



be plastic FREE

EDUKIT ENSAMBLE

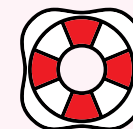


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LEGAMBIENTE





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The **ENSAMBLE** project was created to promote the development of “Blue economy” in the Mediterranean, through a close collaboration between all those who live around the sea, thanks to the coordination by FLAG “Costa degli Etruschi” for the Tuscan area, and the participation of Petra Patrimonia Corsica, Legambiente Toscana and WWF North Africa. The project aims to create a **network with local fishing communities** in Tunisia, France and Italy to spread the strategy based on CLLD, through an exchange of good practices.



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WHAT IS

Blue economy?

Blue economy is the capacity to use what our sea has to offer in a sustainable way, so as to guarantee an equal distribution of resources to all who want to live the sea for their work or simply whoever wants to benefit from it, ensuring this possibility exists for future generations.

Protecting the environment, therefore, stops being a cost and becomes the glue that holds together all the proposals for innovation and development that enhance territories, cultures and local traditions.

Unfortunately, these resources can lose value due to the release of contaminants into the environment resulting from human activities, such as marine litter. Not only are marine species affected, but also the fishermen themselves: a study has highlighted how, out of 260

Italian fishermen interviewed, 43% always or almost always fish waste during every fishing trip, mainly in the coastal areas (32% of cases) or at river mouths (30% of cases). Precisely for this peculiarity, if we invert our point of view, we would realize how the fishermen themselves can become precious allies in reducing the existing contamination.



BOX

What is Blue economy for?



Energy development

Offshore wind farms, tidal power stations (dam-like structures used to capture the energy of moving water), wave motion: these are just some examples of marine energy used to limit greenhouse gas emissions.



Aquaculture and fishing

Fish products represent about 15.7% of animal proteins consumed worldwide. According to estimates by the United Nations Food and Agriculture Organization¹, half of these products come from aquaculture and this percentage will reach 65% by 2030.



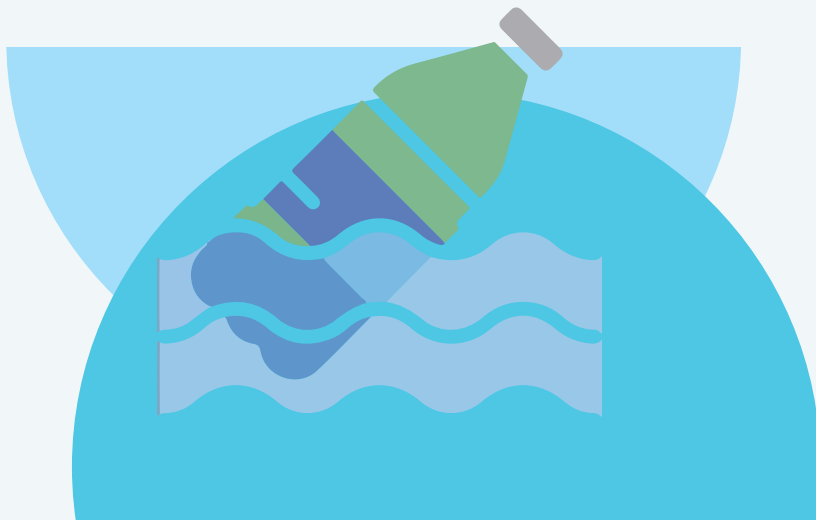
Maritime, coastal and cruise tourism

Healthy marine environments increases the attractiveness of coastal areas, which in turn strengthens the growth potential of activities such as tourism and water sports, as well as ecological tourism activities such as whale watching.

¹ "THE STATE OF WORLD FISHERIES AND AQUACULTURE", FAO 2010.

THE Marine litter PROBLEM

Marine litter among the main enemies of marine biodiversity along with pollution and climate change.



Marine litter is defined as: “... any persistent solid material, produced or treated, that has been disposed of or abandoned in the marine and coastal environment, or elements made or used by people and deliberately discarded or accidentally lost at sea and on the beaches... “.

