



RESOURCE PACK 6 - 12 YEARS

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About the Project

Island Guardians: For a Plastic-Free Med is a project on marine plastic pollution designed and managed by Explora Interactive Science Centre. It is funded via the first Open Call of the Remedies Consortium within the framework of the EU Mission Restore our Ocean and Waters. The project aims to foster a plastic-conscious society and contribute to the prevention of plastic pollution by offering tools that can be easily accessed by any person or entity seeking to carry out a community-based initiative. Through educational resources, storybooks, videos, clean-up events and more, the project implements a long-term strategy to reduce the use of plastic and diminish the volume of plastic litter in our sea and coastal areas.

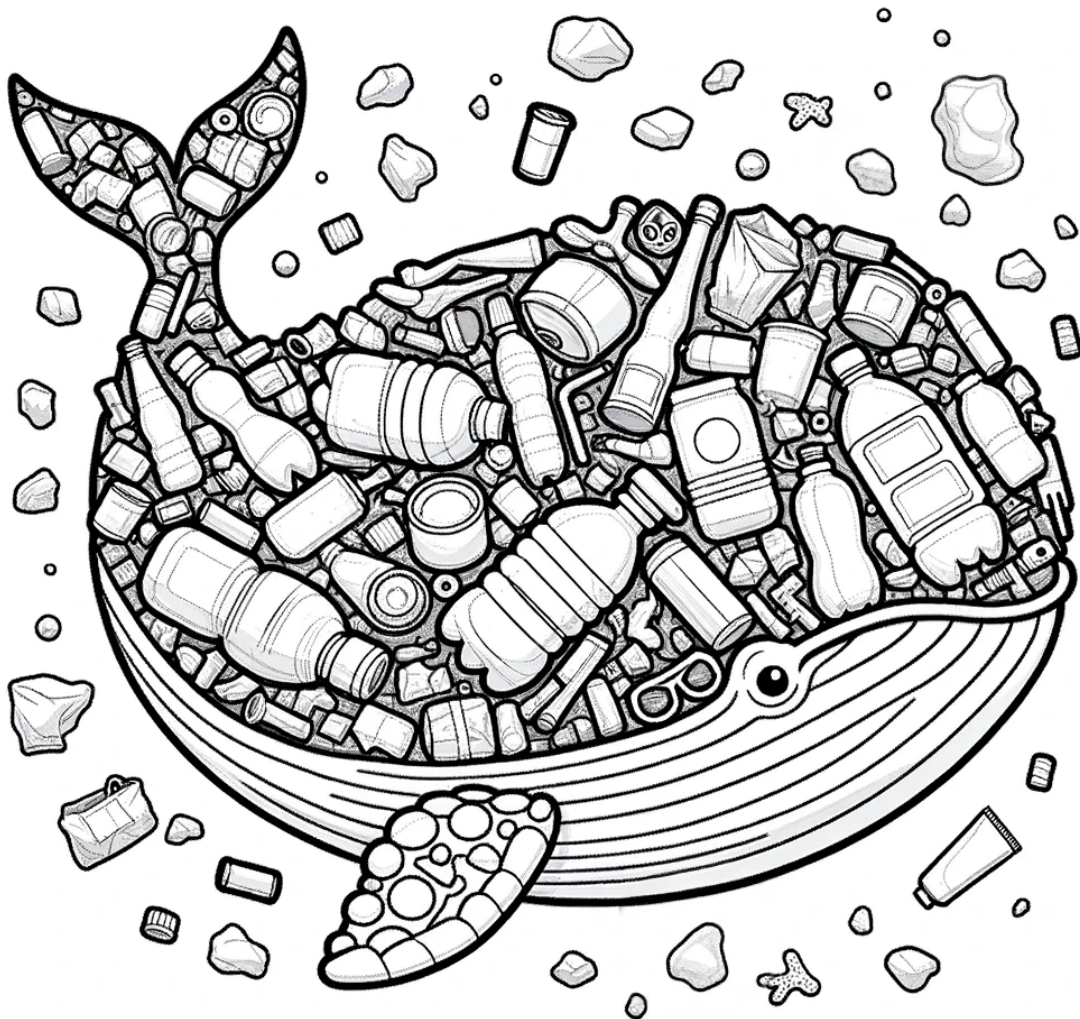
For a full list of project deliverables, kindly visit www.islandguardians.org



Age: 6+

Activity Type: Game

LET THE COLOUR BE THE CHANGE!



Challenge:

Grab your most colourful drawing tools to highlight what's wrong with this picture! Human actions can lead to plastic pollution in our oceans, which impacts marine wildlife. Let's work together to protect our seas and the creatures that call them home!



Zibel is on a mission to reduce waste in Malta and spread awareness! This NGO organises beach clean-ups and runs workshops to educate the public on waste reduction.

Their mission relies on community support to address plastic pollution and ensure a cleaner future for Malta. Have a look at what you can do to help them out!

<https://www.zibel.org/about>



FOREVER IN OUR SEAS

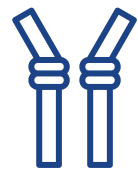
Can you identify which of the below items pollute our beaches?

Colour the ones you think are harmful and try to guess how long they take to break down completely in the sea.

Choose from the options below.

