

# 2024

## 2023 Inspiration Pack – Plastic Tide



An annual art competition for  
schools in Fife organised by:



Scottish Fisheries Museum  
*Boats, fish and folk...*

For more information about the Art  
Competition please contact:

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Scottish Fisheries Museum  
*Boats, fish and folk...*

# Introduction

The seas around Scotland support an amazingly diverse and complex range of habitats and species. The Firth of Forth in particular is a Site of Special Scientific Interest, meaning it is an important area because of its geology, coastal features, habitats, plants, and animals. It is also a Marine Protected Area due to the richness and variety of wildlife found in the Forth.

'Firth' is an old Norse word meaning 'arm of the sea' and refers to sheltered sea areas and river estuaries. The Firth of Forth like other Scottish Firths is a transition zone where salty water mixes with fresh water. As a result, the Forth is full of different habitats which support many species of wildlife.

The many species that call the Firth of Forth home can be found in four areas:

- The Sky – birds
- The Shoreline – animals that live on and around our beaches
- Intertidal Areas – animals that live in mudflats, marshlands etc.
- Under the Waves – sea mammals, fish, anemones, bacteria,

In this year's Art Competition, schools are invited to explore the different species that live and visit the Firth of Forth. This is inspired by our temporary exhibition *100 Species* which opens on 27<sup>th</sup> March which explores these species and the importance of oysters and seagrass to their survival. A full list of the 100 species can be found at the back of this pack. We hope that you will be inspired and create some diverse and original artworks in response.

For inspiration you can visit the museum to see the exhibition or use the information and images in this document in the classroom. You can also borrow our loan boxes 'Positive Currents' and 'Sea Change' which explore some of the themes covered in the exhibition.

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## Species Fact File

**Don't know where to start? Students could make a 'Fact File' about a species of their choice. You could include:**

- A picture of the animal
- Where it lives
- What it eats
- Any predators it has
- A short description
- Any fun facts

# 100 Species Exhibition

The Firth of Forth is teeming with life. From tiny microscopic bacteria to majestic whales, life thrives on our coast and beneath the waves. The 100 species exhibition celebrates the vast biodiversity of the Firth of Forth.

The exhibition was a result of the 100 Species project led by Edinburgh Shoreline, supported by Restoration Forth. Restoration Forth are a marine restoration programme working with communities to restore seagrass habitats and native oyster populations in the Firth of Forth. The goal is to start restoring biodiversity and forge new connections between local communities and the sea.

The 100 Species project and exhibition aims to show that Restoration Forth is not just putting back two key species in a vacuum (oysters and seagrass). It's about creating and maintaining a better habitat for the hundreds of important, diverse species that live in the Forth and making people aware of the incredible creatures our coast supports.

100 species that live in the Forth were selected by local people. Locals learned about the species and then created beautiful, impactful interpretations of those animals in different art mediums. These artworks are on display in the Scottish Fisheries Museum until 10<sup>th</sup> June 2024. Over the next few pages are some examples of the different artworks that will be on display.



Images Source: Edinburgh Shoreline



Images Source: Edinburgh Shoreline



Images Source: Edinburgh Shoreline



Images Source: Edinburgh Shoreline

# The Sky – Birds Need a Space to Soar and a Safe Home

The Firth of Forth is very important to a large number of bird species. We all know you see different seagulls at the seaside, but there are many more bird species that use the Forth shoreline for breeding, resting and migration.

Hundreds of thousands of birds stop off in the Forth over winter as they migrate south. They need safe spaces to rest and feed. Some of the birds need a safe undisturbed place to build their nests and keep their babies safe until they leave the nest.

Other birds live along the shoreline such as waders who feed by probing into the mud for worms, bivalve molluscs and other invertebrates which they can't see. For some of these birds vision has little to do with feeding, except for glancing sideways to see if other birds have found some good snacks. These species have high-set eyes to spot predators. Finding food is by feel using their highly specialised bills. These species have tiny sensors called Herbst corpuscles lining their bill tips which detect changes in pressure made by solid objects in wet mud or sand – i.e. food.

## **Why are seabirds important.**

Seabirds are very important as they are near the top of the marine food chain. Although they are called 'seabirds', they are very important for the health of the Forth's coasts and islands because they bring important nutrients back to the land. Bird poo, called guano, is very rich in nutrients including nitrogen that feeds the soil and keeps our coasts and islands healthy for other species to live.

