



Commonwealth
Litter Programme

Primary School Educational Pack

India

4 lessons around the subject of marine litter

This pack contains handouts for students aged 5 – 10



Department
for Environment
Food & Rural Affairs



Cefas



Funded by
UK Government

LESSON 1

Introduction to marine litter

Key words

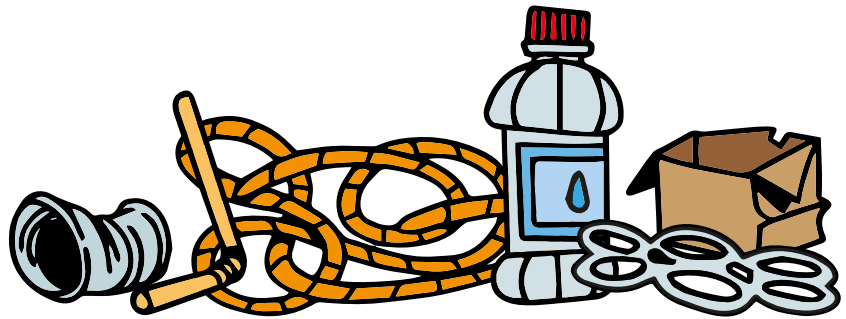
- Marine litter
- Plastic
- Microplastics
- Toxins

Lesson objective

- To be able to explain what marine litter is
- To be able to give an example of marine litter

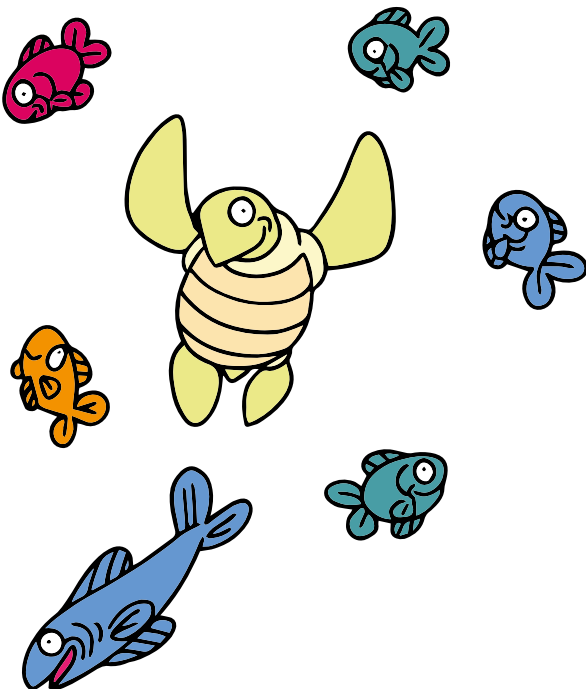
What is marine litter?

Marine litter is any man-made, long-lasting solid material that has ended up in the seas and ocean. It can end up there when it is not properly thrown away by humans.



Where does it come from?

After we use something and then discard it, it enters landfill or is recycled. However, litter can end up on the ground and could find its way to our seas and oceans, becoming marine litter.



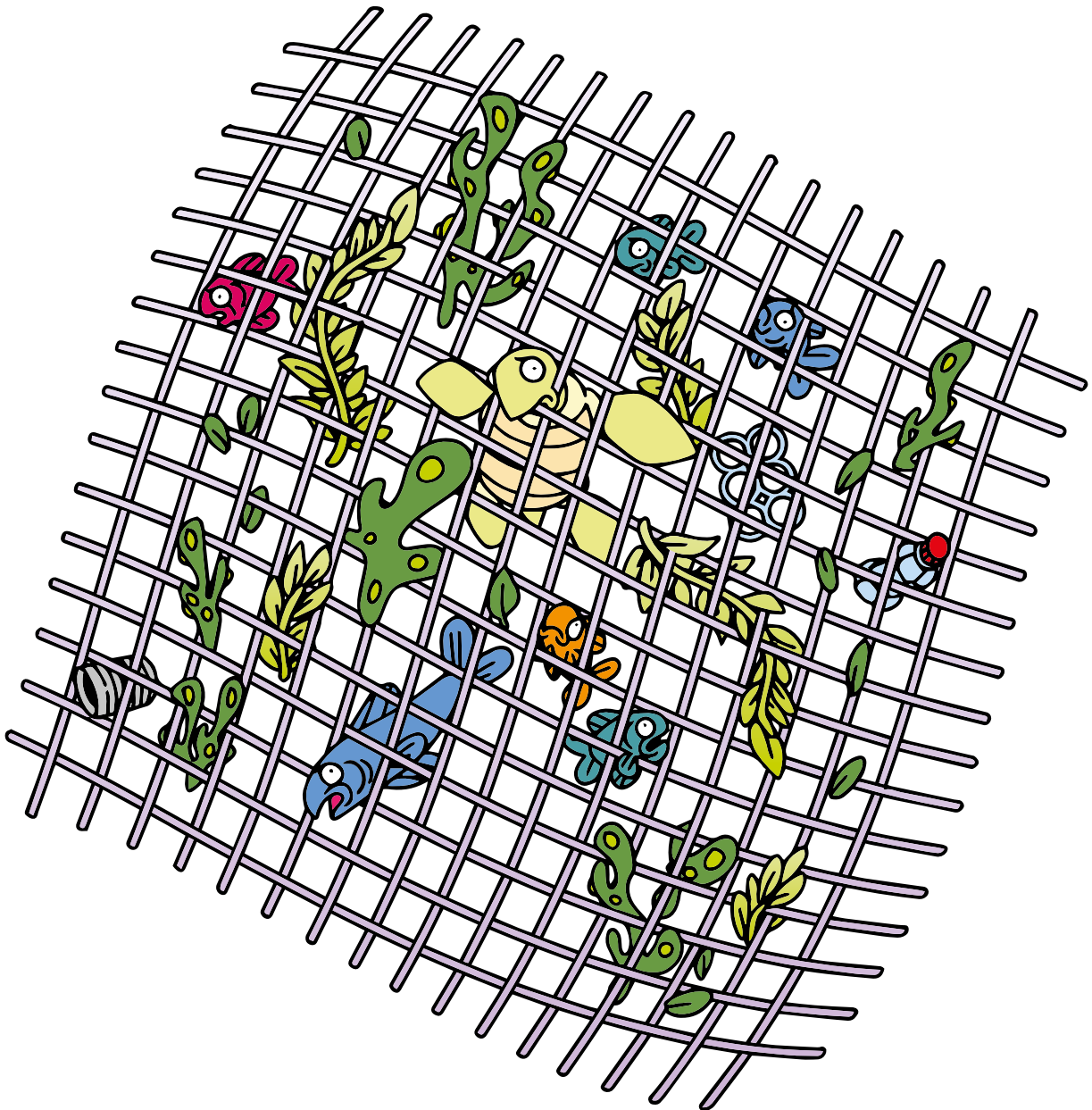
How does it get into the seas and oceans?

