

RSNO

SCOTLAND'S NATIONAL  
ORCHESTRA

Sounds  
*of the*  
Deep

Learning Resource:

**How can you protect  
the Ocean?**

MARINE  
CONSERVATION  
SOCIETY

An underwater photograph showing a large, brownish fish swimming towards the left. The water is filled with various pieces of plastic waste, including a prominent blue bottle cap and other debris. The background is a dark, greenish-blue seabed.

MARINE  
CONSERVATION  
SOCIETY

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# How can you protect the ocean?

## Sustainability Goals:



## Subject links:

Science, Geography, English, Citizenship

Ages 7-11

## Curriculum links:

Human impact, Economic activity, Natural resources, Group work, Presentation, Sustainability, Environmental responsibility

## Ocean Literacy Principles:

6. The ocean and humans are inextricably interconnected

## Learning Objectives:

- To understand that humans impact the ocean whether we live inland or at the coast
- To understand how the ocean is part of all our daily lives
- To be able to work in a group to set up and organise a school initiative
- To inspire action across the whole school

## Resources provided:

- [What did the ocean ever do for us? \(video\)](#)
- [Ocean threats image reel](#)
- [Ocean Manifesto](#)
- [Amazing ocean Fact File](#)
- [How do we use the sea? Fact File](#)

## Step 1

### Background

The ocean is home to 50–80% of all life on Earth. It is also fundamental to the water cycle, provides oxygen, stores carbon, regulates the climate, and provides food. Many industries use the sea including oil and gas, fishing, medicine, marine aggregates, aquarium trade, wind farms, shipping and tourism.

All of these industries put pressure on the ocean, on top of stressors like climate change and marine litter. It's vital we protect marine ecosystems to ensure a healthy ocean for the future, for both biodiversity and for communities and business to benefit from. No matter where we live in the world, our actions have consequences for the marine environment, which means we can all do our bit to help protect the ocean.

## Step 2

### Set the Scene

#### 15 minutes – Why is the ocean important?

To give background to the importance of the ocean you could complete the lesson [Introducing the Ocean](#), and to introduce pressures from marine industries, complete the lesson [How do we use the sea?](#)

Begin this lesson by thinking about why we need to protect our ocean. Give students 1 minute to write down the name of as many marine animals as they can think of on mini whiteboards. Discuss answers and define the term biodiversity.

## Step 3

### Activities

#### Activity 1: 20 minutes – Ocean threats

In small groups, spend a few minutes brainstorming threats to the ocean. This could include examples of marine industries, climate change, marine litter etc. Pause and discuss answers. Show students the [ocean threats image reel](#) to highlight threats, and introduce any not already covered. Students should then return to their brainstorms and try and make links between their life and any of these threats. For example eating seafood, using plastic, using electricity, oil in cars, shipping transporting food, toys and clothes. Can they think of any ways they could help to reduce the threat?

#### Activity 2: 30–40 minutes – Ocean Manifesto

Introduce the [Ocean Manifesto](#) and discuss each pledge and how it relates to the students and the ocean. As a class, vote for your top three favourite actions from the manifesto. Split the class into three groups, allocating one of the actions to each group. Students should work together to create an action plan for how they will implement this action in school.

## Step 4

### Extend

#### 30 minutes – School-wide initiative

Groups could share their ocean action ideas to the rest of school during an assembly, and have a whole school vote on which of the three actions to implement at school. Your class should then be key in ensuring this action goes ahead, helping to run the project throughout school and evaluate its overall success. We would love to hear about your project! Share your story on social media and tag us or email us at [engage@rsno.org.uk](mailto:engage@rsno.org.uk)

## Step 5

### Reflect

#### 5 minutes

Why is the ocean worth protecting? What threats does the ocean face? Name one way you can help protect the ocean as a school. How can you take what you've learnt in class to help protect the ocean at home?



# One Planet, One Ocean

## School Manifesto



Swap plastic for more sustainable alternatives and encourage everyone to use reusable items like bottles, lunch boxes, cutlery and straws



Encourage each other to use more sustainable transport to school, like walking, cycling or car sharing



Save energy by switching off lights, heating, water and technology when not needed



Ensure environmental and marine education is taught in our school



Establish new wildlife areas and initiatives at school, like a pond, vegetable allotment, or wildflower meadow



Reduce, recycle and reuse as much as possible, including composting food waste, collecting rainwater, and taking better care of our resources



Include the wider community in events and educational initiatives, like fundraising days, local litter picks, and swap shops



Create a sustainability team to discuss new ideas to improve our school, like banning cars from idling outside school and ensuring school supplies are responsibly sourced

school pledge to work towards achieving the points in this manifesto.