Unfortunately, when we go to determine the composition of the marine litter, we discover that about 80% is made up of plastic materials. But where does all this plastic come from? It is partly dumped by sea activities, such as bathing establishments, different kinds of boats and similar activities. Most, however, come from the mainland, where, once abandoned or disposed of incorrectly, these materials are carried by the wind and across rivers until they reach the sea.

The quantities arriving in the Mediterranean are enormous! Every year from 5 to 6.8 million tons of plastic end up in the oceans, and the first place obviously goes to plastic bottles. In the Mediterranean, about 570,000 tons of plastic are poured into it every year... it's as if 33,800 bottles were thrown into the sea every minute!

What happens once these materials

reach the sea?

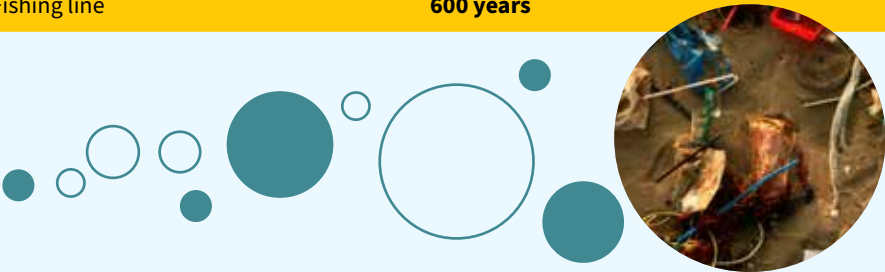


For example, they can become smaller pieces, forming what we call micro plastics. These very small fragments (which do not exceed 5 mm in length) can easily be mistaken for food by marine organisms, such as fish and molluscs, sometimes ending up on our tables too!

But it's not just the fragmentation of larger pieces that generates micro plastics. These can also be released into the environment as they are. In this case we are talking about “mermaid's tears”, a romantic name to define those spheres used by industries to form all plastic objects, once fused together and modelled.

Unfortunately, the ability of plastic materials to persist in the environment allows them to travel for hundreds of kilometres, reaching even the most remote places on the planet, such as Antarctica and the Mariana Trench, the deepest point of the oceans. Furthermore, the sea currents are able to accumulate all these materials in very specific points of the oceans, generating the so-called “plastic islands”. However, do not be fooled by the name... they are not real islands, rather areas with a very high concentration of plastic!

Marine Litter degradation times	
Cigarette butt	2-5 years
Polystyrene	Up to 1000 years
Plastic bag	50-100 years
Glass	Infinite
Aluminium can	200 years
Paper	1 year
Lighter	100 years
Apple core	from 15 to 90 days
Plastic bottle	450 years
Fishing line	600 years



What animals are most affected by marine litter?

Among the animals most subject to this type of contamination we can mention the Loggerhead sea turtle (*Caretta caretta*), the fin whale and some sea birds, such as shearwaters (belonging to the Procellariidae family). For example, sea turtles very easily confuse plastic bags scattered at sea with jellyfish, which they love. Just think of the fact that all species have encountered these objects at least once. Among seabirds, on the



other hand, more than 63% of species are affected by plastic pollution. Then there is the fin whale (*Balaenoptera physalus*), the only baleen whales living in

the Mediterranean Sea, classified as endangered by the IUCN red lists, and which appears to be decreasing compared to the last 20 years. The fin whale, feeding by filtration, ingests up to 7,000 litres of water with each bite, swallowing, along with krill, even large quantities of macro and micro plastics.

Unfortunately, even marine species destined for human consumption are feeding on plastic.



According to a Greenpeace study and Italian research centres (UNIVPM and IAS), around 35% of marine organisms belonging to 300 different species that we usually consume, contained textile fibres and micro plastics in the stomach, on average there are 2,000 fragments of micro plastic that we eat every week through water and air!

The marine ecosystem: a threatened treasure

Why is it essential to preserve aquatic environments?

Water is essential for the development and sustenance of life, it is the basis of all living forms we know; without this precious resource, life on Earth would not have originated.

The oceans, which cover over 70% of the planet's surface, produce 70% of the oxygen we breathe: in reality the sea, through microscopic phytoplankton, produces more oxygen than all the forests on land. Not only that: the sea also absorbs CO₂, an essential process for regulating the global climate, and hosts a wide range of life forms, from microorganisms to sponges and from dolphins to the giant blue whale.