The most common way is by transport from rivers, sewage, and stormwater canals or drains. It also can enter the marine environment by being blown by winds or by being abandoned directly in the sea. An example of large marine litter is old and discarded fishing gear, like nets. Marine litter has been found in almost all marine environments on the planet, from the coastline all the way to the deep ocean and it causes serious problems for marine life.

What can it do to the marine animals?

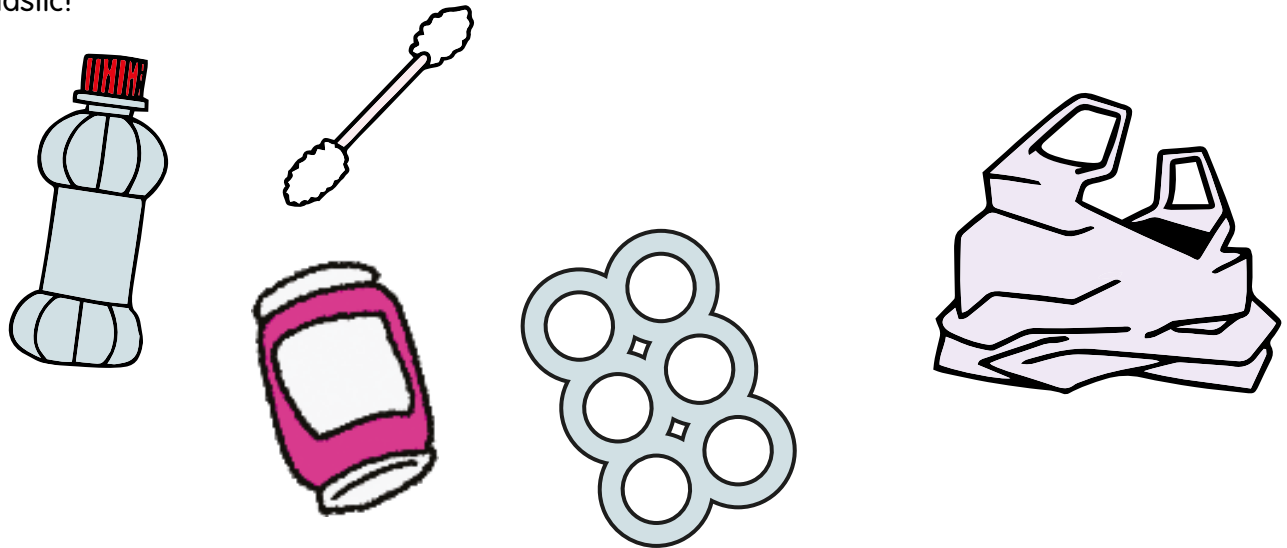
Animals often mistake litter for food, causing them to feel ill. Litter can also cause:

- Damage to an animal's habitat
 - Can you name some animal habitats?
- Can trap animals' legs, fins, and mouths
- Carry new animals that do not belong to that country and may harm the local animals.



What is the most common marine litter found?

Plastic!

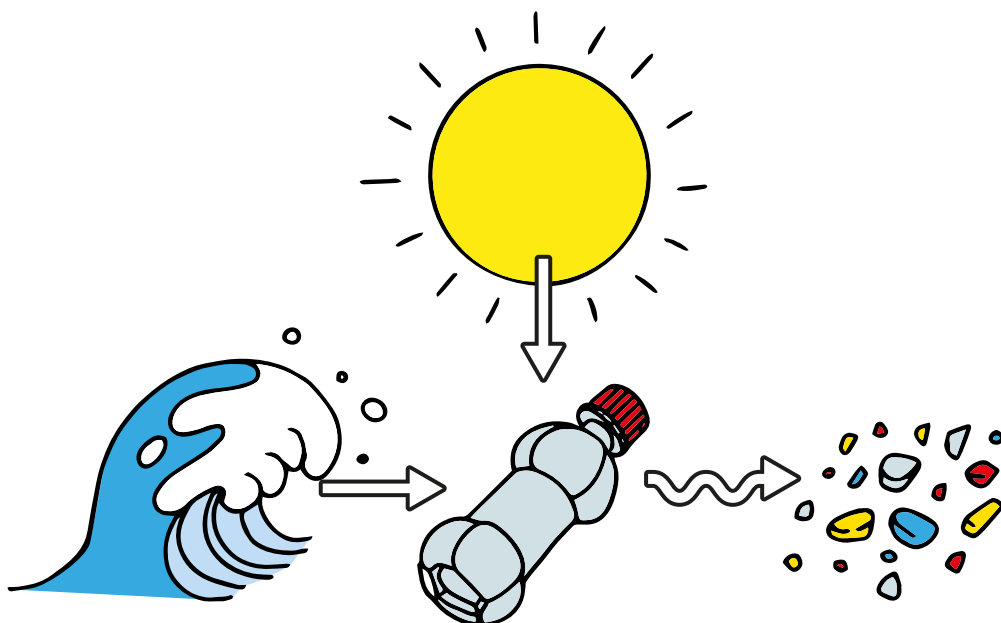
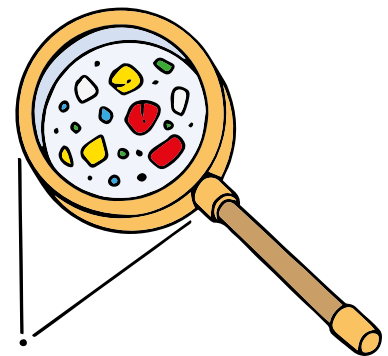


What does plastic do in the ocean?

