 5. Illustration of native oyster habitat restoration on the seabed. Includes the deployment of cultch deposited by a barge at the Tyne and Wear restoration hub, and shows 25 x 25m box with oysters laid in the middle of the site. Photo credit: Lucie Machin.

## FORMAL EDUCATION PROGRAMME

The long-term restoration of UK native oyster populations and wider marine biodiversity recovery can only be delivered with the support of future generations.

The formal education programme was developed to enhance ocean literacy and awareness of native oysters and the ecosystem services they provide among Key Stage 2 and Key Stage 3 pupils. The programme aimed to inspire the next generation of marine stewards to continue to care for the marine environment.

Linked to the National Curriculum for England, Scotland and the new Curriculum for Wales (2022), the education programme featured a range of lesson plans, worksheets, interactive games and workshops. It also included the organisation of site visits so that students could see first-hand the work being done to restore native oyster populations. The ZSL Education Team primarily led the production and development of the education programme and resources, involving the training of local project officers, who proceeded to deliver the programme at each restoration hub. As the project progressed and secured match funding, the project hired dedicated education officers at the Tyne and Wear and Firth of Clyde sites, which boosted the engagement capacity at these sites.

The education programme got off to a challenging start, with the COVID-19 pandemic preventing visits to schools during periods of national and local lockdown. Taking a flexible approach, modifications were made to move engagement online. While in-person engagement eventually became possible, the online resources allowed a much broader geographical spread of access to learning.

The project surpassed the target of 12,000 pupils reached with educational outreach and learning materials, with the number of in-person sessions alone reaching 16,331 students. Those accessing online materials brought the total to 30,535.



## Table showing the number of students reached across the three restoration hubs:

LOCATION	NUMBER OF Education Sessions	NUMBER OF Students Reached
Conwy Bay	22	1,187
Tyne and Wear	88	10,581
Firth of Clyde	37	3,648
Elsewhere	20	15,119
Total	167	30,535

Chart showing a summary of the education level of students reached, through both in-person and online education sessions:



Maria Hayden-Hughes, Conwy Bay Local Project Officer, delivering an education session at Conwy Marina. Credit: Ysgol Port Y Felin. The local pupils reached by the programme varied both by location and educational level, with Key Stage 3 pupils and those in North East England being the groups most interacted with.

Project teams received plenty of positive feedback from schools and students alike on the site visits offered across the three sites:

The feedback from one such visit by primary school students at Ysgol San Siôr in June 2022 described the site visit as "fascinating".



Cafodd Dosbarth Gogarth bore hynod ddiddorol gyda biolegwyr môr yn dysgu am ffermio wystrys a'r amgylchedd morol.

Fascinating morning with marine biologists learning about oyster farming and the marine environment.

@BangorUni @\_OLW\_ @EcoSchoolsWales Translate post



1:36 pm · 13 Jun 2022



One student in Year 6 from Redby Academy, who was on one of the very first site visits in the first half of 2021 expressed their joy at the experience and detailed what they had learnt:

### 66

Yesterday was one of the best days I've had in 2021! It was great holding the oysters, I found barnacles cemented onto the shells and sea worms and baby mussels living on the shells. On the trip, I learned that oysters close their shells when they are out of water to hold water inside to survive.

In early 2023, 30 pupils from Dame Dorothy School in Sunderland visited the Sunderland Marina site. In a social media post, the school commented on the extensive interactive activities that their pupils were able to experience:



**Dame Dorothy Primary School** 📸 15 Feb 2023 · 🕥 Mobile uploads

Year 5 had a great morning at the marina. Visiting the Wild Oyster Project, they learned lots of new facts about the oysters that live just off our shores. They found out why oysters are vital for our local ecosystems and why their numbers are declining. The class were able to handle some oysters, made some models from clay and even created some food webs that illustrated how critical the oysters are in their habitat.

St Luke's High School sent a group of 10 students for a site visit in early 2023 to conduct data collection and carry out monitoring on the oyster nurseries. This followed an in-school session that took place just a few months before. The school provided excellent feedback from the pupils who thoroughly enjoyed the visit and were engaged throughout.





St Luke's Learning for Susta @stlukeslfs

...

On Friday we visited @Wild\_Oysters It was wonderful to have the opportunity to take part in this conservation project! And well done to our pupils who braved the cold weather! @JohnMuirTrust #ThisisLfS



9:15 am · 6 Dec 2022

There were also examples where the project identified and engaged in fostering deeper involvement with students who had a particular interest in marine activities.

