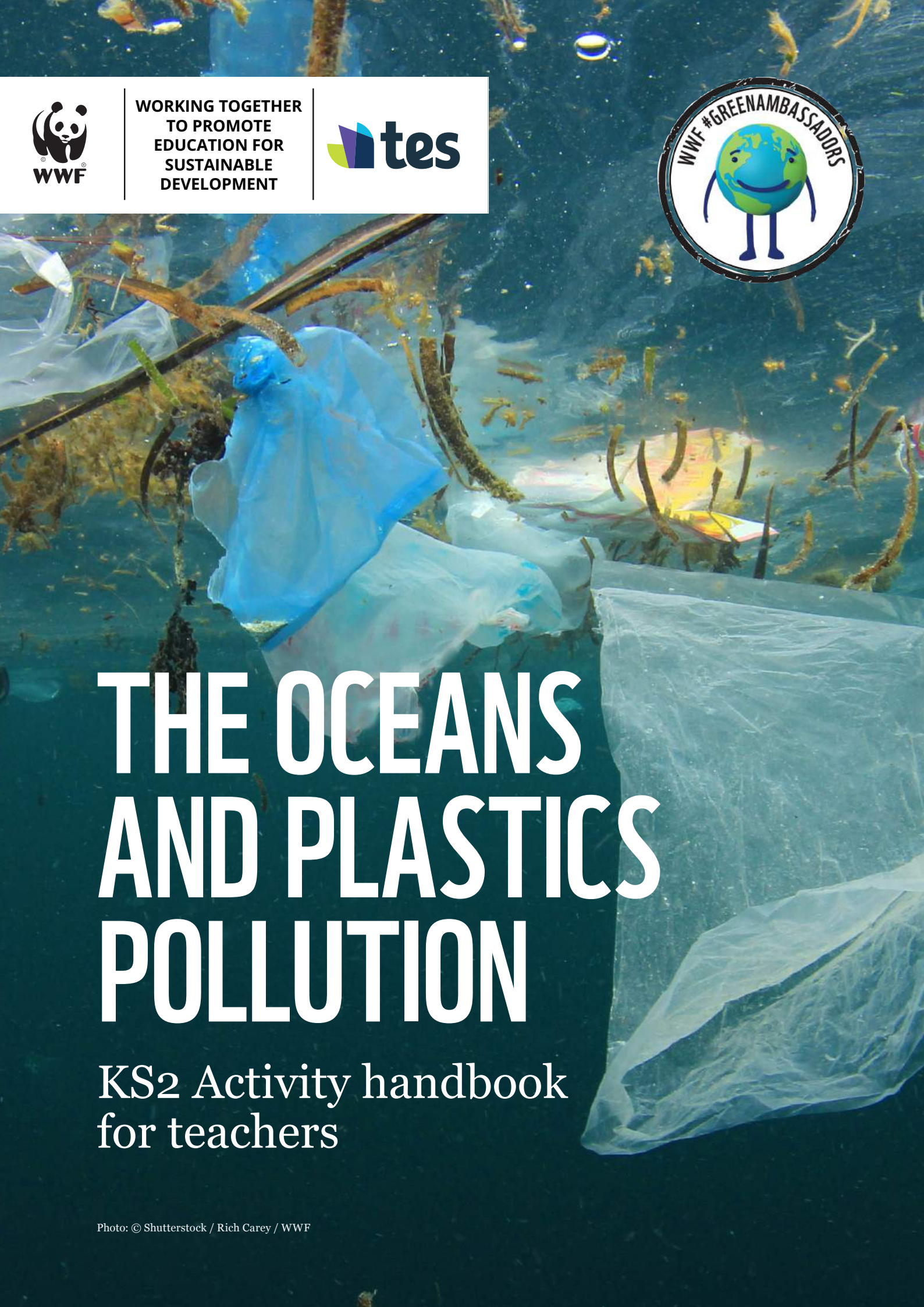


WORKING TOGETHER TO PROMOTE EDUCATION FOR SUSTAINABLE DEVELOPMENT

WWF #GREENAMBASSADORS

THE OCEANS AND PLASTICS POLLUTION

KS2 Activity handbook for teachers

Photo: © Shutterstock / Rich Carey / WWF

THE OCEANS AND PLASTICS POLLUTION

Over
700 million people
depend on fishing for their livelihoods.

INTRODUCTION

Wherever we live, whether in a large city or close to a sandy beach, we all depend on the oceans. From the frozen ice caps of the polar regions to the warm waters of the tropical coral reefs, from deep sea vents to shallow seagrass beds, the oceans contain the greatest diversity of life on Earth. They are home to the largest animal that has ever lived on Earth – the blue whale – and to the tiny krill that it eats.

Globally, over 700 million people depend on fishing for their livelihoods on our planet, and fish and seafood are the main source of protein for more than a billion of us. But the oceans provide far more than food. They give us oxygen to breathe and, through their role in the water cycle, water to drink. The oceans also absorb greenhouse gas emissions and additional heat.

Yet our seas are under threat. If we carry on as we do now, fish and seafood could be overfished, habitats such as coral reefs will suffer, as will the marine life that depends on them, and there could be more plastic in the ocean than fish by 2050.

This resource enables pupils to explore the role of the oceans in our lives and why healthy oceans are so vital to our future. By looking at the impact of plastics pollution on the oceans, pupils will also consider what steps we can all take to safeguard these precious waters for generations to come.

HOW TO USE THIS RESOURCE

This resource contains a range of activities aimed at teachers of 7-11 year-olds. It is intended that this resource will be used in cross-curricular work and all activities can be linked to the National Curricula of England, Northern Ireland, Scotland and Wales. Teachers will find that the material can be adapted for use with different ages and abilities.

Around
70 per cent of the world's people
live within 60 kms of the sea. And around 80 per cent of all tourism takes place in coastal areas.

The six activities engage pupils in active learning methods, encouraging them to work together to solve problems, to think creatively, and to see themselves as active participants in their communities and the wider world.

It is hoped that, as they build their knowledge and understanding, they will become aware of a 'bigger picture' and see how seemingly small actions, such as using a plastic drinking straw, can have far reaching consequences. With a growing awareness of the part that they can play in creating a better future for our oceans, pupils will take a step on the journey to becoming global citizens and sustainability champions of the future.

TAKING A CLOSER LOOK AT THE OCEAN

The vast blue ocean covers over 70 per cent of the Earth's surface. Coastal areas play a huge part in our lives. They are amongst the most densely populated places on Earth. About 70 per cent of the world's population lives within 60kms of the coast.