Plastic breaks down over time due to wave action, and rays from the sun.

The pieces get smaller and smaller over time, and eventually become "microplastics".

Microplastics are an issue for both marine animals and humans. This is because microplastics and the pollutants (toxins) that come from plastics might be introduced into our bodies when we eat some fish and seafood.



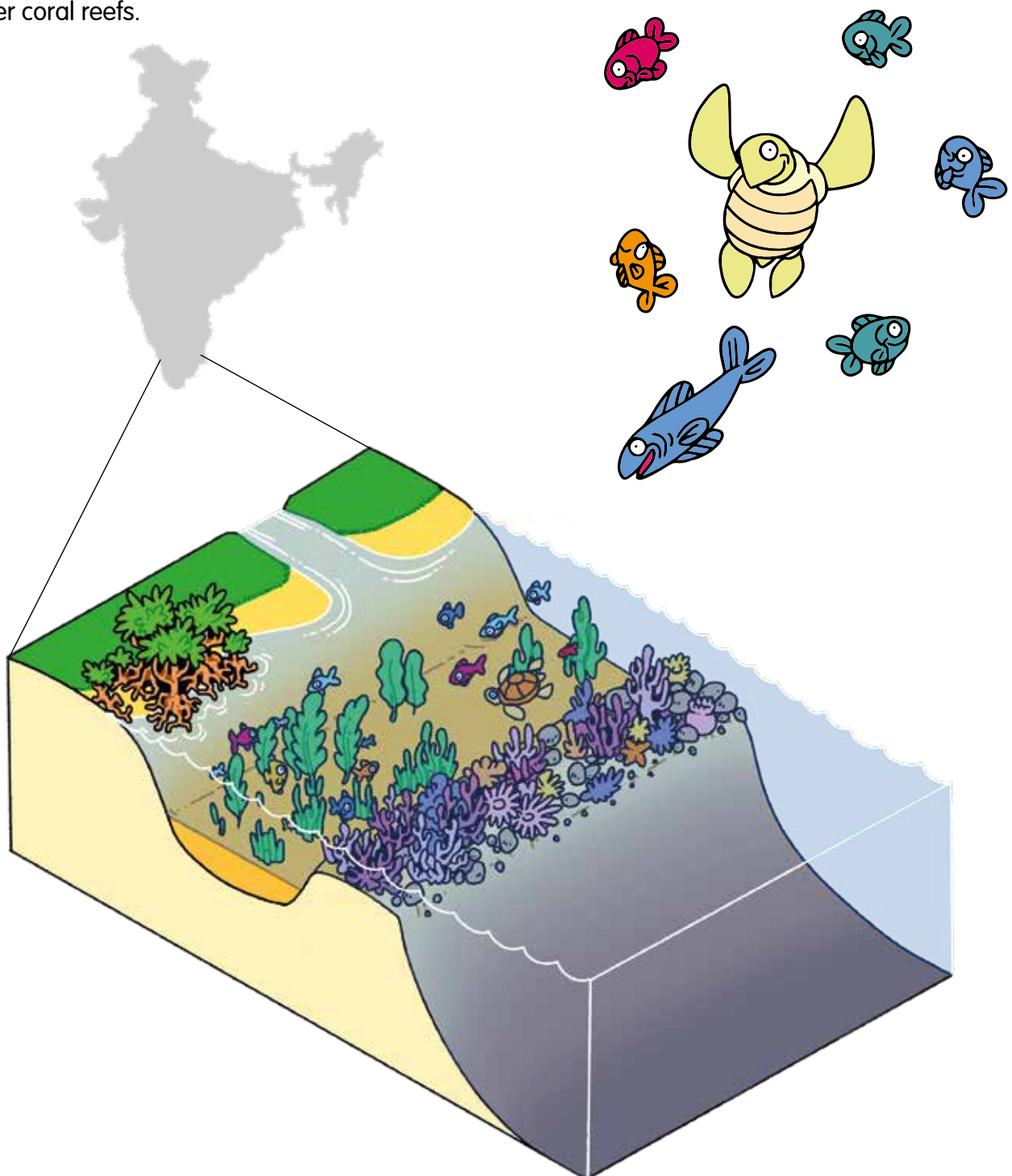
ACTIVITY 1

How many pieces of marine litter can you find?



What does this mean for us in India?

The most common marine litter found in many countries around the world, including India, is plastic! This includes packaging material such as containers, and products such as food wrappers, cigarette butts, chewing-tobacco pouches and bottles. Fishing gear, such as nylon nets and ropes, also are found along the beaches of India and are examples of marine litter. All of this can break up into microplastics. Monsoons and the currents in the ocean help to scatter and break up the marine litter across the beaches and within lagoons, estuaries, and over coral reefs.



ACTIVITY 2

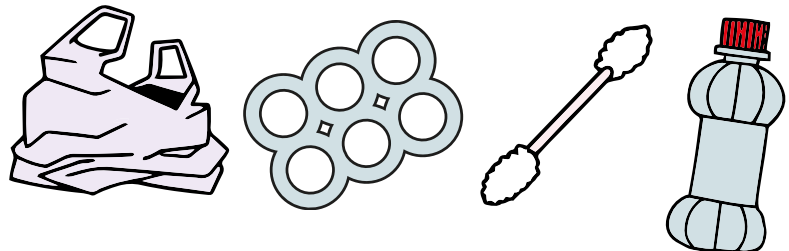
What are things made of?