Also, seabirds are an 'indicator species'. This means they are an animal that is visible in an environment where most other species are hidden underwater. It can be very difficult to detect changes to the marine environment, but by looking at seabirds' behaviour and health, we can get an idea of how healthy the seas around them are.

## **Threats to Seabirds**

The top three threats to seabirds globally are invasive predators, fishing bycatch, and climate change. Other threats include pollution like oil spills, being disturbed at their breeding sites, eating plastic pollution, habitat destruction, and food shortages. Another recent threat was Avian Flu which affected Scotland's seabirds in summer 2023. In the Firth of Forth Herring Gulls were the most effected species. Across Scotland NatureScot received 9,610 reports of dead and sick bird between April and October 2023. Most of the reports came from the east coast.

Below are some of the birds you can see in the Firth of Forth.



**Pochard**

Image: Edinburgh Shoreline



**Ringed Plover**

Image: Edinburgh Shoreline



**Herring Gull**

Image: Pixabay



**Gannet**

Image: Pixabay



**Black Headed Gull**

Image: Pixabay



**Razorbill**

Image: Pixabay



**Guillemot**

Image: Pixabay



**Kittiwake**

Image: Pixabay



**Fulmar**

Image: Pixabay

## Arty Ideas: Make a nest

**Do a bit of research into the types of nests birds make and make a nest for a bird of your choice.**

Think about:

- What materials the bird might use to make its nest.
- Might it use manmade items as well as natural?
- What do their eggs look like?
- What do their young look like?
- What else might you see in their nests?

# The Beach is our Home

We all enjoy visiting the beach, but we need to remember to be respectful to the species that live there. The beach is sandy, rocky, muddy, slippery, and full of big and small things to find. Sometimes it's dangerous, so take care, watch your step.

Most beaches have a foreshore, the area covered by the incoming tide and the backshore which is above the tideline and is drier and softer. The species that live in these different areas have different challenges and have adapted to survive.

Some of the species you may see on a beach include:

- Crustaceans: crabs, shrimps, prawns
- Molluscs: common whelk, mussel, razor shell, common limpet
- Invertebrates: anemone; lugworm, starfish
- Mammals: seals
- Seaweed: knotted wrack, kelp, sea-lettuce
- Birds

## Find some inspiration!

**Why not head to your nearest shoreline at low tide for a scavenger hunt? See how many of these species you can find!**

Limpet

Crab

Seagull

Common Shrimp

Seaweed

Periwinkles

Barnacles

Dog Whelk

Razor Shell

## Shoreline (Backshore)

The backshore is the area of the beach above the high-tide line. The high-tide line is normally marked by the standline, which can be identified by a line of shells or seaweed. Species from the foreshore area of the beach can be seen in the backshore when looking for food or when the tide is in.

## Intertidal (Foreshore)

The intertidal area changes from a wet to a dry habitat as the tide goes in and out. The species that live here need to adapt to this changing environment and rely on each other to survive. The Forth intertidal zone has two main habitats mudflats and sand dunes. There are also areas of saltmarsh and reedbeds. In the winter these areas support 80,000 migrating birds and in the summer the islands and are home to 100 of thousands of breeding seabirds.

The mudflats are home to up to a million animals per square metre<sup>1</sup>. Many are small invertebrates like worms, shrimps and snails which live just below the surface. But other smaller species live deeper underground including anaerobic bacteria that do not need oxygen to survive. The sand dune systems support a large number of plants.

These intertidal areas support an enormously abundant, protein-rich food resource which is vital sustenance for fish, birds and other sea life. In the Forth these areas are in danger of disappearing because of human developments and coastal erosion. This has an impact on the local food chain and species ability to survive.

Below are some images of the creatures you might see on the beach.



**Common whelk**

Image: Edinburgh Shoreline



**Velvet Swimming Crab**

Image: Edinburgh Shoreline

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<sup>1</sup> Scotland's Natural Heritage 'Firths'



**Common Starfish**

Image: [www.aphotomarine.com](http://www.aphotomarine.com)



**Limpet**

Image: Edinburgh Shoreline



**Kelp fly**

Image: Edinburgh Shoreline



**Native Oyster**

Image: Edinburgh Shoreline



**Dabberlocks Kelp**

Image: Edinburgh Shoreline



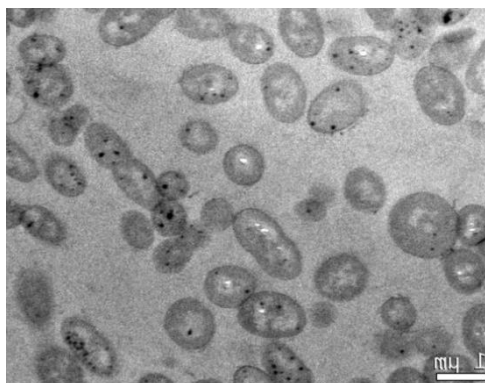
**Grey Seal**

Image: [www.aphotomarine.com](http://www.aphotomarine.com)