In this complex system, marine biodiversity plays a fundamental role (by marine biodiversity we mean the variety of living beings that populate our seas to the extent of genes, species, populations and ecosystems) and its' integrity is based on a fragile balance. The fate of the entire ecosystem and beyond is linked to the survival of a single species. Today millions of people depend on marine resources for their livelihoods. If well managed, marine ecosystems could generate much more than one might think and be able to support communities in an even more robust way.

Marine biodiversity, however, is decreasing, it is a fact. The loss of this great value represents one of the major environmental problems of our days. Every year, processes such as loss of coastal habitats, pollution, over-exploitation of natural resources and global warming threaten marine biodiversity in an ever

deeper and more irreparable way. In particular, water temperatures over the last few decades have significantly increased, drastically altering the flora and fauna.

The Mediterranean, due to its wealth of biodiversity, is one of the most important ecosystems in the world. Consider that our sea is home to approximately **17,000 marine species**, containing 7.5% of all marine animal species and 18% of plant species so far known to man, in only 0.32% of the total volume of all the planet's seas. Of all the species present in the Mediterranean, 28% are endemic, i.e. they are typical and present only in our sea.

Which are the most threatened endemic species of the Mediterranean?

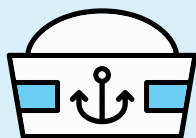
Among the most endangered species there is the **Mediterranean monk seal** (*Monachus monachus*). Currently **less than 700 specimens** survive in nature in our territory.

Another species in difficulty is the ***Pinna nobilis***, the largest bivalve that lives in the Mediterranean. Just think, this animal **is able to reach and exceed 1 meter in length and 25 years of age**. Its byssus (filament it uses to remain attached to the seabed) was used in ancient times as a fabric to make the clothes of kings and emperors. Unfortunately today, water pollution and the presence of parasites are putting its survival at risk.

Posidonia oceanica is also threatened by those maritime activities that are not managed in a sustainable way. This is a plant that forms large underwater meadows of great ecological importance because they host an enormous variety of organisms, in which they find nourishment and refuge.



In the photo above we see a *Pinna nobilis* off the Sardinian coast.
The photo below shows the *Posidonia oceanica*.



Fishermen: guardians of the sea

If we were to identify the category that spends the most time at sea, we would have to mention fishermen, representing real sentinels, ideal for monitoring the health of the marine ecosystem.

Although their activities are strongly influenced by the presence of waste at sea, causing contamination of fish, storage problems on board and slowing down working times (the operation of separating waste from the fish is slow and manual), it is equally true that they can significantly affect the reduction of these pollutants.

In Italy, for example, the approval of the “SalvaMare law” is underway, which would allow fishermen to recover and dispose of waste caught in the sea and in inland waters in special plants located on the mainland, an action not permitted until now.



The possible actions to be implemented, however, are not limited to appointing fishermen as the role of cleaners of the sea, but can represent a springboard for the entire economic development of coastal areas. In a reality like the Mediterranean area, whose namesake sea bathes the coasts of more than 20 nations, different traditions can also be appreciated in the fishing sector, offering visitors unique experiences and enhancing local communities.

Examples are the traditional fishing of the Orbetello Lagoon, Italy, where traditional methods of capture, such as the lavoriero (barrier that takes advantage of the high tide), the martavello (more selective net for specific fish) and the tramaglio net (fixed gill net, mainly used in the summer), even if modernized over time, they maintain their characteristic peculiarities in the name of sustainability where even the processing of the fish itself has rooted historical origins. Intangible heritage of UNESCO, on the other hand, is the technique of fishing with the Charfiya, in the archipelago of Kerkennah in Tunisia. This is a labyrinth created by planting a large number of palm leaves in the seabed that create corridors through which, thanks to the currents, the fish arrive in the capture chambers. Here, they find the pots deposited by the fishermen in which they remain permanently trapped. In this sense, the diversification of fishing activities has infinite possibilities: fishing tourism is a form of tourism

supplementary to artisanal fishing that includes short excursions along the coasts, observation of professional fishing activities, catering on board or on land, recreational fishing and many other activities capable of enhancing the coastal environment and bringing the general public closer to the world of professional fishing.