Number of years:

200 years	3-14 months	6 months	20-30 years	450 years
600 - 800 years	450 years	10 years	600 years	10-20 years



You can be a hero by always carrying re-usable objects like a fabric shopping bag, a reusable cup or mug, reusable cutlery, and by trying to avoid plastic packaging

Age: 6+

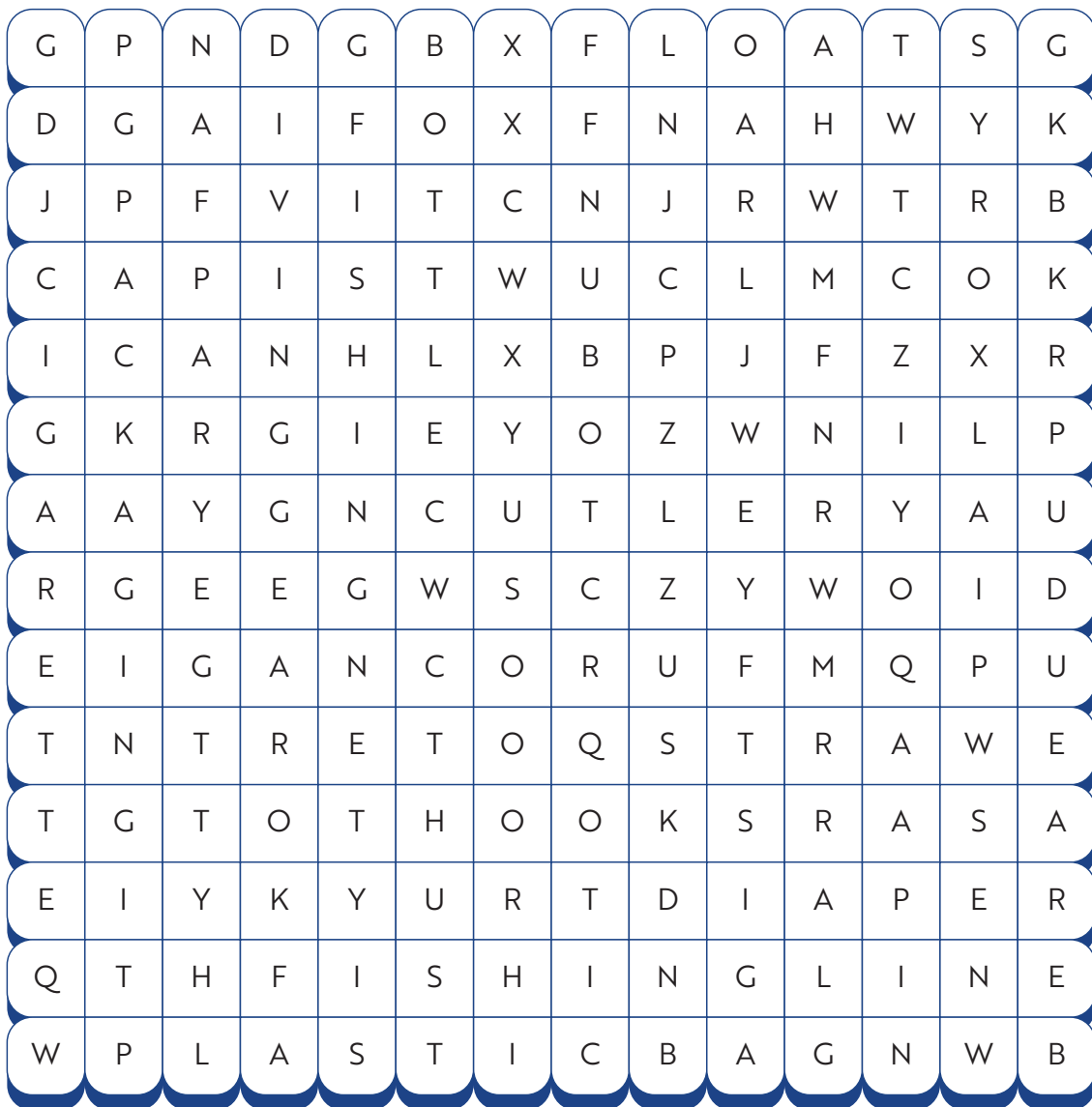
Activity Type: **Puzzle**

SPOT THE LITTER

Find the trash left behind by people on land: *(Mark these with a red pen)*

Straw • Packaging • Diaper • Cup • Bottle • Plastic Bag
Toys • Cigarette • Cutlery

The hidden words can be found **vertically, horizontally or diagonally**



Find the trash left behind by people in the sea: *(Mark these with a blue pen)*

Fishing net • Rope • Fishing line • Diving gear • Floats • Hooks

LITTER LEGENDS!

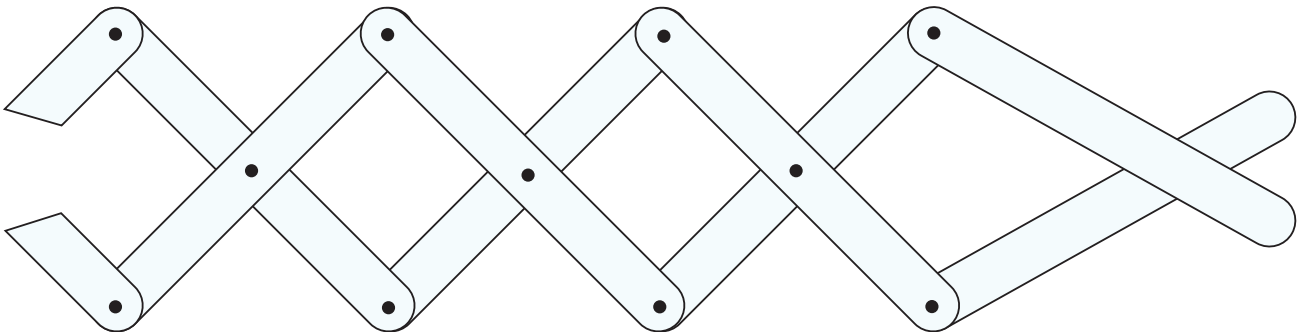
We cannot save the world by ourselves, but we can definitely help make a difference. In this activity, we shall take on a beach clean-up challenge, but it's slightly different. You will create your own litter picker using simple materials and then use it to clean up your favourite beach.



For this activity, you will need to ask the help of an adult as it requires the use of tools.