Signed

(Head Teacher)

Please return this document to [education@mcsuk.org](mailto:education@mcsuk.org)

# Amazing Ocean Fact File

## The ocean is a vital support system for our planet

- It plays a major role in the water cycle
- Marine plants and algae produce over 50% of the oxygen we breathe
- Marine habitats help to store carbon, which is incredibly important in the fight against climate change
- The ocean regulates our climate and weather systems
- Coastal habitats help to protect coastal communities and towns from storms and flooding by reducing wave energy
- Seafood provides a source of food and protein for millions of people
- Millions of people have jobs in marine industries
- The ocean is important for our health and wellbeing, with millions of people using the ocean and coastline recreationally and creatively



Coastal seagrass habitat  
© Benjamin L. Jones via  
Unsplash



Surfer © Sebastian Staines  
via Unsplash

## Helpful terms

**Ecosystem services** – the benefits people derive from ecosystems

**Habitat** – a habitat is the natural home or environment in which an animal, plant or organism lives. A habitat contains all an organism needs to survive such as food and shelter. A microhabitat is a small area within a larger habitat which is home to a species

# Amazing Ocean Fact File

## Ocean diversity



70% of the Earth's surface is covered by the ocean

The ocean is incredibly diverse and is home to 50-80% of all life on Earth. The majority of this diversity is found in productive shallow seas



In the UK we have around 7,723 miles of coastline, with sandy bays, rugged shores, caves and cliffs. Beneath the waves are varied landscapes too, with undersea cliffs, caves, plains and dunes



Our coastal seas host a range of habitats like colourful reefs, kelp beds, rockpools and seagrass meadows, which provide sanctuary to thousands of plants and animals



The biodiversity of species in our ocean is extraordinary, from microscopic bacteria and algae to enormous whales



Biodiversity is important for ecosystem health. An ecosystem with greater diversity is much more likely to recover from damage from external factors compared to an ecosystem with little diversity

## Helpful terms

**Species** - a group of living organisms consisting of similar individuals that share common characteristics and are capable of interbreeding

**Adaptation** - the process of evolutionary change in which an organism becomes suited to its environment

**Biodiversity** - a broad term meaning the variety of plant and animal life. Biodiversity refers to diversity within species, between species and within an ecosystem

# How do we use the sea?

## Fact File



### The ocean's natural services

**The ocean is a vital support system for our planet.**

- It plays a major role in the **water cycle**
- Marine plants and algae produce over 50% of the **oxygen** we breathe
- Marine habitats help to store **carbon**, which is vitally important in our fight against climate change
- The ocean regulates our **climate**
- Coastal habitats **protect** coastal villages and towns from storms and flooding



Eelgrass bed  
© divedog via Shutterstock



Salt marsh habitat, Wales  
© James Hime via Shutterstock



### Ocean resources and human uses

The ocean provides us with many resources that we use in our daily lives, from food and medicine to fuel and electricity. Hundreds of people work in marine industries. With a growing population, the demand on ocean resources is increasing. Perhaps because the ocean is so vast, we underestimate humans' ability to have an impact on it, but these resources aren't limitless and harvesting them can cause damage to marine ecosystems. Read on to learn more about the different ways we use the ocean.

# How do we use the sea?

## Fact File

Ocean industry	Human use	Possible threat
<b>Seafood</b>	Billions of people all over the world rely on seafood for an income and as a source of food	Overfishing affects marine food chains and biodiversity, and it can cause fish populations to collapse. Destructive fishing methods can also badly damage seabed habitats. Intensive fish farming can cause reduction in water quality, and spread disease and parasites to wild fish.
<b>Oil &amp; gas</b>	99% of the oil and gas we use in the UK comes from under the sea. (1) The industry supports around 300,000 jobs in the UK and is important to the economy (2)	Drilling for oil and gas can pose serious threats, from construction of platforms, transporting of goods, creating pipes lines and through extremely destructive oil spills. The industry is also responsible for greenhouse gas emissions, contributing to climate change which in turn is having damaging effects on the ocean.
<b>Shipping</b>	95% of goods moving in and out of the UK are transported by sea. (3) 20.7 million international passengers pass through UK ports each year (4)	Shipping can be associated with noise pollution, emissions, oil spills, container spills, dumping of rubbish at sea and chemical pollution. Shipping can also directly damage the environment through anchoring, shipwrecks, and direct contact with large marine mammals. Shipping is also associated with the movement of invasive species through ballast water, which is when ships store water to even out the weight of the boat. This water can be loaded on in one location and then discharged in another, meaning small animals and plants within the water can be transported to new areas. Biofouling – the accumulation of plants and animals on the hull of the boat – can also transport non-native species to new locations.

