

MARINE
CONSERVATION
SOCIETY

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Subject links:

Science, Geography, Citizenship,
IT, Maths

Ages 7-11

Curriculum key words:

Human impact, modern world, materials and
properties, environmental responsibility, group work,
digital skills, working with data

Ocean Literacy Principles:

6. The ocean and humans are inextricably interconnected

Learning objectives:

- To learn a simple survey method to collect data and to evaluate the method
- To analyse data and present it using IT software
- To consider the impact of litter on the natural world

Resources provided:

- [Marine Litter Fact File](#)
- [Source to Sea Fact File](#) and [ID guide](#)
- [Source to Sea survey form](#)
- [Risk assessment](#) template
- [Beachwatch reports](#)

Extra resources required:

- Gloves
- Bin bags
- Litter pickers (if you have them)

Community clean-up

Sustainability Goals:



Step 1

Background

Litter reaches the ocean in a number of ways: it's washed in from our rivers; it's left on our beaches, or is cast overboard from boats. It not only makes the marine environment look unpleasant, but it impacts the health of thousands of marine animals every year, usually by ingestion, entanglement or suffocation. Plastic is the most-commonly found material and it does not biodegrade but breaks up into smaller and smaller pieces, which can be mistaken for plankton or other food sources. You can find more information in the [Marine Litter Fact File](#).

Litter surveys help us understand the types of litter causing problems for our local environment. We can then use this information to raise awareness and campaign for change. This lesson will see your pupils head out on a litter pick in your local area to see the problem first-hand.

Step 2

Set the Scene

10 minutes – Source to sea discussion

To introduce the topic, ask your group if they know what litter picking is and why it's important. Then, have a group discussion around how the litter we see day-to-day might travel to the sea. Explain that 80% of litter comes from inland sources, so we need to collect litter from our local environment to prevent it from reaching the sea.

Step 3

Activities

Activity 1: 1 hour – Litter picking

In small supervised groups, it's now time to carry out a litter pick and survey in a safe area in your local community. The litter pick is a great way for pupils to practise conducting a survey and to observe litter in the environment first-hand. To help you plan, we've provided a [risk assessment template](#). We'd also highly recommend talking through the [Source to Sea survey form](#) with your group before heading out your litter pick!

Pupils should work in their groups to fill in the [survey](#) for each piece of litter collected. Make sure all pupils know not to pick up anything sharp, dangerous or smelly.

If it's not possible to run a litter pick, pupils could each bring in three clean waste items from home to analyse. You could arrange the items in an open space, using hoops to represent different categories and discussing the impacts of each one reaching the sea.

Activity 2: 1 hour – Analysing the results

When you return from your litter pick or indoor activity, complete the [litter survey worksheet](#). Use computers to present data from each table, then analyse your results and write a short scientific report on what you found.

See the latest [Beachwatch report](#) to explore how Marine Conservation Society beach clean data is presented. Compare your results against the top ten litter items and materials in this year's report. Did you find similar items?

Step 4

Extend

15 minutes – Analysing the method

In small groups, discuss how you could improve the survey technique. Are there more categories you could record? Are there other local areas you could survey? Does your data represent the amount of litter in your whole community? Groups could write notes before sharing as a class.

Step 5

Reflect

5 minutes

Discuss pupils' thoughts and emotions when conducting the litter pick. Try not to ask too many closed questions and let the group guide the discussion around their experience of seeing litter in their local environment.

Step 6

Follow up

Check out our [Artivism](#) lesson to learn more about how we can raise awareness of the marine litter problem creatively using art. Pupils could create an art piece or statement using the items collected either on the litter pick or at home.

Marine Litter Fact File



From source to sea

It is estimated that 11 million tonnes of plastic ends up in the sea worldwide each year (1), and that 80% of litter found in the sea is from inland sources (2).