Here's what you'll need

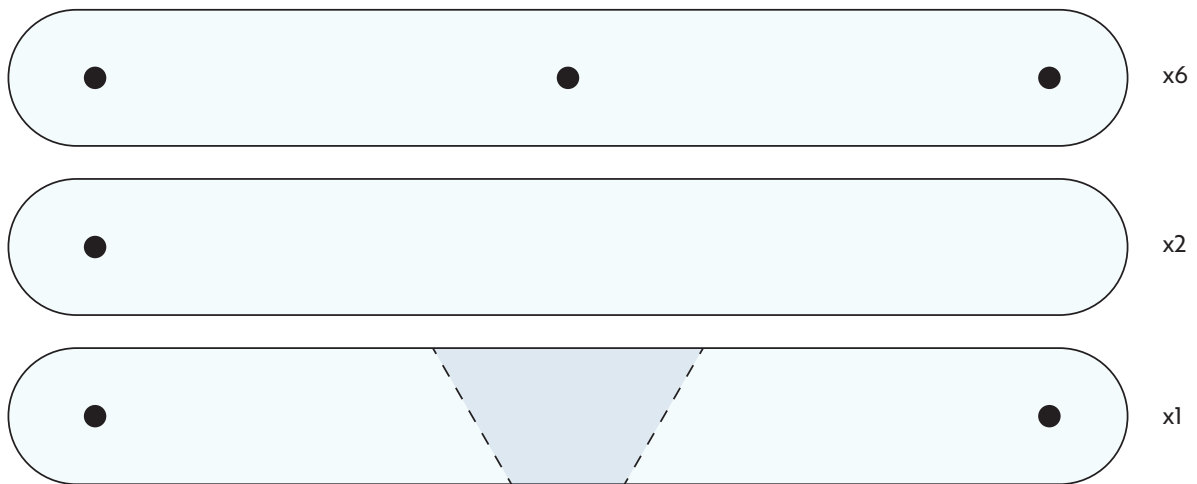
- 10x jumbo popsicle sticks
- 11x butterfly pins
- 2x rubber bands
- Ruler
- Pencil
- Cutter
- Drill
- Side-cutter
- Sandpaper
- Hot glue gun



Join the wave of change by participating in beach clean-ups around Malta with local NGOs and entities:

Green Hats, Żibel, Coast is Clear, Saving our Blue! and Raniero's Adventures





Step 1: Prepare the popsicle sticks

1. Use the above image to mark the placement of the holes on each popsicle stick.
2. Make sure to mark the amount needed as specified above.
3. Ask an adult to drill holes in the popsicle sticks where you have just marked.
4. Ask an adult to use the ruler and the cutter to make light cuts in the sticks along the dotted line. Then bend the pieces slightly until they snap.
5. Sand any rough edges.

Step 2: Connecting the popsicle sticks

1. Follow the design on the previous page and attach the popsicle stick together using the butterfly pins.
2. Make sure you place the front pieces (fingers) at the front and the handles at the back.
3. When attaching the fingers and the handles, put some hot glue between the two sticks to make them more secure.

Step 3: Finish the litter picker

1. Decorate the pieces with paint, markers, or anything else of your preference.
2. If the ends of the butterfly pins are too long, trim them using the side-cutters.

Step 4: Test out your litter picker

1. Hold the handles, pull apart, and push together to see your litter picker in action.
2. Test it out by picking up some objects with it.
3. Can you think of ways of how you can improve it?

Now go to your favourite beach and use the litter picker you've just created to carry out a beach clean-up!