The common thread of all these activities is environmental sustainability which is expressed in the conservation of biodiversity and the mitigation of the effects of pollution and habitat degradation. In this context, ample space is reserved for technological innovation, such as new generation fishing boats that combine energy saving innovation and technology, with modern systems for capturing, processing and preserving fish products, involving not only the production, but the entire production chain.

The fundamental pillars of sustainable fishing are:

1. *The use of instruments which are not too invasive*
2. *Fish following the seasonality of the reproductive cycles of the species, allowing them time to grow and reproduce, respecting the balance between collection and restocking*
3. *Avoid waste and unwanted catches of animals other than those that are being looked for.*

BUT IT IS NOT JUST THE DUTY OF FISHERMAN TO PROTECT OUR SEA

The task of the institutions is to favour the allocation of MPAs (Marine Protected Areas), as well as to improve the design and implementation of measures aimed at making the management of waste, generated by fishing and aquaculture activities, more effective, including discarded equipment, favouring where possible reuse, recycling and recovery.

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A possible solution to marine litter is, therefore, to limit the creation of waste where possible.

#1

Trying to buy the bare minimum and only durable goods, limiting as much as possible, if not eliminating, the use of disposable items.

#2

At the end of an object's life, why not reuse it with other functions, instead of throwing it away? A cup could become a pen holder, plastic bottles for vases, or inner tubes could be used to create toys.

#3

If it is necessary to dispose of an object, being careful to place it in the appropriate recycling bin. In this way, we are able to recover the materials and re-insert them in the production cycle in the form of secondary raw material, obtaining a double advantage: we will not pollute our seas and we will preserve natural resources!

Everything that is thrown into the unsorted bin could end up in landfills, wasting these very important resources!

What can be made
from recycled
plastic?

By reusing plastic bottles it is possible to produce synthetic fibres to make various types of clothes (10 are needed to make a t-shirt). We can use plastic bags, however, to produce a variety of equipment such as garden furniture. Bottle caps are perfect for making new car battery casings. Finally, it is possible to make external flooring from used tyres, such as synthetic football pitches.

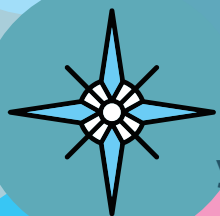




TEST

your

self



Below, you will find educational worksheets with which you can test what you have learned and if you have really become true protectors of the sea!

How much waste do we produce in the classroom?

What are the objects that we throw away the most in the classroom in a day, a week, a month?

Let's understand together what is the level of waste production of the entire class, and if we can separate the waste correctly for recycling.

For each category of objects, a score will be given based on the correctly disposed quantity: you will get 1 point for each object disposed of correctly and 0 for each item in the wrong bin.

	Quantity thrown away in the recycling bin	Quantity thrown away in the rubbish bin.	Average points per object	Is it recyclable?
Aluminium can				
0.5L plastic bottle				
1.5L plastic bottle				
Clean cellophane				
Dirty cellophane				
Bottle cap				
Juice or milk Tetra Pack				
Disposable spoon				

Pen lid				
Dirty snack wrapper				
Clean snack wrapper				
Crisp wrapper				
White sheet				
Plastic bag				
Workbook				
Felt-tip pen				
Food scraps				
Cardboard				
Pencil				
Drawing sheet of paper				

