

Adapted to  
The English Channel -  
The North Sea areas

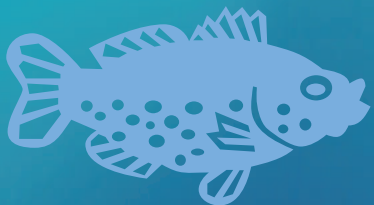


Surname, first name of shipmate :  
\_\_\_\_\_

School :  
\_\_\_\_\_

Favourite fish :  
\_\_\_\_\_

# FROM THE SEA TO MY PLATE



with



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This booklet will help you to learn about the coastline. Let's go and see the sandy beaches, the rocky coasts, the fishing ports and travellers.



You will find out about the long journey accomplished by fish until they arrive to your plate. You will also meet the fishermen who will teach you a lot about fish. Meet Mr Goodfish and you will understand very quickly, just like him, that we need to take a few steps to protect this resource we enjoy so much.

### How to use your ship's log?

Discovering the coastline and its inhabitants is exciting... Make sure you fill in your ship's log for each discovery! Off you go shipmate, let the adventure begin!

## THE 5 STAGES OF YOUR JOURNEY

### THE RESOURCES AND WHERE THEY LIVE (P. 3)

Discover and observe the animals on the foreshore and in the seabed

### DIFFERENT FISHING TECHNIQUES AND RESPECT OF MARINE RESOURCES (P. 7)

Learn about the different types of fishing and discover sea fishing jobs

### FROM THE SEA TO MY PLATE (P. 11)

Observe the various techniques for fish processing and memorise some advices to learn how to recognise fresh fish

### A LITTLE REMINDER... ADOPT MR GOODFISH TO PRESERVE MARINE RESOURCES AND THE FISHING TRADE (P. 15)

Let's think together about ways of protecting resources

### THE OTHER PEOPLE WHO USE THE COASTLINE (P. 16)

Meet the numerous people who use the coastline



READ THESE INSTRUCTIONS CAREFULLY BEFORE EACH TRIP TO THE SHORELINE:

1. I am aware of the tide times.
2. I never wander away from my working group.
3. I never venture to the cliff's foot at rising tide.
4. I always put the stones that I turned over at low tide back as they were.
5. I don't collect things or I only take what I need for my meal.
6. I do not disturb the marine birds.

And of course, I do not throw anything into the sea or on the shore !



# THE RESOURCES AND WHERE THEY LIVE



The place where the land finishes and the sea begins is called the coast or the shoreline. Every day the tide goes out to leave space for a fantastic area: the foreshore.

This vast sandy, muddy or rocky area is full of small animals. Look around carefully, the animals are waiting patiently for the sea to return...

## CREATURES OF THE SEASIDE

Put the numbers corresponding to each animal quoted in the text below on the picture.

Some of them bury themselves in the sand to be protected and withstand the lack of water at low tide. This is the case of **lugworms** (1), worms which can be recognised on the surface thanks to the hole and the characteristic coiled casts, which correspond to the opening of the "U" shaped burrows where they live.

Many different kinds of shellfish can buried themselves quite deep such as **cockles** (2) and **razor shells** (3). They can also be spotted thanks to holes visible on the sand surface.

Some of them prefer to cling to or hide in the rocks like **limpets** (4) (also known as "Chinese hat" because of their shape), **winkles** (5), **mussels** (6), **crabs** (7), **sea anemones** (8), and **starfishes** (9)...

And some of them choose rock pools which are rich in food. This is the case of **brown shrimps** (10) and **hermit crabs** (11) which feed on the remains of animals.