The surface of the sea hides a dazzling variety of species living in its different ecosystems below. Up to 2 million species are found in, on or around delicate coral reefs. These are home for up to a quarter of all marine life and around a quarter of all the ocean's fish start their lives in coral reefs.

But the seas also extend to hidden depths. In the total darkness of the ocean floor are volcanic vents – the first of which wasn't discovered until 1977.

Most of us never venture far beyond the coastal waters, yet the oceans help to sustain life on Earth. Oceans create around half the oxygen we use to breathe. They also regulate our climate, absorbing most of the planet's excess heat. The seas also absorb vast amounts of carbon dioxide soaking up around a quarter of the damaging carbon produced by human activities – such as the burning of fossil fuels – helping to protect us against the effects of climate change.

But today the oceans are under more pressure than ever before and that's largely due to human activity. Overfishing and irresponsible fishing practices are affecting the delicate balance of life in the seas. With climate change we are seeing sea levels rise and experiencing more extreme weather events. As the oceans warm and absorb more carbon dioxide, this has caused acidification in some places, with devastating results such as coral bleaching. Arguably the world's most iconic coral reef, The Great Barrier Reef in Australia, has now been hit by four mass coral bleaching events in 1998, 2002, 2016, and 2017.

Pollution is poisoning our blue planet. Over 80 per cent of this comes from land-based activities as our waste eventually flows into the sea. Fertilisers and pesticides leak into rivers, and each year 8 million tonnes of plastic waste is dumped in the ocean, and this amount is set to double by 2025. In May 2018, a plastic bag was found more than a kilometre down on the sea bed in the world's deepest ocean trench.

Photo: © Peter Chadwick / WWF.

Ocean plastics can harm marine life. Animals can become entangled in fishing nets and plastic rings. Plastic is also accidentally eaten by many species, including sea turtles, which may mistake plastic bags for jelly fish.

Microplastics are particularly dangerous. These tiny pieces of plastic are less than 5mm in size. They are often found as microbeads, in toothpastes and cosmetics. And when we do our washing, fibres from synthetic clothing can eventually reach the sea. When microplastics are eaten by animals such as plankton, they enter the food chain and can even reach us.

Our oceans contain some of the most important, yet least protected ecosystems in the world. Only a tiny fraction of around 4 per cent are designated as protected – even with this small percentage it's unclear how well managed and monitored they are. When we compare that with around 17 per cent of the world's forests that are protected, we can see how much we're falling short. We all share a responsibility to look after our oceans. There are many simple steps that we can all take to reduce our plastic footprint, from making more sustainable shopping choices, to recycling our waste and thinking about what we put down our drains.

For the sake of all our futures, now is the time to act.

Plastic is designed to last for a very long time. But it hasn't been around for very long – only since the early 1900s – although it wasn't until the 1960s that plastics became more widely used. Since then, plastic has changed the way we live. It's cheap and can be used for many different purposes, from life-saving medical equipment to takeaway coffee cups.

Today we are surrounded by more plastic than ever before. Plastic production has surged over the past 50 years, from 15 million tonnes in 1964 to 311 million tonnes in 2014, and is expected to double again over the next 20 years.

A huge problem is single-use disposable items. Though used for just a few minutes, these will still be around in hundreds if not thousands of years. Only around 9 per cent of plastic is recycled – but a huge amount ends up in our oceans. It's been reported that in the middle of the Pacific there's a huge area of plastic rubbish, twice the size of France, kept in place by the swirling currents.

It's a reminder of the threat to sea life and ecosystems that plastic poses. And a wakeup call to act now.

© iStockphoto.com / WWF-Canada.

© WWF / Troy Mayne.

© Richard Stonehouse / WWF-UK.

Every one of us can do something to stop plastics pollution. Here are a few ideas that you may like to share with your pupils:

1. Avoid plastic where possible, for example buy cotton buds made with card instead of plastic.
2. Use a reusable bottle for your drinks.
3. Say no to plastic bags and drinking straws.
4. Invest in reusable containers and mugs.
5. Buy unpackaged food and grow your own.
6. Stop using wet wipes.
7. Don't buy balloons for parties, or release balloons into the sky – decorate with more natural materials instead!
8. Wear clothes made with natural fibres.
9. Try to avoid glitter, or only use eco-friendly glitter in school.
10. Talk to friends and family about how much plastic they use.
11. Don't use products with microbeads in them (common ingredients to look out for in the ingredients list are polyethylene and polypropylene).
12. Pick up litter.
13. Never flush plastics down the toilet.

And remember the five Rs:

- Rethink – what things do you really need?
- Refuse plastic where you can – it can help make a point.
- Reduce the amount of plastic you use.
- Reuse items whenever you can.
- Recycle as much as possible.

CLASSROOM ACTIVITIES

ACTIVITY 1: WHY DO THE OCEANS MATTER?

This introductory activity draws out the importance of the oceans in all our lives. If you are doing it as part of an oceans topic, you may wish to encourage pupils to create a 'thought space' where they can write down their reflections as the topic develops. Before beginning, ask pupils to write down what they already know about the oceans, and what they would like to find out. At the end of the topic, pupils can think about what they have learned and how their feelings and opinions have changed.

LEARNING OUTCOMES

- Pupils will reflect on what role the oceans have in their lives.
- Pupils will explore the concept of interdependence.
- Pupils will develop their group work skills.

RESOURCES NEEDED

- A large sheet of paper for each group of four pupils.
- Coloured pens.
- One copy of the 'Why do the oceans matter? fact sheet or poster' for each group of pupils. Download the fact sheet and poster from www.tes.com/wwf-plastics-oceans. You may also like to display a copy of the poster in your classroom.

