

**PROJECT BOOKLET
FOR YOUNG PEOPLE**

GO EUROPE!

**PLASTIC
PIRVTES**



A joint initiative by:



Bundesministerium
für Bildung
und Forschung



REPÚBLICA
PORTUGUESA

CIÊNCIA, TECNOLOGIA
E ENSINO SUPERIOR



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA IZOBRAŽEVANJE,
ZNANOST IN ŠPORT

BACKGROUND INFO:

PLASTIC PIRATES – GO EUROPE!

Plastic Pirates – Go Europe! is a joint citizen science campaign by the German Federal Ministry of Education and Research (BMBF) in collaboration with the Portuguese Ministry of Science, Technology and Higher Education and the Slovenian Ministry of Education, Science and Sport. The campaign is taking place in all three countries from 2020 to 2021 as part of the trio presidency of the EU Council. The goals of the campaign are to strengthen scientific collaboration in Europe, promote the level of dedication among citizen scientists and to raise awareness and consciousness for the environment. The joint project of the three countries demonstrates how citizens in Europe can work together to achieve common goals. In the years 2020 and 2021, pupils, teachers and scientists will collaborate to

identify microplastic in rivers and their estuaries and contribute to a better understanding of environmental problems. The Plastic Pirates campaign was first developed in 2016 in Germany by the Kiel Science Factory and partners with support from the BMBF for the Science Year 2016*17 – Seas and Oceans and, since 2018, will be continued within the framework of the research focus 'Plastics in the Environment'.

You can find information about the Plastic Pirates at plastic-pirates.eu/en.



UNITED FOR RESEARCHING THE RIVERS OF EUROPE AND AGAINST PLASTIC WASTE



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Hallo, zdravo, olá, hello!

A whale washed up on a beach with a stomach packed with plastic litter and a beach full of plastic bags and cans – you have all seen the terrible pictures. Most of this waste comes from rivers. And many rivers flow through more than just one country. What is thrown away in one city one day might appear in another the next. Let us join our efforts to tackle this problem together!

This is why we are launching **Plastic Pirates – Go Europe!** In the coming 18 months, you, as citizen scientists, have the chance to get to the root of this problem. We are calling on pupils from Germany, Portugal and Slovenia to join this initiative, as our three countries will hold the trio presidency of the Council of the EU during this time. We want to send out a clear message of our support for environmental protection, citizen science and active cooperation in European education. Of course, we are also committed to ensuring that our fellow European neighbours can join us in investigating this urgent challenge in the future.

As a Plastic Pirate, you will gather information on plastic litter from our rivers. On this basis, scientists from our three countries will analyse the data. By taking part in this campaign, pupils can contribute towards important scientific research while still at school. In the end, we will know more about the state of our rivers and the scale of plastic pollution. Thank you for playing such a vital role and for your important contribution to the conservation of our planet.

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THE PROJECT BOOKLET PLASTIC PIRATES – GO EUROPE!

This **project booklet** aims to give young people aged between 10 and 16 hands-on experience of the issues related to seas and the ocean, particularly the problem of plastic waste in seas and flowing waterways. The key questions for the Plastic Pirates are as follows: **How bad is plastic waste pollution in flowing waterways and seas in Europe? What kinds of plastic are particularly common in the environment and what impact does this have on our seas and our ocean?**

This project booklet helps young people find their feet during the excursion and serves as a scientific guide to data collection.

The tone of the booklet is aimed at the young people themselves. It has been designed in such a way that they can complete the various steps of the project independently. Help them in your role as an educator.

The project booklet is suitable for use in a group of between six and 30 young people, whether a school class, a work group or a club. Including preparation and follow-up work, the project takes about three days, or six to eight teaching hours, to complete – plus approx. two hours for sampling. As different amounts of time can be allocated to the individual stages, the project booklet is also well suited to integration within a project week.

WHAT TEACHERS AND GROUP LEADERS NEED TO KNOW

A torn plastic bag on the riverbank or a yoghurt cup floating in the water are symptoms of serious interference with the highly complex system of seas, the ocean and flowing waterways. The **Plastic Pirates – Go Europe!** project focuses on this plastic waste problem and our future handling of it, but aims to familiarise the young people with the general topic of the ocean and water cycles in the process. They will learn what it means to work scientifically – and try their hand at it.

Citizen science projects give people interested in science an opportunity to play a hands-on role in the research process.

The Plastic Pirates – Go Europe!

campaign is one such example, contributing to research into the spread of both macroplastic and microplastic in and around European rivers.

This booklet provides a step-by-step guide to conducting the project (including preparation and follow-up work).

The research data collected by many groups throughout Europe will, during the course of the project, be used to create a scientifically sound, digital online map. In a second step, this data will be evaluated by research partners in Germany, Portugal and Slovenia, and then published. The Plastic Pirates team will keep you up to date about the scientific analyses:

plastic-pirates.eu/en/socialwall

The teaching materials and worksheets for the Plastic Pirates – Go Europe! youth campaign

Alongside this project booklet, teachers and group leaders at clubs/associations can also access supporting teaching materials and worksheets on the topic of seas and the ocean. These materials are suitable for educational work in both curricular and extracurricular settings. They contain exercises for young people, are structured in a modular way and can be ordered free of charge at plastic-pirates.eu/en/material/order.

FOR YOUNG PEOPLE

This booklet puts you in control. You decide which river you want to investigate for plastic waste. You take the samples. You measure, collect and enter the data gathered into our map at plastic-pirates.eu/en/results/map. In other words, you don't just 'play' at being scientists – you are a scientist!

This booklet will tell you exactly how it works and what you need to know. It will guide you through the project over the next few pages. Each step is

an important building block for scientific study and ensures that your data are reliable and usable when you have finished.

You will use a range of methods to understand the pollution by waste in and around the river and to record your findings. The booklet contains specific instructions for each method. Split into groups. Different groups will tackle different aspects of the study.



THE BEAUTY OF THE OCEAN

Seawater makes up nearly two-thirds of the earth's surface, which is why earth is a blue planet when seen from space. The seas and the ocean are the largest connected habitat on our planet. They are important and precious – and more than half of the world's population live in coastal areas.

The ocean gives us pleasure in the form of swimming and surfing, days at the beach and cruises. It is our food source, we use it as a shipping route and we search for new natural sources on the seabed. People who do not live on the coast are also connected to the ocean via rivers.

At the same time, the seas and the ocean are also under threat, for example due to pollution caused by plastic waste. By taking part in the **Plastic Pirates – Go Europe!** project, you can help protect the world's seas and the creatures that live there. With the studies that you will carry out on rivers, you will help scientists to find out where the plastic waste is entering the seas and the ocean and where the waste comes from.

On the following pages, you will find out about aquatic ecosystems and their inhabitants.

Terms such as Atlantic Ocean and Pacific Ocean are still used and are not wrong, but marine researchers talk about a global ocean that connects the various sea and ocean basins with the marginal seas. For this reason, the plural term 'oceans' is avoided.





The deep sea

Even today, the deep sea largely remains a mystery.

Scientists know more about the surface of the moon than they do about large sections of the underwater regions of the world. That's because planets and moons can be charted using telescopes and satellites. Back down on earth, however, the ocean itself blocks our view of the seabed. In order to penetrate the depths of the ocean and transmit data and photos from the seabed, it is necessary to send various measuring instruments and robots on complex missions. Frequently, scientists discover new species in the deep sea or are able to photograph creatures that no one has ever seen before.

Large swathes of the seabed are made up of wide plains covered in sediment. Only very few creatures live here, as they are reliant on food that trickles down from above. When a whale dies and its corpse sinks to the bottom of the sea, it provides an abundance of food for all kinds of deep-sea dwellers. Although nearly no humans have seen the deep sea with their own eyes, our plastic waste has made its way into the deepest parts of the ocean (the Mariana Trench).



Why don't polar bears eat penguins?

The polar regions

The Arctic and Antarctic are amongst the coldest, windiest, darkest and stormiest regions on the planet.

The Arctic is an enormous area that makes up about five per cent of the earth and four per cent of the world's seas and ocean. It is a large water basin that is partially covered in ice in winter and summer and surrounded by continents.