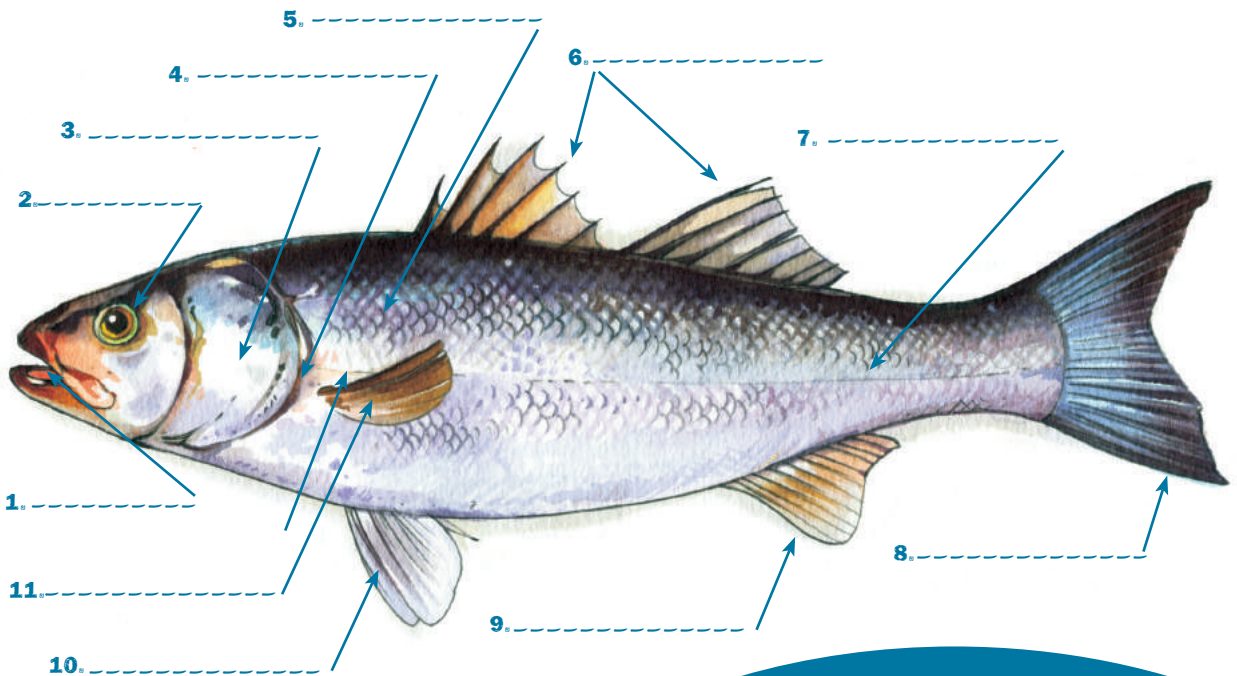


## ANATOMY OF A FISH

"Fish" move by undulating their bodies, stabilise and direct themselves using their fins. They breathe oxygen dissolved in the water through their gills. Their skeletons are either made of bone like the sea bass drawn below, or cartilage like sharks and rays.

Put the different parts of the fish in the right place with the help of a fisherman or a fishmonger.

Mouth - Operculum - Lateral line - Dorsal fins - Eyes - Ventral fins - Caudal fin - Anal fin - Scales - Pectoral fins - Gills.



How do fish move?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What are the fins for?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

OPEN QUESTIONS...



## ◁ SOME CREATURES WHO LIVE IN THE NORTH SEA

The North Sea holds many riches. Shipmate, look at the fishmongers' stalls and try to identify these living creatures. Write their name below each of the corresponding drawings. Here are a few clues, your turn to play!