1. wintershalldea.com 2021
2. Oilandgasuk.co.uk 2021
3. Foresight Future of the Sea 2018
4. Department for transport 2020

# How do we use the sea?

## Fact File

Ocean industry	Human use	Possible threat
<b>Marine aggregates</b>	Sand and gravel is dredged from the seafloor to provide materials for construction, for coastal defences, and to increase the depth of shipping channels	Dredging physically damages seafloor communities of plants and animals where the material is removed and where it is deposited.
<b>Offshore windfarms</b>	Offshore wind powers the equivalent of 4.5 million homes a year (5)	Construction of wind farms can directly damage marine environments, migratory species, and cause noise pollution.
<b>Aquarium trade</b>	With an estimated 2 million people worldwide keeping marine aquariums, the aquarium trade is worth around £237 million (6)	Coral reef species make up the majority of the aquarium trade. Collecting these species in the wild can be very destructive to the habitat and non-target fish. Some fish that have been targeted are at risk of extinction.
<b>Tourism</b>	60% of the world's population live within 60km of the coast, and many people use beaches and coastal waters for recreation and tourism. Coastal tourism is an important livelihood for many people in the UK and benefits the economy	Pressure from coastal development and recreational activities can cause harm to sensitive habitats. Activities on the ocean like boating can discharge oil, damage seabed habitats through anchoring and cause noise pollution. Coastal development on land reduces areas of natural coastal habitats. This reduction directly reduces biodiversity and also reduces vital functions these habitats provide, like helping protect land from erosion and helping to filter nutrient runoff from land.
<b>Medicine</b>	Many medicines are derived from natural sources on land, but the ocean is also a source of medicine. Many marine plants and animals are being studied to find new medicines	Healthy seas with healthy species are required to be able to derive medicine from the sea. If resources for medicines aren't harvested sustainably this could contribute to a decline in habitat health.

5. renewableuk.com 2021

6. UNEP 2003

# How do we use the sea?

## Fact File



### Protecting our ocean

To ensure a healthy ocean for the future, we must reduce habitat damage, ensure sustainable harvesting and protect vital ecosystems.

#### How can we protect the ocean?



**Legislation and laws** are in place to reduce threats. Many activities require licenses, like removal of any material, construction work, work which may include disturbing or collection of wildlife, any activity which may have contact with the seabed, and any activity that might deposit substances into the sea. These activities must pass several environmental criteria before being issued a license



**Marine Protected Areas (MPAs)** are similar to nature reserves. They are set up to protect specific species or whole habitats. MPAs can reduce destructive activities and protect and recover biodiversity. It's estimated that, within Europe, for every €1 invested into MPAs there could be a return of €3 due to the value of services they provide (7)



**Fully Protected Marine Areas or No Take Zones** are strict MPAs where all damaging activities are banned to allow habitats a chance to recover and thrive



**Restoration projects** aim to actively restore habitats through conservation work



### Difficulties in protecting our ocean

Managing the ocean is tricky, as there are many stakeholders with conflicting interests and opinions, including governments, commercial industries, large and small-scale fishers, tourist industries, environmental NGOs, scientific communities and coastal inhabitants.

The ocean is a vast space and managing activities is logistically and financially difficult.

7. European Commission 2020

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How can you protect the Ocean?  
**Experiences and  
Outcomes**

## Literacy

- I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience. **LIT 2-06a**
- I can show my understanding of what I listen to or watch by responding to literal, inferential, evaluative and other types of questions, and by asking different kinds of questions of my own. **LIT 2-07a**
- To help me develop an informed view, I can distinguish fact from opinion, and I am learning to recognise when my sources try to influence me and how useful these are. **LIT 2-08a**
- When listening and talking with others for different purposes, I can:
  - share information, experiences and opinions
  - explain processes and ideas
  - identify issues raised and summarise main points or findings
  - clarify points by asking questions or by asking others to say more. **LIT 2-09a**
- I can make notes, organise them under suitable headings and use them to understand information, develop my thinking, explore problems and create new texts, using my own words as appropriate. **LIT 2-15a**

## Expressive Arts

- I have experienced the energy and excitement of presenting/performing for audiences and being part of an audience for other people's presentations/performances. **EXA 2-01a**

## Social Studies

- I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally responsible way. **SOC 2-08a**

## Digital Literacy

- I can analyse how lifestyles can impact on the environment and Earth's resources and can make suggestions about how to live in a more sustainable way. **TCH 2-06a**
- I can make suggestions as to how individuals and organisations may use technologies to support sustainability and reduce the impact on our environment. **TCH 2-07a**

With thanks to our partners



**Sounds of the Deep is supported by:**

Aberdeen City Council, Aberdeen Endowments Trust, Alexander Moncur Charitable Trust, Balgay Children's Society, Castansa Trust, Cookie Matheson Charitable Trust, David and June Gordon Memorial Trust, Educational Institute of Scotland, Forteviot Charitable Trust, The Gannochy Trust, Glasgow City Council, Hugh Fraser Foundation, Jimmie Cairncross Charitable Trust, Leach Family Charitable Trust, Leisure and Culture Dundee, Leng Charitable Trust, The McGlashan Charitable Trust, MEB Charitable Trust, Nancie Massey Charitable Trust, Northwood Charitable Trust, PF Charitable Trust, Q Charitable Trust, Scott Davidson Charitable Trust, ScotRail, Stevenston Charitable Trust, Tay Charitable Trust, Tillyloss Trust, Walter Craig Charitable Trust, Walter Scott Giving Group.



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Charitable Company registered in Scotland  
Company Number: SC027809  
Scottish Charity Number: SC010702

The RSNO is supported by  
the Scottish Government