The Antarctic, on the other hand, is a giant land mass, Antarctica, 98 per cent of which is covered by a layer of ice that is more than four kilometres thick in places. The lowest temperature ever recorded was -89.2° Celsius and was measured at the Vostok Station in the Antarctic. This is the world's pole of cold. However, because of climate change, the highest temperature to date of 20.7° Celsius was recorded in the Antarctic in February 2020.

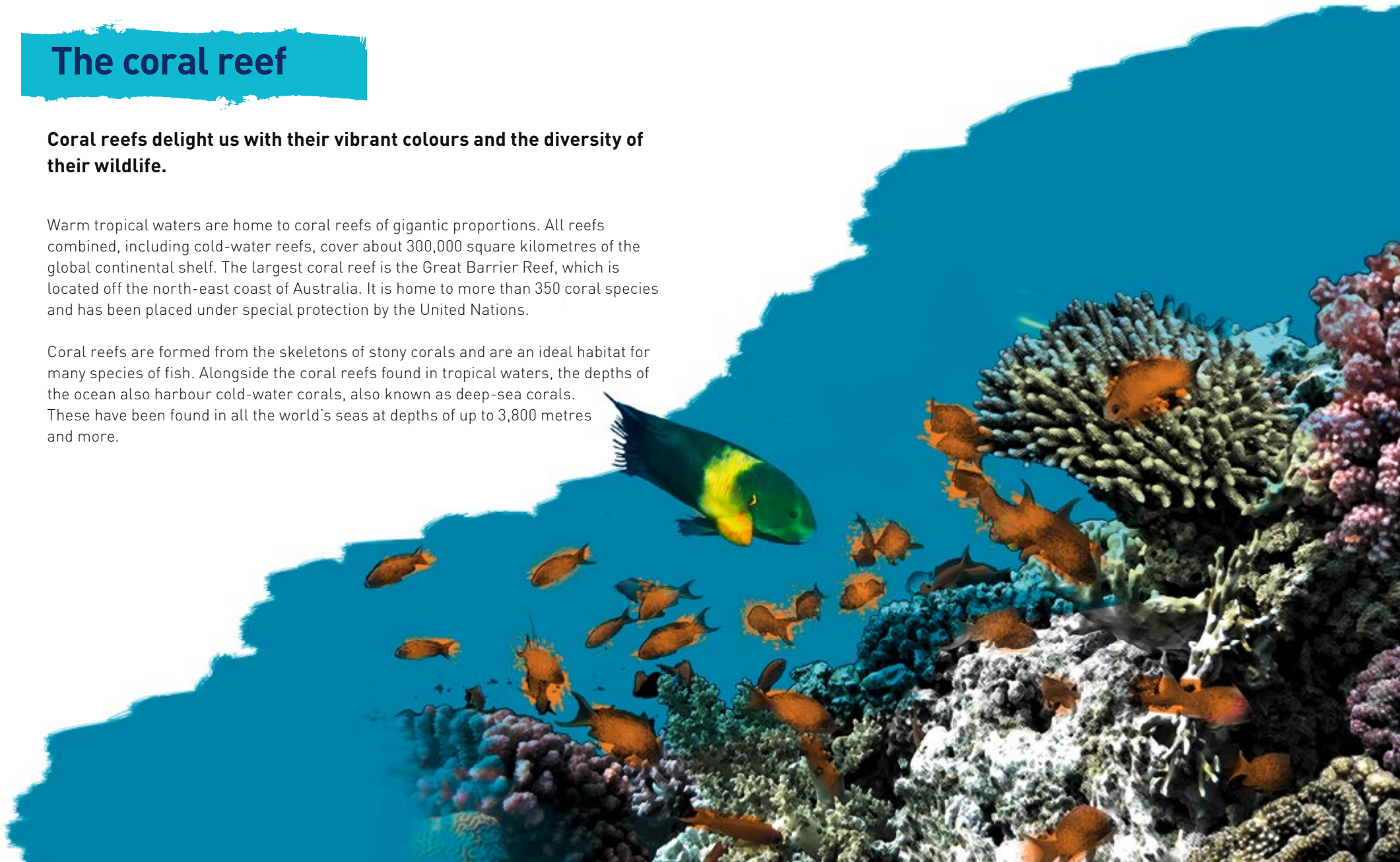
During the short polar summer, the sun doesn't set and its strong rays, combined with the large quantities of nutrients found in the cold waters, give rise to huge plankton blooms (i.e. massive numbers of plant and animal plankton). As a result, many species migrate to the polar regions to reproduce or feed, such as the large fin whales and humpback whales. The Antarctic, which in winter is twice as large as the United States due to the formation of sea ice, is also home to krill, a small shrimp-like creature that emits light. It is found in large swarms and is regarded as one of the most adapted animals on earth. Krill are eaten by penguins, seals and whales.

The coral reef

Coral reefs delight us with their vibrant colours and the diversity of their wildlife.

Warm tropical waters are home to coral reefs of gigantic proportions. All reefs combined, including cold-water reefs, cover about 300,000 square kilometres of the global continental shelf. The largest coral reef is the Great Barrier Reef, which is located off the north-east coast of Australia. It is home to more than 350 coral species and has been placed under special protection by the United Nations.

Coral reefs are formed from the skeletons of stony corals and are an ideal habitat for many species of fish. Alongside the coral reefs found in tropical waters, the depths of the ocean also harbour cold-water corals, also known as deep-sea corals. These have been found in all the world's seas at depths of up to 3,800 metres and more.



EUROPE'S RIVERS –

WHERE THE SEA STARTS

Rivers connect all of Europe – from small streams through to major rivers. One of Europe's longest rivers is the Danube, which flows through a total of ten countries. The Danube stretches 2,850 kilometres from its source to the mouth of the river, where it flows into the Black Sea.

Rivers offer habitat and food for a wide variety of flora and fauna but are also often struggling with environmental problems: one example of a typical European species found near rivers is the kingfisher. This little brightly coloured bird eats small fish, grabbing them by diving into the river from its vantage point on the banks. Although the European population of the kingfisher is stable, the species is experiencing habitat loss due to the straightening of river paths, for example.

A freshwater fish that is typically found in Slovenia is the marble trout, which can be identified thanks to its impressive marbled pattern. Although it grows quickly, the species is threatened due to overfishing and interbreeding with non-native species. Many bodies of water in Portugal are home to the European otter, but this species too is threatened by changes to its habitat, the exploitation of resources, hunting and pollution of the waters where it makes its home. It will likely disappear from many of its waters if nothing is done to protect its habitat. In Germany, thanks to many protective measures, beavers are returning to more and more regions and building their lodges on the riverside.

Research conducted on waste pollution in rivers has already shown that large quantities of waste are carried via rivers into seas and the ocean, where they pose a danger to marine wildlife. There are still many questions about where exactly the majority of waste enters the rivers, who is responsible and what impact it has on the river ecosystem. Over the next few weeks, precisely these questions will be researched by you – and, in doing so, you will contribute to solving the waste problem!



Your local river

Now it's over to you. Over the next few hours and days, your local river will become your classroom. But before you start doing field work and taking samples from your river, take a look at the river network as a whole.

Exercises

1. Draw the course of your local river onto the map of your country.
2. Is there a river of similar length in one of the other countries? Draw it in the corresponding map.
3. Research your river and enter the answers to the following questions on the map:
 - Where is the river's source?
 - Where is its mouth?
 - Where does it flow into?
 - Which cities or towns does it pass on its way to the mouth?
4. Rate the condition of your river. Is it heavily used or more natural?
Has there been any river restoration work (i.e. work done to restore the river to its natural state)?
5. Do you see your river as clean or dirty?

**INSERT YOUR PHOTO OR
DRAWING HERE!**



Maps not to scale

RIVER POLLUTION

A BIG PROBLEM FOR RIVERS AND THE OCEAN TOO

Sadly, we humans don't always look after our rivers and seas properly, leading to many different types of pollution.

The use of too much **fertiliser** in agriculture and therefore excess fertiliser in water run-off

Noise pollution, from ship turbines and offshore industry

Pollution caused by **organic pollutants** and **harmful substances** such as pesticides

Household and industrial **waste**

Pollution caused by **oil** from shipping and the petroleum industry

Some of the waste that we humans produce is transported into seas and the ocean via rivers. This means that the amount of waste in the ocean increases each year. Long-lasting plastic waste that degrades very slowly is a particularly serious threat to marine wildlife and the entire ecosystem.