Through our partnership with Bangor University, the project was able to provide opportunities for three summer internship placements, and facilitated four Master's-level research projects assessing the associated biodiversity, the use of artificial structures for oyster restoration, and oyster reproductive success in the marina sites.

A relationship was also developed with the North East's Deep Blue Pirates Squid Squad, a youth section of a diving club. Classroom sessions were held in 2022 around the ecosystem services that oysters provide and have also used oyster shells in a pool to build their own reef to simulate a nursery habitat for juvenile marine life. This was a fantastic example of engaging young people with a pre-existing interest in marine environments, to apply their skills in the context of native oyster recovery.



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The project delivered a formal education programme for pupils aged 8–11 (KS2) and 11–14 (KS3), aiming to inspire the next generation of marine stewards, including:



Lesson plans and PowerPoint presentations – in schools and accessed online



Activity worksheets and games



Site visits to oyster nurseries at marinas

# 30,535

students engaged in total, across 167 sessions delivered both in person and online, including:



## 16,331

students reached in person, across

146

sessions



14,203

students reached online, across

2

sessions and via free online education materials

Figure 6. Summary of the outcomes from our formal education programme, across all three Wild Oysters Project sites. Photo: Mature native oysters that have been cleaned by volunteers, ready to be deployed onto the reef site in Tyne and Wear. Credit: Lucie Machin.

(19)

## **PUBLIC OUTREACH AND ENGAGEMENT**

The success of the project depended on the support of the local communities around each restoration hub, specifically the businesses and stakeholders in each marina.

This was important for two reasons. Directly impacting the objectives of the project, the recruitment of citizen scientist volunteers was required to conduct monthly oyster monitoring activities. Broader engagement with the community was also extremely valuable. Informing the local residents about the benefits that native oysters provide to their natural environment helped generate awareness and inspire support.

#### **TRAINING OF CITIZEN SCIENTIST VOLUNTEERS**

Given the broad geographical spread of the project and the regular maintenance required at each oyster nursery, the recruitment and training of local volunteers were essential. The monitoring responsibilities these volunteers supported included:

- · Checking oyster survival
- · Tracking mobile and sessile biodiversity
- · Monitoring reproduction rates
- · Applying biosecurity measures and restocking oysters

These activities helped to evaluate site suitability, to ensure nurseries were not fixed in suboptimal environments for growth and reproduction.

Recruitment activities were carried out through attendance at local events and fairs, social media, newsletters and leveraging partnerships with local wildlife/conservation groups with shared values.

The target of 150 trained volunteers across the 3 hubs was well-surpassed. At the conclusion of the project, 428 volunteers had contributed 4,694 hours to the project. Regular communication with volunteers promoting opportunities for involvement was facilitated through the use of a mailing list and localised private member groups on Facebook. Most of this effort was concentrated in the Conwy Bay and Tyne and Wear sites where the results of capacity-building were generally consistent. Ultimately, it points to an incredibly encouraging enthusiasm within local communities to learn new skills and restore their natural environments, when provided with the tools and opportunities to engage.

## Table summarising the citizen scientist volunteer engagement across the three restoration hub locations:

LOCATION	TRAINED Volunteers	REGULAR Volunteers	TOTAL HOURS Contributed	NUMBER OF Volunteers Signed up to Mailing List	CLOSED Facebook group Membership
Conwy Bay	174	64	~1,218	139	71
Tyne and Wear	209	34	~1,463	139	286
Firth of Clyde	45	10	~315	65	75
Total	428	108	~2,996	343	432

Feedback collected from volunteers focused on the positive feeling associated with contributing to nature recovery as well as appreciation for the knowledge and skills gained from the opportunity.

## 66

Working with the Wild Oysters restoration project is such an amazing and eye-opening experience. Knowing the work we do will have a positive impact on generations to come is such an immense feeling, and seeing the biodiversity that flourishes each time reminds me of why I continue to help with this vital project. As a Marine **Biology student at Bangor University,** it's important to see what is described in textbooks happening firsthand. This is such a powerful educational tool that as I continue to volunteer with the native oyster restoration project, I will continue to learn.

#### **Nick Corley**

**77** 



### 66

I'm retired, but really enjoying myself. What a friendly bunch of volunteers. And so knowledgeable. I've gained so much whilst helping out!

**Keith Jackson** 

77

One particular highlight of citizen scientist training efforts in Tyne and Wear was the employment opportunities it provided to two volunteers, who, with references provided by The Wild Oysters Project obtained employment with the Environment Agency and the National Trust, respectively. This is a powerful illustration of the impact of this project, showing that it can inspire efforts in wider nature conservation and restoration and builds the cadre of restoration conservation professionals.