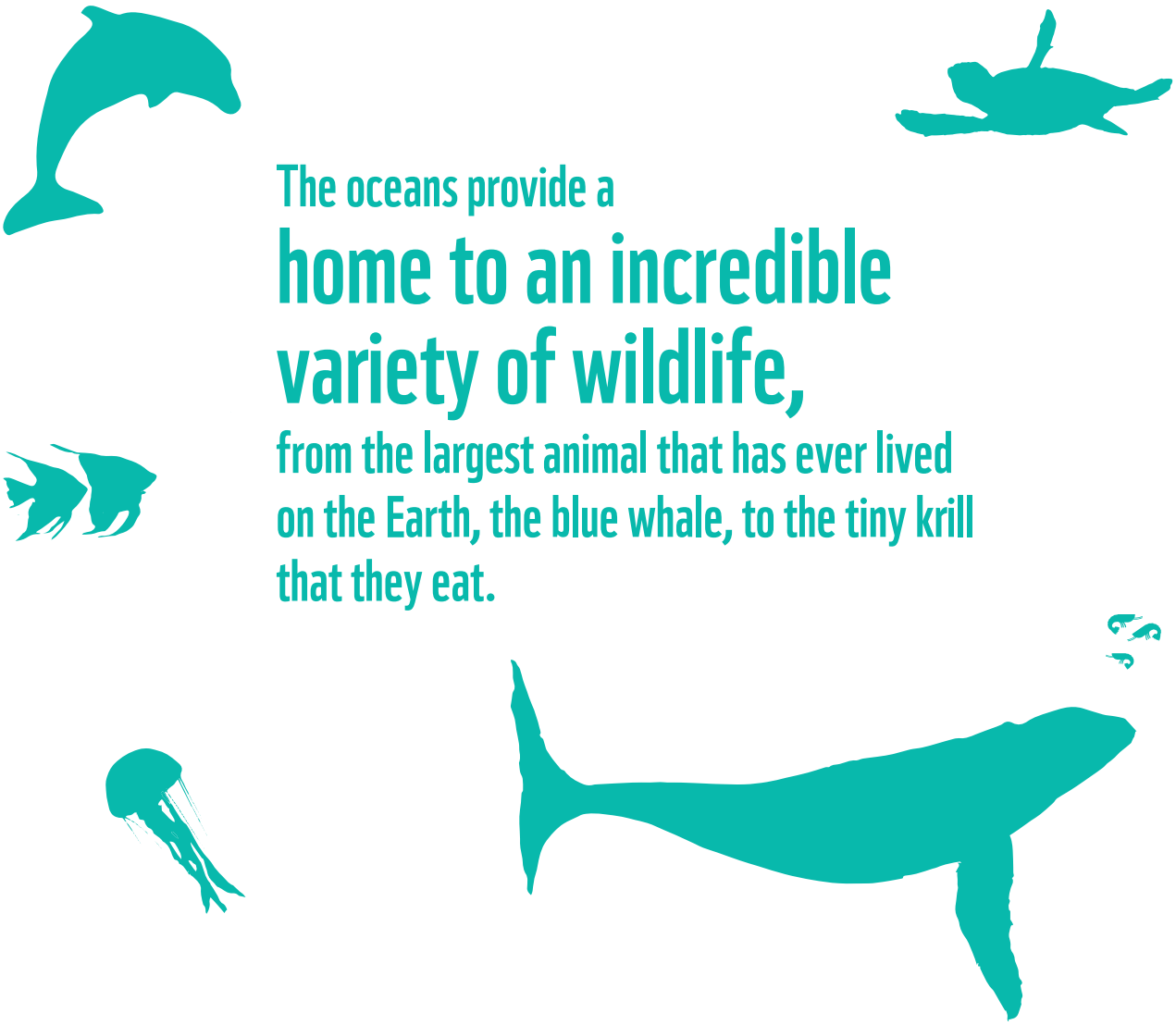
WHAT TO DO

- Begin by asking pupils to think about what the ocean means to them and discuss this with a partner. Have they ever visited the sea, and if not, would they like to? What did they do at the seaside? Have they ever travelled across the sea or been on a boat trip?
- Each pair should then join with another and draw up a shared list on the large sheet of paper. This may include swimming, building sandcastles, going on a boat, exploring rockpools, eating fish and chips, fishing etc.
- The ocean provides much more than leisure opportunities. Now ask pupils, in their groups, to discuss what other roles the oceans may play in their lives. They should write these on their sheet using a different coloured pen.

- After allowing time for discussion, give each group a copy of the 'Why do the oceans matter?' fact sheet which contains additional facts. Ask them to add five new facts to their large sheet of paper in a third colour. They will need to agree on which five facts on the fact sheet they consider to be the most important.
- Come back together as a class and take feedback from each group. Were there any facts that particularly surprised pupils? How easy was it to agree on just five facts? Has this activity made them think differently about our oceans?
- End the session by reflecting on the fact that every one of us depends on oceans for a healthy planet. Discuss the idea of interdependence and how all living things are connected in a web of life. If we overfish the seas then they will not be able to give us as much food to eat and other species will suffer too.
- Ask each pupil to think of one message that they would like to pass on to others about the oceans and to share this with the person sitting next to them.

FOLLOW UP

Ask pupils to draw a poster calling on people to protect the seas. They could choose to illustrate one of the facts from the fact sheet and think of a catchy slogan to go with it.



ACTIVITY 2: PICTURING THE SEAS

This photo activity is a useful starting point for exploring the topic of oceans and plastics pollution and encourages pupils to take a questioning approach.

LEARNING OUTCOMES

- Pupils will understand how human activities are affecting the oceans.
- Pupils will use photos to explore their feelings about plastics pollution.
- Pupils will develop their group work skills.

RESOURCES NEEDED

- A copy of one photo (A4 size) for each group of pupils. Before the session, fix each photo to the centre of a large piece of paper so that pupils can write around it. Download the photos from www.tes.com/wwf-plastics-oceans.
- Coloured pens.

WHAT TO DO

- Divide the class into groups, giving each one a photo to work on. Pupils should discuss what they see in the photo and how it makes them feel.
- Then write down as many questions as they can on the large sheet of paper around it.
- After a few minutes ask the groups to feed back to the whole class.
- Draw up a shared list of questions that pupils would like to explore and group these into different types of questions. Some can probably be answered straight away, while others will need to be researched. The answer to some may depend on the opinion of the person who is answering it.
- After examining the photos, explain to pupils that these photos all relate to plastic pollution in our oceans. This is an issue that threatens the future of our seas and our planet. We can all do something about plastic pollution and this will be explored in later activities, particularly Activity 6.

ACTIVITY 3: OCEANS AND PLASTICS QUIZ

This is an engaging activity to introduce a new topic to a class.

LEARNING OUTCOMES

- Pupils will learn more about the oceans and plastics pollution in an interactive way.
- Pupils will develop their speaking and listening skills.
- Pupils will develop their group work skills.

RESOURCES NEEDED

- A copy of the 'Oceans and plastics quiz sheet' questions for each pair of pupils. Download quiz sheet and answers from www.tes.com/wwf-plastics-oceans.