**THE COD** has a small chin barbel under the mouth.

**THE RED MULLET** is red.

**THE MACKEREL** has bluish zebra stripes on the back.

**THE HERRING** has a blue sheen.

**THE WHITING** has a golden back and a silver and white belly.

**THE SAITHE** has a dark grey back. It has the same number of fins as the cod but without the chin barbel.

**THE SEA BASS** is silvery grey.

**THE DOGFISH** is long and covered with freckles. It's small shark.

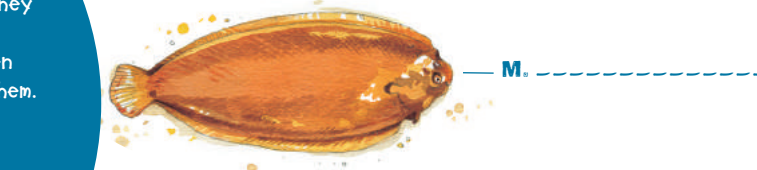
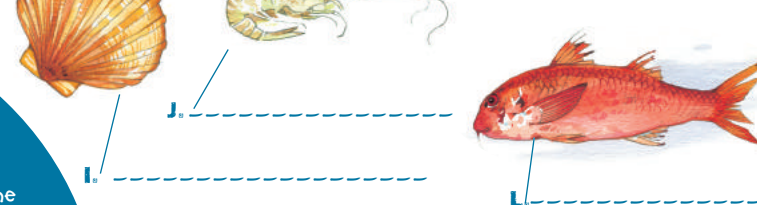
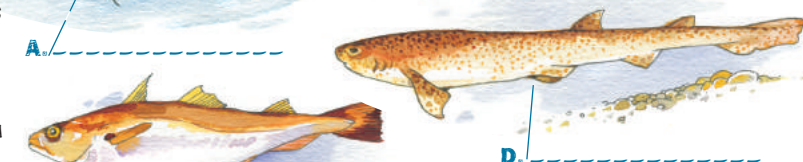
**THE SOLE** is long and completely flat.

**THE PLAICE**, also called flounder, is flat and covered with red dots.

**THE CUTLEFISH** is a mollusc with 8 arms. It's the same shape as a shield.

**THE BROWN SHRIMP** is a small crustacean with long antennae.

**THE SCALLOP** is a mollusc with a flat shell.



### DID YOU KNOW?

Even though some of them live in the open water, most of the animals shown above feed the bottom of the sea, at the level of the continental shelf. There, they find small crustaceans, molluscs or fish. This behaviour is well known to fishermen who adapt their fishing gear to catch them.

All these food chains weave a real network.

Energy is transferred from one to another. We are all connected to each other and we all depend on each other.

Each animal is useful in the sea which is why it's important to vary what you eat to avoid depleting a specy.





# DIFFERENT FISHING TECHNIQUES AND RESPECT OF MARINE RESOURCES



Hey shipmate, you can fish too! Coastal areas, like the Opal Coast, are the most important fishing areas in the world. Discover the techniques used to catch fish, shellfish and crustaceans; contact the port authorities to have more information on fishing seasons, areas and permitted amounts.

## ON THE FORESHORE, FISHING ON FOOT

Both professionals and amateurs (like you for example) gather seafood by hand.

But take care you can't do just everything and anything. **Fishing rights: a few precautions.** There are a few rules for coastal fishing: respect the minimum capture size, use the proper equipment, go to places reserved for this purpose and don't have eyes bigger than your belly! This way, you will contribute to safeguarding biodiversity.

### When to fish?

The ideal time for on foot fishing is the hour before low tide.

### Mussel fishing

is done by hand or with a spoon. The mussels must measure at least 4cm.

### Shrimp fishing

is done with a net that you push into the water.

### Razor clam fishing

Search in the wet sand for the two lock-shapes holes that the razor clams leave behind when they bury themselves.

In each hole, just drop two grains of coarse salt with a little water and wait patiently. After ten to twenty seconds the razor clam shows its nose. Then you have to seize it quickly between two fingers and pull it gently upwards. Take care, the shell is sharp!

### Cockle fishing

**With a rake,** walk on the sand to make the buried cockles appear and then scrape the muddy sand with a rake. The cockles must measure at least 3cm.

**With a spoon,** you need to dig wherever you find two small black 1mm holes 1cm apart.



## SEA FISHING

Sea fishing provides a living for thousands of people and feeds millions of others. In Boulogne-sur-Mer, the most important French fishing port and on the Opal coast, we mainly practice traditional fishing. The longer the trip out to sea is, the bigger the boats are.