But how does the waste enter the sea in the first place and how long does it take for plastic bags or fishing lines to degrade? And, of course, how does the issue affect us and how can we help to improve the situation?

Become a researcher and study the plastic waste found in rivers and seas!



Macroplastic

Macroplastic refers to all pieces of plastic that are larger than five millimetres. These include fishing nets, lids of water bottles, cigarette lighters and flip-flops.

Floating macroplastic is dangerous for marine wildlife. On the one hand, it can easily be mistaken for food and swallowed. As it cannot be digested, the animals starve to death as their stomachs

are full of plastic. On the other hand, animals such as turtles, seals and whales can become entangled in torn-off nets, known as 'ghost nets', no longer being able to swim.

They end up dying in these fishing nets or from other pieces of plastic waste.

Microplastic

Microplastic is smaller than five millimetres. Scientists now split small plastic particles into different categories based on size – for example larger microplastic (one to five millimetres), smaller microplastic (one micrometre to one millimetre) and nanoplastic (smaller than one micrometre), which is even smaller than bacteria. Microplastic is formed, for example, when larger plastic particles in the ocean are broken down into ever smaller parts by the sun's rays, the salt content in the water and the movement of waves.

Many microplastic particles are caused by car tyres wearing down on the roads. These particles then make it to the ocean via sewers and rivers. Microplastic generated by the fragmentation of larger objects is called 'secondary microplastic'. Small plastic pellets produced by industrial companies for the manufacture of larger plastic objects or as additives for other products also make their way into the environment, for example in transport accidents.

This microplastic is referred to as 'primary microplastic'. Like macroplastic, microplastic can also be confused with food by animals, resulting in it entering their bodies and thus becoming part of the food web. To date, only little research has been conducted into how dangerous microplastic can be for animals and humans. Although microplastic is much smaller than macroplastic, it can also pose a significant risk to marine wildlife.

Due to chemical properties, harmful organic substances can attach themselves to these tiny particles. If they are then mistaken for prey and eaten by plankton-eaters or other animals, they enter the food chain.

INFO

In this project, you will be investigating microplastic particles that are larger than one millimetre, which is why the booklet refers to 'larger microplastic'.

WORKING LIKE SCIENTISTS

When you think of scientists, you might have an image in your mind of old men in white coats with crazy hair. The reality is very different.

Researchers don't just work in laboratories all day. For some, their laboratory is even outdoors: at the beach, at a lake, in the forest or at a dune. Scientists also attend specialist conferences, supervise students, produce charts and communicate with colleagues – all as much a part of their day-to-day tasks as performing experiments and gathering data. It's a highly exciting and diverse profession. See for yourself ...



Now that you have learned so much about our ocean and our rivers and have gained important knowledge about the problem of waste, it's time to research the issue more closely. It's time for a scientific study.

You should be clear about three things:

- This is a scientific study in which you are gathering important research data on waste. These data will be published afterwards.
- The study will be carried out by many young people in various countries in Europe, so it is important that everyone sticks to exactly the same method.
- In this project, you are the researchers!

In the next few hours, you should therefore work through the **FIVE STEPS of any scientific experiment:**

- STEP 1:** Formulate a research question.
- STEP 2:** Make hypotheses (before starting their experiments, scientists make predictions about what they expect the results to be; these predictions are then checked).
- STEP 3:** Plan the research method.
- STEP 4:** Carry out the experiment and gather data.
- STEP 5:** Evaluate and compare your results.

On the hunt for waste

It is now time to plan the sampling procedure. We want to gain an insight into the waste by and in the river and record it using a variety of methods. Split into groups – with each group concentrating on one aspect of the issue of waste.

Look at the illustration on the next page and read through the research questions for each group (page 16 onwards). Split into groups, with each group selecting an aspect of the study that they will examine in more detail.

River sampling – let's go!

Samples are taken from European rivers using a particular scientific method.

As it is not possible to take samples of all rivers from source to mouth, we will use random sampling. This will give us a large body of data about the prevalence of plastic by and in European rivers.

The same method will be used at all sampling sites, enabling us to compare the data at a later stage. This is only possible, of course, if everyone sticks to the predefined method.

AN OVERVIEW OF RESEARCH METHODS

GROUP C

Floating waste
(page 20)

GROUP B

Variety of waste on the
riverbank
(page 18)

EXTRA GROUP

Larger microplastic
on the riverbank
(page 26)

GROUP A

Waste on the
riverbank
(page 16)

GROUP D

Team of reporters
(page 24)

Read through the research questions for your group and write them down in your own words.

Group:

Research questions:

1.

2.

3.

PREPARING TO TAKE SAMPLES

To enable you to compare your results online with other groups at a later stage, it is important that all groups in all locations apply the same method.

Now read your sampling method carefully on the worksheet and fill in the boxes. Start assigning the first tasks to members of your group.

MY GROUP



I would like to do the following job:

Name



Job

Write down the most important aspects of your method in bullet point form:

- | | | |
|---|---|---|
| • | • | • |
| • | • | • |
| • | • | • |

The sample site

Look for a suitable spot at which to take your samples. When you have decided, think about the following questions:

- How long and wide is the river? Does its appearance change over its course?
- What does the riverbank look like? Think about soil composition, elevations and hollows, and vegetation. Does the riverbank look the same everywhere or are there big differences?
- How is the area close to the riverbank used by humans? How is the river used?

You will soon realise that every river and every riverbank are different. First of all, you will need to find a suitable spot by your chosen river where you can look for different types of waste. Please remember that safety always comes first when doing field work.

Look out for both yourselves as well as the environment: adhere to rules in protected areas and respect the breeding periods of birds.



Materials list



- Use Google Earth, for example, for remote exploration of your river and find a suitable site together with the other members of your group. Think about what specifically your group needs (e.g. access to the river, vantage point, plenty of space, particular ground). Please consider the available riverbanks, which could vary for certain rivers due to tides, for example.

Take a screenshot of your sampling site using Google Earth, print it out and stick it in this box. Describe your sampling site (meadows, fields, streets, urban area, etc.).

Requirements for our group's sampling site:

NOTES

Find out the coordinates of your chosen site in decimal degrees and enter them here:

Latitude

.

Longitude

.

Example: Brussels/Senne: 50.89853, 4.40344

The pilot phase

A scientific study also includes a pilot phase. This is a trial run of the sampling procedure that helps you prepare for any problems that may occur during the actual sampling. Don't forget that your data forms part of a real scientific study.

Search for your material together and run through your sampling procedure. To do this, look for a large open space (e.g. school playground, empty car park), draw your section of the river in chalk and see where you could take your samples.

Do you have problems or questions?
Feel free to get in touch with us:
plastic-pirates.eu/en/contact

Were there any problems? How did you deal with them?

What problems do you expect to encounter when taking samples from the river and how might you solve them?

Problem	Solution

Exploring the riverbank!

If possible (and allowed), explore the surroundings of your chosen site before taking samples. Take photos so that you can show the other groups what it looks like there. Imagine how you will apply your method at the site, taking into account the materials required and the various tasks that need to be completed. Can you identify any further obstacles? Complete the list above.

GROUP A

WASTE ON THE RIVERBANK

RECOMMENDED GROUP SIZE OF FOUR TO SIX



RESEARCH QUESTIONS

1. How much waste can be found on the riverbank?
2. What material is the waste made of? Does it float or sink?
3. How likely is it that the waste found on the riverbank will enter the river? Where on the riverbank is the waste found?

METHOD

1. To sample, you need a bit of space on the riverbank. Look for an easily accessible spot measuring approximately 50 metres along the river and 20 metres from the river.
2. Identify three different riverbank zones:
ZONE A: Foreshore. This zone is in regular (daily) contact with the river and roughly five metres wide. Here, you can often see the most recent high-water mark.
ZONE B: Backshore. This zone is in irregular contact with the river and encompasses the next ten metres of the riverbank.
ZONE C: Riverbank crown. This zone is not in contact with the river and starts about 15 metres from the river.