WHAT TO DO

- Divide your class into pairs, giving each one a copy of the 'Oceans and plastics quiz sheet' questions. Encourage pupils to discuss the figures in the statements: do they think the figure could be higher or lower?
- Once they have had the chance to complete the quiz, go through the answers together. You may wish to add some additional information from the answer sheet or share this with pupils.
- As a class, consider what pupils have found out.
- Ask each pair to join another and discuss whether there are any statements that particularly interested them. What have they learned through this activity?

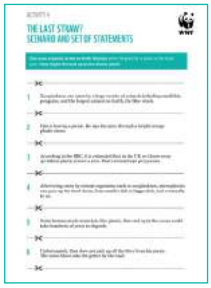
ACTIVITY 4: THE LAST STRAW?

Through this activity, pupils use different pieces of information to understand the links between their own use of plastic and ocean pollution.

LEARNING OUTCOMES

- Pupils will understand that their use of plastic has an impact on our oceans.
- Pupils will gain an awareness of their personal power and what they can do to bring about change.
- Pupils will develop their group work skills.

RESOURCES NEEDED



- Each group will need a copy of 'The last straw? scenario' stuck on an envelope and a set of 'The last straw? statements', cut up, and put inside each envelope. Download the scenario and statements from **www.tes.com/wwf-plastics-oceans**.
- For reference, also download a copy of the 'Completed timeline'.
- A large sheet of paper for each group.
- Eco-friendly glue – did you know that many glues contain plastic?

WHAT TO DO

- Ask pupils how many of them have used a drinking straw in the last week.
- Discuss where they used them – at home or when eating out? Why do they think drinking straws are used? Do they prefer to drink using a straw? Why? Or why not?
- Now divide the children into groups and give each an envelope with the scenario on the front.
- Read this as a class and explain to pupils that they are now going to sort the statements in the envelope. Together these will answer the scenario question.
- Ask pupils to go through each statement and sort them into a timeline. Point out that some statements sit alongside others rather than fitting directly into a timeline.
- When pupils have had time to agree their timelines, they should glue them onto their sheet of paper.
- Come back together as a class and discuss pupils' findings. What is the story that has unfolded about Dan's drinking straw? What steps could have been taken at different points along the way to avoid Dan consuming plastic?

Photos: © Greg Armfield.

© Photospin.

© Photospin.

- Ask pupils to think about what they have learned. How do they feel about the issue of plastic pollution now? Activity 6 provides a useful follow up to this activity and contains plenty of ideas for practical steps that can be taken to keep our seas healthy.
- Finally, ask pupils about whether they now feel differently about using plastic drinking straws?

ACTIVITY 5:
PLASTIC POLLUTION IN GREENSEA COVE

Through this role play activity, pupils will be encouraged to look at a range of different perspectives on the issue of plastic pollution in the seas.

LEARNING OUTCOMES

- Pupils will develop their speaking and listening skills.
- Pupils will explore the feelings and emotions of those who take different viewpoints.

RESOURCES NEEDED

- One copy of the 'Role play cards', cut up and put in an envelope, for each group of five pupils. Download role play cards from www.tes.com/wwf-plastics-oceans.

WHAT TO DO

- Set the scene for the role play by explaining that pupils are going to create a short sketch based on a scenario. Explain that the residents of Greensea Cove are finding that their seaside town is getting more and more polluted by plastics in the sea and on the beaches. They have decided to call a meeting so that different groups can discuss the problem with the local councillor.
- Give each group a set of the role play cards and allow them to decide who is going to take on which role.
- Give each actor a few minutes to prepare. It's best to keep this time short as role plays work best when they are informal and not over-prepared. Pupils should feel free to add further information and present their own interpretation of their characters.
- Go around the groups and offer support as they prepare their scenes.
- Come together and allow each group to perform their role play to the class.
- Make sure that you allow time for the actors to debrief after the performances. Everyone should be given the opportunity to express how they felt. Were they happy with the outcome?

FOLLOW UP

Pupils could write a newspaper report about the council meeting, based on one of the role plays. They should decide on a broadsheet or tabloid style and should include a headline to grab attention, some quotes and photos with captions.

Photo: © Shutterstock.

OTHER DRAMA ACTIVITIES

Hot seating

Put one of the role play characters in the 'hot seat' and give pupils the opportunity to ask them questions about their views and actions. This activity can help pupils to develop empathy for a particular character or viewpoint, especially one which they would not normally share.

Conscience alley

Get pupils to make two lines facing each other with a pathway up the middle. A pupil takes on the part of one of the role play characters and everyone in the class thinks of one thing that they would like to say to this character. The character then walks between the two lines with pupils, in role, making their statements as they walk past.

With younger children, it can be helpful to do this more than once so that less confident pupils have the chance to think of something to say. At the end, ask the pupils who have walked through the conscience alley to say how they felt, and which arguments they found convincing.

ACTIVITY 6: TURNING THE TIDE ON PLASTIC

This activity allows pupils to think about the use of plastic in their everyday lives and the steps that they can take to protect the oceans. It is important that pupils do not feel overwhelmed by the challenge of plastic pollution and so they will explore how each one of them can take action to keep our seas healthy.

You might like to share with your pupils this example of young people having the power to make change. After witnessing plastic pollution first-hand, Belize schoolgirl Madison Pearl Edwards took action to encourage others to save our oceans. Her story is a reminder that we need to support pupils to tackle difficult environmental issues. Read it at www.tes.com/belize.

LEARNING OUTCOMES

- Pupils will build an understanding of how plastic pollution affects the oceans.
- Pupils will consider a range of steps that can be taken to reduce the use of plastic.
- Pupils will develop their group work skills.

RESOURCES NEEDED

- A copy of 'My plastic diary worksheet' – one for each pupil. Download the plastic diary worksheet from www.tes.com/wwf-plastics-oceans.
- Also download a print out of the 'What can be done? diagram' to share with pupils as an example.
- A single-use plastic bottle.
- Some examples of other single-use plastics, for example drinking straws, food and drink containers or wrappers and plastic bags.
- A large sheet of paper and pens for each group.
- Smaller sheets of paper and coloured pens.

PREPARATION

In the week before carrying out this activity, ask pupils to keep a 'plastic diary', recording how much single-use plastic they use. This could be done as a piece of homework. Explain to pupils that tonnes of plastic goes into making items that we use once for just a few minutes. These single-use plastics can last for hundreds of years. Use the items mentioned above to show pupils some examples of the most common single-use plastics.