### TRADITIONAL FISHING

The traditional fishing comprises the **small scale fishing** which is practised along the coast (the boats go out to sea for the day or the night) and the **sea fishing** which lasts 3 or 4 days (the ships are a bit bigger and go out a bit further). The main species caught are sole, mackerel, cuttlefish, sea bass, red mullet, shrimp, whiting, herring and plaice...

### OFFSHORE FISHING OR "DEEP SEA FISHING"

The boats are larger (30 to 50 meters) and go out for 10 to 15 days following high tide off the European coasts. The main species caught are saithe and whiting.

## EACH BOAT HAS ITS OWN TOOLS

Recognise them from the quays

### Trawler and trawl

The **trawl** is a tapered pocket-shaped fishing net. If it touches the bottom it is a **bottom trawl**. It catches whiting, saithe and other benthic species.

If it works in midwater it is a **pelagic trawl**.

It is used for midwater sea fish such as herring, mackerel and other pelagic species.

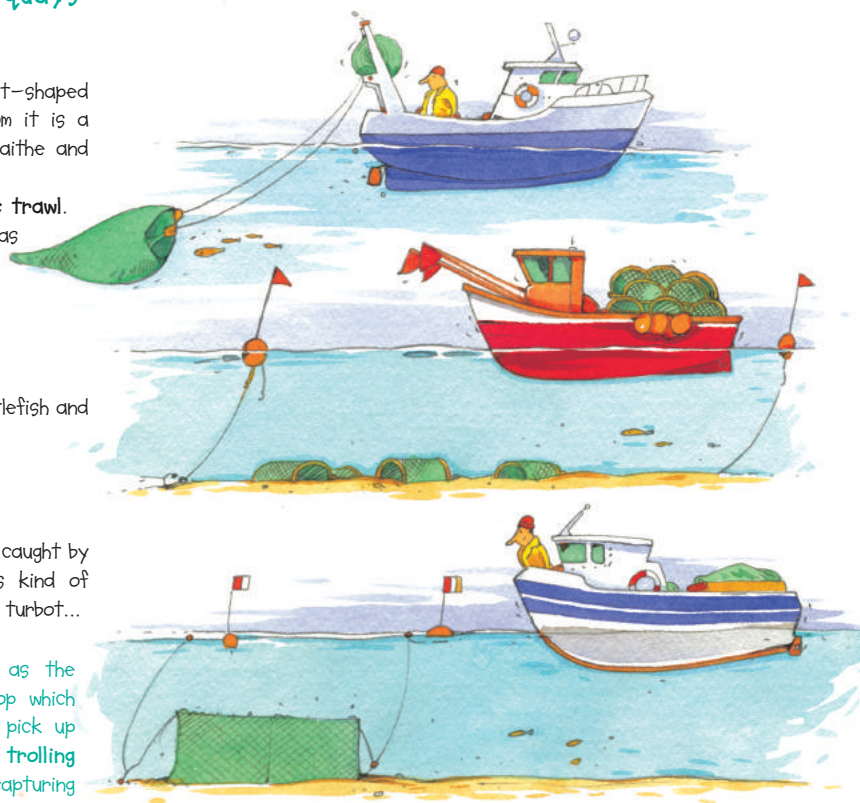
### Pot vessels and crab pots

Crab pots are used to fish crab, cuttlefish and lobster...

### Gillnetter and trammel net

When the fish are swimming, they are caught by getting entangled in the mesh. This kind of fishing involves mainly sole, plaice and turbot...

There are other techniques, such as the **dredge fishing**, using a metal scoop which scrapes the bottom of the sea to pick up shellfish (scallops for example) or the **trolling technique** which is very effective for capturing linecaught sea bass.



## WHO FISHES FOR WHO?

Draw a line to link each species with the way it is captured.

