



Plastic Not So Fantastic

PHOSPHOR
HELPING YOUNG SCIENTISTS SHINE

Plastic is a really useful material – it can be moulded into lots of different shapes, it's waterproof and durable. Plastic might look like a wonder material, but there is a problem.

How many plastic items do you throw away every day? From crisp packets to drink bottles; takeaway cartons to bags, many of the things we use are made from plastic.

But have you ever thought about what happens to your plastic trash?

It's thought that more than eight million tonnes of plastic enter the world's oceans every year. That is about the same mass as 2 million elephants – it's very difficult to imagine just how much plastic this is – but it's a lot!

Most of what you throw away will end up in landfill sites – giant rubbish dumps. Plastic is not biodegradable. This means that it does not rot, like paper or food. Almost 80% of the plastic ever made is still on the planet.

It's very easy for plastic to get blown into the sea and rivers from the land – whether it is from a landfill, a lorry transporting plastic waste or from litter dumped on the ground. Also, some plastic gets flushed down the toilet so enters the water this way.



A floating garbage patch

A lot of plastic in the ocean ends up travelling many miles and ends up in an area called the Great Pacific Garbage Patch. It is estimated to cover an area three times the size of France – a massive, floating pile of plastic. It exists because of different currents in the ocean, acting like a kind of whirlpool, dragging and trapping plastic in one spot.

Plastic stays in the ocean for hundreds of years, gradually being broken down into smaller and smaller pieces, until the ocean ends up a soupy mess of tiny bits of plastic.

Plastic harms wildlife

Whatever its size, plastic in the ocean harms wildlife.

Turtles mistake plastic bags for jellyfish – their favourite food. Their stomachs get full up with plastic, so they can't digest actual food.

Animals get tangled up in large bits of plastic like ropes or old fishing nets.

The tiny bits of plastic block sunlight from reaching algae below the surface. Algae are found at the start of lots of ocean food chains. Animals that feed on algae, such as fish and turtles, will have less food. If populations of those animals decrease, there will be less food for larger animals such as sharks and whales.

In total, around 10 000 animals are killed by plastic every year.

What can we do?

It is obvious that we need to do something about plastic waste. Luckily, we have lots of scientists and engineers coming up with ideas on how to do this.

Organisations, like The Ocean Cleanup*, are designing innovative technologies to try and remove plastic from our rivers and oceans.

One of their ideas is The Interceptor. This is a solar-powered boat that flows down rivers. Rubbish is skimmed off the surface of the water and enters onto a conveyor belt, where it is tipped into a bin before being taken to be recycled.

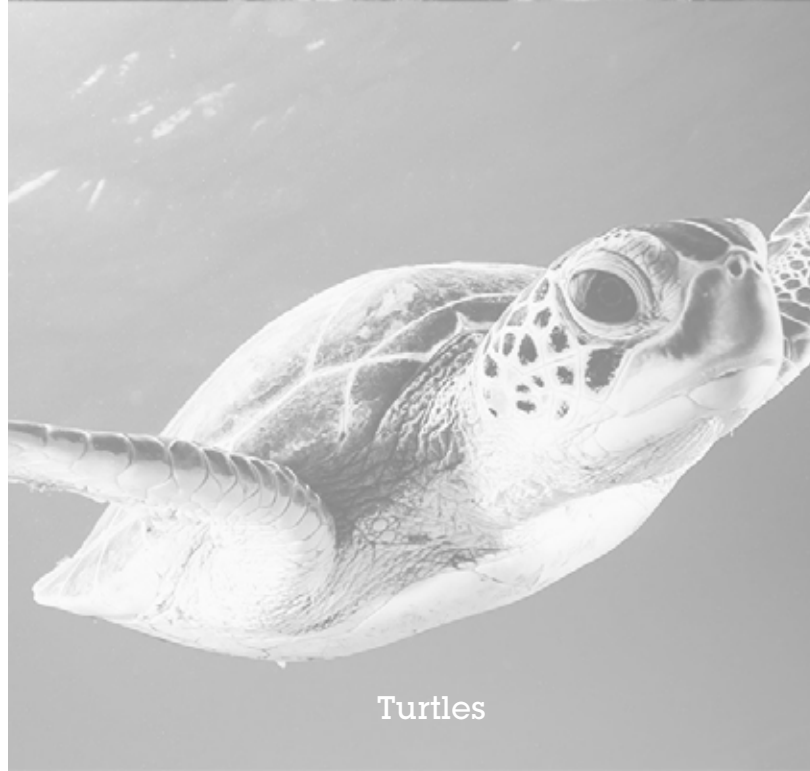
But the best solution is to tackle the problem at its source and stop using so much plastic.