WHAT TO DO

- Divide pupils into groups and ask them to consider the role that plastic plays in their lives.
- They should refer to their 'plastic diary' and compare how much single-use plastic they used over a week. What other plastic items did they use? Perhaps they went to a party where there were balloons? Or they used products that contain more 'hidden' plastics such as wet wipes or synthetic clothing.
- Hold up a plastic bottle and ask pupils to discuss with a partner how long they think this will take to break down in the sea. Are pupils surprised to learn that it could take hundreds of years? What impact might this have on the animals and plants that live in the oceans? And how might this affect us?
- Discuss how every one of us has a part to play in protecting our oceans from plastics pollution.
- In their groups, ask pupils to think of ways that we could all use less plastic. Ask them to draw three circles on their sheet of paper, as shown in the 'What can be done? diagram', and write down as many ideas as possible for what can be done at each level. For example, as individuals pupils can say no to plastic drinking straws. At a community level, schools or local community centres can invest in reusable food and drinks containers. And at a wider world level, businesses can reduce their plastic packaging.
- Ask pupils to think about what steps they can take to encourage others to reduce plastic pollution. For example, they could talk to friends and family about saying no to single-use plastics or they could write to businesses asking them to reduce their packaging.
- Finally, ask each pupil to draw around their hand and, on each finger, write down one thing that they will do to use less plastic and help keep our oceans free of plastic pollution. Then ask them to agree with a friend one step that they will take over the coming week. You will find a list of suggestions for reducing plastic pollution on page 4.
- Use these hands to create a 'hands up for change' display, telling the rest of the school what they can do to cut back on plastics.

FOLLOW UP

Pupils could carry out a school plastic audit. They could present their findings to the school council. You will find useful information to support this activity in the WWF Green Ambassador scheme:

www.wwf.org.uk/get-involved/schools/green-ambassadors.

Share a photo of your display with us; we'd love to see it! Send to schools@wwf.org.uk

You might also like to tweet a photo of your display @wwf_uk #GreenAmbassadors

Photo: Creative Commons, Rey Perezoso.

How long does a plastic bottle last?

Different kinds of plastic degrade at different times, but it can even **take hundreds of years for some items**, perhaps longer. According to a report by The Guardian, in the UK we use **38.5m plastic bottles every day and only just over half of these are recycled**.

GLOSSARY

BIODEGRADABLE

Something that can be decomposed by bacteria or other living organisms. For example, a leaf may be broken down by bacteria or fungi. Most plastic is not biodegradable.

CLIMATE CHANGE

A term which refers to the changing of the Earth's climate over a period of time, including warming and cooling. It is now used to refer to the more rapid warming of the climate which most scientists agree is the result of human activities. The burning of fossil fuels, which interferes with the natural balance of gases in the atmosphere, is largely to blame. As a result, global temperatures are rising, and we are seeing many effects of climate change including rising sea levels and extreme weather events.

ECOSYSTEM

A community of all the living things (such as plants and animals) and non-living things (such as air, water, sunlight and soil) which exist in a particular environment.

FOOD CHAIN

A group of living things that are linked by the food that they eat. Plants are usually at the bottom of a food chain. They get their energy/food from the sun. Animals get energy by eating plants or other animals. The animals at the top of a food chain are called apex predators.

FOSSIL FUELS

Fuels such as coal, oil and natural gas that are formed from the remains of plants and animals that lived millions of years ago. Fossil fuels are buried deep in the Earth's crust. When they are burned to produce energy they release carbon dioxide into the atmosphere, which adds to the 'greenhouse effect'.

GREENHOUSE GASES

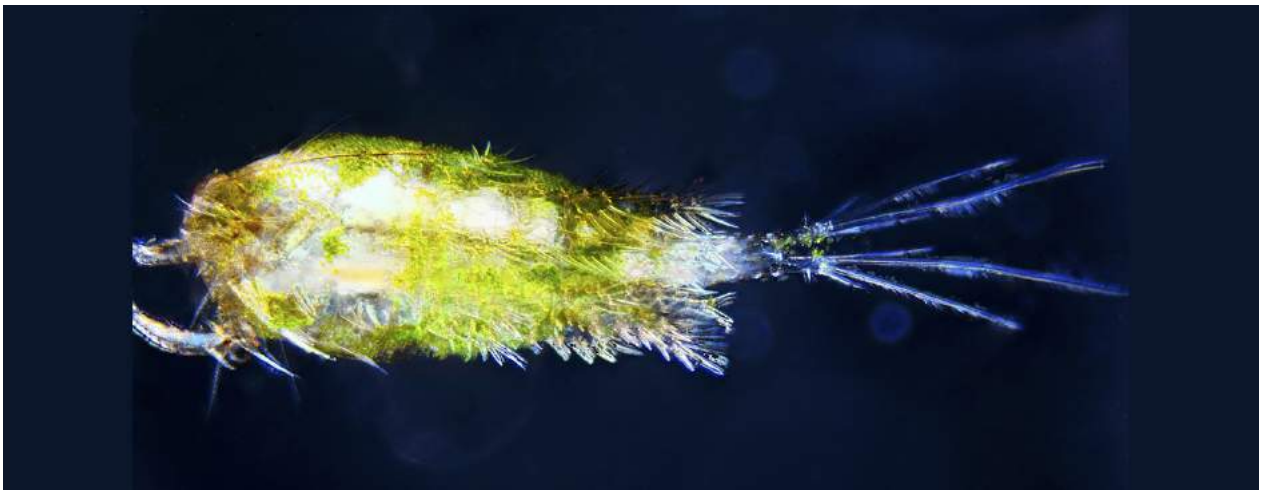
Gases in the atmosphere, such as carbon dioxide, methane and nitrous oxide, that trap and retain some of the sun's heat inside the Earth's atmosphere (the 'greenhouse effect'). We need to cut man-made greenhouse gas emissions to prevent this greenhouse effect inside the Earth's atmosphere, as the trapped heat is making the Earth warm faster than could happen naturally.

HABITAT

The natural home or environment of an animal, plant or other organism. A habitat can provide living things with food, water and shelter. Habitats can be very large (such as a coral reef) or small (for example, a rock pool or a log).

MICROBEAD

Tiny pieces of plastic that are less than 1 millimetre in size. Some can be seen by the naked eye, but others are much smaller. They can sometimes be found in cosmetics or toothpaste.



After being eaten by minute organisms such as zooplankton, microplastics can pass up the food chain, from smaller fish to bigger fish, and eventually to us. Photo: Krill © Photospin.