- |              |                 |
|--------------|-----------------|
| Plaice •     | • Pelagic trawl |
| Whiting •    | • Crab pot      |
| Crab •       | • Dredger       |
| Cuttlefish • | • Trammel net   |
| Mackerel •   | • Bottom trawl  |
| Scallop •    |                 |



## ◀ AQUACULTURE

It consists on farming aquatic animals (fish, shellfish and crustaceans) and cultivating algae in specially designed areas. On the Opal coast fish and mussels are farmed. Aquaculture complements fishing. It helps to satisfy the increasing consumption of seafood. By itself it globally represents 50% of fish and shellfish consumed.

## ◀ REPORT

**How does aquaculture farming work?**

Everything is carefully controlled to ensure that the fish can grow and reach adulthood (water quality, diet, health aspects).

### 1. Reproduction

Fish are chosen at sea to become broodstock: the female lays approximately one million ova that the male covers with a substance (milt) to fertilise them. Approximately 20% of the eggs will become fish.

### 2. Hatchery

The eggs are collected in incubator ponds. A few days to a few weeks later they will hatch and become larvae.

### 3. Nursery

The larvae are placed in new ponds and are fed with plankton. They metamorphose into fingerlings when their scales appear on the body.

### 4. Fish farm

The young fingerlings (sea bass, sea bream, turbot etc.) which are now three months old are moved to nets set at the waterfront. They will remain there for one to four years to reach adulthood.

Responsible aquaculture looks for better ways to preserve the oceans and is mainly interested in vegetarian animals or ones that can be fed with co-products.

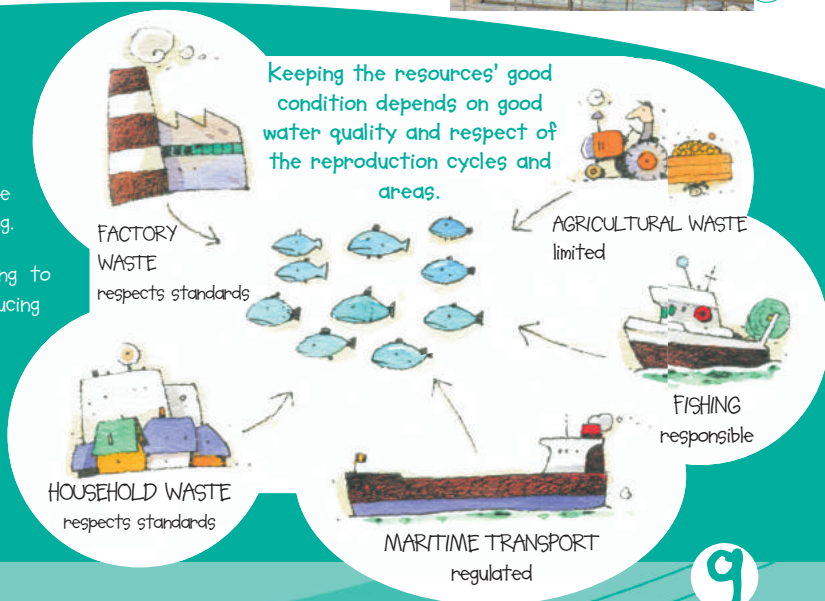


## ◀ PROTECTING RESOURCES

There are more and more of us on the planet and our need for food is increasing.

That is why coastal regions are seeking to develop aquaculture which means producing fish but also creating jobs.

Resources are not infinite. We therefore need to take care if we want to continue to eat wild-caught fish.





## ◀ **DESCRIBE YOUR MEETING WITH A FISHERMAN**

If you get the chance to meet a sea fisherman make the most of it and ask him some questions about the species fished, gear used, life aboard the boat etc. You can also speak with fishermen's wives who sell fish on stalls or fishmongers...





# FROM THE SEA TO MY PLATE



Mmm, the smell of breaded fish gives you an appetite, doesn't it?

