

Restoration Forth Monitoring Guide

Help restore the Firth of Forth in as little as five minutes by getting involved in our citizen science activities



Why oysters?

Oysters are known as 'ecosystem engineers' because of the benefits they can provide to their local ecosystem and to other species. They create complex reef structures which provide habitats for other marine species, are proven to increase biodiversity and even store carbon.

Oysters are filter feeders and can filter up to **200 litres of water each day**, improving water quality and clarity. The clearer water could allow more sunlight to reach underwater plants, like seagrass, helping them to grow.



Improves water quality



Supports biodiversity



Increases cultural value

European flat oysters

Restoration Forth is working to return European flat oysters because of the benefits they have for marine health and their cultural significance in the Firth of Forth area.



Lower shell: Rounder and thicker with distinctive growth lines.

Upper shell: Flatter with ridges radiating from the hinge.

Colour: A variety of colours, from brown to white and even pink, purple or black.

Size: Up to 11cm.



Oyster deployment

We have been exploring habitats around the Firth of Forth and have chosen **two subtidal sites** (coastal areas which are below the low tide level and always submerged) and **two intertidal sites** (areas of the shore between high and low tide level, so are regularly exposed) where we will start to return oysters.



Getting involved in Restoration Forth

We're working together with volunteers and local communities to collect important scientific data about habitats, oysters and other species in the Firth of Forth. This helps improve our understanding of restoration activities and better protect local marine environments.

This guide describes the different ways you can get involved in this project, so whether you've got five minutes or a little bit longer, you can help restore oysters to the Firth of Forth!

What is marine restoration?

Restoration Forth is a marine restoration project. Restoration projects, like this one, take steps to improve habitats or return species to recover the health of ecosystems which have been damaged due to human activity.

The Firth of Forth was once home to one of the largest European flat oyster beds in Europe, but by the end of the 19th century, the beds had been fished to local extinction. Globally, we have lost approximately **85% of our oyster reefs**. Restoration Forth aims to help recover this vital species and restore local habitats.

What is citizen science?

Citizen science is when volunteers and scientists work together to conduct scientific research. Anyone can be a citizen scientist and it's a great way to get involved in scientific projects, like oyster restoration, that bring about real change. Citizen science also offers lots of opportunities to get outside, meet new people and learn new skills.



Getting involved

The Restoration Forth science team, from Heriot-Watt University, has identified three different types of information which would be useful to collect about the survival and wider impact of returning oysters to the Firth of Forth.

Staying safe

Before you get started, it's extremely important that you stay safe on the shoreline. Here are some top tips:



Please do not enter the water.



Carry out your survey at low or lowering tide and be mindful of what time the tide turns and will start to rise.



Take someone along with you and carry a phone to call for help.



You are responsible for your own safety. Use your judgement to assess your risk.

Finding the best places to restore oysters

By collecting information on washed-up oyster shells, water temperature and seabed type around the Firth of Forth, we can determine which sites are most suitable and will give the oysters the best chance of survival. This expands our knowledge of oyster restoration and the kinds of habitats they prefer, which could help inform other restoration projects around the world.

Activity 1. Oyster observer guide

Looking for oyster shells on your local shorelines



15-30 minutes



Anywhere on Firth of Forth shoreline

Oyster shells continue to wash ashore around the Firth of Forth and may indicate areas where historical oyster beds once thrived. This could suggest good places to return them. Use our Oyster Observer Guide to tell us how many shells you find on your local beach. Head to mcsuk.org/restoration-forth when you're ready to get started.

Activity 2. Habitat assessment

Looking for the best habitats



5-15 minutes



Anywhere on Firth of Forth shoreline

Oysters like to live in areas where the seabed is made of small pebbles or shell material, with fewer big rocks where predators could hide. Areas with more shell material and calmer conditions may improve the chances of oyster larvae settling and establishing oyster beds.

1. Record when and where you are conducting your survey
2. Randomly select and measure out a 1m square, marking each corner
3. Look at your square and record the following details:

Date and time of your survey

Name of the beach

Map co-ordinates/what3words of location

How would you describe the beach's location?