The aim of this activity is to understand different materials we find around us and explore what happens to these items in water.

Different materials can last for different amounts of time in the environment. Food waste will disappear over time, whereas other materials do not. These long-lasting materials, once they enter in the marine environment, are called marine litter and include plastic; some types of paper, wood and cloth; metal; glass; and sometimes a mix of them!

Examples:

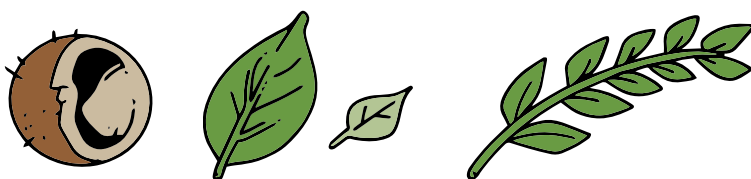
Plastic is the main component of marine litter in the world. Some plastic items you may find are soda and water plastic bottles, cigarette butts, food wrappers, chewing-tobacco pouches, drinking straws, earbud sticks and plastic bags.



Glass from broken and entire bottles is the second most common material found on beaches.

Metal is also common as marine litter. Aluminium drink cans and discarded metallic hardware items can be found on beaches and in our rivers and seas.

Natural materials like food scraps (both vegetable and animal) are called organic waste. This material is not considered marine litter because it decomposes.



Activity:

Compare how “natural” items and man-made (“synthetic”) items act in water. Collect a mix of man-made and natural items, hard and soft, flexible, and brittle.

You will need:

- A variety of materials found from around the school/community centre
- 3 buckets per class
- Water
- Pencils and Paper

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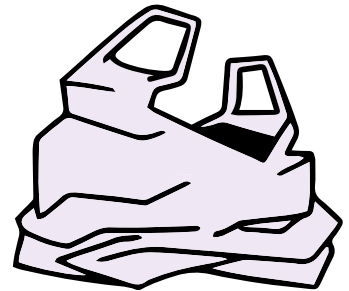
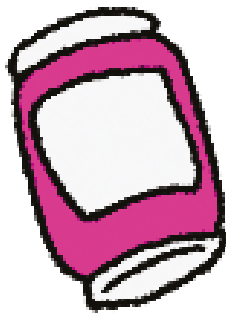
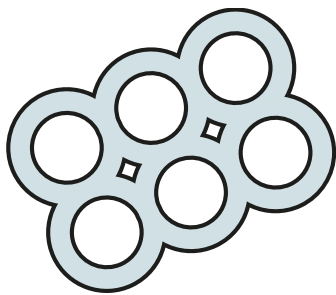
ACTIVITY 1 • WHAT ARE THINGS MADE OF?

If space permits in your classroom, and with the guidance of an adult, set up three buckets of water.

In the table below, write the name of your item, e.g. plastic bottle and guess what will happen when you place it in the bucket of water.

Take turns placing some more items in each bucket of water one by one, and watch what happens! Did you guess correctly? Did the item you chose sink or float?

What do you think will happen to these items if they were left in the water for 1 month, or even a year?



ACTIVITY 1 • WHAT ARE THINGS MADE OF?

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Helping to keep your community clean

Key words

- Marine litter
- Community
- Mangroves
- Clean-up
- Beach and river

Lesson objectives

- To understand where marine litter can come from
- To help keep your community clean from litter

Where does marine litter come from?

Trash does not have to just be dropped at the beach or in the sea to become marine litter. Rivers, drains, wind, and rain can carry rubbish from the land to the sea. It is just as important to clean-up any litter by a river or on land before it can reach the sea. It is also much easier to pick up litter from the land than it is to clean the ocean or a river!

How can marine litter affect your community?

Mangroves and coral reefs on the coastline of India create homes for many marine animals and help to protect the land from flooding and storms. Marine litter can become stuck within the mangroves, creating hazards for marine animals. If the mangroves and animals are badly affected by marine litter, the habitat will not be able to function as well as it can.

How to help your community

Talk to your school friends, teachers, and family about whether you have noticed any litter in the community you think could become marine litter. What was the litter made from? Was it a big or small piece of litter?

Think about where you like to play and walk in your community. Do you like seeing any trash on the sidewalk, beach, or in a river? Do you often see clean and healthy beaches and rivers?

If you collect items such as shells when you are on the beach with your family or friends, you could instead collect man-made items. Be sure to be safe and to dispose of them correctly!