A further piece of feedback from a volunteer in the Tyne and Wear site reinforced a sense of responsibility upon learning about the challenges facing oyster populations to be part of a solution.

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I first volunteered with The Wild Oysters Project as I wanted to make a difference to my local environment and when I learned what has happened to Oyster populations I knew it was something I wanted to get involved in. The work that this project does is so important and the people who do it are amazing. I'm honoured to have been able to help even a small amount.

**7**7

Katarina Martin

<image>

## 428

citizen scientists helped with oyster nursery monitoring throughout the duration of the project, equating to approximately

> **3,000** volunteering hours

#### **PUBLIC ENGAGEMENT**

The support we received from local communities was key to delivering the project's aims.

Volunteers supported the team by monitoring the native oysters and recording regular data on the environment. This allowed the project to achieve the significant impact it has so far.

The number of people the project engaged with was well over double the 38,000 target, reaching a total of 82,127 people.

While exceptionally comprehensive, engagement activities could be broadly divided into the wider engagement that took place online and around the UK, as well as site-specific engagement, focusing on local events and activities.

The project delivered an engagement programme, which aimed to increase the awareness of native oysters and the ecosystem services that they provide, and to foster a sense of stewardship towards the marine environment. Our engagement plan included:



Monthly volunteering sessions at oyster nursery marina sites



Hosting local celebration events and collaborating with existing local events



**Online media** (website and social media) and press plan



Wider engagement via presentations, workshops and conferences

82,127 members of the general public reached, through



delivered both online and in person, including:



24,481

people reached in person, across



people reached online, across

57.646

activities

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Figure 7. Summary of the activities delivered as part of the project engagement programme, and reach of these activities, across the three Wild Oysters Project sites. Photo: Sand art activity led by Soul2Sand, at the Tyne and Wear restoration hub community celebration event. Credit: Claire Eason, Soul2Sand

#### WIDER ENGAGEMENT

Much of the wider engagement activities involved delivering presentations and workshops at sector-level events and conferences, for example:

- The 20th International Conference on Shellfish Restoration
- The Native Oyster Restoration Alliance conference (2020, 2021, 2023)
- The Global Biodiversity Festival 2021
- Shellfish Centre Conference, Llandudno 2022
- Coastal Futures 2022
- COP26.

As well as general awareness-spreading, these events were vital for securing partnerships, funding and research opportunities.

The creation and distribution of multimedia learning resources was another core stream of engagement that made oyster restoration activities far more accessible to a broad range of potential stakeholders. The project supported the production of a <u>Guide to Oyster Nurseries</u> handbook which was produced by Blue Marine, in collaboration with University of Portsmouth, ZSL, Marina Developments Limited (MDL) and British Marine, explaining the effectiveness of oyster nurseries in achieving population recovery, as well as creating a roadmap for other projects to follow. Similarly, <u>a</u> <u>100-second animation</u>, displayed in marinas around the country, was produced to highlight the critical role oysters play in the marine environment, how oysters have been impacted by unsustainable practices and details ways boat owners can reduce their impact and help native oysters to recover.

The use of The Wild Oysters Project website and social media channels has allowed for project materials to be easily accessible and free to download for a large audience. For example, the production of a series of video-based "shorts" posted to social media illuminated the objectives of the project and made a call to action for volunteers. Social media posts from ZSL relating to this project reached 85,307 people, while 1,238 people engaged with the posts by liking, sharing or commenting.

The project also featured in ZSL's members' magazine, Wild About, reaching 27,627 households.

> The widespread awareness and popularity of the project is reflected in The Wild Oysters Project

WINNING

the 2024 Great British Wildlife Restoration Award

#### **PRESS COVERAGE**

Finally, the project's wider communications activities attracted huge media interest and dominated headlines, reaching over **96 million people** through national, regional and trade press along with interviews, features and stories in national news, across radio stations and prime-time broadcast shows with an equivalent advertising value (EAV) of £2.1m.







#### SITE-SPECIFIC ENGAGEMENT

Throughout the project, much of the consultation with local communities occurred through working groups, comprised of key local stakeholders that included government agencies, universities, local charities and commercial and marine groups.

The meetings held with these groups were a useful forum for distributing information and updates and addressing any questions or feedback to consolidate local support for the project.