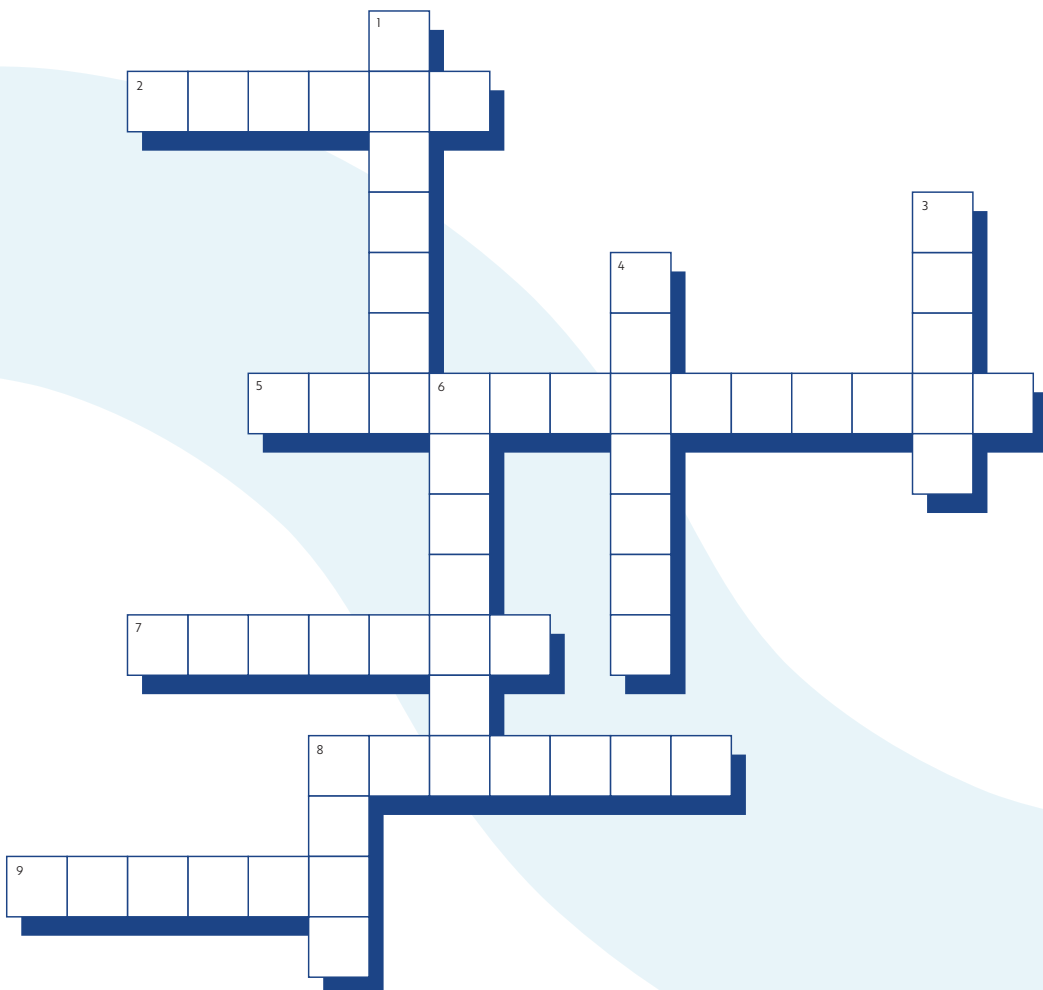
CROSSWORD

DOWN

1. This type of waste is very harmful to marine life.
3. A sandy or rocky shore by the sea, often visited for relaxation and play.
4. A smart ocean mammal known for its playful nature.
6. Doing this more can help reduce waste in our seas.
8. A colourful marine creature with claws.

ACROSS

2. This sea creature can live for over 50 years and is often harmed by plastic bags.
5. These small plastic particles are a big problem for ocean health.
7. What do we need to do more to save marine animals from pollution?
8. This action helps protect marine life by removing trash from beaches.
9. A protected marine area around Malta, known for its clear waters and rich underwater biodiversity.



LET'S JUMP INTO UPCYCLING!

Turn some old plastic bags into amazing skipping ropes! Let's learn how to upcycle materials by crafting them into something usable. Let's help some plastic bags skip the landfill, while having a fun time!

What you'll need:

- Plastic bags
- Scissors
- Masking tape
- Duct tape
- Table

How it's made:

1. Prepare the Plastic Bags

Flatten each plastic bag by cutting it open to create a single large rectangle. Remove the handles and any extra pieces.

2. Create Strips

Cut the plastic bags into long strips.

3. Form Long Strips

Tie the plastic strips end-to-end to form longer strips, a little longer than the desired length of the skipping rope. (Repeat this until you have 12 long strips)

4. Braiding

Group six strips together and tape one end of the group to a surface of a table using masking tape. Braid the six strips together into one long braid. Repeat this with the remaining six strips to create a second braid.

5. Twisting the Braids

Twist the two braids together tightly to make the skipping rope stronger.

6. Creating Handles

Secure the ends of the twisted braids with duct tape to form handles.

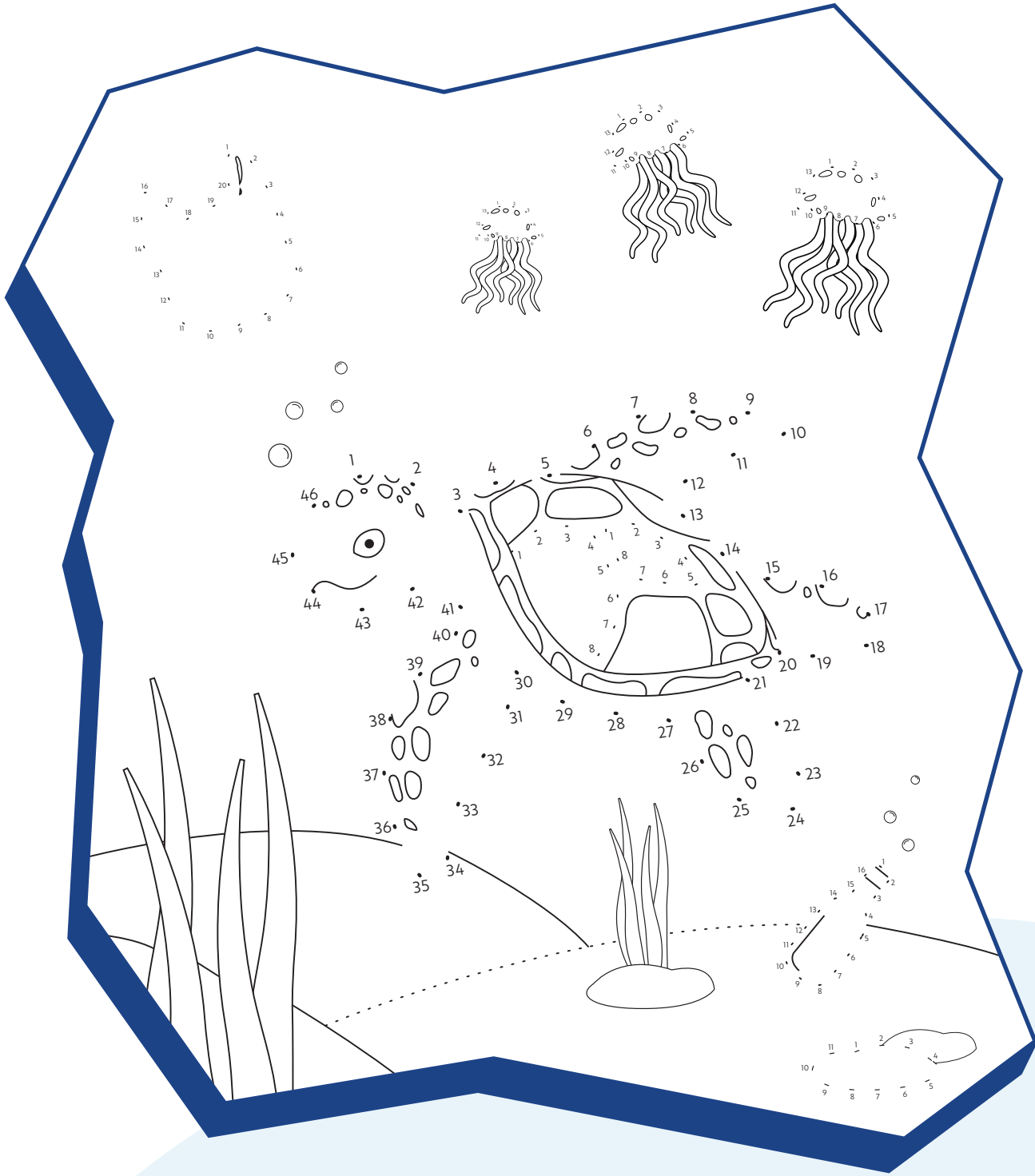
Time to take your skipping rope for a test!