**Snakelocks Anemone**

Image: [www.aphotomarine.com](http://www.aphotomarine.com)



**Bacteria: Alteromonas**

Image: Edinburgh Shoreline



**Sand Eels**

Image: Edinburgh Shoreline



**Ocean quahog**

Image: Edinburgh Shoreline



**Sea mouse**

Image: Edinburgh Shoreline



**Sand mason worm**

Image: Edinburgh Shoreline



**Polychaete: Worm**

Image: Edinburgh Shoreline



**Lugworm**

Image: [www.aphotomarine.com](http://www.aphotomarine.com)



**Seagrass or Eelgrass**

Image: Edinburgh Shoreline

## Arty Ideas: Count Your Stitches

Some of the artwork on display in the exhibition was made by sewing, so why not have a go. Here are two different ways you could sew your species.

### EMBROIDERY

#### You will need

Fabric or AIDA

Embroidery Hoop (optional)

Embroidery Floss/Threads various colours

Needle

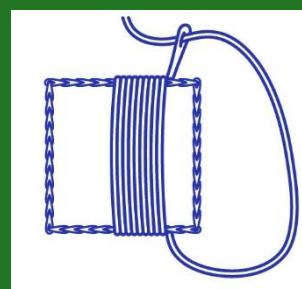
Scissors

**STEP 1:** Using a pencil draw the outline of your chosen species in the centre of your fabric.

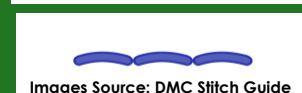
**STEP 2:** Put your fabric in your embroidery hoop if you have one.

**STEP 3:** Choose a thread colour and cut a length. Tie a knot at one end and thread the other end through your needle.

**STEP 4:** There are many different stitches you can do ([click here](#) for ideas). To keep things simple fill the shape of your creature using 'Satin Stitch'. Remember to keep the thread knot at the back of your fabric.



**STEP 5:** Once you have filled the shape give it an outline using 'Back Stitch'.



**STEP 6:** Now why not add other elements to your design like the habitat the species lives in. Experiment and see what you come up with.



## Arty Ideas: Count Your Stitches

### **APLIQUE**

#### **You will need**

Fabric – minimum 2 colours

Scissors

Embroidery Floss/Threads various colours

Needle

Embroidery Hoop (optional)

Pins

**STEP 1:** Choose a piece of fabric similar in colour to your animal. Draw the outline of your species on the fabric.

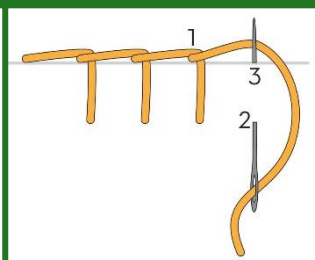
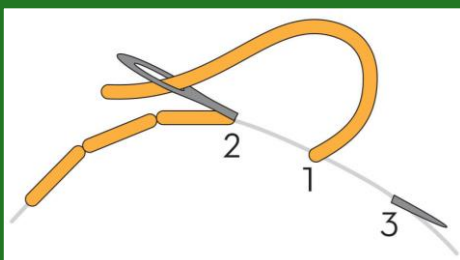
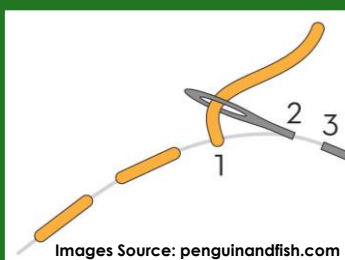
**STEP 2:** Cut the shape out and pin in the centre of your background fabric.

**STEP 3:** Put your fabric in your embroidery hoop if you have one.

**STEP 4:** Choose a thread colour and cut a length. Tie a knot at one end and thread the other end through your needle.

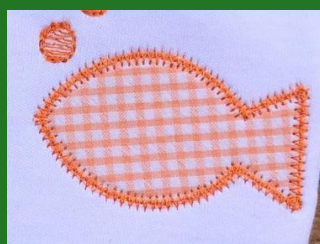
**STEP 5:** Choose a point on the edge of your shape to start. Make your first stitch by coming through the back of the fabric.