RESULTS

N. Objects _____ Total points _____

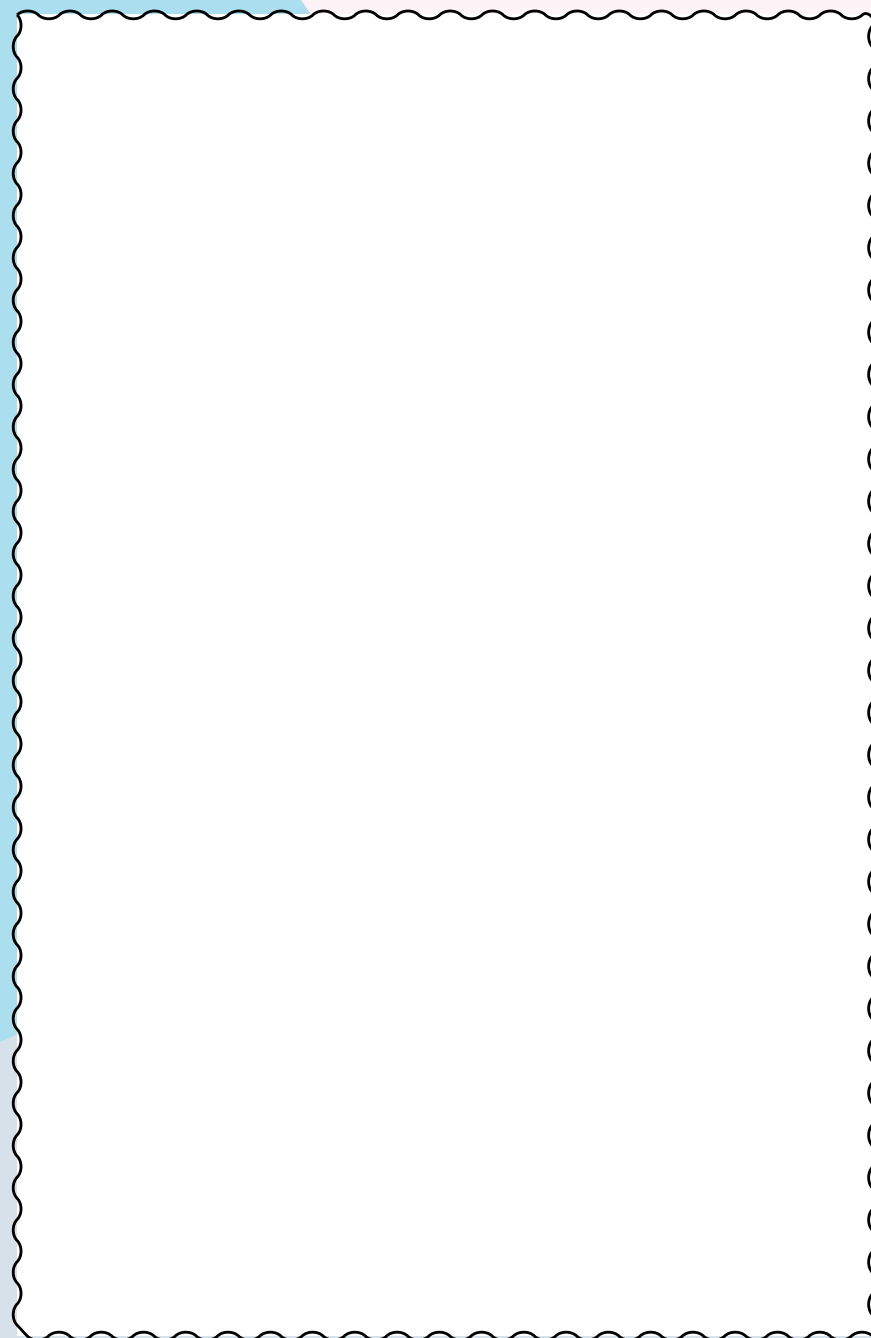
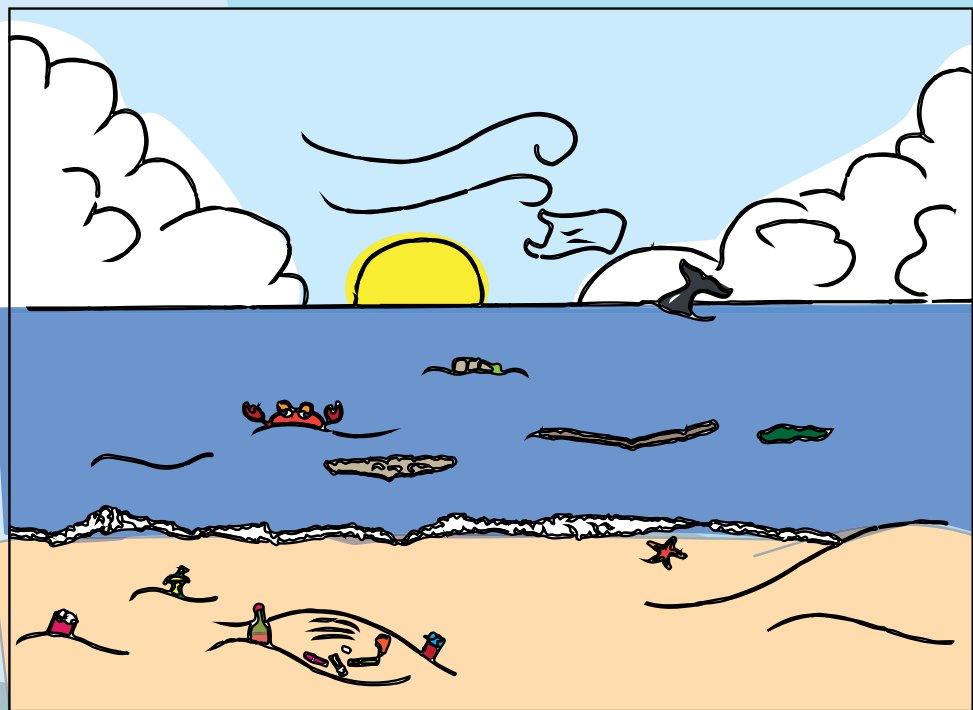
If the points > 80% of the total number of objects Great job! You are recycling in the correct way, the material you disposed of will make new secondary raw material.