MICROPLASTICS

Tiny pieces of plastic that are less than 5 millimetres across. Microplastics include broken-down plastic waste, synthetic fibres and microbeads. They are a major cause of ocean pollution.

PHYTOPLANKTON

Tiny microscopic organisms that live in the sea.

RENEWABLE ENERGY

Energy that comes from sources that can be replaced or restocked. These include wind, wave, solar, tidal and geothermal power. Fossil fuels are not renewable.

SINGLE-USE PLASTICS

Plastic products that are only used once before they are thrown away, for example drinking straws.

ZOOPLANKTON

Tiny animals, that are often microscopic, that live in the sea. This huge group of animals includes some crustaceans, krill, and the eggs and larvae from bigger animals.

ABOUT WWF

WWF is the world's leading independent conservation organisation. We're creating solutions to the most important environmental challenges facing the planet so people and nature can thrive. This involves working with businesses, communities and governments in over 100 countries. Together, we're working to safeguard the natural world, tackling climate change and enabling people to use natural resources sustainably.

www.wwf.org.uk

This stunning short film celebrates the beauty, fragility and resilience of the natural world – and the people whose lives depend on it. It's a snapshot – or more accurately hundreds of snapshots – that shows the breadth of WWF's work across the world.

Watch the film at vimeo.com/20873820

WWF's work with schools and young people

Inspiring the next generation

We've only got one planet – and it's beautiful! It's also necessary for our very survival.

For over 30 years, WWF has been working with schools and educators to inspire and support young people to build their knowledge and understanding, develop their skills, and explore their values so they're motivated and equipped to both enjoy and care for our amazing planet.

Through education for sustainable development, we can motivate and empower young people to come up with creative solutions to the environmental and sustainability challenges we face, and make positive change happen.

To help support both you and your pupils, WWF has developed free classroom resources to help put sustainability at the heart of your school.

www.wwf.org.uk/schools

FREE CPD EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) COURSE

Empowering young people to make a difference!

Tes has partnered with WWF to create a new course for teachers. 'Education for sustainable development' is an online programme for educators who want to put ESD at the heart of their school and inspire a new generation of sustainability champions.

The course aims to:

- Develop a better understanding of ESD and why sustainability is an important part of teaching and learning;
- Explore ways of developing a whole school approach to ESD;
- Provide strategies, activities and ideas to develop ESD in your school.

Photo: © Cat Holloway / WWF-Canon

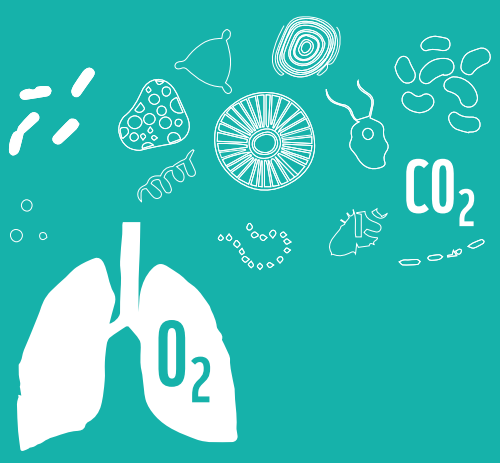
WHY DO THE OCEANS MATTER?

Over
700 million people
depend on fishing for their livelihoods.

Around
70 per cent of the world's people
live within 60 kms of the sea. And around 80 per cent of all tourism takes place in coastal areas.

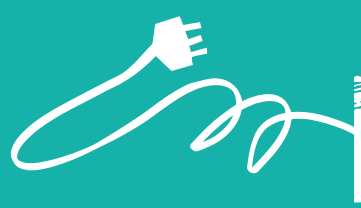
Around the world, approximately
one billion people
rely on fish and seafood for their main source of protein.

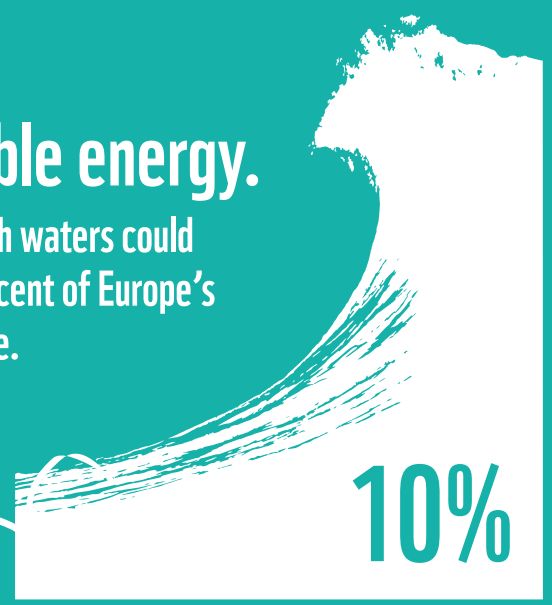
Many
medical treatments
have been developed from resources that are found in the sea. These have been used to treat asthma, arthritis and several types of cancer.



The sea is full of
tiny microscopic organisms called phytoplankton.
They absorb carbon dioxide and help to give out around 1/2 of the oxygen that we need to breathe.

Wave power is creating
more renewable energy.
It is thought that Scottish waters could generate around 10 per cent of Europe's wave power in the future.

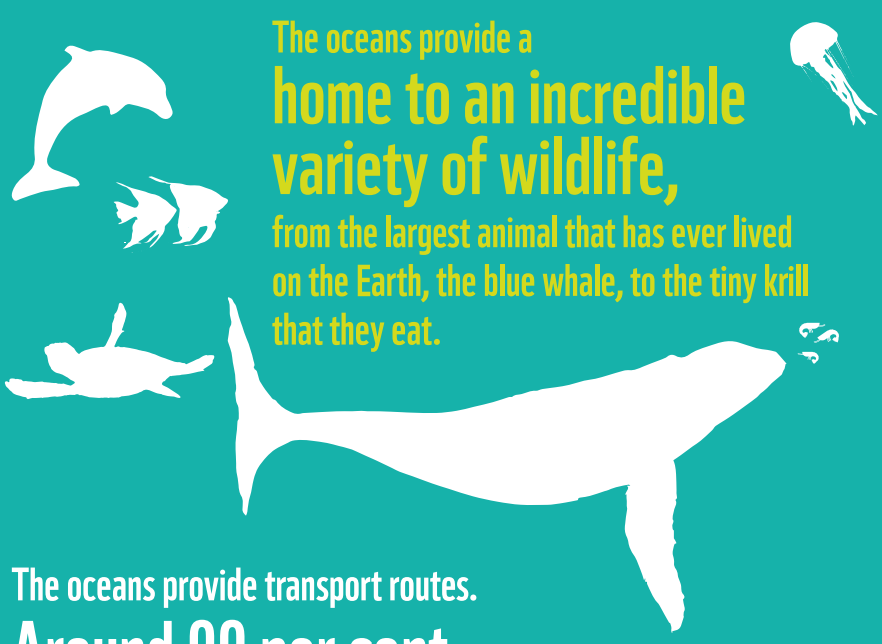




The oceans are
part of the water cycle.
Water evaporates from the ocean surface and rises as water vapour. When this meets colder air, it condenses to form clouds and rain.