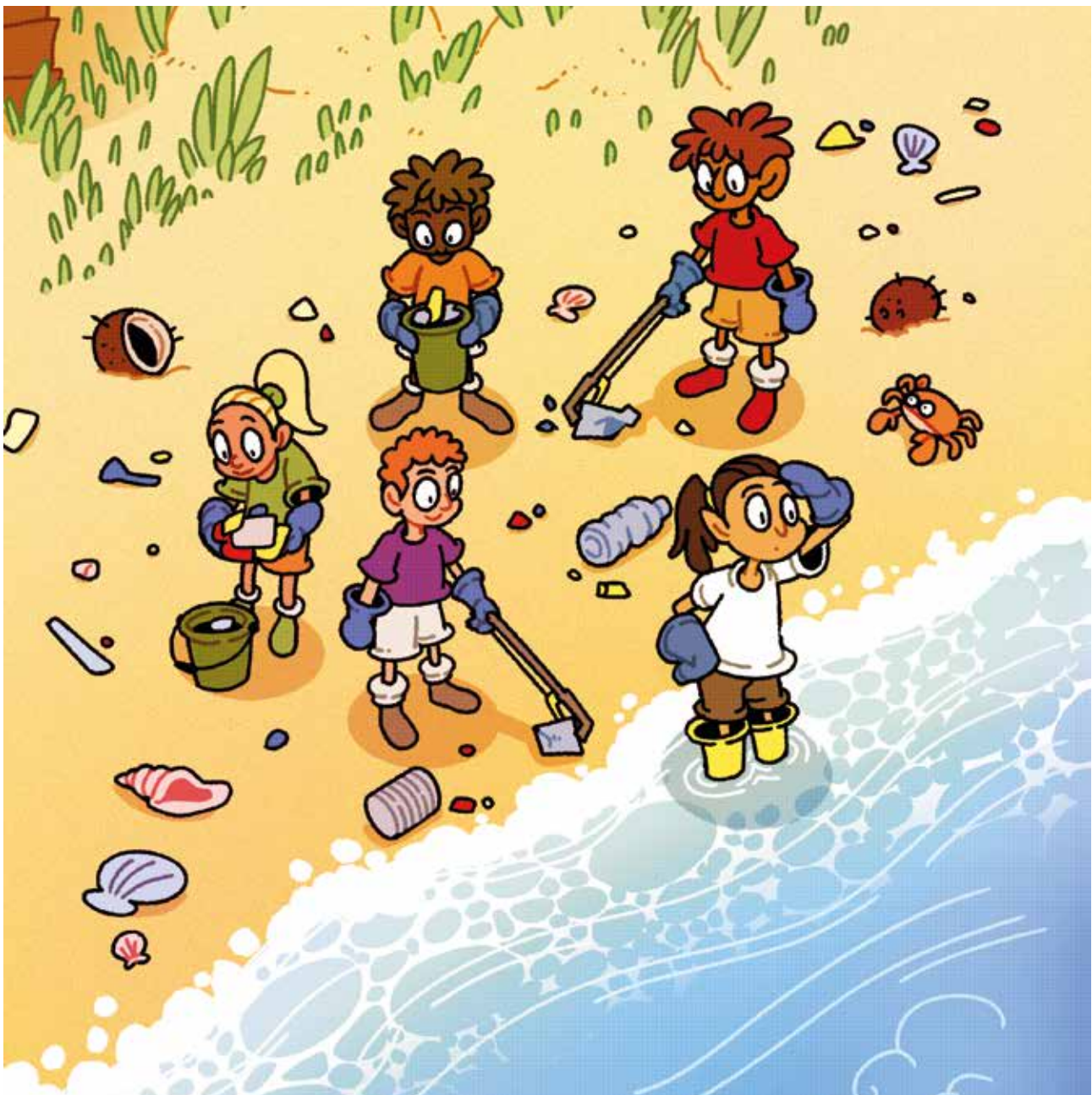
Organising a field trip to collect litter

Field trips are when you take your learning outside of the classroom. It could take place in the school ground, at a beach, river, or in your local community to learn about what litter you find.

Remember to always listen to your teacher and stay safe on a field trip!

What to do on a field trip

- Record the type and number of litter items found! This helps you to monitor and understand where litter comes from. Government departments and researchers also collect data like this to find out about sources, quantities and different kinds of litter.
- Think about some questions before you go:
 - What litter are you most expecting to find?
 - Do you think there will be a lot of litter around your community that could end up in the ocean?



ACTIVITY 2

Field Trip – Finding litter in your community

The aim of this exercise is to get out of your classroom to see if there is any marine litter around your community.

Remember if you do not live near a beach, you can clean by a riverbank or even your school ground!

Record what you find, where, and what it is made of.

You will need:

- Beach, river, village, or school ground
- Notebooks and pencils
- Litter pickers (ask your teachers to arrange for large forceps or tongs)
- Gloves (if possible)
- Buckets/bags



Instructions:

Make sure you go with your teacher and other adult helpers, and with your parent or guardian's permission!

With your teacher and maybe other adult helpers, go to your chosen location. Please make sure you have permission from your parents or guardian, the school, and from the landowner for access if it is a private area.

If you are going to the beach: check the tide times. The beach is best to visit 2 hours or more after high-tide, and not when the tide is coming back in.

At your chosen location, get into groups set by your teacher.

- Select a large area (up to 100 metres) and mark out the area to look for litter.
- Record, count and pick up any of the marine litter you can find in the area.

Be careful as some objects may be sharp. Ask an adult to collect these items. Please wear gloves, if possible, to reduce the risk of injury!

If you are at the beach, start from the top of the beach where the plants and bushes start to grow, and go down to where the sand changes colour, seaweed and shells normally collect there and it is called the "high-tide mark" on the beach.

When you find the marine litter, count it and write it in the correct group (e.g. polythene bag, small plastic, large plastic, metal, glass) on the worksheet.

Once completed, make sure you dispose of the rubbish responsibly and bring a selection of clean, safe litter items back to the classroom for additional activities and lessons!

Use a tally to count how much you find. Write examples of what you found under each heading.

[illegible]

Back in the classroom

Put any collected litter on a table in groups based on what the items are made of (e.g. plastic, metal).

Collect all the records together and add up the numbers of all the items found. Try to work out the most common groups and items you found.

What was the most common object found?

Did you expect to find this?

Have you ever used this item before?

What did you bring back to the classroom?

Do you recycle anything in your school?

Were any items found on the beach found in your classroom?

LESSON 3

How does litter impact marine-life?