But do you know how at least this fish has arrived in this form in your plate?

There are many stages, from it being caught at sea to it being sold. And to impress the fishmonger, learn how to recognize a good fresh fish!

## THE JOURNEY OF A FISH

When it arrives at the docks the fish passes through several hands: wholesale fish merchants and curing, cooking, canning, cutting, packaging and international transport companies. The fisheries sector is very structured. Everyone complements everyone else's activity.

## REPORT

Try to trace the route of the fish. To do that, in the box next to each photo, put the number (1, 2, 3, or 4) which corresponds to each steps describe below.



1 - The catch is landed at the port

2 - The fish are sorted according to their species, their size and quality. Wholesalers buy the fish depending on supply and demand (restaurant owners, fishmongers, wholesalers, supermarkets and consumers as well)

3 - The fish are transported in crates of ice by refrigerated trucks to be sent to stalls or processing plants.

4 - In the processing plants they are packaged, canned, cooked, prepared or cured...

# THE PRODUCTS FROM THE SEA ROUND: WHO DOES WHAT ?

Draw a line to connect each finished product to its manufacturing process.  
Complete this list by cutting out images of products that you find in the newspapers.



## Salting and curing companies

They produce mainly fillets of smoked fish (salmon, herring, mackerel, halibut, haddock), kippers, sprats, pickles, rollmops and fish roe.

## Canneries

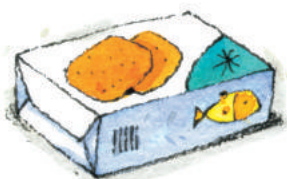
They are specialised in processing fish caught by trawling (mackerel, herring, saithe) and salads using tuna and salmon.

## Packaging companies

They cut the fish and pack it into chilled and frozen products (stretch film, bags etc.)

## Prepared-fresh-and-frozen-products companies.

They specialised in breaded fish slices and sticks, seafood and fish, pancakes, soufflés, spreads, potted fish, terrines etc.





## CUT OUT YOUR TOOLS

Now you're ready to choose your fish and cook it.

Take these tools to the fishmonger. It will help you to make your choice.

Before you go, check the list of seasonal and local species which should be eaten as a priority at [www.mrgoodfish.com](http://www.mrgoodfish.com)

## AT THE FISHMONGERS

1. Complete the identity sheet for your fish, you can use the labels on the fishmonger's stall to help you

Always choose your fish according to these criteria:

Its name : .....

Its size : .....cm. Check with ruler.

Its season : .....

There is a season for fish just like fresh fruits and vegetables; ask the fishmonger which is the best season to buy:

Saithe: .....

Scallop: .....

Sole: .....

Its origin: ☐ farmed  
☐ fished from sea

Its appearance: it must be shiny and firm, have tight and colourful skin, bright round eyes and bright red gills.

How do you choose the right fish? It's not easy. Look for the Mr Goodfish logo which ensures that all the criteria have been studied. You will find it at the fishmongers, in restaurants or supermarkets.



And remember shipmate, just like in the sea, each animal has its own use. Eating a little of everything means we can preserve all the different species.

2. Now that you have chosen the right fish, ask the fishmonger to prepare it.

If it is a fish with scales (like sea bass), he will remove them. Then, he will do alike with the innards and the skin.

## RULER

Choosing properly means choosing fish which have reproduced at least once!

Main species encountered	Recommended size (cm)
Saithe	61
Dogfish	53
Sea bass	36
Whiting	27
Plaice	27
Sole	24
Crab	14
Scallop	11
Mussel	4
Cockle	3
Brown shrimp	3

Sea bass : 36 cm



Saithe : 61 cm



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# EVERYONE TO THE KITCHEN

With the help of your parents, cook your fish... Because fish is good for you !