Sources on land can include intentional and accidental littering, items flushed down toilets, sinks and drains, windblown litter from bins and landfills, and litter carried by rainwater into drains, rivers and eventually the sea. Litter is also a problem at sea, with sources like fishing, sailing, speed boats, commercial ships and container spills causing litter pollution.



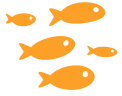
Litter timeline

Litter in the ocean takes longer to degrade than litter on land, but will eventually start to break up due to wave action, currents, saltwater and sunlight. Degradation time varies greatly depending on the properties of the litter.

Microplastics are a serious environmental issue. They are plastics that have broken up into pieces less than 5mm. However, some plastics enter the environment this size already - like microfibres and plastic nurdles. Nurdles are the small plastic pellets used in the production of plastic products.

1. Pew, 2020
2. Europa, 2016

Marine Litter Fact File



Marine life and litter

Litter items can cause harm to all sorts of marine life, from tiny plankton to huge whales.

Animals can become entangled in litter, causing injury, reduced mobility and even death. Ingestion of litter, particularly plastic, is very problematic for marine life as they are unable to digest it. Large amounts of plastic ingestion can lead to starvation, as there is no room left for food. One study found 100% of turtles sampled to have plastic in their stomach (3). In some areas, the extreme amount of plastic on the sea floor can suffocate the animals and plants living there.

Invasive species

Ocean currents can move plastics around the world. Small animals and plants can hitch a ride on the surface of plastic and travel with the currents, introducing non-native species to new areas. The introduction of non-native species could cause harm to the ecosystem.

Plastic chemicals

Several chemicals used in the production of plastic materials are carcinogenic. Toxic contaminants can also accumulate on the surface of plastic materials that have broken up and been underwater for a long time. When marine animals ingest plastic accidentally, these toxic contaminants enter their digestive systems and could build up in the food web over time.



Gannet carrying fishing rope
📷 JHS Archer-Thomson



Microplastic pieces within seaweed
📷 Natasha Ewins

Marine Litter Fact File



Litter surveys

Litter surveys are not only important for clearing rubbish, but also for gathering data on the types of litter polluting our environment. [Beachwatch](#) is our national beach clean and survey initiative, and has been running for nearly 30 years. Our brilliant volunteers head out to beaches across the UK to clean and survey our coastline, collecting and recording the rubbish they find within a 100m stretch of beach. This litter data helps inform our campaigns and lobby government, and has led to influential changes like the UK-wide carrier bag charge, microbead bans and changes to wet wipe packaging.

We also use the data to determine the sources of litter. For example, if a significant amount of sewage-related debris (SRD) is found in an area, we work with local sewage treatment companies to try to improve treatment plants, and with communities to raise awareness of what should and shouldn't be flushed down the toilet.



Reducing litter

We all need to do our bit to reduce litter in the environment. By rethinking how we shop and what we use in our daily lives, we can all make a difference. Refusing unnecessary plastic and other materials, reducing the amount of products we consume, and repairing rather than replacing are all important actions we can take. Through education, we can help raise awareness, encourage positive consumer behaviour, and campaign for change from businesses and the government.



© Natasha Ewins



© Aled Llywelyn

Marine Litter Fact File



Recycling

Even if we reduce the number of items we use, we will still need to throw some away. This is where efficient recycling is key. Download a guide from your local council to help students understand what can be recycled at home and at school. Many items can be recycled, but if your local council has limited recycling options check out [Terracycle's website](#) for local drop-off points.

Plastics can only be recycled at best 2-3 times before they lose their strength, so we still need to move away from plastics to materials that can be recycled time and time again. We need to change how products are recycled, and how we incentivise best practice to ensure materials and resources are valued. This could include redesigning products or calling for economic incentives like Deposit Return Schemes (DRS), where a small deposit is paid when consumers buy a single-use drinks container and is refunded when they return it to a store or dedicated recycling point.