If the points are 50-79% of the total number of objects Good job! You are able to correctly identify and dispose of a good amount of plastic material. But there is still something to learn!

If the points are < 50% of the total number of objects You're still not sure about the concept of recycling and how to separate different kinds of materials. Most of your waste will end up in landfills or incinerators. Too bad, you could have found it a new purpose as a secondary raw material.

A plastic beach

This is the condition of a typical beach on the Mediterranean Sea. If we immediately stopped contaminating it with further waste, what would it be like in 100 years? What waste would be completely degraded? And which ones would still be there? Try drawing the beach in this scenario. To finish, have fun colouring it!



What would happen if...

A plastic bottle wasn't disposed of correctly?

Number the pictures! (1-6)



What are the objects that degrade first?



Put the following materials in order from the one that lasts the shortest time in the environment to the one that lasts the most. How long do they take?

Least time for degradation



Most time for degradation

Beach littering monitoring

What is the conservation status of your favourite beach?
Let's find out together!
Go there and follow the instructions!

1. Define an area of 100 meters in length and a width from the shoreline to the dune or vegetation.
2. Walk along the sampling area noting all the objects found.
3. Count all visible litter found on the beach, even if partially covered by sand.
4. Record the waste following the sampling categories indicated below

Dispose of collected waste correctly!

PLASTIC

Name	No. objects
Six pack rings (2, 4 or 6 holes)	
Bags, shopping bags, bin bags	
Small plastic bags, ex: Ziploc bags	
Plastic bag handles	
Plastic bottles and containers for drinks <= 0.5L	
Plastic bottles and containers for drinks >0.5L	
Detergent and soap bottles or containers	
Food containers, including fast food	
Cosmetic bottles and containers (sun cream)	
Other cosmetic containers (shampoo, shower gel, deodorant...)	
Other bottles and containers (barrels, cans, drums...)	

Name	No. objects
Motor oil bottles and containers < 50cm	
Motor oil bottles and containers > 50cm	
Tanks (plastic containers with handles)	
Injection guns (silicone)	
Plastic crates and baskets	
Car parts	
Drink bottle lids/caps	
Detergent bottle lids/caps (not drinks)	
Non-identifiable lids/caps	
Plastic cap rings	
Tobacco packaging/ plastic from cigarette packaging	
Lighters	

