

Our wonderful oceans



Age 11-14



60 minutes

Curriculum links

- Understand the geographical similarities and differences between places including the differences between species
- Use globes, maps and atlases to locate oceans and physical features

Resources



Slideshow 1:
Our wonderful ocean



Student Sheet 1a:
World map

Student Sheet 1b:
Marine ecosystems

Student Sheet 1c:
Competing creatures



Gallery:
Living reef

Gallery:
Deep-sea creatures

Gallery:
The Great Barrier Reef



Diagram:
Deep ocean poster



Subject Update:
Learn more: How many oceans are there?

Lesson overview

This lesson introduces the marine habitat and encourages a discussion around what students already know about the ocean. Students will use globes and maps to identify the location of the different ocean basins. They will then learn the names and key features of iconic species from the ocean. Students then use information sheets to discover how humans use the ocean, presenting their findings in a fact-sheet.

Lesson steps

Learning outcomes

1. Ocean habitat introduction (5 mins)

Students are introduced to the marine habitat and share their prior knowledge about the ocean.

- Review prior knowledge of ocean

2. The blue planet (30 mins)

Students study maps and globes to discover how much of the earth is covered in water, mapping the world's ocean basins, their physical features and important marine ecosystems.

- Name, locate and describe the world's oceans

3. Competing creatures (10 mins)

Using information about iconic marine species, students play a game of Competing creatures in pairs, matching the marine ecosystems and animals.

- Describe the features of iconic marine species

4. Humans and the oceans (10 mins)

Students compile a list of ways humans use the oceans and start thinking about how our actions affect the ocean.

- Explain how humans use the ocean

5. Reflection (5 min)

In pairs students recall three new things about ocean they learnt today. Students reflect on what else they would like to know and share questions with the teacher.

- Reflect on learning

Extension or home learning

Students create a fact-sheet about a marine ecosystem found in the UK, including a description of the environment, the animals that are found there and how humans use it.

Step Guidance

Resources

1
5
mins



Step 1 introduces students to the marine habitat and asks them to share their prior knowledge about the ocean and the creatures that reside there.

- Use slides 2-4 to introduce the lesson and the learning outcomes.
- Ask students to share what they know about the ocean with their partner.
- Take feedback from students.
- Explain that in pairs, students will have 30 seconds to name as many marine animals as they can think of, keeping a tally on mini-whiteboards. Encourage them to avoid repetition.
- Students share how many they listed.

Slideshow 1:
Slides 1-4

2
30
mins



Step 2 involves students locating the world's oceans and understanding marine ecosystems.

- Choose two students to answer the questions on the board. It is imperative that the students understand how important water is to humans.
- Hand out Student Sheet 1a and atlases. Students identify and label the five oceans.
- Using Student Sheet 1b and laptops or tablets, students access the online galleries and then annotate their world maps with information about the different environments and marine animals.
- Students colour a map showing where different environments and animals are found.

Slideshow 1:
Slides 5-12

Student Sheet 1a:
World map

Student Sheet 1b:
Marine ecosystems

Gallery:
Living reef

Gallery:
Deep-sea creatures

Gallery:
The Great Barrier Reef

Diagram:
Deep ocean poster

3
10
mins




In step 3 students work in pairs to compare and contrast different marine animals.