Circular economy

We currently have an economy which is linear, which means we make, use and dispose of products using up finite resources. It's estimated that only 9% of all plastic ever made has been recycled (4), so we know that recycling alone isn't the solution. Instead we need to move towards a circular economy, where products are designed to be used time and again, repairable, or re-purposed as new products. The whole life cycle of the product has been considered, so very little ends up in landfill.



Litter collected at a beach clean
📷 Natasha Ewins



Single-use plastic straws
📷 Natasha Ewins

4. Geyer *et al.*, 2017

Source to Sea Fact File



Stopping pollution at its source

We know that litter from towns, parks and even the most remote country lanes can make its way to our ocean through our rivers and streams, our drains and sewer system, or by being blown onto our beaches.

As part of our litter surveys, we collect data to track rubbish back to its source. Our survey results are then used to find solutions to ocean pollution and to campaign for measures to bring positive change.

We've used data collected in previous years to make the case for carrier bag charges across the UK and are campaigning for Deposit Return Schemes for all types of drinks containers.

No matter where you live across the UK, you can help keep our seas clean.

Litter ID guide

We've highlighted some of the most-commonly found litter items on our beaches, streets, rivers and parks to look out for.

By taking part in inland cleans to collect and record these items, we can work together to prevent pollution from reaching our seas.

Head to mcsuk.org/source-to-sea for more information



In 2022, we found an average of 14 drinks-related litter items for every 100m of beach, and all these items were also found on **97% of inland cleans**



As part of the Great British Beach Clean 2025, 83 inland cleans took place. Volunteers removed **15,728 litter items, weighing in at 400kg!** Thanks to their efforts, this litter has been stopped from reaching our seas



Plastic/polystyrene

All items on this side of the sheet are identified as plastic or polystyrene



4/6 pack yokes

Four or six-pack rings/yokes are connected and hold together multi-packs of drinks cans



Bag ends

The part that remains after tearing-off single-use carrier bags in supermarkets



Biobeads

Tiny plastic pellets used in filtration process in wastewater treatment plants. Usually wrinkled, knobby or ridged



Biofilm support media

The plastic material upon which microorganisms grow, typically used in waste water treatment



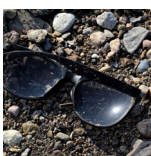
Caps/lids

Plastic caps and lids from bottles/containers, used to seal drinks. Includes plastic to which they are tethered



Cigarette stubs

The remaining part of a cigarette, commonly made from synthetic plastic cellulose



Combs/hair brushes/sunglasses

Plastic items used for untangling hair, as well as plastic glasses



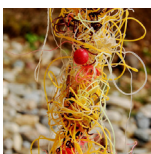
Cutlery/trays/straws

Single-use plastic knives, forks, take-away trays and straws



Fishboxes (polystyrene)

Used for packaging fish or other seafood. There's also a place on your form for wooden and plastic



Fishing line (angling)

Colourful, thin and wiry nylon thread, sometimes attached to a bait hook, used for catching fish



Fishing net/net pieces: 0-50cm

Plastic twine, cord, or something similar, used typically for catching fish



Fishing net/net pieces: 50cm+

Plastic twine, cord, or something similar, used typically for catching fish



Foamed polystyrene fragments

Unidentifiable polystyrene items. Use the ruler at the bottom of the form to record the size



Food container - foamed polystyrene

Containers storing food, such as fast food containers, lunchboxes, etc



Food container - plastic

Plastic containers used for carrying or storing food, such as fast-food containers, Tupperware, lunchboxes, etc



Injection gun cartridge (e.g. sealant)

Cartridge made of plastic for devices used to inject grease, silicone, or other fluids. Includes their nozzles



Jerry cans

Containers with a handle used for storing or transporting liquids, typically petrol or water



Lobster & fish tags

Used to mark fish and shellfish such as lobsters, often with a serial number



Lobster/crab pots & traps

Used to catch crustaceans. Most feature a net covering and a cone-shaped entrance tunnel