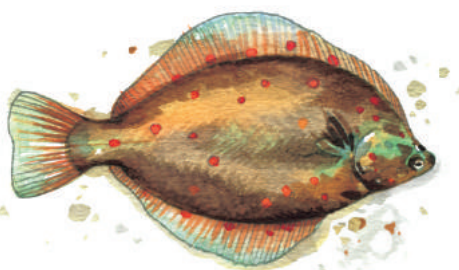


## RULER

Whiting: 27 cm



Plaice: 27 cm



Sole: 24 cm



Brown shrimp: 3 cm



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## HOME-MADE BREADED FISH



### Ingredients (for 3 people):

- 3 Mr Goodfish fish fillets
- 2 eggs
- Breadcrumbs (you will find them in shops in the "flour" aisle)
- One lemon

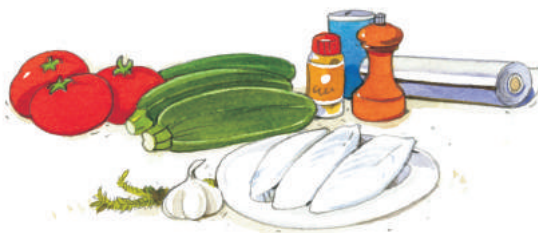
### 10 mins preparation:

- 1 - Lightly beat the egg in a plate and then dip the fish fillets in it.
  - 2 - Drain them and cover them in bread crumbs.
  - 3 - Heat butter or oil in a frying pan and fry the fillets for approximately 2 minutes on each side. Take care overcooked fish becomes dry and stringy.
- There you have your "homemade" breaded fish. You can add a small dash of lemon juice and a pinch of salt to your dish.

## FISH EN PAPILOTE

### Ingredients (for 3 people):

- 3 Mr Goodfish fillets
- 3 small courgettes or 3 tomatoes
- Garlic, salt, pepper, thyme and cumin



### 10 mins preparation:

- 1 - Heat the oven to 200°C for 10 mins.
- 2 - Prepare 3 foil pockets (one per fillet), and put your fish fillets, salt, pepper in each pocket and add (if you want) finely chopped garlic and a few thyme leaves.
- 3 - Cut the carefully washed courgettes or tomatoes into thin slices and put them in each foil pocket.
- 4 - Close the foil pickets and put them in the warmed oven for 15 minutes.

When you open your foil pocket you can add a spoonful of fresh cream or a dash of olive oil.





# A LITTLE REMINDER...

## Adopt Mr Goodfish to save the resources and fishing trade

If you like fish and want to keep eating it, here are a few simple and easy rules to follow.

If you think about it carefully and ask for the others' help, you will be able to develop good habits!

You too shipmate, adopt Mr Goodfish!



### THE EFFORTS OF THE MR GOODFISH FISHERMAN



- He respects the minimum size of each fish species (suitable nets).
- He fishes species which are not endangered.

### THE EFFORTS OF THE MR GOODFISH FISHMONGER



- He prefers products which come from fishing and responsible aquaculture.
- He gives priority to local and seasonal fish.
- He respects the minimum size of each fish species.

### THE EFFORTS OF THE MR GOODFISH COOK



- He prefers products which come from fishing and responsible aquaculture.
- He gives priority to local fish.
- He respects the minimum size of each fish species.
- He changes his menus according to the season.