Key words

- Food-web
- Plankton
- Whale
- Sea turtles
- Mangroves
- Coral reefs
- Plastic
- Microplastics
- Toxins
- Tangled

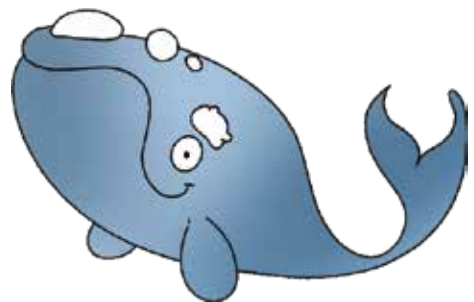
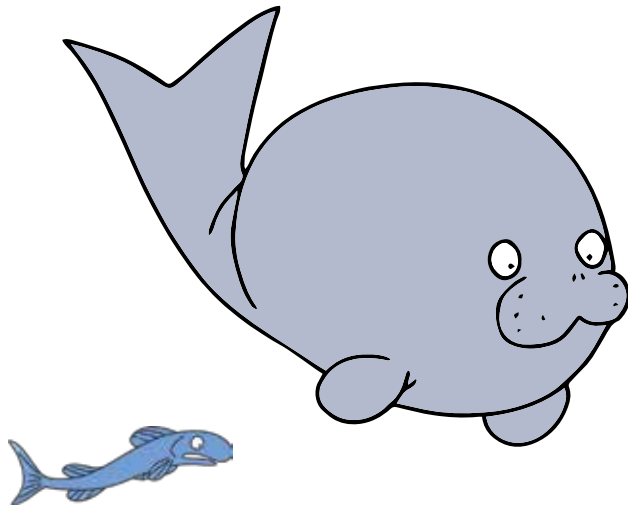
Lesson objectives

- To recognise what a food web is
- To understand how plastics can enter marine animals

Our seas and oceans are bursting with life with plants and animals of all shapes and sizes.

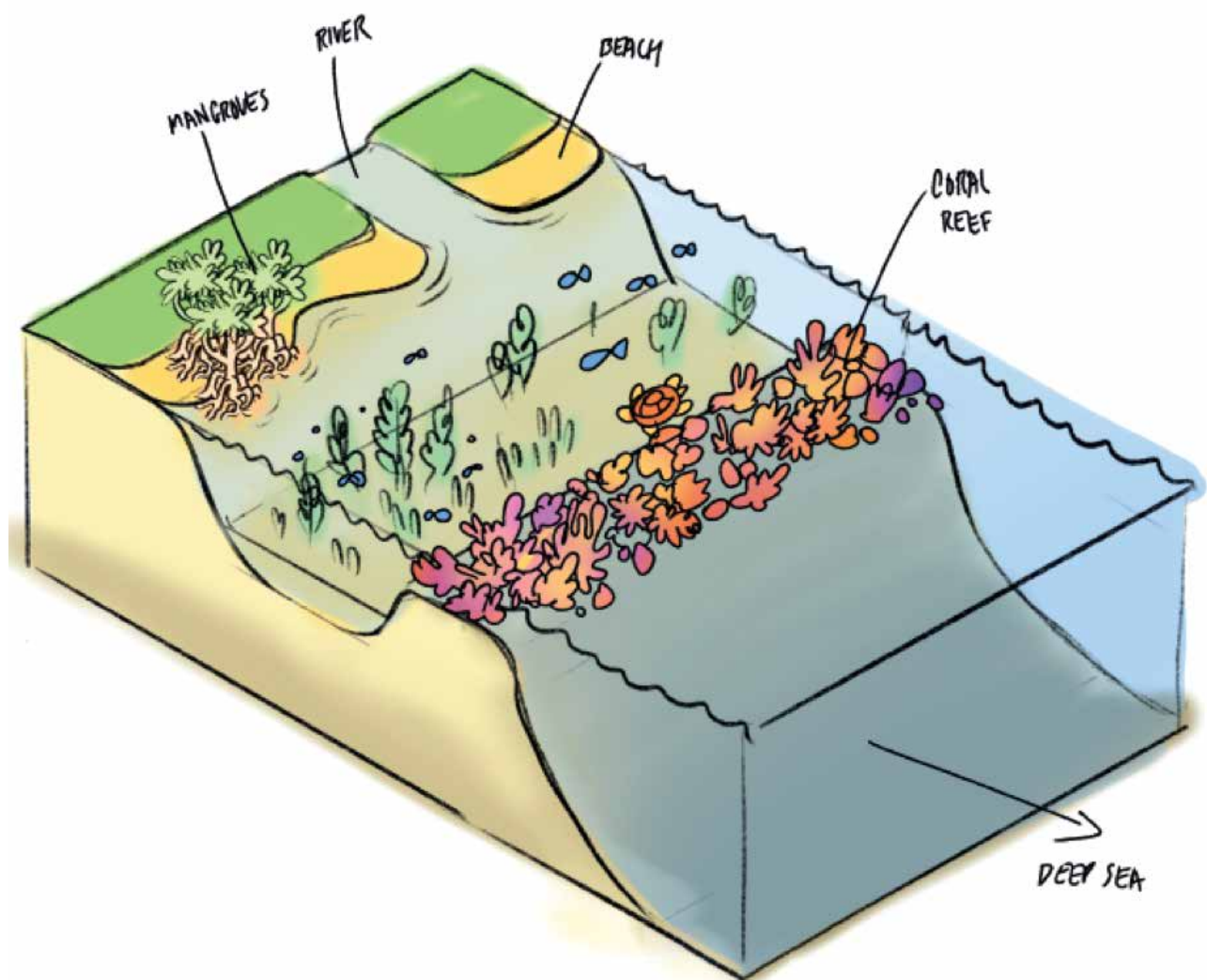
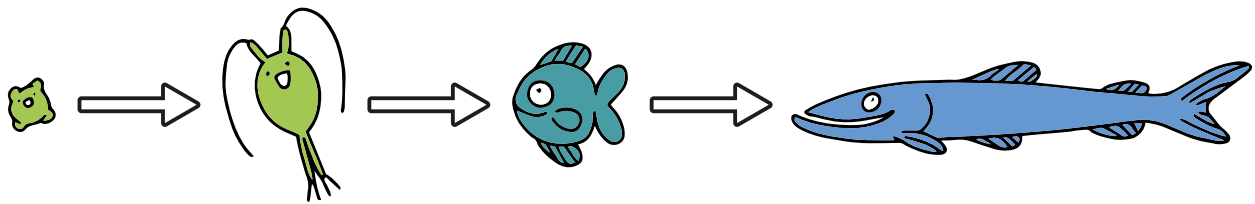
They range from tiny plankton to huge whales like the blue whale.