Nurdles

Small, colourful plastic pellets, about the size of a lentil - 'virgin' plastic from which nearly all plastic goods are formed



Octopus pot

Pots made of plastic or PVC tubing, weighted with concrete, and typically having a volume of 4 litres



Oyster nets/mussel bags

Plastic net sack for growing (underwater) shellfish. These bags can have different sizes and shapes



Oyster trays

Tray made of square mesh for growing oysters. Sometimes stacked, with or without feet, doors, v-braces and hooks



Packaging/plastic sheeting

Large plastic packaging or sheeting used for the protection/covering/wrapping of cargo objects



Packets: crisp/sweet/lolly (incl. sticks)/ sandwich

Plastic food packets and wrappers in various styles and shapes



Plastic fragments (range of sizes)

Unidentifiable plastic items. Use the ruler at the bottom of the form to record the size



Sheeting from mussel culture (Tahitians)

Plastic sheeting which is cut on one side into strips. Used to protect mussel farms from animals



Shoes/sandals

Various types of footwear such as shoes and sandals made of plastic



Shotgun Cartridges

These consist of a plastic tube mounted on a brass base and can come in a range of colours



Strapping bands

Used for fastening any type of package. Usually made of quite hard plastic. Comes in a range of colours



String & cord (diameter <1cm)

Threads made of plastic twisted together into a length. Not to be confused with fishing net pieces.



Tangled dolly rope

Tangles of blue, black or orange rope that are used to protect bottom trawling nets against wear and tear



Tangled nets/cord/rope/string

Tangled pieces of plastic open-meshed material made of twine, cord etc. Typically used for fishing



Toys/party poppers/fireworks/dummies

Any plastic object that children play with, as well as toys used on the beach

Rubber



Tyres used as fenders
Rubber tyres used as boat or dock bumpers will often be pierced with rope or metal chains

Glass



Glass (other)
Fragments of glass items that cannot be identified should go in other and be recorded as 'pieces'

Medical



Containers/tubes (inc. pill packages)
Any packaging of pharmaceutical solids and liquids e.g. pain killer packets or blister packs

Cloth



Clothing/shoes/towels
Any type of clothes, garments and headwear made of natural or artificial materials



Furnishings
Fabric used for furniture, fittings, and other decorative house accessories such as curtains



Sacking
Sacks and other packaging items that are made of a strong, coarse fabric

Metal



Caps/lids
Metallic caps and lids from bottles and containers, including the pull tabs from cans



Fishing weights/hooks/lines
Weights increase sink rate of lures/hooks. Lures are metal hooks with bright mounts



Loxster/crab pots & tops
Wire or metal and netting with opening for lobster or crab entry into tunnel

Sanitary



Condoms
A thin rubber sheath. Within this category also any packaging should also be recorded



Cotton bud sticks (plastic or cardboard)
Short stick with parallel notches at each end where cotton wool would have been attached



Tampons & applicators
Tampons and plastic applicators that have been incorrectly flushed down the toilet



Toilet fresheners
Attached inside toilet bowls to keep it smelling fresh. Usually made of plastic



Towels/panty liners/backing strips
Can be found on beaches when being incorrectly flushed down the toilet



Wet wipes
Disposable synthetic cloth, often found on beaches when incorrectly flushed down the toilet

Paper/ cardboard



Cartons (Purepak e.g. milk)
Containers made of carton with a plastic-lining used for food products. Check for logo

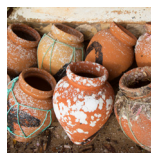


Cartons (Tetrapak e.g. juice)
Similar container made of paperboard with a plastic-lining used for food products. Check for logo

Pottery/ ceramics

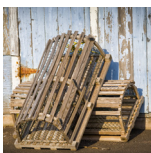


Construction material (e.g. tiles)
Ceramic materials used in construction, such as bricks, roof tiles, floor tiles, and cement