AIMS OF SAMPLING

- Identify the different riverbank zones (using the method described)
- Determine sampling points where you can look for waste on the riverbank
- Sort the waste by material



REQUIRED MATERIALS

- A straight stick, approx. 50cm long
- Piece of string, 1.5m long
- Pebbles or similar objects to mark out a circle
- Camera or smartphone
- Paper and a thick felt-tip pen
- A white cloth
- Tape measure
- 9 bags (for gathering the waste if this is to be counted later at the school/in the group's room)
- Work gloves



3. Now mark out your first transect. This is an artificial line that runs from the edge of the foreshore to the riverbank crown, so through all three zones. It is important that you place your transect at random – and not because you see somewhere with a lot or very little waste.
4. Now determine a sampling point in each of the three riverbank zones (A, B, C): at your sampling point, place a stick in the ground and tie a piece of string measuring 1.5 metres in length around the bottom. Run the string along the ground to trace out a circle. Use small stones to mark the circle. Now trace out the second and third circles in zones B and C. The distance between the circles should always be more or less the same. Use the illustration overleaf to help you.
5. Now search for waste in the first circle and place it on a white cloth next to the circle. Only collect waste – no natural objects such as wood or plant remnants. Only collect waste that is at least as large as a cigarette butt (two to three centimetres) and that is actually located within the circle, even if other waste is very close by.
6. On a sheet of paper, write down the transect number, the sampling point (e.g. '1A' means transect 1, foreshore sampling point) and the name of your school or club/organisation. Place this sheet of paper next to your cloth and take a photo of the sheet of paper and the waste spread out on the cloth (see photo on page 17). Make sure that the individual pieces of waste are easily visible, that they do not overlap and that there are no other objects on the piece of cloth. Check whether the waste with the sheet of paper can be identified.

Take a photo of each sampling point, even if no waste was found (photo of the sheet of paper with an empty cloth). Otherwise, your results cannot be included in the scientific study.

7. Count out the items of waste and sort them by the various materials. Enter your data in the results table on page 28.

8. Repeat the procedure in the two remaining circles and then mark out a second and third transect. This repetition is important to generate reliable data. Please ensure that your circles are roughly level with those of the first transect. Provided there is enough available space, the distance between the transects should be at least 20 metres.

TIP

If you find a particularly large amount of waste, you can pack it into bags after the last circle and count it at school or in your group's room. Please ensure that each bag is labelled with the number of the transect and sampling point (e.g. '1A') to avoid mixing up waste from different sampling points.


CALCULATING THE AREA OF THE CIRCLE

In order to work out how much waste there is in one square metre of your riverbank, we first of all need to know the **area of the circle** (A). Use the following formula:

π : Pi = approx. 3.14

r : Radius of the circle (= 1.5m)

$$A = \pi \times r^2$$

$$A \sim 7 \text{ m}^2$$


Make sure that the pieces of waste are easily visible and that they do not overlap.

EXAMPLE PHOTO



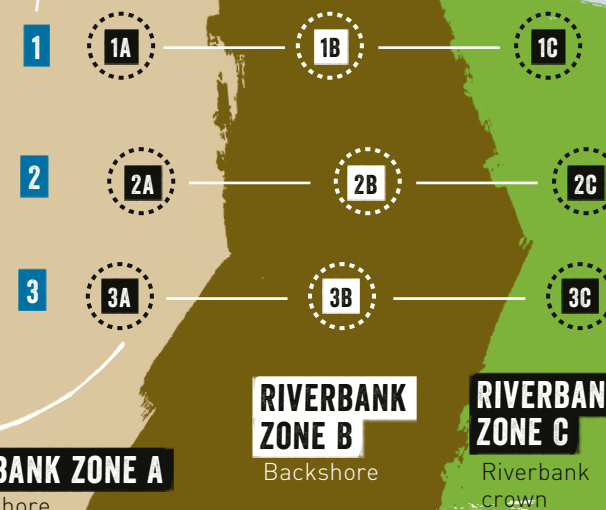
A transect is an imaginary line that connects two or more sampling points.

Sampling points where data are collected are determined along this line.

TRANSECTS

RESULTS LOG

Complete the table on page 28!



GROUP B

VARIETY OF WASTE ON THE RIVERBANK

RECOMMENDED GROUP SIZE OF SIX TO EIGHT



RESEARCH QUESTIONS

1. Which category of waste is most represented?
2. Which single-use plastic items were found most often? What is the ratio of single-use plastic waste to other waste?
3. Which (political) measures would lead to less plastic waste on the riverbank?

METHOD

1. First, find a place to set up a 'waste-sorting station'. It should be at least 50 metres away from Group A and not be exposed to wind. This is where you will sort, count and document the waste you find. Split yourselves up: at least two participants are responsible for sorting and documentation. More people are needed if a lot of waste is found. The sorters should familiarise themselves with the waste categories (page 28) and set up the station: write the categories on a piece of adhesive tape and stick it to the canvas. Position buckets for the pieces of waste which could easily fly away (plastic packaging and plastic bags)

AIMS OF SAMPLING

- Set up the waste-sorting station
- Categorise the pieces of waste along the riverbank
- Calculate the proportion of single-use plastic



in order to prevent waste already accounted for from mixing with the other waste (page 19). If you should find a lot of waste that doesn't fit into a category, you can supplement the categories with one of your own (see 'Results', page 28).

2. The other participants take buckets and look for waste. **Be careful not to search in the area of Group A (they need an area of approx. 50 metres on the riverbank)!** In the process, do not venture more than 20 metres from the river. Before getting started, mark this 20-metre point and then walk next to each other along the river. Doing so will allow you to maintain approximately the same distance from one another.

3. Collect all of the waste you find. **Be careful if you encounter sharp objects and hygiene items – always use work gloves to pick up these items!**

REQUIRED MATERIALS

- Buckets, bags or other containers for collecting and sorting the waste (the more the better)
- Canvas, approx. 5m by 2m
- Fabric adhesive tape and thick felt-tip pen
- String, at least 10m long, the longer the better (for measuring the area)
- Tape measure
- Camera or smartphone
- Waste bags for removing the waste
- Work gloves
- Scale, ideally a luggage scale



Sandy or dirty pieces of waste should be thoroughly shaken out. Once your bucket is full, take it to the sorting station, where the sorting experts will help you separate the waste into the proper categories. Make your way back to the sorting station after an hour at the latest, or as soon as you are unable to find any more waste.

4. Now measure how much of the riverbank you covered. Use the measuring tape or the string to do so. If you walked quite a distance, you can also measure 50 or 100 metres of string and then simply use the string to measure the distance. Make a note of this value in the data table on page 28.

INFO

Collect and document all waste (not only single-use plastic) in order to generate reliable data about all of the waste.

5. Count up the first pile of waste (see image below) and write down the result in the data table. If no waste was found in a particular category, enter a zero in the table. Now spread the waste out so that nothing overlaps. Take a photo of the waste together with the category name and then check the quality of the photo. Take several photos if too much waste in one particular category is found.
6. Follow this procedure for all of the waste categories.
7. Now weigh the plastic waste you found. Then weigh all of the waste together, including plastic waste, and enter the results in the table (page 28). You can use a waste bag for weighing purposes. Once finished, dispose of the waste properly.
8. Calculate the total number of all types of waste and what percentage each category represents. Use the formula below to calculate the proportion of single-use plastic. Record your results on page 28 and discuss which measures would be effective to reduce the waste in each category (e.g. prohibition of single-use plastic).

WASTE-SORTING STATION



HOW ARE PIECES OF WASTE COUNTED?

In general, the waste is counted as it is found. Waste items that are only loosely connected or that are found inside other containers are counted individually. For example, a plastic bag that contains other waste must be emptied and each piece must be recorded separately (be careful and wear gloves). Pieces of waste which are firmly connected (e.g. a glass bottle with the lid screwed on) or tightly wrapped objects (e.g. fishing nets) are counted as one piece of waste. The larger object determines the waste category.

$$\% \text{ single-use plastic} = \frac{\text{Total number of single-use plastic}}{\text{Total number of waste items (including single-use plastic)}} \times 100$$

RESULTS LOG

Complete the table on page 28!



Plastic bag with straw and disposable coffee cup = category 'plastic bag' 1x, category 'plastic cutlery and plates' 1x, category 'takeaway packaging' 1x



Glass bottle with a screwed-on metal lid = category 'glass bottle' 1x

GROUP C

FLOATING WASTE

RECOMMENDED GROUP SIZE OF FOUR TO SIX

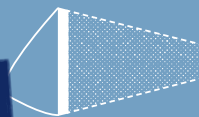


Your group will deal with two different types of waste: larger floating waste and larger microplastic.