Make sure you collect used plastic bags for this crafting activity and not use new ones! You might need to wait a bit to collect a few, you can even pick some up if they are littering outdoor spaces!

A VIEW INTO OUR SEA

Complete the puzzle by connecting all of the dots to reveal the images. Then, give this scene life by adding colour to it.



SURVIVAL OF THE FITTEST

Navigate through different challenges and see which animals are most likely to adapt and survive based on their unique characteristics.

Know Your Ocean Dwellers!

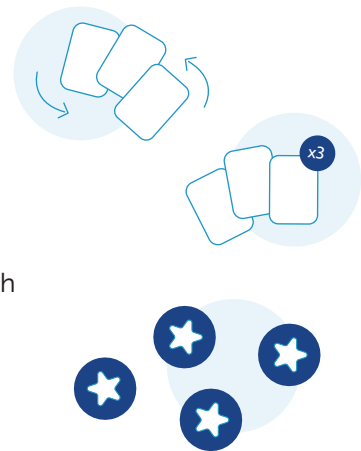
Understanding the strengths and weaknesses of each animal card will help in making strategic choices against specific scenarios.

How it's played:

Shuffle the Ocean Dweller Cards and the Scenario Cards separately.

Each player draws 3 Ocean Dweller Cards.

Each player begins with 4 Survival Tokens, used to keep track of which animals survive each round.



Game Rules:

- 1 A Scenario Card is drawn and revealed to the players.
- 2 Players secretly choose one of their Ocean Dweller Cards to face the scenario based on the animal's strengths.
- 3 Based on the Scenario Card, players reveal their chosen card and discuss between each other which animal would be more likely to survive the scenario.
- 4 Players whose animals survive the scenario earn one Survival Token. Players whose animals do not survive lose one Survival Token.

Winning the Game:

The game ends after a predetermined number of rounds (e.g. four rounds). The player with the most Survival Tokens at the end wins. In case of a tie, the player with the highest diversity of surviving animals (different feeder types) wins.

WILL IT FLOAT OR SINK?

Instructions:

Find 5 plastic items in your house and check their RIC number (found inside the triangle), usually found at the bottom of the item. This will let you know what type of plastic the item is made of! Match the plastic's density with fresh water to predict if it will float. Test this by placing the item in a sink full of water and record the results in the table below!

What is Density?

Density is how heavy something is for its size. If you compare two things of the same size, the one that's heavier has a higher density.

PLASTIC ITEM	RIC CODE (NUMBER ON OBJECT)	WILL IT FLOAT OR SINK?	
		PREDICTION	RESULT

- Did your predictions match your results?
- Why do you think salt water is more dense than fresh water?

Types of plastics and their density:



PETE

1.38 - 1.39



HDPE

0.95 - 0.96



V

1.16 - 1.45



LDPE

0.92 - 0.94



PP

0.90 - 0.91



PS

0.020 - 1.07



OTHER

Varies

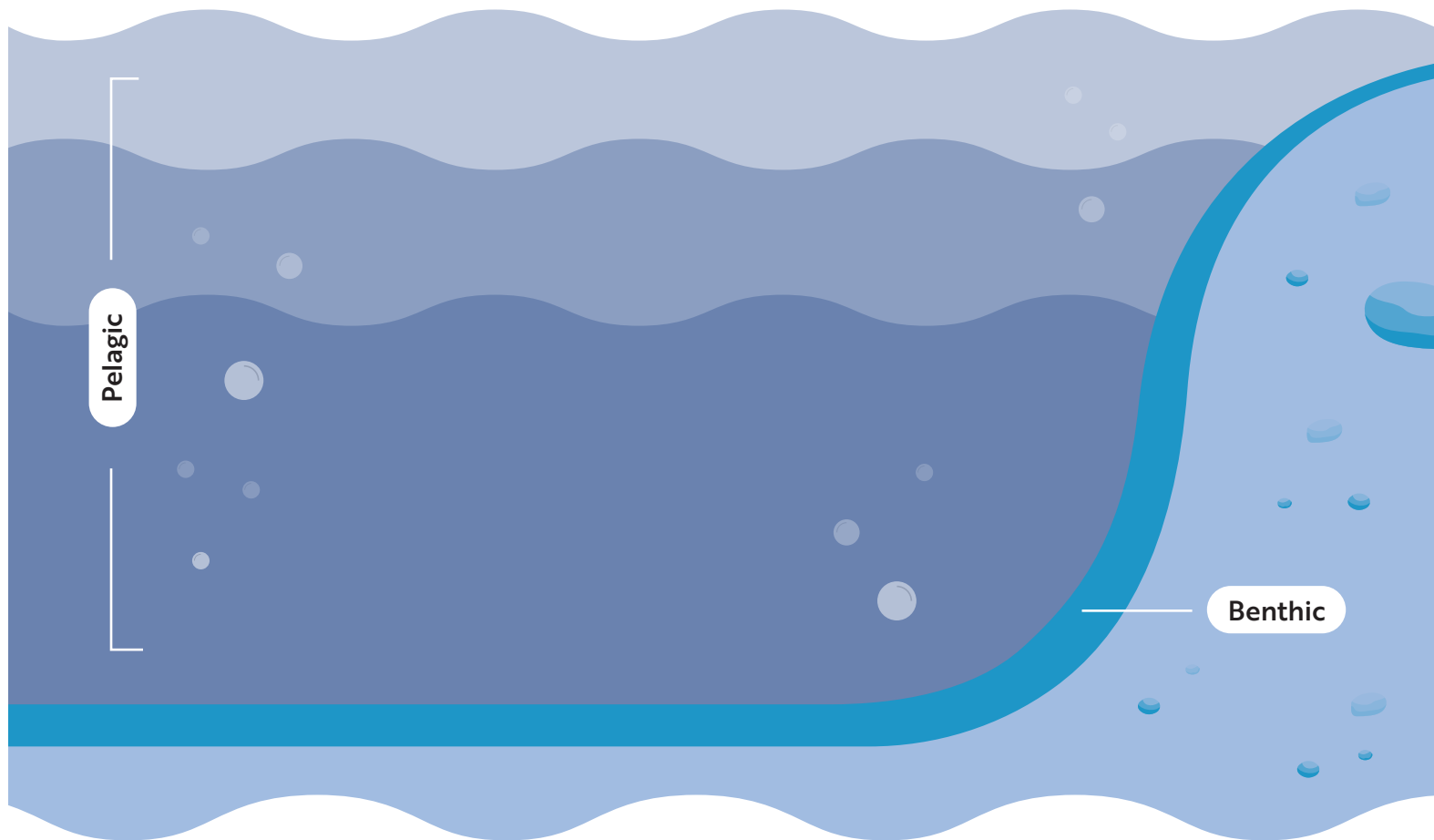
Fresh Water
1.00

Sea Water
1.03

To learn more about these different types of plastics, go online and search the letter symbols listed here!

WHAT'S AT RISK BELOW?

Use the cut-outs on the last page to place the ocean dwellers in the correct regions on the ocean zone map. Then, place each of the 5 plastic items from the density activity in the areas where they would end up to see which creatures might be affected. If you found any other items that are not included below, go ahead and draw your own!



Pelagic animals live and swim in the open ocean. Benthic fish are different; they live at the bottom of the ocean - some swim above the seafloor, some rest on it, and others even dig into it!

Food for thought:

- Which types of plastics will affect which animals?
- How might the shape and size of a plastic object affect the animal?
- Are there any alternative materials rather than plastic that could be used to make these objects?



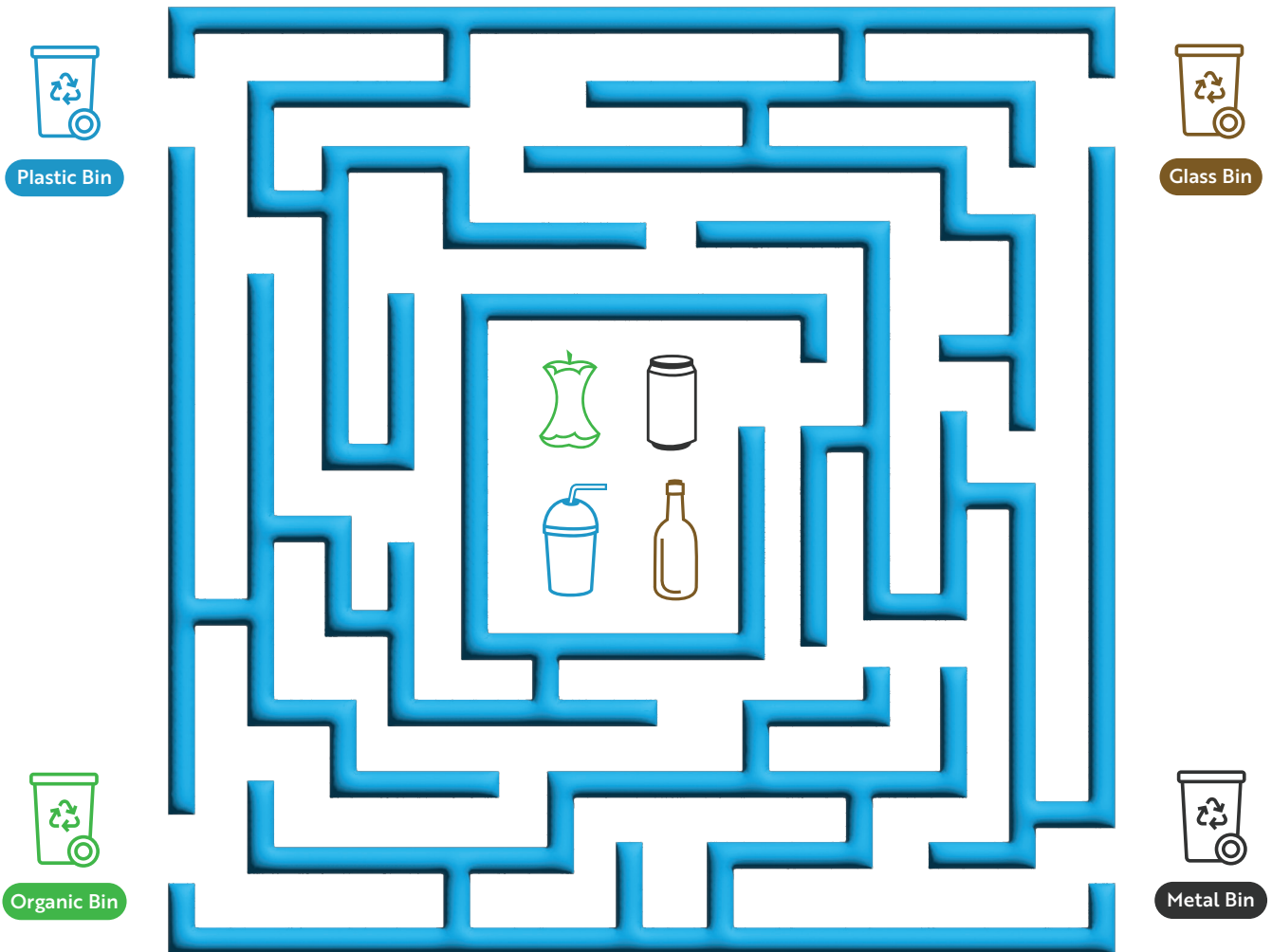
Check out the local project **DEEP-SEE** to learn about the types of plastic found in different sea layers!

