

What is an MPA?

Sustainability Goals:



Subject links:

Science, Geography, ICT, Art, Citizenship

Ages 7-11

Curriculum links:

UK wildlife, Biodiversity, Habitats, Ecosystem, Human impact, Natural resources, Map skills, Digital skills, Creativity, Sustainability, Group work, Environment

Ocean Literacy Principles:

6. The ocean and humans are inextricably interconnected

Learning Objectives:

- To learn what a Marine Protected Area is and how it can help protect wildlife
- To use an online map to find information about locations
- To work on a creative group project to make a 3D art sculpture

Resources provided:

- [MPAs Fact File](#)
- [How do we use the sea? Fact File](#)
- [Weird Fish video](#)
- [Online MPA Mapper](#)
- [MPAs in the UK worksheet](#)

Extra resources required:

- Computers or tablets
- Craft materials & recycled items

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 ocean, including oil and gas, fishing, medicine, marine aggregates, aquarium trade and wind farms, shipping and tourism. With so much pressure, it is vital we reduce habitat damage and protect ecosystems to ensure a healthy ocean for the future, for both biodiversity and for communities and business to benefit from.

One way of protecting the ocean is through Marine Protected Areas (MPAs). These are areas of the sea where ecosystems are protected from harmful human activities. Protection can range from the exclusion of just one activity, to the complete removal of all exploitative activities. For further information on MPAs see the [MPAs Fact File](#), and for information on ocean threats, see the [How do we use the sea? Fact File](#).

Step 2

Set the Scene

15 minutes – Why should we protect the sea?

To give context to the importance of the ocean, you could complete the lesson [Ocean overview](#). To introduce different pressures from marine industries, you could 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 their answers and define the term 'biodiversity.' Repeat the activity, but this time giving 1 minute to write down marine industries and the activities carried out in the ocean, and discuss. Finally repeat the activity for threats to the ocean.

Step 3

Activities

Activity 1: 10-15 minutes – What is a marine reserve?

This lesson will focus on marine protected areas as a management method for protecting the ocean. Watch the [Weird Fish video](#) as a way of introducing the topic. To assess learning, ask students some questions about the video: where did Mel live? What was good about Mel's home/habitat? What did Mel's home look like before it became a marine reserve? Can you remember the top 3 benefits of marine reserves? Why are marine reserves good for the fishing industry?

Activity 2: 10-20 minutes – Where is my nearest MPA?

Explain that marine reserves are a strict type of MPA where no activities are allowed. These are also called 'fully protected marine areas.' There are also many MPAs that may only exclude certain activities. For example, fishing might be allowed, but drilling for oil is banned.

In pairs, take a look at the [JNCC website](#) and use the interactive map to find an MPA on your nearest stretch of coast. Find out the name of the MPA, how big it is, what its protected features are (species & habitats) and write down notes on the [MPAs in the UK worksheet](#).

Note – you can change the settings on the left depending on what you want to search for. Why not spend some time looking at how many different types of MPA there are around the UK, selecting different categories and seeing how this affects the whole map? If you don't have access to computers or tablets, you could do this as a class activity showing the map on your whiteboard.

Activity 3: 1 hour – Creating an ocean scene

Split the class into three groups. Each group will create a 3D ocean model to represent different categories of marine protected areas. Group 1 should create an area with no protection. Group 2, a marine protected area with a ban on some activities. Group 3, a fully protected marine area/marine reserve. Students will need to think about what their MPA will look like in reality. They should use knowledge gained in Activities 1 & 2 to consider what type of habitats, species and industries are likely to be in their areas. Students will also need to consider how diverse the wildlife will be in their area compared to the number of industry activities allowed there. Try to make the model out of as many recycled items as possible as well as craft materials.

Step 4

Extend

30 minutes – Educational Ocean

You could extend Activity 3 by adding labels to explain different elements, like the habitats, species and activities within the 3D sculptures.

Step 5

Reflect

5 minutes

Why do we need MPAs? What is the difference between a marine protected area and a fully protected marine area/marine reserve? Name one benefit of an MPA for humans.

Step 6

Follow up

To explore how, as individuals and as a school, you can help protect the ocean, complete our lesson, [How can you protect the ocean?](#)

To learn about the amazing wildlife living in our ocean check out the [Amazing Ocean lesson series](#).

Marine Protected Areas Fact File

Why do we need to protect the ocean?

The ocean provides us with many resources that we use in our daily lives, from food and medicine to fuel and electricity. With a growing population, the demand on ocean resources is increasing. These resources aren't limitless and harvesting them can cause damage to marine ecosystems.



How can we manage and protect the ocean?

To ensure a healthy ocean for the future, we must reduce habitat damage, harvest our ocean's resources sustainably and protect vital ecosystems. We can protect ocean resources through legislation and laws, restoration projects and marine protected areas.



What are Marine Protected Areas?

The terminology

Marine Protected Area (or MPA) is a catch-all term that describes an area of sea where marine species and/or habitats are protected.

In the UK, MPAs include Marine Conservation Zones (MCZs), Special Protected Areas (SPAs), Special Areas for Conservation (SACs), and others. A fully protected marine area or 'marine reserve' are the strictest form of MPA.



What do they do?

MPAs protect specific species or whole habitats through reducing destructive activity. In most MPAs only certain activities are banned, whereas in fully protected marine areas all damaging activities are banned.



Marine Protected Areas Fact File

What are the benefits?



MPAs can provide a safe area for habitats and species to recover and thrive



Fully protected marine areas have been shown to not only increase biodiversity in an area, but also to increase the quantity and size of species



Unlike on land there are no real boundaries in the ocean, which means that the abundance of life in an MPA can 'spill out' and benefit neighbouring areas



It is estimated that within Europe for every €1 invested into MPAs, there could be a return of €3 due to the value of the services they provide (1)



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via Pixabay



Eelgrass bed
© divedog via Shutterstock

Balancing act

Marine Protected Areas are set up to protect wildlife and habitats, but the views of local communities and economic activities in the area also need to be considered. There are many stakeholders with conflicting opinions, like governments, commercial industries (e.g. oil & gas, shipping, marine aggregates) large and small-scale fishers, ministry of defence, environmental NGOs, scientific community, tourist industries and coastal inhabitants.

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

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
Seafood	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.
Oil & gas	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.
Shipping	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
Marine aggregates	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.
Offshore windfarms	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.
Aquarium trade	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.
Tourism	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.
Medicine	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

MPAs in the UK

Name:

Find a Marine Protected Area (MPA) on your nearest stretch of coast using the JNCC website.



What is the name of your nearest MPA?

How big is this MPA?

What are its protected features? Protected features means the species and habitats that live there.

If there's time:

Can you find out how many different types of MPA there are in the UK?

Have a go at selecting different categories and see how this affects the map.