Octopus pots
Pots made of pottery, weighted with concrete, and typically having a volume of 4 litres. Used to trap octopus

Wood



Crab/lobster pots and tops
Stationary wooden traps used to catch crustaceans such as lobsters and crabs Usually covered in a net



Fishboxes
Boxes used for packaging fish or other seafood. There's separate options for plastic and polystyrene



Lolly stick/chip fork
Includes sticks from ice-creams, small wooden forks from fast food suppliers (chip forks), chopsticks and toothpicks

We know some items are hard to categorise - here is a photo guide to some common tricky items and where to put them on your form



Disposable vape
Plastic - other



Dental floss stick
Sanitary - other



Receipts
Paper - other



Tissues
Paper - other



Hair bands & bobbles
Cloth - clothing



Goggles, arm bands, snorkels
Plastic - toys



Balls & sports equipment
Plastic - toys



Metal nails
Metal - other (0-50cm)



Dog poo bags (empty)
Plastic - bags (small)



Nitrous oxide
Metal - other (0-50cm)

Source to Sea Litter Quest

80% of the litter we find in our ocean comes from inland sources.
Your survey will help track litter items from source to sea.



About your survey

Where did you clean?

- | | | | |
|-------------|--------------------------|----------------|--------------------------|
| Town | <input type="checkbox"/> | River | <input type="checkbox"/> |
| Countryside | <input type="checkbox"/> | Playground | <input type="checkbox"/> |
| Park | <input type="checkbox"/> | Office grounds | <input type="checkbox"/> |
| Street | <input type="checkbox"/> | School grounds | <input type="checkbox"/> |

First half of your postcode:

How many bags of litter did you fill?

Weight of litter (kg):

About your group

How many people are in your group?

Is your group taking part as a:

School group? Youth group?

What is the age range of those taking part?

Are you taking part as part of an organisation?

What is the weirdest thing you found?

Try to recycle the litter you collect if you can, but always keep yourself safe!


What to do – Spot the litter, write down what you found, then pick it up.
You can use a tally to keep track as you go along. ||||

Plastic drink bottles




How many?

Loose plastic bottle caps/lids




How many?

Plastic drink cups



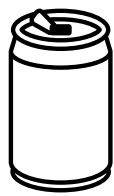
How many?

Glass bottles




How many?

Metal drink cans




How many?

Polystyrene fast food container



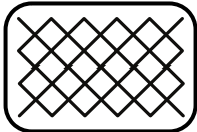
How many?

Paper cups



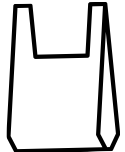
How many?

Disposable BBQs




How many?

Single-use plastic bags



How many?

Polystyrene cups




How many?

Plastic bags for life



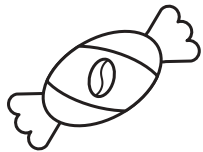
How many?

Wet wipes



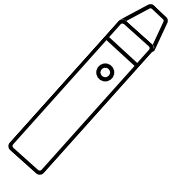
How many?

Packets e.g. crisps, sweets



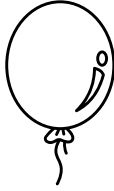
How many?

Vapes



How many?

Balloons



How many?

Litter survey results

Now you've completed your litter survey, fill in the boxes below to start analysing your results.

Where did you carry out the survey? E.g. park, river

How many individual pieces of litter did you find?

Which material did you find the most of? E.g. plastic, glass

Were most items recyclable or non-recyclable?

Complete this table for the top three most-common items you found

<i>Name of item</i> <i>E.g. balloon, drinks can, newspaper</i>	<i>What material is it?</i> <i>E.g. plastic, metal, paper</i>	<i>Source</i> <i>E.g. blown by the wind, dropped on the ground</i>	<i>Could it be recycled?</i> <i>Yes/no/don't know</i>	<i>How could it harm wildlife?</i> <i>E.g. an animal could eat it or get trapped in it</i>