RESEARCH QUESTIONS

1. How many large items of waste float along the river towards the sea? Is the majority of what you see floating natural (e.g. leaves and branches) or rather floating waste?
2. How large are the floating items of waste and what materials are they made of?
3. How much larger microplastic is floating in the river towards the sea?

A NET



FOR SAMPLING LARGER MICROPLASTIC

If you wish to take part in sampling of larger microplastics, you will need a special net, which you can borrow free of charge from our website plastic-pirates.eu/en/material/sampling-net. Remember to send your net back once you have taken your samples – also free of charge, of course.

AIMS OF SAMPLING



- Sample with the net
- Observe floating waste
- Count and classify large floating waste and larger microplastic

METHOD

CASTING THE SAMPLING NET

1. Find a suitable spot for casting your sampling net. This could be a jetty, a small bridge or an accessible spot on the riverbank.
2. Cast your net, with the opening facing the opposite direction to the river's current. Stabilise the net so that the river water can flow through the opening. Note down the current time. The net should be in the river for 60 minutes. You can tie the net to a bridge railing or a bollard. Once the net is attached, please take a photo of it floating in the river. This information will be helpful later to interpret the data.

REQUIRED MATERIALS

- Sampling net
- String/rope (to cast the net)
- Stopwatch/smartphone
- Tape measure or string, 20m long
- Three sticks of similar size (may be found at the sampling site)

MEASURING THE FLOW SPEED

3. Now measure the flow speed of the river right next to the location where the net has been cast: to do so, use the measuring tape to measure off 20 metres on the riverbank along as straight a stretch as possible. Mark a starting point at zero metres and a finishing point at 20 metres.
4. Now lay or toss one of the sticks at the level of the starting point and the approximate location of the net and start the stopwatch. Stop the stopwatch as soon as the stick passes the finishing point. Record the time in seconds in the results table on page 29.
5. Repeat the measurement with the two remaining sticks and complete the table.
Calculate the average and use the following formula to calculate the flow speed of your river.

In m/s =

Distance travelled in
m (= 20)

Average value of measure-
ments in s

In km/h =

Flow velocity
in m/s x 3,600
1,000

OBSERVATION OF FLOATING WASTE

6. Now start observing floating items. Look for a vantage point from which you can observe the floating waste. If possible, stay close to your net so that you can monitor it. Now estimate the entire width of the river and the width which you can overlook. Objects in the water (buoys, rocks) can be helpful in doing so. On a bridge, you can also determine the GPS coordinates and use those to determine the width of the river. Enter both values on page 29.

7. Now keep a lookout for floating waste. As soon as you see an object, try to take a photo of it. Make the other members of your group aware of it and, together, attempt to identify the object and to find out what material it is made out of. **Waste that is stuck and not drifting is not counted.** Make a note of your observations in the list on page 29. Keep a watch for floating waste for at least 30 minutes.

8. As soon as the period has elapsed, write down the time in the results table. Retrieve the net after 60 minutes and make a note of the end time when you do this.

9. Seal the net so that it doesn't come open again. Take it to your school or group room to dry. The next page continues with the analysis of the microplastic.

WIDTH OF THE RIVER

Use Google Earth, for example, to measure the width of the river at the point from which you made your observations. Enter the value in the results table on page 29.

CALCULATION OF LARGER MICROPLASTIC PER 1,000 LITRES OF RIVER WATER

You need the following data to calculate the number of larger microplastic fragments per cubic metre of river water:

- Flow speed in m/s.
- Area of the net opening; measure the internal opening of your sampling net in metres!
Side a = ... m, side b = ... m
 Don't forget that not all of the net is submerged in the water. Normally, about 9 to 11 cm of the net is submerged. Therefore, use a value of 0.09 m for b. Calculate the surface area of the opening in m²: **a × b = ... m².**
- Length of time for which the net was cast, in seconds.

Enter your values in the following formula:

Number of larger microplastic fragments per m³

Number of larger microplastic fragments in the net

Flow speed of the river in m/s × Area of the net opening in m² × Length of time (in seconds) for which the net was cast



ANALYSIS OF THE LARGER MICROPLASTIC

**WHITE
PELLETS**



LARGER MICROPLASTIC FILAMENTS OF VARIOUS COLOURS



**SMALL
STONES**



LARGER MICROPLASTIC FRAGMENTS OF VARIOUS COLOURS

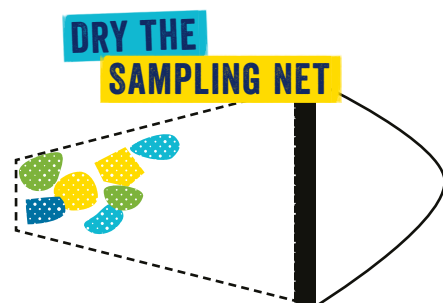


INFO! IDENTIFYING LARGER MICROPLASTIC

It isn't always easy to tell small plastic fragments apart from stones, shards of glass and mussel shells. Take a look at and compare the photos. What are the differences between the four groups? Pay special attention to the differences between white pellets, white fragments and pebbles.

PLEASE NOTE

Be aware that you can only retrieve plastic pieces larger than one millimetre, i.e. larger microplastic (see page 11 for the size definitions of microplastic).



RESULTS LOG

Complete the table on page 29!



As soon as the net (and its contents) are dry, open it and empty the entire contents onto a tray. Ensure that you have really removed all materials; otherwise, small pieces could remain in the net.

Look for larger microplastic using a dissecting microscope or a magnifying glass and sort the plastic pieces into fragments and pellets. Make a note of the results in the table on page 29. Please see the opposite page for details on how to recognise larger microplastic.

Then pack the entire contents of the net (larger microplastic and other objects) into a tightly sealable bag and label this bag with the name of your school or organisation and your group name.

Your teacher/group leader will return this bag to us along with your net so that your results can be confirmed.

Note: Please send the sample even if you did not find any larger microplastic.

REQUIRED MATERIALS

- Tray
- Dissecting microscope or magnifying glass
- Sealable bag (to send off the sample)



GROUP D

TEAM OF REPORTERS

RECOMMENDED GROUP SIZE OF FOUR TO SIX



1. How successful was sampling?
2. What are the possible sources of waste near the river? Where does the waste come from? Who might be responsible?
3. How could we possibly handle the waste problem?

METHOD

1. Search for possible sources of waste in the surrounding area and take photographic evidence. Consider the following sources of waste: overflowing bins by the river, overflowing bins near the river, bulk waste, scrapyards, diverted waste water, gratings, fishing equipment, very light plastic objects (which could be transported by wind). Could a larger one-time event be responsible for the waste (e.g. a storm or a festival)?
2. As a group, discuss whether there have been any severe weather conditions in recent weeks. If yes, mark the corresponding data fields on page 29.

AIMS OF SAMPLING

- Document the sampling with photos or a short video
- Seek out and identify sources of waste and estimate the effects of the weather
- Gather photographic evidence



REQUIRED MATERIALS

- Camera or smartphone
- A notepad and pen

INFO

Did you see any animals or plants that were affected by the waste? Feel free to send us photos!

3. Talk to the other groups and interview them. What methods have they used and what did they aim to research? Were there any major problems? What was their motivation like when taking samples? Complete the results table on page 29.
4. Ask the other groups what waste they have found so far and think about where it might have come from. Take photographic evidence.
5. Now take a photo of all participants (using a self-timer if available) and write the name of your school/organisation and the river on the photo. If you agree, this photo will be shown together with your group name on the map of Europe at plastic-pirates.eu/en/results/map for everyone who is interested.

6. Don't forget to make a note of the date of today's sampling on results page 29. Also record the coordinates of your sampling location (you can use Google Maps, for example, to do so, or you can ask your teacher for help).

ARTICLE ABOUT THE SAMPLING PROCESS

Take a look at your photos and write a short article about your sampling procedure for your school website. It may include the following:

- The jobs done by each group
- How much waste was found by each group, and what kind
- Whether any larger microplastic was found
- The suspected source of the waste
- How you liked the work and the project
- How river waste can harm plants, animals and humans
- What we can all do to avoid waste in rivers and seas

Publish a few of your photos or a short video.



What kind of waste is left behind and by whom? Take a look at the table and think about further evidence that may shed some light on the source of the waste.