<https://ocean.mt/deep-see/>



LET'S RECYCLE

Can you clean up this beach by finding the correct path for each piece of waste?

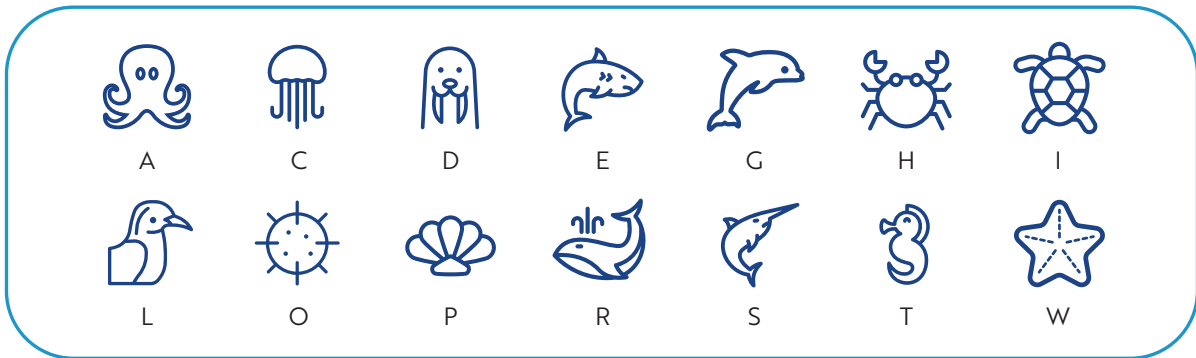


- Plastic can take hundreds of years to decompose. Help it find its way to recycling!
- Did you know that aluminium cans are 100% recyclable? Guide this soda can to its new life!
- Organic waste like apple cores can be composted. Take it to the organic bin to turn it into something useful for the earth!
- Glass is infinitely recyclable. Ensure this bottle goes to the glass bin to be reused again and again!

WHO'S THE CULPRIT?

Every day, we use lots of things that have plastic in them. Sometimes, we don't even know it! Even though we might not see the plastic, it's there, and it can still enter our oceans and the food chain. That's why it's important for us to learn about these plastic culprits and how we can use things that are better for our planet instead.

Crack this cryptic code to find out about some plastic culprits that hide in plain sight!



Did you know that many of your items of clothing are made of plastic? The most common one is polyester! Buying clothes made of natural fibres such as cotton will reduce your consumption of plastic!

ECO-CRAFTERS

Let's be Eco-crafters! Get ready to become heroes for our planet by joining us on a treasure hunt at the beach! We will turn hidden beach waste into amazing art, and cool crafts. Grab your explorer hats, and let's sieve, clean and create as we make the beach beautiful and learn how every little piece of plastic we save makes a big difference!

This activity has four parts. The first part is making two sand sieves to filter out the sand. The second part is extracting the microplastics and recording the data. The third part is cleaning the microplastics. The final part is creating the art piece.

Materials

- **For the Sand Sieves:**

- Mesh screen or fine netting
- Some wider wire mesh
- Material to build your sieve structure such as wood, PVC tubes etc
- Scissors or a cutter
- Stapler, zip ties, or strong tape

- **For Collecting Microplastics:**

- A bucket or any other container
- Reusable gloves
- A hand shovel

- **For Recording the Data**

- Printed template
- Smartphone or tablet with the Andromeda app installed (must have camera)

- **For Art/Craft Project:**

- Clean microplastics
- Craft glue or hot glue gun
- A base for your art piece, such as cardboard or a canvas
- Anything else you may wish to use for your craft



Template



App

Instructions

Step 1: Build Your Sand Sieve

1. Use your chosen material to prepare two identical frames for your sieves.
2. Cut the two meshes to fit the frames. Make sure you leave some excess.
3. Attach the wide mesh to one frame, this will be the filter for larger objects in the sand such as pebbles, sea grass or wood.
4. Repeat the same procedure for the finer mesh. This will allow the sand to pass through but catch the rest of the objects in the sand.

Step 2: Collect Microplastics

1. Visit a local beach equipped with your sieve and a bucket.
2. Use the sieve to sift through the sand and gather microplastics.
3. Place collected plastics in your bucket.

Step 3: Record Data of your collection

1. Scanning this QR code.
2. Use the Andromeda app on your phone or tablet to capture a photo of the microplastics found. Make sure to follow the app's instructions.



Scientists from the University of Malta are working on the Andromeda project to study microplastics in our oceans. By using a special app, kids can help collect data and learn about the impact of microplastics on marine life. Join us in protecting our seas and discover how science makes a difference.

For more details about this initiative, scan this QR code to access to full fact sheet about the Andromeda project.



MLT



ENG

Step 4: Clean Your Findings

1. Rinse the microplastics with clean water to remove sand or debris.
2. Dry the plastics before proceeding to the crafting stage.

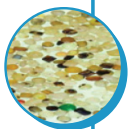
Step 5: Create Your Artwork

1. Brainstorm ideas for what you can create with the cleaned microplastics.
2. Use glue to assemble your artwork or useful item on your chosen base.
3. Decorate with paints or other materials as desired

Did you know that there are different types of microplastics in our seas? They come in different shapes and sizes, and each type has its own story.

Here are the five main types of microplastics:

- **Microbeads**
 - Tiny round pieces of plastic.
 - Found in face scrubs, toothpaste, and body wash.
- **Pellets**
 - Small, hard, and round.
 - Used in making plastics and recycling.
- **Film**
 - Thin, soft pieces of plastic.
 - Come from broken plastic bags and packaging.
- **Fiber**
 - Long, thin strands.
 - Come from clothes and industrial materials.
- **Fragment**
 - Rough, uneven pieces of plastic.
 - Come from bigger plastic items that break apart.