The ocean absorbs some of
the sun's heat
and carries it around the globe in ocean currents. This helps to regulate the climate of our planet.

58°F / 14°C

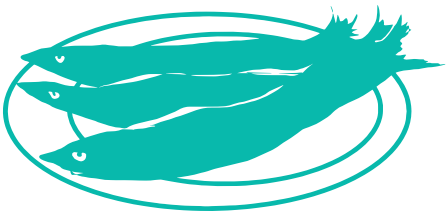


The oceans provide a
home to an incredible variety of wildlife,
from the largest animal that has ever lived on the Earth, the blue whale, to the tiny krill that they eat.

The oceans provide transport routes.
Around 90 per cent of all trade between
countries is carried by ships.

ACTIVITY 1

FACT SHEET: WHY DO THE OCEANS MATTER?



1 Over 700 million people depend on fishing for their livelihoods.

2 Around 70 per cent of the world's people live within 60 kms of the sea. And around 80 per cent of all tourism takes place in coastal areas.

3 Around the world, approximately one billion people rely on fish and seafood for their main source of protein.

4 Many medical treatments have been developed from resources that are found in the sea. These have been used to treat asthma, arthritis and several types of cancer.

5 The sea is full of tiny microscopic organisms called phytoplankton. They absorb carbon dioxide and help to give out around half of the oxygen that we need to breathe.

6 Wave power is creating more renewable energy. It is thought that Scottish waters could generate around 10 per cent of Europe's wave power in the future.

7 The oceans are part of the water cycle. Water evaporates from the ocean surface and rises as water vapour. When this meets colder air, it condenses to form clouds and rain.

8 The ocean absorbs some of the sun's heat and carries it around the globe in ocean currents. This helps to regulate the climate of our planet.

9 The oceans provide a home to an incredible variety of wildlife, from the largest animal that has ever lived on the Earth, the blue whale, to the tiny krill that they eat.

10 The oceans provide transport routes. Around 90 per cent of all trade between countries is carried by ships.

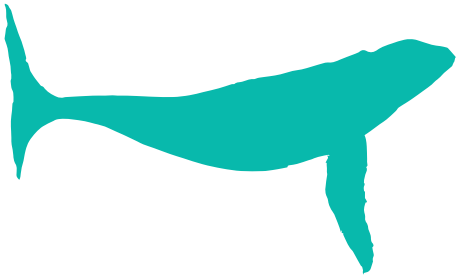


Photo: © Martin Harvey / WWF.

Photo: © Shutterstock / Rich Carey / WWF.

Photo: © WWF/Troy Mayne.

Photo: © WWF / Greg Armfield.

ACTIVITY 5

PLASTIC POLLUTION IN GREENSEA COVE ROLE PLAY CARDS

Photo: Photospin

Manager of the Greensea Cove tourist office

Tourism brings much-needed money into your quiet seaside town. But the beaches are full of litter and most of it comes from food packaging and plastic bags that people leave behind. You are worried that unsightly rubbish on the beach will keep tourists away. Hotels, shops and other local businesses will lose customers.

You believe the council should do more to clean up the beaches and provide better rubbish disposal and recycling services.

Photo: © WWF Intl. / Jonathan Diamond / The Stand

Environmentalist

You are worried because the plastic left on the beaches is polluting the seas and affecting wildlife. For you, the problem is not how to dispose of plastic waste, but how to make sure that there is less of it in the first place. You believe that more than half the plastic rubbish that homes throw away comes from supermarket packaging.

You think that supermarkets should pay a tax on all plastic packaging, just as they do on plastic bags.

Photo: Photospin

Resident of Greensea Cove

You moved to Greensea Cove to live near its beautiful beaches. But you have noticed that it's becoming more littered with plastic. You help to organise a beach clean-up every year, but the rubbish keeps piling up. Visitors enjoy picnics on the beach, but they often leave their litter behind. The rubbish bins are always full, and litter blows into the sea.

You know that this pollutes the seas and can kill wildlife.

Photo: Photospin

Supermarket manager

You are the manager of the supermarket in Greensea Cove. You know that your customers expect the best food at low prices. Plastic packaging keeps your food fresh and clean. It's also strong, which means that less food is damaged when it is transported. This means that less food is wasted.

You want to keep your customers happy and keep prices down – after all, you don't want them to shop at a different supermarket!

Photo: Photospin

Local councillor

Plastic rubbish is a big problem in Greensea Cove. You want visitors to keep coming to the beach (they bring in money), but it costs the council a lot to provide rubbish bins and recycling services. The council does not have a lot of money to spare and you have many services to pay for including local transport, care for the elderly, education services, libraries and parks. Who should pay for rubbish disposal?

You are going to be chairing this meeting and inviting people to present their views. Make sure that everyone has the chance to be heard and ask them what can be done to solve the problem.