Source of waste	Evidence
Residents	Overflowing bins, household waste
Riverside visitors	'Party waste' (barbecue equipment, empty beer bottles)
Fly tippers	Junk
Industry	Microplastic pellets
Agriculture	Larger plastic films for covering fields, plastic coverings for greenhouses
Shipping	Items that are used on board ships: canisters, waterproof clothing
Fishing	Nets, fishing lines, salt packs, polystyrene/styro-foam boxes, other fishing equipment
----- -----	----- -----

**STICK EVIDENCE PHOTOS HERE
AND IDENTIFY THE SUSPECTED
SOURCE OF WASTE**

Stick an evidence photo here.

Stick an evidence photo here.

Stick an evidence photo here.

EXTRA GROUP

LARGER MICROPLASTIC ON THE RIVERBANK

OPTIONAL, IF THERE IS A SANDY BEACH



RESEARCH QUESTIONS

1. How much larger microplastic can be found on sandy sections of the riverbank (river beaches)?
2. Compare the larger microplastic you found on the riverbank with the plastic shown on page 22 and categorise it.
3. Does the larger microplastic look similar to the food of a bird species common in the area?

METHOD

1. Identify the high-water mark (the point at which wet and dry sand meet). If you cannot find this line, take samples within the first metre of the riverbank.
2. Lay out a 20-metre-long piece of string along this line and mark out three points parallel to the river – at the start, middle and end of the length of string.
3. Measure out a 50 centimetre by 50 centimetre square at each of these points and mark it out in the sand.



AIMS OF SAMPLING

- Determine the high-water mark and trace a transect along the sandy beach
- Separate larger microplastic and sand by filtering
- Identify and classify larger microplastic

4. Go to the first square. Remove all larger natural objects (e.g. stones, algae, plants, wood). Use a spade to dig about two centimetres into the sand within (!) the square and deposit it on a tray.
5. Filter the sand on the tray with the sampling sieve. Place everything left behind in the sieve onto another tray. If the sand is damp, do not filter it on the beach, but pour it into a bag. Label the bag with the sampling point number [1, 2, 3], close it securely and take it with you back to your school/group room. Here, leave your sand to dry in appropriately labelled trays and filter it once it is dry. Place everything left behind in the sieve onto another tray.

6. Take a close look at the contents of the tray. Sort larger microplastic into one corner, count the plastic fragments and pellets and complete the results table on page 29. Page 22 (Group C) describes how you can recognise larger microplastic.
7. As soon as you have counted all the larger microplastic pieces and entered them into the table on page 29, label a bag (name of your school/organisation, sampling point number [1, 2, 3]). Pour the entire contents of the tray into the bag, including sand (not only the larger microplastic). Seal the bag.
8. Repeat the procedure with the second and third samples. Note: Please do not mix the samples; instead, pour them into separate labelled bags.

REQUIRED MATERIALS

- Sampling sieve, mesh width: 1 mm; find instructions at plastic-pirates.eu/en/material/download
- Piece of string, 20 m long
- Small spade or tub to dig out the sand
- Three sealable bags to hold the samples
- Trays



CALCULATING THE SAMPLING AREA

- Work out the size of your sampling squares in m²:
side a in m × side b in m = ... m²
- Calculate the number of pieces of larger microplastic for 1 m² of each sampling point: number of larger microplastic fragments / area of the sampling point in m²
- Calculate the average of the three sampling points to determine how much larger microplastic per m² of river beach you found

A SIEVE

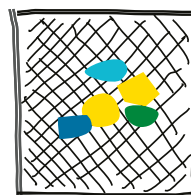
FOR SAMPLING LARGER MICROPLASTIC
AT THE RIVER BEACH

If you wish to take part in sampling of larger microplastic, you will need a sampling sieve, which you can construct yourselves. You will find instructions on the website plastic-pirates.eu/en/material/download.

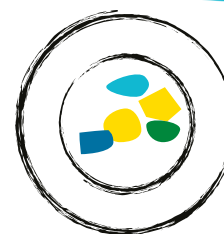
SAMPLING POINT



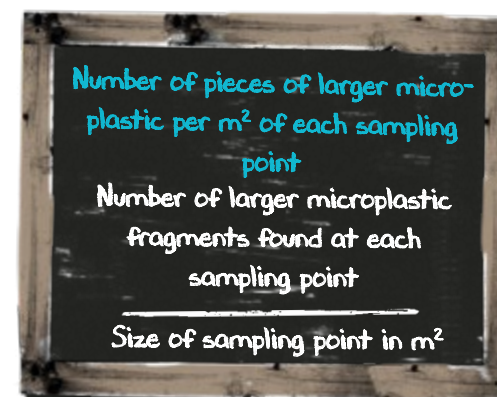
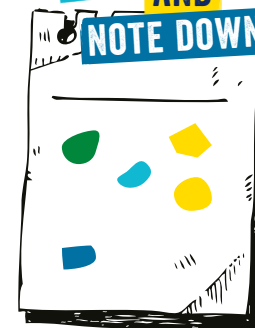
SIEVE



PLACE CONTENTS ON A TRAY

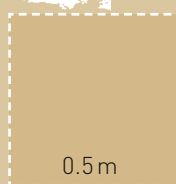


SORT AND NOTE DOWN



SAMPLING POINT 1

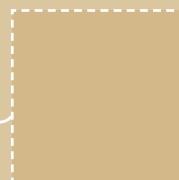
0.5m



0.5m

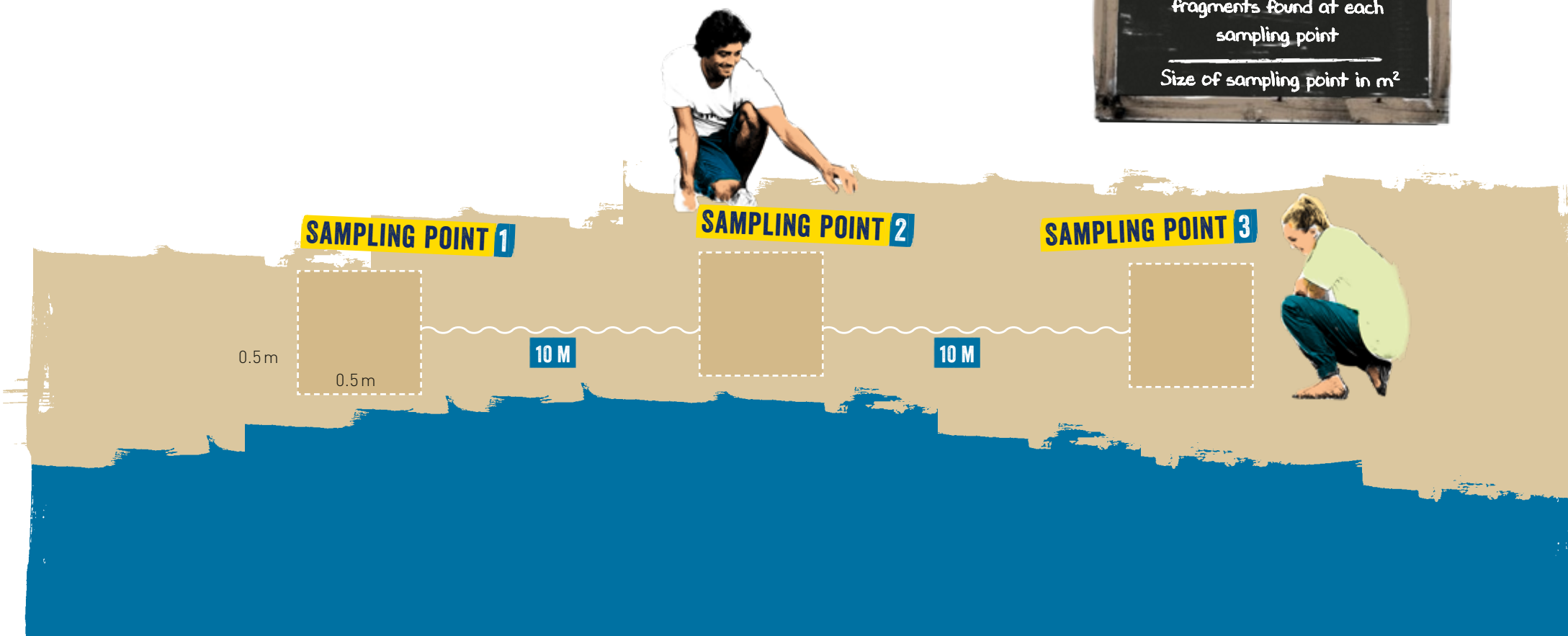
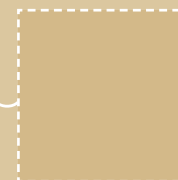
10 M

SAMPLING POINT 2



10 M

SAMPLING POINT 3



RESULTS

HOW POLLUTED IS OUR RIVER?