The Indian coastline is home to habitats such as mangroves and coral reefs, which in turn are home to lots of marine animals. You may have learnt already about the effects of climate change, warmer sea temperatures, and sea level rise on mangroves and coral reefs but litter also poses a serious threat. Litter can harm habitats and animals by damaging the environment, such as coral reefs, animals can get "tangled" in lost fishing nets and get injured or die by drowning, and animals can eat plastics and "microplastics".



How do they all connect?

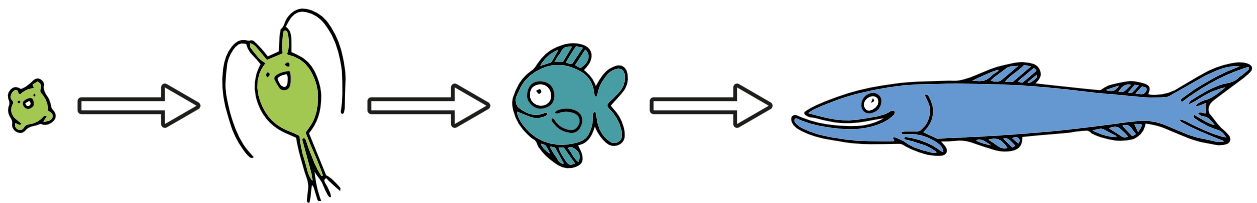
All ocean plants and animals are linked in a giant marine “food-web”. The plants and animals range from tiny “plankton” you would need a microscope to see, to larger fish, sea turtles, manta rays, dugongs and whales!



Draw some marine animals you know live in your country. Do any of them eat the other animals? For example, sharks eat other fish and sea animals! Do you know any animals who eat only plants?

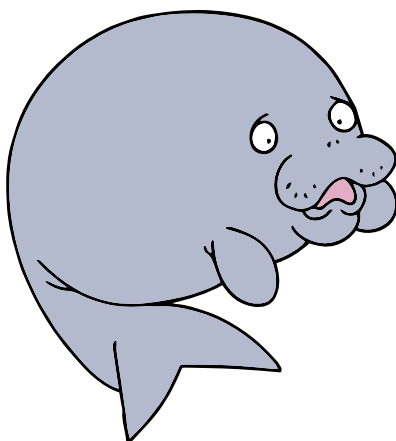
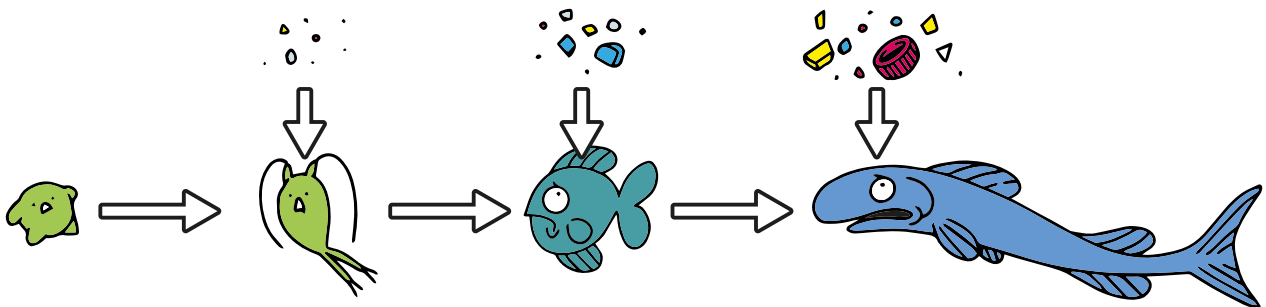
How does marine litter fit into the food-web?

Different sized animals eat different things, e.g. some large fish eat smaller fish. However, with marine litter, the tiny phytoplankton can ingest “microplastics” we mentioned a few lessons ago. Which can be eaten by zooplankton, which are tiny free-floating animals, and small fish! Sea turtles and whales can ingest larger litter items, such as plastic bags.



What happens when animals eat plastics?

Plastics release toxins, harmful chemicals, which can cause animals to become ill. Plastic can also take up a lot of space in an animal's stomach, this means there is less space for food, the animal then does not eat enough food and can become very ill. These side effects can stay in the animals and can even be passed to predators when they eat their prey / animals who ate the plastic! Unfortunately, this can also be passed to people who eat seafood.