Presenting the work undertaken by the project at local events or to local organisations was a key method of engagement. From a talk delivered to members of the North Wales Wildlife Trust for Great Big Green Week, to an interactive exhibition stand for an ocean-themed day at the Great North Museum and a presentation delivered at the University of the West of Scotland's Zoological Conference, activities assisted in spreading awareness to a much broader cross-section of the communities in and around all three of our restoration hubs.

Site visits were also arranged to show key stakeholders the work being done first-hand. This involved multiple visits to assist in monitoring nurseries by the Environment Agency at Sunderland marina, where discussions took place on how nature-based solutions, in particular oysters, can be threaded more into water and catchment management. Another visit to Sunderland marina by the "Coastal Cuisine Group" was part of an outreach initiative aimed at attracting people newly arrived in the area, particularly international migrants, to assist with their assimilation. Hosting a wide array of these interested groups at the sites was an effective way of demonstrating the tangible impact of the project's restoration work.



## **PROJECT LEARNINGS**

Throughout the three years the project was active, staff and volunteers fed back many valuable learnings for future projects.

#### NATIVE OYSTER HABITAT RESTORATION

The work carried out at Conwy Bay and Tyne and Wear presented a few challenges which should be learnt from in future:

#### **Cultch deployment method**

The method of deploying bagged limestone gravel was not only expensive, but also logistically challenging and resulted in an uneven spread of gravel that led to peaks on the seabed. The size of stone used meant that in practise the chutes/ discharge spout on the bags did not work as effectively as hoped. Therefore we do not intend to repeat this method.

#### Marine licensing

Due to the uneven distribution of the gravel, the project, along with the local working group, deemed it necessary to apply for another marine licence to allow for levelling of the gravel material. In future, the inclusion of levelling of cultch material on the seabed within the original marine licence should be considered.

#### Local resource availability

There was a shortage of vessels locally able to deploy large volumes of cultch. A longer lead time for identifying and acquiring vessels or selecting sites with larger fleets will help remedy this in future.

#### Engaging on oyster reef deployment

The project found quarterly local stakeholder engagement during both project development and delivery very beneficial and vitally important. Prior to future reef deployment activities, organising several open consultation meetings to share upcoming activities with wider community members will ensure all those interested are informed and have the opportunity to provide feedback.

#### Licenses for cultch

The marine licences required to deposit cultch material on the seabed were expensive and timeconsuming to acquire. Factoring in additional time and budget for this should be considered in future.



#### Oyster nurseries

The method of using oyster nurseries in marina sites is an effective engagement tool, however maintenance and monitoring can be time-consuming and labour-intensive for project staff. Time and capacity requirements should be revised in any similar projects.

#### Cultch storage and deployment

Identifying locations to store large volumes of cultch material can be challenging and costly. Going forward, this should be a consideration in site selection. Mobilising the movement of large volumes of cultch material is challenging to align with weather windows and vessel availability when it comes to the loading of vessels and deployment of cultch material at sea.

#### Seasonality

Due to the delay in the award of a marine licence, the project team subsequently deployed the reef in September, which was not ideal for our post-reef monitoring surveys when storms are more prevalent and water visibility is affected. This can be factored into timeline planning in future.





#### FORMAL EDUCATION PROGRAMME

Throughout the project the education programme delivery team fed back successes and valuable learnings for future projects, see recommendations outlined below:

- It is beneficial for education materials to be linked to the National Curriculum for England, Wales or Scotland, depending on location. Taking a streamlined approach helped the programme fit into existing topics and talking points, making it easier for students to understand the content and it made the programme more appealing to schools to take up the opportunity.
- Focus on key learnings and objectives during the education session. Due to the short length of time of the class sessions, focusing on key facts that the students will remember should be the priority.
- We found that funding for travel is a barrier for some schools to attend site visits, therefore our allocated budget for school engagement proved to be beneficial.
- It is good practice to adapt the materials for different student groups so that learning is optimised to educational-level and local contexts.
- There can be barriers to learning due to language and specific educational needs. These should be factored in when developing materials and lesson plans.
- It is beneficial to have a member of the team with an educational background, or support from an education department to review materials, to ensure that content is appropriate.
- Two project staff members are required to run a session with 30 students, in addition to teacher support.
- It is effective to use the project as a starting point, to later discuss wider environmental and marine conservation issues.