Once you have entered your results, ask the other groups to complete the tables. You will then have an insight into your river and the types of waste present there.

GROUP A

WASTE ON THE RIVERBANK

	Transect 1			Transect 2			Transect 3			
	Sampling point A	Sampling point B	Sampling point C	Sampling point A	Sampling point B	Sampling point C	Sampling point A	Sampling point B	Sampling point C	Total
Paper										
Cigarette butts										
Plastic										
Metal										
Glass										
Food leftovers										
Other waste										
Total										
Per m ²										

Waste per m²
in each riverside
zone:

Foreshore (average of A + A + A)

Backshore (average of B + B + B)

Riverbank crown (average of C + C + C)

PLEASE NOTE

If you find a lot of waste which cannot be put into a category, but which is important for your sampling location or for current events, describe it and count it in the field labelled 'Local waste'. This could be, for example, salt packs for fishing, stacks of old newspapers, batteries or face masks and disposable gloves that have accumulated due to the coronavirus pandemic.



GROUP B

VARIETY OF WASTE ON THE RIVERBANK

	Number
Plastic	
Plastic bags	
Plastic bottles for drinks	
Plastic lids of drink bottles	
Takeaway and fast-food packaging, including disposable coffee cups and their lids	
Plastic cutlery and plastic plates (also plastic coffee stirrers and plastic straws)	
Plastic packaging for sweets, biscuits, crisps, etc.	
Cotton buds with plastic sticks ('Q-tips')	
Wet wipes, tampons and sanitary towels	
Polystyrene ('styrofoam')	
Total number of single-use plastic	
Small pieces of plastic less than 2.5cm	
Other unidentifiable plastic objects	
Metal	
Metal beverage cans	
Bottle caps	
Aluminium foil	
Other unidentifiable metal objects	
Glass	
Glass bottles for drinks	
Glass pieces	
Other unidentifiable glass objects	
Other waste	
Cigarette butts	
Paper	
Textiles (clothing, shoes, textile remnants)	
Rubber (car tyres, rubber bands)	
Balloons	
Other unidentifiable waste	
Local waste:	
Total number (including single-use plastic)	

Proportion
of single-use
plastic

%

Length of river-
bank searched

m

Weight of
plastic waste

kg

Weight of all waste
including plastic

kg

GROUP C**FLOATING WASTE****Flow speed**

m/s

Run	Time in seconds
1st stick	
2nd stick	
3rd stick	

km/h

**Larger microplastic**

Start time

End time

Time in minutes

 :
 :

Number of fragments caught

Number per 1,000l of water

Pellets	Fragments	Total

**Floating items**

Start time

End time

Time in minutes

 :
 :

List of floating waste (item and material, e.g. 'bottle (plastic), bag (paper), string (other)')

Total number of floating waste

Observed width in m:



River width in m:

**EXTRA GROUP****LARGER MICROPLASTIC ON THE RIVERBANK****Larger microplastic****Sampling point**

	1	2	3	Total
Pellets				
Fragments				
Total				
Per m ²				

GROUP D**TEAM OF REPORTERS**

Sources of waste	Yes	Possibly	No	Evidence
Residents				
Riverside visitors				
Fly tippers				
Industry				
Agriculture				
Shipping				
Fishing				

Sampling point coordinates:

 . , .

Sampling date:

 . .
Weather over the last seven days

Yes

No

Heavy rain, flooding

Storm, strong winds

Heat, dryness

Problems during sampling

No problems

Some problems

Lots of problems

The biggest problems

Group A

Group B

Group C

Extra group

UPLOAD

YOUR DATA

Once you have evaluated your findings, you should upload the key data, as well as your photos, to the following website:

plastic-pirates.eu/en/results/data-upload

Think about a name for your group, which you will use when uploading your results so that other project groups can compare their findings with yours.

To do so, go to the website and fill in the fields. Ideally, you will nominate one person to enter all the data. The researchers in Germany, Portugal and Slovenia also need your original results to scientifically evaluate and interpret your data. Please therefore also upload a scan or photo of the completed results pages (28 and 29). Enter your data two weeks after the end of the campaign period at the latest.

Your data are online – what happens now?

You've done your part – and it's now time for others to get to work. It all lies in the hands of the research partners in Germany, Portugal and Slovenia, who will scientifically evaluate the data submitted by all project groups. As this is such a large-scale study, it will take a bit of time to make everything absolutely water-tight in line with scientific standards.

We will keep you up to date via social media about the scientific evaluation:

plastic-pirates.eu/en/socialwall

You can find results from previous counting periods here:

plastic-pirates.eu/en/results/analysis



Plastic Pirates – Go Europe!

https://www.plastic-pirates.eu/en/results/data-upload

YOUR GROUP NAME

DATE OF SAMPLING **SAMPLING SITE**

(DD) . (MM) . (YYYY)

NAME OF THE RIVER

COORDINATES OF YOUR CHOSEN SITE

Latitude .

Longitude .

YOUR GROUP PHOTO

GROUP A

- Waste on the riverbank: pieces of waste per m²

GROUP B

- Number of pieces of waste made of single-use plastic:
- Total number (including single-use plastic):
- Weight of all waste in kg:

GROUP C

- Flow speed of your river:
- Floating waste: items of waste were observed
- Larger microplastic: pieces of larger microplastic per 1,000 l of river water

EXTRA GROUP

- pieces of larger microplastic per m² of river beach

NUMBER OF PARTICIPANTS

IMAGES OF FINDINGS AND ORIGINAL DATA

- Photos of waste collected at the sampling points (Group A)
- Photos of the waste from the various waste categories (Group B)
- Photo of the sampling net in the river and photos of floating waste, if available (Group C)
- A photo/scan of pages 28 and 29 with all data collected

The data upload will take approximately 20 minutes. You will receive email confirmation once the upload is successfully completed. This email will contain a confirmation link that you need to click on to release the data. Feel free to get in touch with us should you have any technical difficulties or questions: plastic-pirates.eu/en/contact

COMPARISON OF WASTE IN RIVERS IN EUROPE

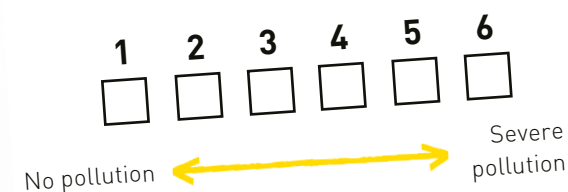
Now you can go to plastic-pirates.eu/en/results/map to compare your data with other project groups. Complete the table and answer the questions in the box.

COMPARISON OF RESULTS:

	Our results	Average in your country	Average in Europe
Flow speed of the river in m/s			
Items of waste per m ² of riverbank			
Proportion of single-use plastic in per cent			
Total number of items of floating waste in 30 minutes			
Pieces of larger microplastic per 1,000 litres of river water			
Pieces of larger microplastic per m ² of river beach			

What is your view of waste pollution at your river?

SCALE





Find answers to the following questions:

- Did other project groups find more or less waste than you?
- Is there anywhere in your country where a lot of waste was found? What is the situation in other countries?
- What might the reasons be?
- What material is the waste in European rivers principally made of?
- Are your samples different in any way?
- Where do you think the waste in the various countries comes from?
- Which rivers carry the most waste into the sea and why (e.g. size and length of the river, total amount/volume of water, proximity to cities and industrial sites)?

Mark the following on the map on page 9:

- The sampling sites with the largest numbers of each kind of waste
- Your river and your sampling site
- A particularly fast-flowing and a particularly slow-flowing river

Compare these flow speeds with your river and discuss what impact they might have on riverbank waste. Write down a few ideas in note form.



EVALUATION AND FOLLOW-UP WORK

Group

You have entered your results. Now it's time to answer your group's research questions.

Answer to research question 1:

Answer to research question 2:

Answer to research question 3:

**HAVE ANY NEW
RESEARCH
QUESTIONS
CROPPED UP?**

WHAT MAKES ME THINK— AND INSPIRES ME TO ACT



QUESTIONS THAT
TAKE YOU FURTHER

What do you regard as the greatest challenge?