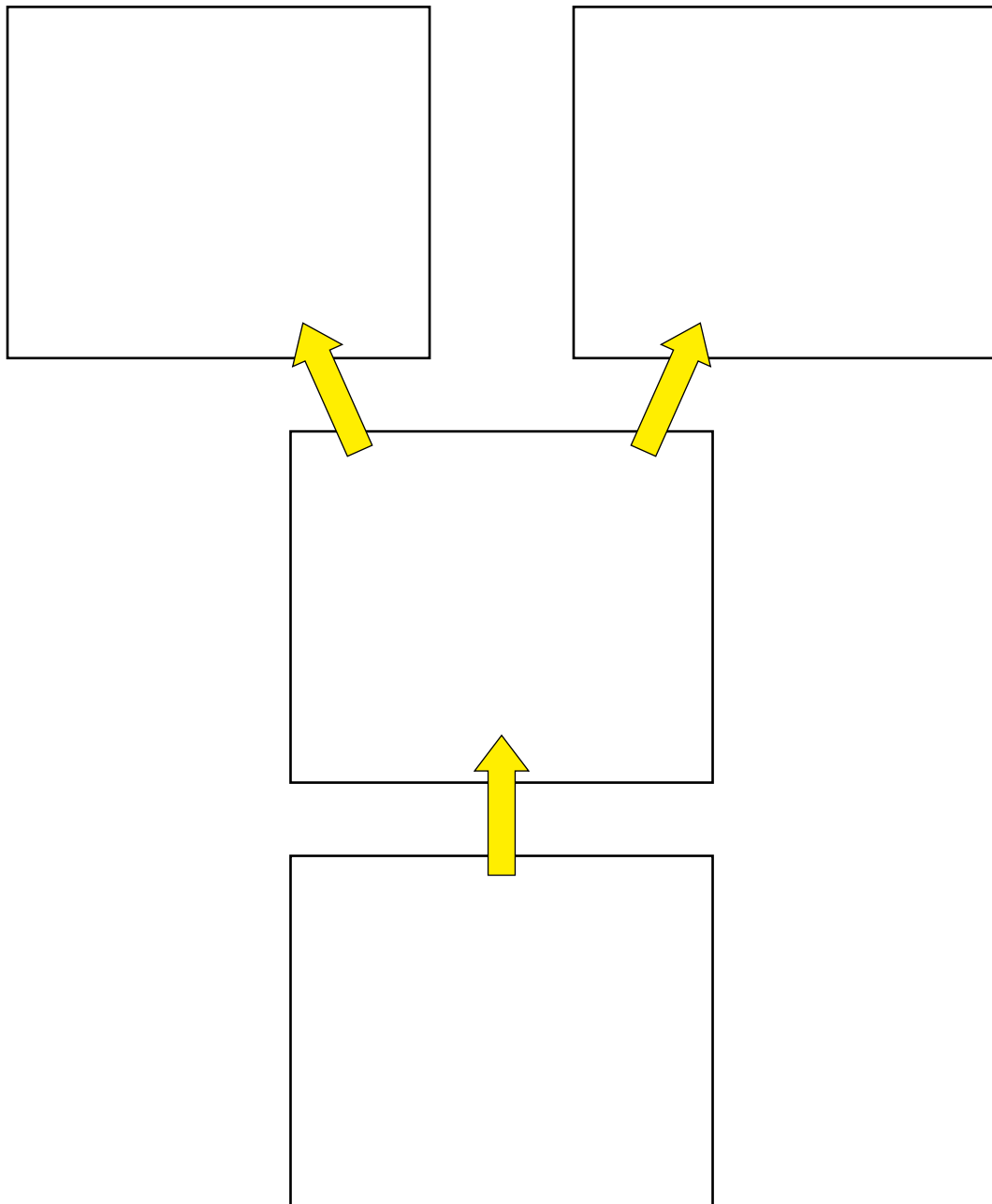


ACTIVITY 3

How does marine litter affect the food web?

Name or draw some marine animals such as plankton, small fish, big fish and sharks and try to link them together in a marine food web!

Afterwards, pick a few animals from your food web and explain to the class some ways that they could be affected by marine litter.



LESSON 4

What are the solutions?

Key words

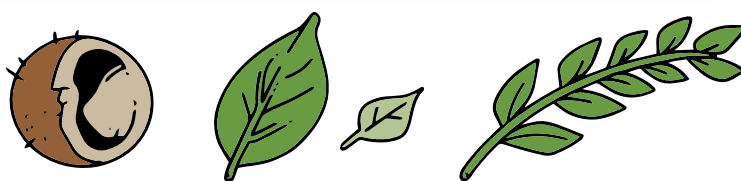
- Reduce
- Re-use
- Recycle



Lesson objectives

- To be able to name the three important actions to reduce marine litter and plastics in the oceans
- To give an example of how to reduce, re-use and recycle an item

Years ago, people of our elder generations would drop their litter on the ground. However, they were using natural materials like leaves and coconut husks that over time would biodegrade and become one with the soil.



Materials we use these days are increasingly “synthetic”, which can last a very long time so we must put these items in the bin for proper handling by waste treatment agencies.

Plastic can take up to 1000 years to disappear!

What we can do:

There are three important actions that we can do to help reduce the amount of plastic that enters the seas and oceans: Reduce, Re-use and Recycle.

REDUCE

You can reduce the number of single-use items that you use day to day.

Some simple ways to do this are:

- Bring a reusable bag to the store/shop when you buy your groceries
- Bring water from home in a reusable water bottle for your day
- Do not use drinking straws made of plastic

RE-USE

There are many ways that you can creatively use things that you may otherwise throw away. Can you think of someone else that would be able to use it? Can you re-purpose it for another use?

Think of some examples of things you could re-use, how to re-use, or make these things re-usable: The first one is done for you!

- Water bottle – refill with water instead of throwing away and getting a new one
- Parcel packaging
- Plastic bags
- Tin foil
- Small food jars and pots

RECYCLE

Many of the items that end up in our garbage dumps and landfill sites can be re-made into other items, so we should not just throw everything away carelessly. Please check with your local area which items you throw away can be sent for recycling instead of putting it all in landfill.

Do you have a place at school where you can recycle some items?

Do you separate out your recycling from other waste? e.g. into paper, plastic, metals.

ACTIVITY 4

Reduce, Re-use, Recycle game

Let's discover the three ways that we can make sustainable everyday choices to help combat marine litter by implementing the three Rs: Reduce, Re-use and Recycle.

You will need:

A variety of cleaned marine litter items collected (as described in Lesson 2) or examples of clean litter from home or school.

Instructions:

Create three signs with '**Reduce**', '**Re-use**' and '**Recycle**' labels.

In turn, select your items and consider if you can reduce, re-use or recycle each item, placing them in the correct pile under each sign.

After the activity

Do you know where you can take the items for recycling?

Can you re-use anything in these piles?

Is there anything in this pile that did not need to be used and/or thrown away?

Can you make some art items out of the marine litter for your classroom? Some decorative article, toy, or a piece of jewellery?