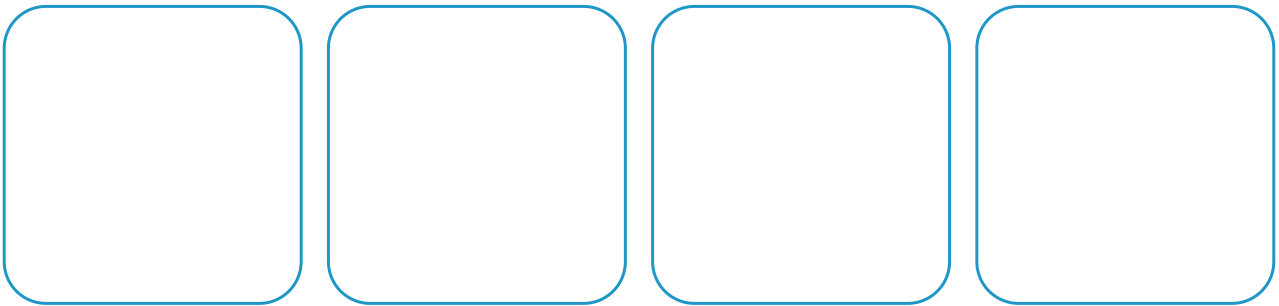
Source: Prapanchan et al. (2023)

LET'S GO ON A HUNT!

Hey young guardians! Ready for an adventure to help save our seas? Your mission: explore, observe, and learn how we can keep our beautiful Mediterranean Sea free from plastic. All you need to do is take this checklist and something to write/draw with.

1. Bottle Patrol: Pick up 5 bottles, glass or plastic, and recycle them correctly.

2. Shell Art: Collect 4 unique shells and sketch what they look like below. Use them later in a craft project to decorate something.



3. Rope Reuse: Find pieces of old rope and write down three ways to repurpose them.

4. Flip-Flop Flip: Find a discarded flip-flop and brainstorm its new use.

Tip: You can re-use the material to create something else. What did you think of?

5. Fishing Line Fix-Up: Collect abandoned fishing lines and consider how they could be re-cycled to avoid harming wildlife.

6. Can Collect: Gather aluminium cans and take them to a recycling bin.

7. Beach Clean-Up Champion: Count how many trash items you've collected and document the weirdest item you found.

8. Creative Conservationist: Sketch or photograph your favourite coastal plant or animal, and research why it's important to protect it.

BE AN ISLAND GUARDIAN

Would you like to be an activist and voice your thoughts on how we can safeguard the Maltese waters?

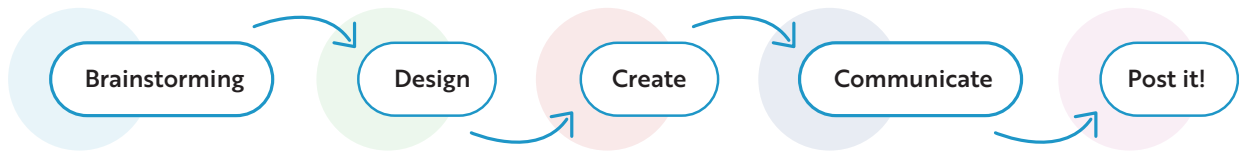
Join our poster competition by simply desining your own poster.

- Poster Size: A3
- Materials: Use any materials you like (paints, markers, recycled materials, etc.).
- Content: Include a clear message about protecting the marine environment.
- Submission: Write your name and age on the back of your poster.

Share your poster with us and we will display it at Esplora for a whole week!

Send it to:

Content team
Esplora Interactive Science Centre
Dawret Giovanni Bichi
Kalkara
KKR1320



HELP SHEET

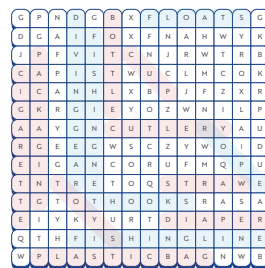
Forever in our seas

1. Plastic bottles - 450 years
2. Plastic bags - 10-20 years
3. Cigarette butts - 10 years
4. Food wrappers - 20-30 years
5. Beverage cans - 200 years
6. Straws and stirrers - 200 years
7. Fishing nets - 600-800 years
8. Fishing lines - 600 years
9. Balloons - 6 months
10. Glass bottles - 1 million years
11. Plastic cutlery - 450 years
12. Rope pieces - 3-14 months

Marine Crossword

Cigarettes Wipes Clothes Diaper

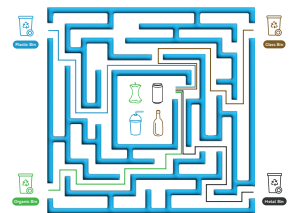
Spot the litter



Marine Crossword

1. Plastic
2. Turtle
3. Beach
4. Dolphin
5. Microplastics
6. Recycling
7. Protect
- 8A. Cleanup
- 8D. Crab
9. Gnejna

Recycling Maze



Survival of the Fittest

Getting Caught in Plastic: Marine animals that have better flexibility and movement can better avoid getting tangled up in plastic waste present in our oceans.

Eating Microplastics: Some animals eat tiny pieces of plastic by mistake. Animals that are selective in their hunting, are less likely to eat harmful plastic. Eating plastic can harm animals by causing stomach problems, loss of nutrition, and sometimes even causing death.

Plastic Waste in Habitats: When plastic trash builds up where animals live, it can be harmful. Animals that can live in different places have a better chance of staying safe.

Rising Sea Temperatures: Plastic traps heat in the water, causing the sea temperatures to rise. This can be a problem for animals that do not adapt easily to changes in temperature.

esplora®



REMEDIES

MEDITERRANEAN SEA BASIN LIGHTHOUSE



RESOURCE PACK

6 - 12 YEARS

islandguardians.org



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the European Union

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