**STEP 6:** Stitch around the edge of the shape with a running stitch, back stitch or blanket stitch. Make sure you stitch through both pieces of fabric.



**STEP 7:** When you get back to the start tie your thread at the back and cut the tail.

**STEP 8:** Now why not add other elements to your design like the habitat the species lives in. Experiment and see what you come up with.



## Under the Waves – Dive Down

Many species can be found in the waters of the Firth of Forth. Some live here and others just visit every so often. Deep in the water it is cold and dark and you might not see these species every day but they are just beneath the water. It is getting harder for these species to survive as they fight for space in the busy Firth. They are amazing at adapting, but things are changing so quickly it is harder for them to adapt quick enough. Below are some images of the types of species that are under the waves.

### Arty Ideas: Shoebox Scene

**Many animals live under the sea. For this activity you can focus on one or more species.**

Using a box create an underwater scene with species of your choice. See the image on the front cover for inspiration.



**Parasitic Shrimp**

Image: [www.aphotomarine.com](http://www.aphotomarine.com)



**Humpback Whale**

Image: Edinburgh Shoreline



**Twaité Shad**

Image: Edinburgh Shoreline



**Basking Shark**

Image: Edinburgh Shoreline



**Cat Shark**

Image: Edinburgh Shoreline



**Pogge**

Image: Edinburgh Shoreline



**Sea Lamprey**

Image: Edinburgh Shoreline



**Thick lipped mullet**

Image: Edinburgh Shoreline



**Light bulb sea squirt**

Image: Edinburgh Shoreline



**Moon Jellyfish**

Image: [www.aphotomarine.com](http://www.aphotomarine.com)



**Orca**

Image: Edinburgh Shoreline



**Harbour Porpoise**

Image: Edinburgh Shoreline

## Sources of Further Information

Below are some links to further information on the Firth of Forth and its wildlife.

**100 Species Project – Edinburgh Shoreline (includes an interactive map showing all the artwork created during the project)**

<https://edinburghshoreline.org.uk/100-species-project-watch-our-art-work-taking-shape/>

**Exploring the Forth: Resource Pack for Teachers – The Scottish Fisheries Museum**

<https://www.scotfishmuseum.org/perch/resources/forth.pdf>

**Shoreline Birds – Edinburgh Shoreline**

<https://edinburghshoreline.org.uk/wp-content/uploads/2018/09/Shoreline-detailed-file-birds.pdf>

**Edinburgh 100 Species Community Hub List – Edinburgh Shoreline (details on a section of the 100 species)**

<https://edinburghshoreline.org.uk/100-species-edinburgh-shoreline-community-hub-list/>

**Firths: Scotland's Living Landscapes – Scottish Natural Heritage (1997)**

<https://digital.nls.uk/pubs/e-monographs/2020/216636112.23.pdf>

**Species of Special Protection Areas (SPAs) in the Firth of Forth Report No. 804 – Scottish Natural Heritage (2020) – has detail on the different species**

<https://www.nature.scot/sites/default/files/2017-07/Publication2020>

**Beach Wildlife – Keep Scotland Beautiful**

<https://www.keepsotlandbeautiful.org/community-and-place/scotlands-beach-awards/information-for-visitors/wildlife-watching/>

**Sea Change Exhibition – The Scottish Fisheries Museum**

<https://www.scotfishmuseum.org/sea-change.php>

**Scotland's Native Species: Chapter 5 Marine Wildlife - COVE**

<https://cove.co.uk/blog/scottish-wildlife-the-ultimate-guide-to-scotlands-native-species/>

# What are the 100 Species

Below is a list of some of the different species that can be found in the Forth.