Who would you like to tell about the project, and why?

How has the campaign changed your view of the issue of plastic waste?

What have you learned about yourself throughout the project?

What did you find particularly surprising during the programme?

How has your understanding of the term 'science' changed over the course of the project?

OVER TO YOU ...

After researching the waste pollution of your river, you should now think about how you can approach the problem of plastic waste in your environment. Form groups, choose a topic from the double-sided page and develop your own project on the subject. The questions should serve as inspiration for coming up with and implementing your ideas.

REDUCE

YOUR OWN ATTEMPT TO REDUCE YOUR PLASTIC WASTE



Think about how you, maybe even together with your friends or family, can avoid producing waste in your everyday lives.

- During which activities or on which days of the week in particular is a lot of waste produced?
- What material is the waste made of?
- What alternatives are there and how difficult would it be to use them in your everyday life?
- How much waste would that save?

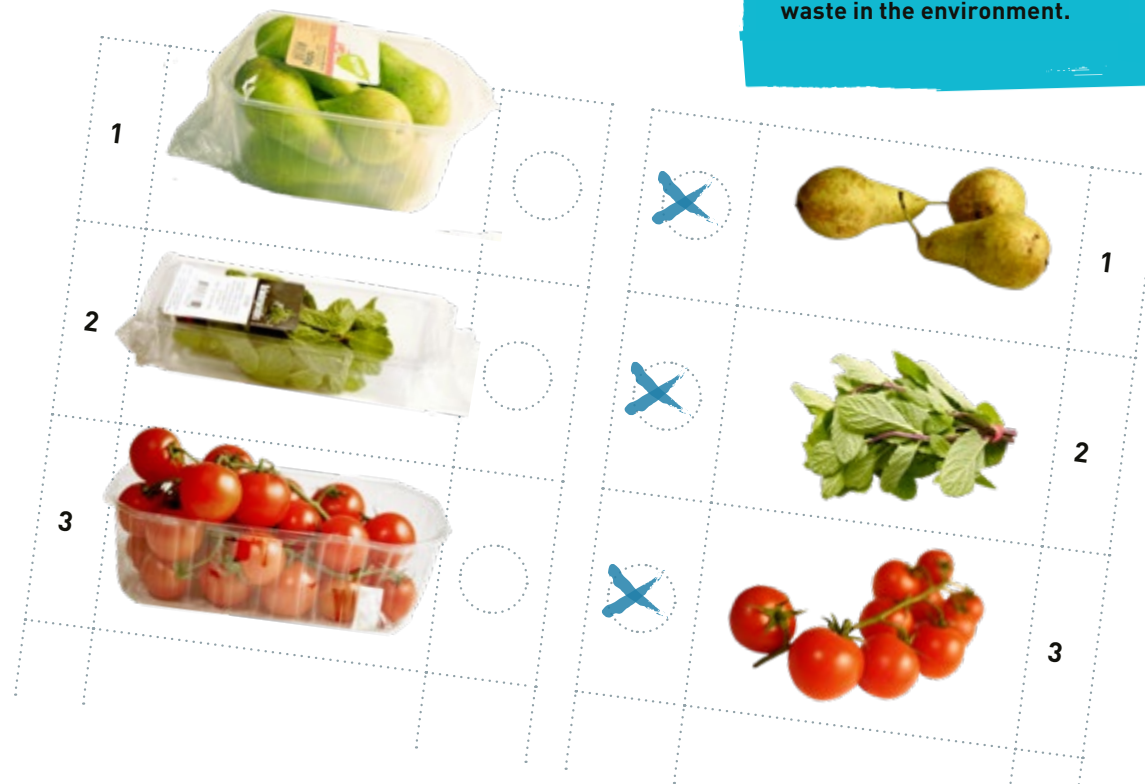
PLASTIC-FREE CASTING YOUR VOTE WHEN SHOPPING: THE CHOICE IS YOURS!

Each time we buy a product, we are casting a vote and letting the manufacturer or retailer know that we would like to buy more of that product. Find out how your shopping could involve less packaging.

- What is important to customers when shopping?
- Would they be prepared to pay more for items with less packaging?
- What are some of the hurdles to shopping at the farmer's market or in packaging-free shops?



Not all single-use plastics are bad! It is logical to make certain products out of plastic and to only use them once. Some of these include items in hospitals which are contaminated after use. These items are very helpful, but it must be ensured that they are disposed of properly and that they do not end up as waste in the environment.



UPCYCLING AS GOOD AS NEW!



Upcycling means that waste products are given a new function and thus once again have value.

- Which waste is generated in your area that is not reused in other ways?
- How could the waste be transformed into a new product with new value?
- Who might need the product?
- Are there negative or positive side effects (e.g. on the environment)?

Did you carry out a project and/or investigate the topic of plastic waste further? We would like to hear from you!

plastic-pirates.eu/en/contact

#PlasticPiratesEU

OUTREACH RETHINKING AND CHANGING



You can only make changes if you make others aware of the problem.

- How could you raise awareness for an environmental topic of your choosing (e.g. writing an article, making a stop-motion film)?
- Which target group do you hope to reach and what is the message you want to get across?
- Who are the decision makers (e.g. from the worlds of politics, industry, trade) and how are measures implemented by them?

More information can also be found in the 'Over to you' chapter of the teaching materials and worksheets.

NOTES

[illegible]This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Partners

Plastic Pirates – Go Europe! is a joint initiative by the German Federal Ministry of Education and Research, the Portuguese Ministry of Science, Technology and Higher Education and the Slovenian Ministry of Education, Science and Sport.

Plastic Pirates – Go Europe! is coordinated by a number of project partners from Germany, Portugal and Slovenia:

The Kiel Science Factory (Kiel, Germany) is a joint laboratory of Kiel University and the Leibniz Institute for Science and Mathematics Education where pupils learn, teach and conduct research. The Kiel Science Factory offers extracurricular learning and research for pupils and teachers in collaboration with university students and scientists – both in the form of school programmes as well as through citizen science.

forschungs-werkstatt.de

Ecologic Institute (Berlin, Germany) is an independent academic think tank for environmental research and policy analysis. The institute introduces new findings and ideas into environmental policy and promotes sustainable development. One key priority is strengthening research, education and the discourse surrounding environmental policy on a European and international scale. Ecologic Institute has offices in Berlin, Brussels and Washington DC.

ecologic.eu

Ciência Viva (Lisbon, Portugal) is a Portuguese agency for the promotion of citizen engagement in science and technology that works together with a national network of academic centres. Ciência Viva works in close concert with research laboratories and, especially for the **Plastic Pirates – Go Europe!** campaign, has entered into partnerships with a series of scientific institutions:

CCMAR, the Centre for Marine Sciences in Faro, FCT-NOVA, the Centre for Marine and Environmental Sciences within the Faculty of Sciences and Technology at the University NOVA de Lisboa, MARE/UCoimbra, the Centre for Marine and Environmental Sciences at the University of Coimbra, and CIIMAR, the interdisciplinary Centre for Marine and Environmental Research in Porto.

cienciaviva.pt

The Slovenian Ministry of Education, Science and Sport promotes the development of a responsible academic society. It creates the framework conditions for the development of socially responsible and satisfied generations. Together with other partners, the ministry is working towards the creation of an inclusive, equal, sustainable and creative society of lifelong learning. It also supports the dedication of young people and their participation in sport activities. The Ministry closely collaborates on **Plastic Pirates – Go Europe!** with a number of research institutes and other partners from Slovenia.

gov.si

PARTNERS

Together with the following partners, Germany, Portugal and Slovenia will be supporting, accompanying and coordinating the Plastic Pirates – Go Europe! campaign from 2020 to 2021 in the context of the trio presidency of the Council of the European Union:



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The mark of
responsible forestry



Plastic Pirates – Go Europe! is a joint campaign by the German Federal Ministry of Education and Research in collaboration with the Portuguese Ministry of Science, Technology and Higher Education and the Slovenian Ministry of Education, Science and Sport. The campaign is taking place in all three countries from 2020 to 2021 as part of the trio presidency of the Council of the European Union. The goals of the campaign are to strengthen scientific collaboration in Europe, promote excellence in citizen science and to raise awareness and consciousness for the environment.