Name	No. objects
Cigarette butts	
Pens and pen lids	
Combs/hairbrushes/ sunglasses	
Crisp and sweet wrappers	
Lollipop sticks	
Toys and party confetti shooters	
Plastic cups	
Plastic plates and cutlery	
Straws and cocktail stirrers	
Bags of fertilizer/animal feed	
Net bags for vegetables (e.g. potatoes, oranges)	
Plastic gloves	
Gloves (professional latex gloves)	
Fish trap	
Plastic tags used in fishing or industry	
Octopus traps	
Nets or bags for mussels or oysters	
Baskets for oyster farming	
Plastic sheets for mussel farming	
Rope (diameter larger than 1 cm)	
Rope (diameter less than 1 cm)	
Nets and pieces of netting < 50cm	
Nets and pieces of netting > 50cm	
Rope and tangled nets	
Plastic boxes and baskets for fish	
Polystyrene boxes and baskets for fish	
Nylon fishing lines (recreational fishing)	
Fishing light sticks (starlight), incl. box	
Floats for fishing nets	
Buoys	
Fenders	

Name	No. objects
Buckets	
Plastic bands or ties for packaging	
Industrial packaging, plastic sheeting	
Pieces and fragments of fibreglass	
Helmets, construction site helmets	
Hunting gun cartridges	
Shoes/sandals	
Synthetic sponges	
Plastic (2.5cm to 50cm pieces)	
Plastic (pieces > 50cm)	
Polystyrene (2.5cm to 50cm pieces)	
Polystyrene (pieces > 50cm)	
CD/CD cases	
Plastic jars for salt	
Diving fins	
Sellotape/masking tape	
Telephones (even fragments or pieces)	
Plastic construction waste	
Plastic flower vases	
MBER biofilm carrier	
Containers and bags for bait and ground bait	
Cable ties	
Cotton ear buds	
Sanitary pads/ panty liners/ tampon applicators	
Toilet deodorants	
Nappies (for children or elders)	
Syringes and needles	
Medicinal containers / tubes / tablets / blister packs	
Dog droppings in a bag	
Flip flops	
Other plastic objects/polystyrene (unidentifiable)	

RUBBER

Name	No. objects	Name	No. objects
Balloons, including valves, ribbons, lanyards		Inner tubes and rubber sheets	
Rubber balls		Wheel frame (bicycle or car, etc.)	
Boots and wellington boots		Rubber bands	
Tyres and seatbelts		Other pieces of rubber	

TEXTILES

Name	No. objects	Name	No. objects
Clothing		Ropes and fabric nets	
Canvas, leather or hide shoes		Canvas and sails	
Backpacks and bags		Other textile products	
Jute bags			
Upholstery			

PAPER/CARDBOARD

Name	No. objects	Name	No. objects
Paper bags		Paper cups, plates, napkins and containers for drinks	
Cardboard box		Newspapers and magazines	
Tetra pak milk carton		Paper fragments	
Tetra pak cartons (other food)		Other paper items	
Cigarette packages			

WOOD (treated/worked)

Name	No. objects	Name	No. objects
Corks		Wooden baskets for fish	
Pallets		Wooden popsicle sticks, ice cream sticks, coffee stirrers, forks	
Worked wooden objects		Other wood <50cm (manufactured goods)	
Wooden crates (for fruit)		Other wood >50cm (manufactured goods)	
Wooden/wicker pots			

METAL

Name	No. objects	Name	No. objects
Spray cans		Drums, barrels and cans for oil	
Beverage cans		Other barrels/cans (<4 L)	
Food jars or cans		Gas bottles, metal cans/barrels (> 4 L)	
Tinfoil, aluminum foil		Paint cans	
Bottle or jar caps / can tabs		Wire, wire mesh, barbed wire	
Disposable barbecue		Car parts/car batteries	
Household appliances (refrigerators, washing machines, etc.)		Metal cables and wires	
Metal dishes (plates, cutlery, cups...)		Batteries for domestic use	
Leads/weights/lures/fishing hooks		Other metal objects <50cm	
Metal fish trap		Other metal objects < 50 cm	
Industrial scraps			

GLASS/CERAMICS

Name	No. objects	Name	No. objects
Glass bottles (and pieces of bottles)		Neon tubes	
Light bulbs		Glass or ceramic fragments > 2.5 cm	
Glass / ceramic tableware (plates, cutlery, cups, glasses)		Other glass or ceramic objects	
Construction materials (tiles, bricks, etc.)			

SYNTHETIC/CHEMICAL PRODUCTS

Name	No. objects
Medical items (plasters, medical tampons, bandages, etc.)	
Wax/paraffin and candles	

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