*www.theoceancleanup.com/rivers/

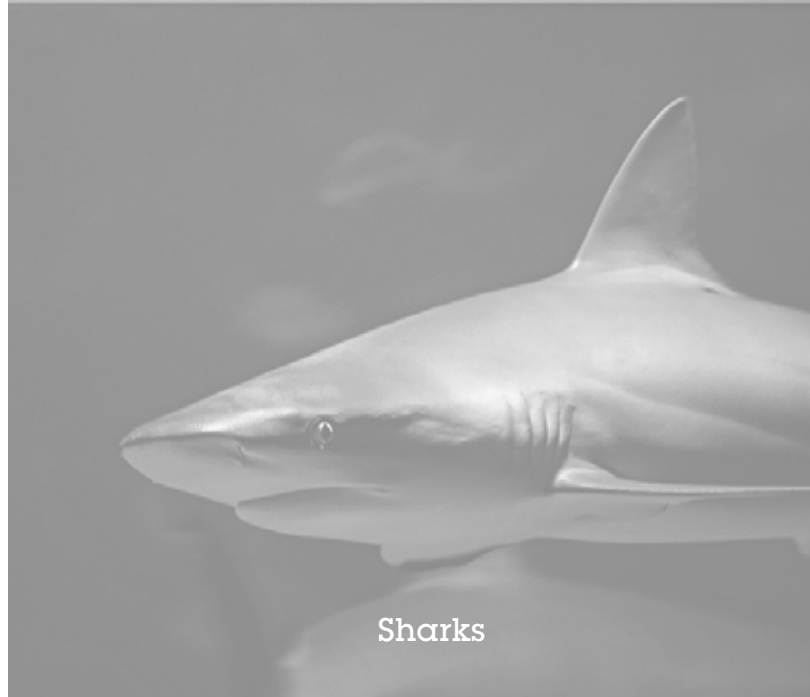
The food chain...



Algae



Turtles



Sharks

But the best solution is to tackle the problem at its source and stop using so much plastic. In the UK, we've done some things to reduce the amount of plastic we use:

- We pay for plastic bags. This has cut down the amount of plastic bags being thrown away.
- Many cafes and restaurants use paper straws, instead of plastic ones.
- Plastic microbeads have been banned from products such as body scrub and toothpaste.

But there is so much more we can do – can you think of anything?

What can you do to help?

- Use less plastic! Opt for paper straws, fabric bags and reusable bottles.
- If your school uses plastic takeaway containers or straws, try and persuade them to use cardboard instead.
- Reuse or recycle plastic when you can.
- Volunteer to be part of a litter picking group and help clear plastic litter from your local area.
- A great way to make friends, get some exercise and help the planet!



Worksheet

1. Explain how:

- a) Plastic in the ocean reduces the amount of algae.
- b) How a lack of algae affects animals that eat algae.
- c) How a lack of algae affects animals that eat other animals.

2. Scientists have developed plastic made from plant material. This plastic decays, so it is biodegradable. Explain why using biodegradable plastic is better for the environment than normal plastic.

3. Research an invention that helps to remove plastic from the water or stops plastic from entering water from the land. Explain how it works.

4. Design a poster to encourage people to use less plastic.

Curriculum links

KS2

Living things and their habitat: recognise that environments can change and that this can sometimes pose dangers to living things.

KS3

Relationships in an ecosystem: the interdependence of organisms in an ecosystem.

How organisms affect, and are affected by, their environment.



www.phosphorescience.com