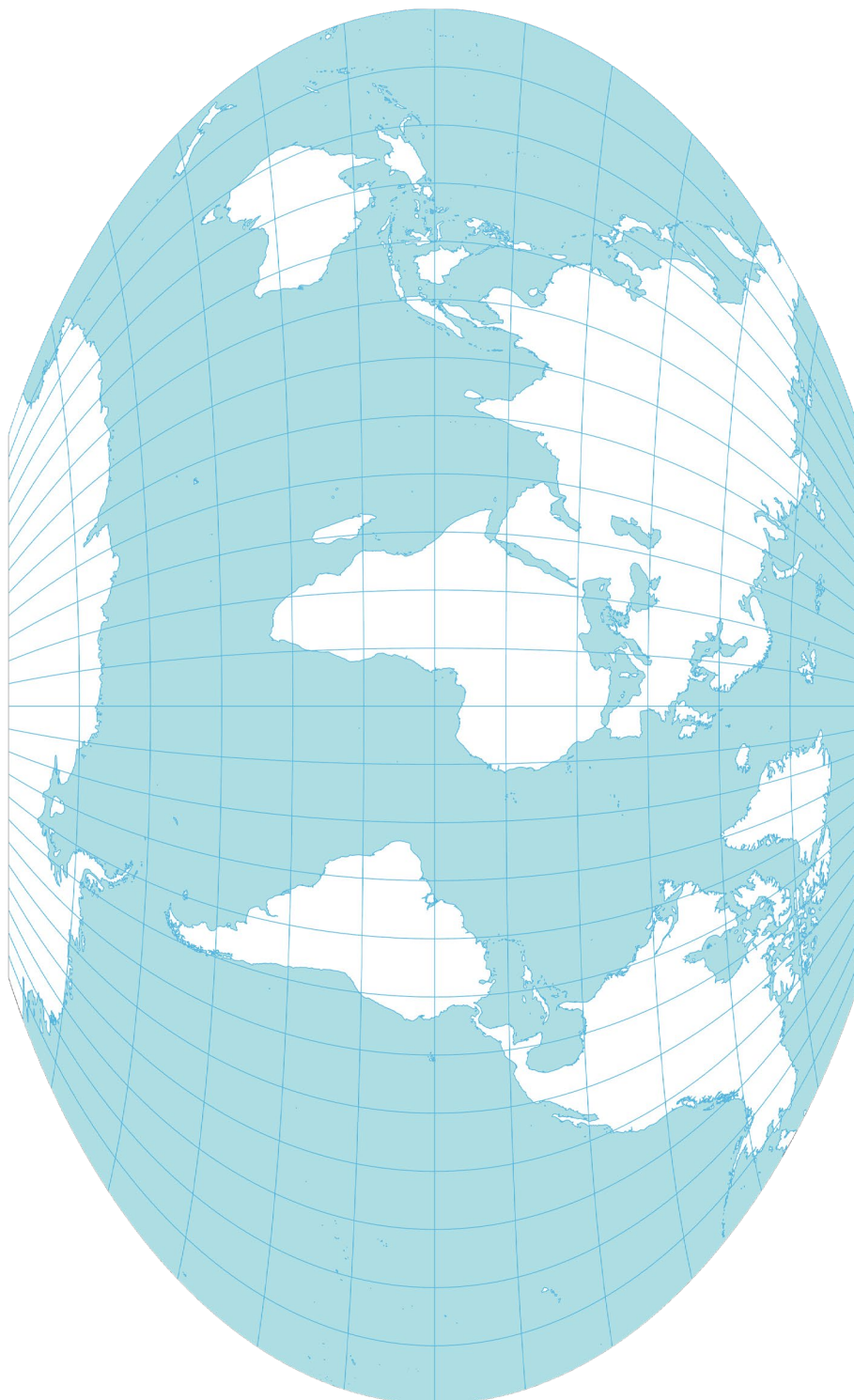
- Hand out Student Sheet 1c (cards need to be cut up and put into envelopes beforehand).
- On each card there are a number of statistics about different marine animals. In pairs students compare two animals by picking a particular statistic to compare. The student whose animal has the favourable statistic wins that round.
- Students continue until one student has won all the cards.
- Following this, students pick their favourite three animals and locate where they live on their world maps.

Slideshow 1:
Slide 13

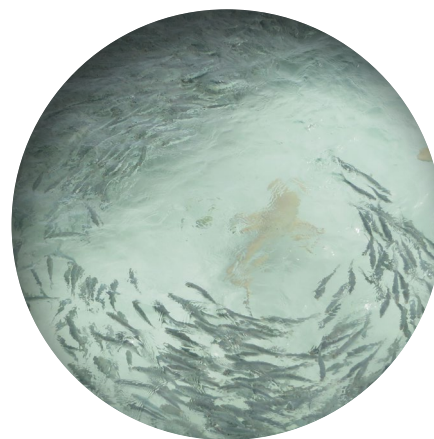
Student Sheet 1c:
Competing creatures

Step	Guidance	Resources
4 10 mins	 <p>Steps 4 asks students to consider the impact humans have on the world's oceans.</p> <ul style="list-style-type: none">· In pairs, students list what we do and what resources we use that involve the ocean. e.g. fishing, surfing, etc.· Ask students to share their answers.· Students should then discuss how the actions of humans could affect the oceans. Share examples on the board.	Slideshow 1: Slides 14-15
5 5 mins	 <p>Step 5 asks students to reflect on their learning and think of questions that they would like to find out more about.</p> <ul style="list-style-type: none">· Choose students to explain how they have met the learning outcomes. For each question bounce it to at least one more student to assess learning.· Give students the opportunity to ask questions, this can be used as an opportunity to clear up any misconceptions or write a list of further questions for investigation.	Slideshow 1: Slides 16-18
+ 30 mins	 <p>Students create a fact-sheet about a marine ecosystem found in the UK, including a description of the environment, the animals that are found there and how humans use it.</p>	