### THE MR GOODFISH COMMITMENTS THAT I WILL PROPOSE TO MY PARENTS



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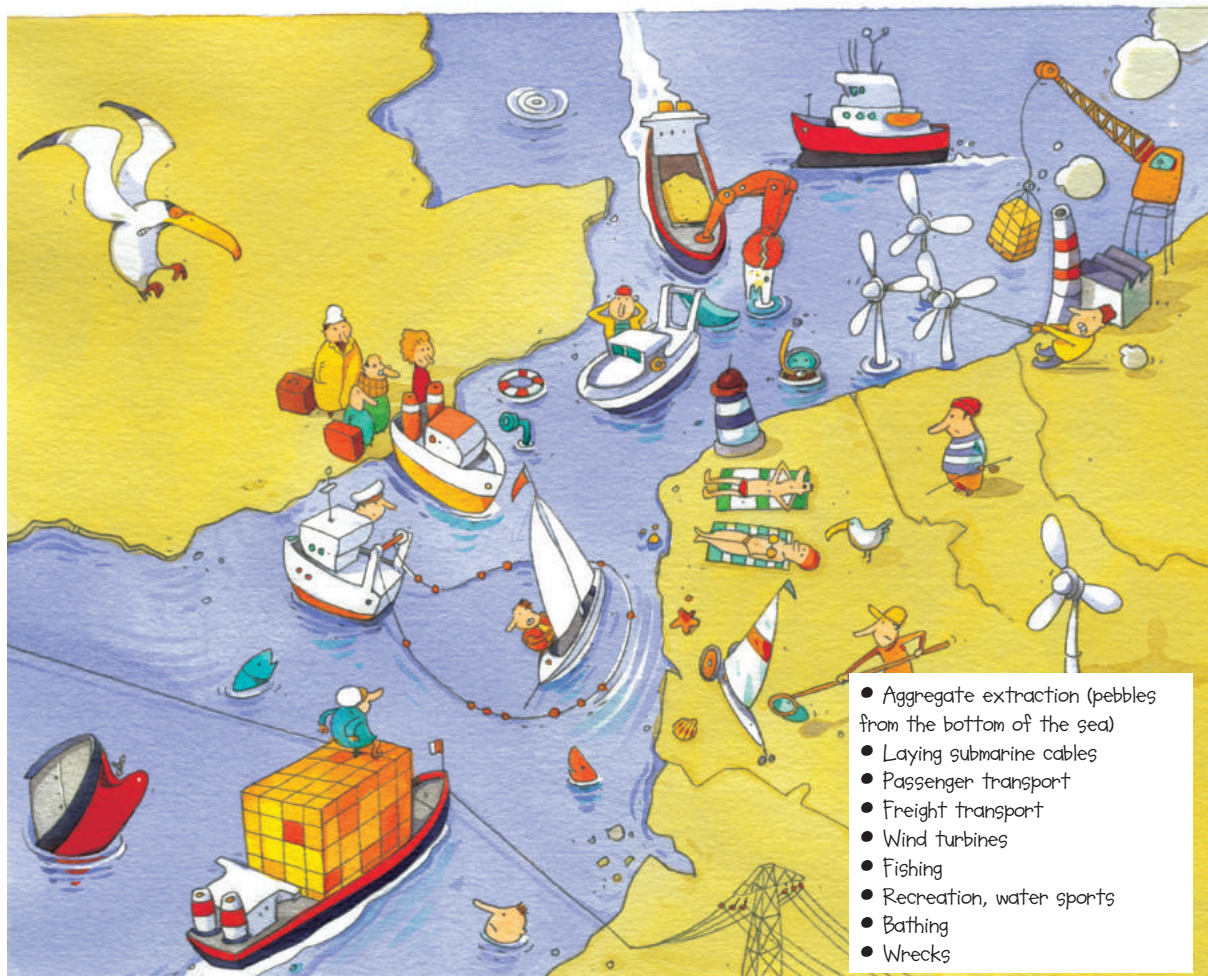
# THE OTHER USERS OF THE COASTLINE



Fishermen are not the only ones who try to preserve marine resources. The coast has many attractions and therefore draws the crowds.

Everyone, at their own level, must take into account the fragility of the environment and make sure they follow a few rules.

## WITH THE HELP OF THE KEY, CIRCLE THE COASTLINE ACTIVITIES



- Aggregate extraction (pebbles from the bottom of the sea)
- Laying submarine cables
- Passenger transport
- Freight transport
- Wind turbines
- Fishing
- Recreation, water sports
- Bathing
- Wrecks

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