#### **OUTREACH AND ENGAGEMENT**

During the delivery of the outreach and engagement programme, the project team found the following elements to be effective and successful:

- Local community events should be scheduled before the delivery of restoration activities, to help share information with locals beforehand.
- Establishing a local working group with key stakeholders attending every quarter is effective, as it ensures that the community is part of the decisionmaking and future direction of the project, and it helps to identify and discuss any concerns or questions.
- Collaborate with existing events and local conservation charities to help share project key messages. Leveraging existing groups and events in the local community is a good way of amplifying project awareness and recruiting volunteers with aligned interests and values.
- Using a closed Facebook group is effective for comms with volunteers. It is a platform widely used by key audiences and its forum-like features are valuable for encouraging engagement.
- Online volunteer sign-up mechanisms reduce admin, e.g., Volunteersignup.org
- Scoping out pre-existing marine citizen scientist opportunities in the local area to see if there was historic interest in the location.

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## **OUR FUNDERS**

Generous donations provided by our funders, without which the project would have not been able to get off the ground, include:

- The People's Postcode Lottery, awarded as part of the Dream Fund, was our lead funder, providing £1.18 million to ZSL, Blue Marine Foundation and British Marine.
- The Flotilla Foundation provided £144,435 to ZSL for the Tyne and Wear site.
- Durham Blue Carbon Fund provided £18,000 to ZSL for the Tyne and Wear site.
- George Cornelius provided £5,000 to Blue Marine Foundation for works in the Conwy Bay site.



• Blue Marine Foundation provided £10,000 through other fundraising.

Further funding for The Wild Oysters Project has been secured from the Nature Networks Fund and Stronger Shores Partnership, detailed in the next section.



**Constant** Top photo: Children creating sand art of an oyster reef at Roker Beach, Tyne and Wear. **Credit**: Lucie Machin. **Bottom photo**: Native oysters being held next to oyster nursery hatch at Sunderland Marina, Tyne and Wear. **Credit**: Celine Gamble, ZSL.

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## **LEGACY & FUTURE**

Given the scale of the challenge presented by native oyster decline and wider marine biodiversity loss, this project should be viewed as a means to further action.

The project has demonstrated the success of an approach which has laid the groundwork for the recovery of native oyster populations, while also educating young people, and inspiring entire communities to contribute to marine ecological recovery. The Wild Oysters project is taking this momentum forward, having secured further funding for its Conwy Bay and Tyne and Wear sites.

#### CONWY BAY: NATURE NETWORKS FUND (I<sup>st</sup> April 2023–31<sup>st</sup> March 2025)

The <u>Nature Networks Fund</u>, delivered by The National Lottery Heritage Fund in partnership with the Welsh Government, has pledged £249,919 of funding to enhance the coastal habitat condition in Conwy Bay through native oyster restoration.

The partnership project, between Zoological Society of London and Bangor University, aims to restore European native oyster habitats and the biodiverse community of associated organisms and local cultural heritage, contributing to wider ocean recovery. Conwy Bay is part of the Liverpool Bay Special Protected Area (SPA) and the Menai Strait and Conwy Bay Special Area of Conservation (SAC) protected sites. The funding will enable the recruitment of an Engagement Officer, to scale up our outreach and education activities locally. The project will seek to increase engagement opportunities for women and girls in STEM and local communities to Conwy Bay.





Mewn Partneriaeth â Llywodraeth Cymru In Partnership with Welsh Government

#### TYNE AND WEAR: STRONGER SHORES PARTNERSHIP FUNDING (I<sup>st</sup> APRIL 2023-31<sup>st</sup> MARCH 2026)

The <u>Stronger Shores Partnership</u>, led by South Tyneside Council with funding from Defra as part of the Flood and Coastal Innovation Programmes (FCIP) which is managed by the Environment Agency, has pledged £420,000 of funding to continue and scale up the delivery of the Tyne and Wear restoration hub.

Stronger Shores is underpinned by a desire to improve understanding of the benefits of marine habitats such as kelp, seagrass and oyster reefs with regards to coastal erosion, flood risk, climate change and biodiversity management. The funding will enable the Tyne and Wear restoration hub, in partnership between the Zoological Society of London and Groundwork North East and Cumbria, to continue for a further three years, to deliver oyster nursery site engagement, and to scale up efforts to restore native oyster habitat.





**O** Top photo: Native oyster reef sand art created at Roker Beach, Sunderland. Credit: Claire Eason, Soul2Sand. Centre left photo: Peacock Fan Worms on oyster nursery. Credit: ZSL. Centre right photo: Volunteer monitoring the sessile biodiversity on a native oyster. Credit: The Wild Oysters Project. Bottom left photo: Child looking at rock pool touch table at celebration event. Credit: Lucie Machin. Bottom right photo: The Silver Shantymen singing sea at community celebration event at Tyne and Wear restoration site. Credit: Lucie Machin.

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