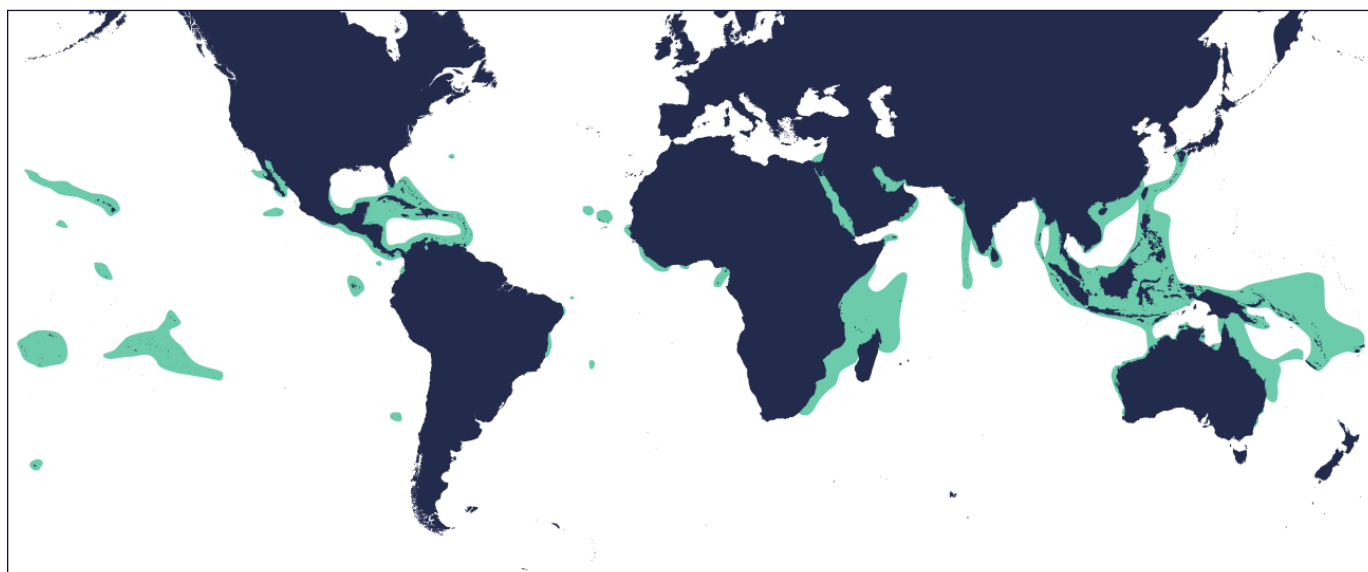
World map



Marine ecosystems



Coral reefs



Location:

They are found in over 100 countries around the world. The majority are found between the Tropic of Cancer and Tropic of Capricorn.

Characteristics:

They grow in temperate waters from 23-29°C, they prefer salty and clear water.

Facts:

Coral reefs are found in less than 1% of the ocean yet are home to 25% of all marine life on the planet.

Mangroves



Location:

They grow at tropical and subtropical latitudes near the equator. They are found in the intertidal zone of the coastline, where the ocean meets the land.

Characteristics:

Mangroves grow in areas with low-oxygen soil, where slow moving salt-water allows fine sediments to accumulate.

Facts:

They stabilize the coastline, reducing erosion from storm surges, currents, waves and tides. There are 70 species of mangroves.

Kelp forests



Location:

They are found in cool, nutrient rich, relatively shallow waters close to the coast. They are rarely found deeper than 40 meters.

Characteristics:

Kelp are a type of algae which provide food and shelter for many organisms such as fish, invertebrates and marine mammals.

Facts:

They can grow 30-60cm per day.

Physical features

Open ocean

More than 50% of the earth's surface is covered by ocean which is at least 2 miles deep (3.2km).

Deep ocean

The area of ocean located below 200m, where there is little light and close to freezing temperatures. Deep ocean makes up to 95% of the worlds living space, only 5% is mapped with a high resolution.