SPECIES NAME	LATIN NAME
<b>Angiosperm:</b> Seagrass or Eelgrass	Zostera noltii & Zostera marina
<b>ANTHOZOAN</b>	
Snakelocks Anemone	Anemonia viridis
Phosphorescent seapen	Pennatula phosphorea
<b>BACTERIA</b>	
Alteromonas	
E Coli (Escherichia coli)	
Proteobacteria: Pseudomonas	
Proteobacteria: Roseobacter	
<b>BIRDS</b>	
Pochard	Aythya ferina
Knot	Calidris canutus
Gannet	Morus bassanus
Common Tern	Sterna hirundo
Eider Duck	Somateria mollissima
Fulmar	Fulmarus glacialis
Ringed Plover	Charadrius hiaticula
Seagull	
<b>CEPHALOPOD:</b> Common Squid	Loligo vulgaris
<b>Common urchin</b>	Echinus esculentus
<b>Common whelk</b>	
<b>COPEPOD</b>	
Benthic Copepod	Stenohelia gibba
Benthic Copepod	Paramphiascella hyperborea
Copepod	Microarthridion fallax
Marine Copepod	Eurytemora herdmani
<b>CRUSTACEAN</b>	
Lobster	Homarus gammarus
Parasitic Shrimp	Hyperia galba
Norway Lobster	Nephrops norvegicus

SPECIES NAME	LATIN NAME
Velvet Swimming Crab	Necora puber
Hermit Crab	
Edible Crab	Cancer pagurus
<b>Curled Octopus</b>	
<b>DIPTERA:</b> Syrphid Fly	Eristalinus aeneus
<b>ECHINODERM</b>	
Common Starfish	
Brittle Star	Amphipholis squamata
<b>FISH</b>	
Sea bass	Dicentrarchus labrax
Twaite Shad	
Cat Shark	Scyliorhinus canicular
Plaice	Pleuronectes platessa
Wolf Fish	Anarhichas lupus
Sand Goby	Pomatoschistus minutus
European Sea Sturgeon	Acipenser sturio
Cod	Gadus morhua
Basking Shark	Cetorhinus maximus
River & Sea Lamprey	Lampetra fluviatilis
Pogge	Agonus cataphractus
Mackerel	Scomber scombrus
Fatherlasher	Myoxocephalus Scorpius
Herring	Clupea harengus
Sand Eels	Ammodytes tobianus
Thick lipped mullet	Chelon labrosus
Sword fish	Xiphias gladius
Butterfish	Pholis gunnellus
Skate	Dipturus batis
<b>Fuzzy sea cucumber</b>	

SPECIES NAME	LATIN NAME
<b>HYDROZOAN:</b> Hydroid	Bimeria vestita
<b>JELLYFISH</b>	
Moon Jellyfish	Aurelia aurita
Northern comb Jelly	Beroe Cucumis
Lions Mane Jellyfish	Cyanea capillata
<b>Kelp fly</b>	Coelopa frigida
<b>Light bulb sea squirt</b>	
<b>Limpet</b>	Patella Vulgata
<b>MAMMALS</b>	
Minke Whale	Balaenoptera acutorostrata
Harbour Porpoise	Phocoena Phocoena
Harbour Seal	Phoca vitulina
Orca	Orcinus orca
Grey Seal	Halichoerus grypus
Bottlenose Dolphin	Tursiops truncatus
Blue Whale	Balaenoptera musculus
Common Dolphin	Delphinus delphis
Humpback Whale	Megaptera novaeangliae
Sei Whale	Balaenoptera borealis
<b>MARINE ALGAE</b>	
Bladder wrack	Fucus vesiculosus
Kelp or Oarweed	Laminaria digitata
Japanese Kelp or Wakame	Undaria pinnatifida
Dabberlocks kelp	Aleria esculenta
Knotted Wrack	Ascophyllum nodosum
Phaeocystis	

SPECIES NAME	LATIN NAME
Green Algae	Monostroma oxyspermum
Seaweed - filamentous green algae	Rhizoclonium riparium
Northern Tooth Weed	Odonthalia dentata
<b>Marine dinoflagellate</b>	Alexandrium tamarense
<b>MOLLUSC</b>	
Bivalve	Abra alba
Native Oyster	Ostrea edulis
Great Scallop	Pecten maximus
Horse Mussel	
Blue Mussel	
Dog Whelk	Nucella lapillus
Cockle	Cerastoderma edule
<b>Ocean quahog</b>	
<b>PORIFERA:</b> Shredded Carrot Sponge	Amphilectus fucorum
<b>Sea Lemon</b>	Doris pseudoargus
<b>Sea mouse</b>	
<b>Sea slug</b>	Polycera quadrilineata
<b>Sea Turtle</b>	
<b>SEA WORMS</b>	
Annelid: Segmented Worm	Exogone naidina Oersted
Peanut Worm	Golfingia Vulgaris
Peacock Worm	Sabella pavonine
Sand mason worm	
Polychaete: Worm	Theodisca mamillat/ Naineris quadricuspida
Polychaete: Worm	Cirratulus cirratus
Lugworm	