ACTIVITY 3

OCEANS AND PLASTICS QUIZ ANSWERS

1 Oceans cover about 70 per cent of our planet's surface.

TRUE: *Oceans cover 71 per cent of our planet's surface and make up 95 per cent of all the space available to life.*

2 In the UK, we eat £2.5 billion worth of seafood each year.

FALSE: *In the UK, we actually eat a staggering £4.5 billion worth of seafood each year, with the most common fish eaten in the UK being salmon, tuna and cod.*

3 Only 30 per cent of the ocean is protected.

FALSE: *Only 4 per cent of the ocean is under some form of protection. We need to do far more to protect our oceans and the plant and animal species that live there, as well as provide a healthier future for us too!*

4 Around half of the oxygen that we breathe comes from the ocean.

TRUE: *Tiny marine organisms, called phytoplankton produce around 50 per cent of the oxygen that we breathe.*

5 It can take fishing lines 300 years to degrade in the ocean.

FALSE: *According to some sources, sadly, it can take twice as long as this – 600 years. Around 10 per cent of all rubbish in the sea comes from the fishing industry. Nets and fishing gear can get lost or thrown away and these 'ghost nets' can keep trapping fish, seals, turtles and other sea life for years.*

6 By 2050, oceans could contain more plastic than fish.

TRUE: *We are producing around 20 times more plastic than we did 50 years ago and this is expected to double again in the next 20 years. Much of this ends up in the sea.*

7 About 45 per cent of plastic waste is properly recycled.

FALSE: *In fact, just 9 per cent of all plastics are recycled. Around 40 per cent of our plastic ends up in landfill and a third finds its way into fragile ecosystems such as the world's oceans.*

8 On average there are 358 items of litter per square kilometre on Britain's sea floor.

TRUE: *The amount of litter on Britain's sea floor has increased by over 200% since 1992 and nearly 80% of this is plastic.*

9 Over 80 per cent of pollution in the sea comes from activities that have taken place on land.

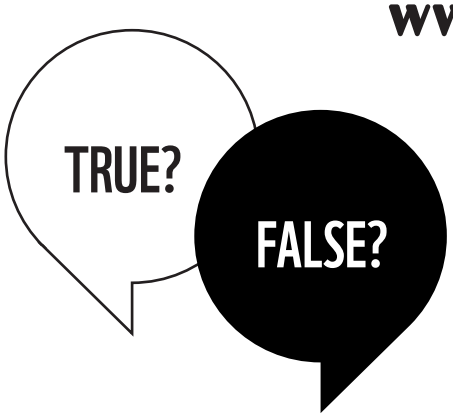
TRUE: *Most of our waste eventually reaches the sea. If they are not thrown away carefully, plastics can enter drains and rivers. Fertilisers and pesticides from farms and gardens can run to the sea and in many parts of the world, untreated sewage is pumped into the ocean.*

10 Microplastics are found in over 75% of mussels taken from British beaches.

TRUE: *According to research, microplastics are found in up to 80% of mussels taken from British beaches! Every day millions of microplastics enter the sea from products such as toothpaste and scrubs, so we need to reduce the amount of plastic entering the oceans.*

ACTIVITY 3

OCEANS AND PLASTICS QUIZ QUESTIONS



Discuss these statements with a partner and agree on whether you think that they are true or false. Circle your answer on the sheet.

1	Oceans cover about 70 per cent of our planet's surface.	**TRUE / FALSE**
2	In the UK, we eat £2.5 billion worth of seafood each year.	**TRUE / FALSE**
3	Only 30 per cent of the ocean is protected.	**TRUE / FALSE**
4	Around half of the oxygen that we breathe comes from the ocean.	**TRUE / FALSE**
5	It can take fishing lines 300 years to degrade in the ocean.	**TRUE / FALSE**
6	By 2050 oceans could contain more plastic than fish.	**TRUE / FALSE**
7	About 45 per cent of plastic waste is properly recycled.	**TRUE / FALSE**
8	On average there are 358 items of litter per square kilometre on Britain's sea floor.	**TRUE / FALSE**
9	Over 80 per cent of pollution in the sea comes from activities that have taken place on land.	**TRUE / FALSE**
10	Microplastics are found in over 75% of mussels taken from British beaches.	**TRUE / FALSE**

ACTIVITY 4

THE LAST STRAW?
SCENARIO AND SET OF STATEMENTS

Dan uses a plastic straw to drink his juice when he goes for a picnic in the local park. **How might this end up on his dinner plate?**

1 Zooplankton, are eaten by a huge variety of animals including small fish, penguins, and the largest animal on Earth, the blue whale.

2 Dan is having a picnic. He sips his juice through a bright orange plastic straw.

3 According to the BBC, it is estimated that in the UK we throw away 42 billion plastic straws a year. That's around 640 per person.

4 After being eaten by minute organisms such as zooplankton, microplastics can pass up the food chain, from smaller fish to bigger fish, and eventually to us.

5 Some human-made materials, like plastic, that end up in the ocean could take hundreds of years to degrade.

6 Unfortunately, Dan does not pick up all the litter from his picnic. The straw blows into the gutter by the road.

7 Plastics look like food to many animal species. Marine turtles can mistake plastic bags for jelly fish, their favourite food.

8 Zooplankton, tiny animals that live in the sea, can eat microplastics.

9 Dan's favourite food is fish and chips.

10 In the sea, plastics break up into tiny pieces called microplastics. These are less than 5mm in size.

11 When it rains, litter is carried away down the drain. It ends up in the river which flows into the sea.

12 Fish are caught and sold to people who eat them for dinner.

ACTIVITY 4

THE LAST STRAW?

Completed timeline

2 Dan is having a picnic. He sips his juice through a bright orange plastic straw.

6 Unfortunately, Dan does not pick up all the litter from his picnic. The straw blows into the gutter by the road.

11 When it rains, litter is carried away down the drain. It ends up in the river which flows into the sea.

10 In the sea, plastics break up into tiny pieces called microplastics. These are less than 5mm in size.

8 Zooplankton, tiny animals that live in the sea, can eat microplastics.

4 After being eaten by minute organisms such as zooplankton, microplastics can pass up the food chain, from smaller fish to bigger fish, and eventually to us.

12 Fish are caught and sold to people who eat them for dinner.

9 Dan's favourite food is fish and chips.

Statements that sit alongside the completed timeline

3 According to the BBC, it is estimated that in the UK we throw away 42 billion plastic straws a year. That's around 640 per person.

5 Some human-made materials, like plastic, that end up in the ocean could take hundreds of years to degrade.

7 Plastics look like food to many animal species. Marine turtles can mistake plastic bags for jelly fish, their favourite food.

1 Zooplankton, are eaten by a huge variety of animals including small fish, penguins, and the largest animal on Earth, the blue whale.

ACTIVITY 6

MY PLASTIC DIARY

Your name .....

Over the next week, keep a 'plastic diary', recording how much single-use plastic you use.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Add up your totals here
Plastic bags								
Plastic bottles								
Plastic drinking straws								
Plastic food wrappers and packets								
Yoghurt pots and other food containers								

What other plastic items have you used this week? .....

.....

ACTIVITY 6

WHAT CAN BE DONE?

Write down one thing that you will do to use less plastic and help keep our oceans free of plastic pollution.