Bay Lagoon Open and exposed Harbour Island

Estimate the distance to the nearest river mouth *(if you aren't sure, leave this blank)*

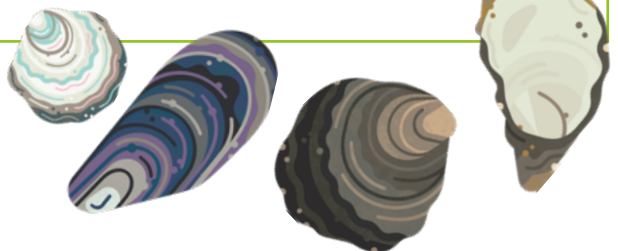
How would you describe the beach type in your square?

Shell matter Mostly mud Mostly sand

Mostly gravel (less than 2cm) Mostly pebbles (2-5cm)

Mostly large rocks (5-20cm) Mostly boulders (> 20cm)

You can find the oyster shell ID guide at mcsuk.org/restoration-forth



How are the oysters getting on?

Once the oysters have been returned to the Firth of Forth, we need to monitor how they survive, grow and whether they start to reproduce. We can look at the oyster shell sizes, survival rates or movement and look for oyster spat (baby oysters). It is especially important to monitor this over time to help identify any trends or changes. Oyster restoration can be a very slow process, so revisiting monitoring sites can collect important data on their progress and help improve future oyster reintroduction.

Activity 3. Monitoring oysters

Checking in on the oysters



1-5 hours



Organised events at oyster restoration sites

We'll be conducting regular checks to see how the oysters are surviving and growing. This may require a bit more time and training, but is a great chance to get hands-on experience and develop your science skills.

To get involved, sign up to our newsletter on our website. You'll get regular updates on how to get involved in practical monitoring activities.

Tracking the impact of returning oysters

We need to monitor the impact the oysters are having on their local environment. Collecting information on the presence of other species either living or visiting the area, or beginning to grow on the oyster shells, can tell us more about the benefits of returning oysters to the Firth of Forth.

Activity 4. Biodiversity monitoring

Looking for other species



1-2 hours



Anywhere on the Firth of Forth shoreline
when the tide is going out - best in rocky areas

This survey looks at the impacts returning oysters might have on other species. We're interested in seaweeds, birds and the species which start to grow on oyster shells.



Ready to get started?

Scan the QR code or head to mcsuk.org/restoration-forth to download the survey and ID guides, recording forms, and to submit your data

Other ways to get involved

Looking for more ways to help out? Here are other opportunities to get involved with Restoration Forth or other marine projects through citizen science activities.



Events and activities

Keep up to date with upcoming Restoration Forth events at [wwf.org.uk/restoration-forth](https://www.wwf.org.uk/restoration-forth)



Big Seaweed Search

The Marine Conservation Society and Natural History museum team up with people across the country to take a closer look at UK seaweeds. Head to mcsuk.org/big-seaweed-search to find out how you can get involved.



Wildlife Sightings

Reporting jellyfish and turtle sightings provides vital information about our ocean's inhabitants and contributes to scientific research which finds solutions to protect our seas. Check out the ID guides and report your sightings at mcsuk.org/wildlife-sightings.



Beach cleans

Join or organise a beach clean at mcsuk.org/beachwatch to help clean up our coastline and collect important data which enables the Marine Conservation Society to campaign for change.



Seagrass Restoration

You can get involved in seagrass restoration activities too! Find out more information on seagrass restoration work at projectseagrass.org/restoration-forth

Restoration Forth

This community-inspired marine restoration project aims to **re-introduce 30,000 European flat oysters and restore four hectares of seagrass** to the Firth of Forth, Scotland.

Working with communities, the Restoration Forth project team will research potential sites and trial methods for restoring oysters and seagrass to the area.

Together, communities around the Firth of Forth and across Scotland can help restore our marine environment and influence Scottish Government policy for stronger marine protection.

Find out more at wwf.org.uk/Scotland/restoration-forth



📍 The Firth of Forth railway bridge - Caitlin Godfrey



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