Mariana Trench

The world's deepest point at 10,994m deep. Located in the western Pacific, east of the Philippines approximately 124 miles east of the Mariana Islands. The trench measures 1,580 miles long and is on average 43 miles wide.

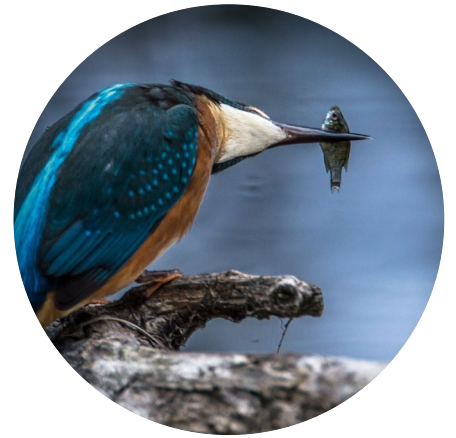
Mid-Atlantic Ridge

An underwater mountain range in the Atlantic Ocean that runs from 87°N to 54°S. It is on average only 3km above the ocean floor, ranging from 1000km to 1600km wide. It was created by tectonic plates moving away from each other. The North America plate and the Eurasian plate continue to move apart, causing the Mid-Atlantic Ridge to continue to grow at a rate of 2.5cm per year.

Facts about the ocean

- The ocean is estimated to cover 14 million square miles, combined with the depth, the ocean covers 1.35 billion cubic kilometres.
- The average depth of the ocean is 720m.
- Connected ocean ridges can measure up to 40,000 miles long. They weave through all major oceans and are the single largest feature on Earth. They are the result of the Earth's tectonic plates moving apart.
- The worlds highest mountain is Mauna Ke. At a height of 10,203m (33,500 feet) it is larger than Mount Everest which is 8,850m (29,035 feet), but only 4205m (13,796 feet) of Mauna Kea is visible above sea level.

Competing creatures



Stingray



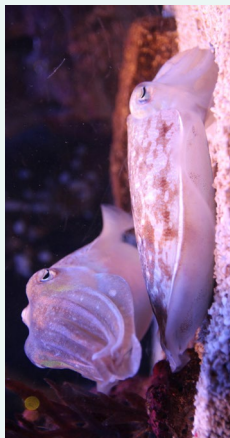
Size: Up to 2m
Weight: Up to 340kgs
Life span: 15 - 25 years
 Live in shallow warm water

Sperm whale



Size: 6 - 20.5m
Weight: 35,000 - 57,000kgs
Life span: 50 - 70 years
 Live in all oceans, in open water

Cuttle fish



Size: 15 - 50cm
Weight: 3 - 11kgs
Life span: 1 - 3 years
 Live in the Mediterranean and North and Baltic Seas

Japanese spider crab



Size: Up to 4m
Weight: 20kgs
Life span: 100 years
 Live in the Pacific Ocean around Japan

Nudibranch



Size: 2cm - 60cm long
Weight: Up to 1.5kgs
Life span: Up to 1 year
 Live in tropical waters

Crown-of-thorns starfish



Size: 20 - 40cm
Weight: Half a kilogram - 3.5kgs
Life span: Up to 8 years in captivity
 Live in the Indo-Pacific region



Great white shark



Size: 3m – 4.2m long

Weight: 680 – 1200kgs

Life span: 70 years

Live in temperate oceans;
North America, South Australia

Copepod



Size: 1mm – 5mm long

Weight: Less than half a gram

Life span: 6 months to 1 year

Live in all marine environments

Parrotfis



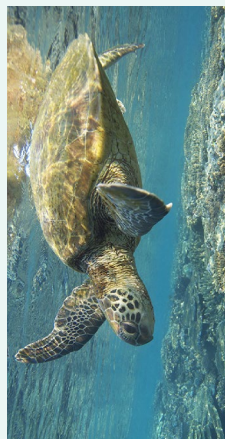
Size: 30 – 120cm

Weight: 20.5kgs

Life span: Up to 7 years

Live in tropical waters

Green turtle



Size: 80cm – 120cm

Weight: Up to 320kgs

Life span: 80 or more years

Live in tropical waters

Clownfis



Size: 10 – 20cm long

Weight: 0.25kgs

Life span: 3-6 years

Live in the Indo-Pacific region

Reef manta ray



Size: Up to 5.5m wide

Weight: Up to 900kgs

Life span: 20 years

Live in the Indo-Pacific region