

Love fish?

There are many different ways to eat fish and also many different kinds of fish to eat. They all have a different colour, flavour and texture, and these characteristics can change when they are cooked. Fish fingers are one of the most popular lunch and evening meals for children, but fish can be eaten for breakfast too. Kippers and kedgeree are ways of preparing fish for breakfast. Kedgeree originates in India, and recipes often travel far. Here are some other examples: fish curry (India), paella (Spain), saltfish (Jamaica), sushi (Japan), seafood gumbo (America), bouillabaisse (France).

Fish can be bought in different places – markets, supermarkets, fishmongers – and if you are preparing seafood at home then you might need to remove the scales, take out bones, cut off the head or get it out of its shell. You can also buy fish in different forms – fresh, chilled, frozen, smoked, pickled, canned or in prepared meals.

Fish is a healthy food to eat because it gives us protein, vitamins and minerals. Some fish are called “oily fish” and these are full of “**Omega 3**” which gives us healthy skin and helps concentration. Omega 3 is also very good at keeping hearts healthy.

Fish packaging usually shows useful information like how to cook fish, the best before date, nutritional facts and figures, and where the fish was caught. Some fish is also marked with the MSC eco-label which shows that the fish was caught using sustainable fishing methods.

Wild fish are the last natural food resource still hunted on a large scale. Many people around the world depend on fish as their main source of animal protein. Fish provide over half of the required protein for at least 400 million people living in many of the poorest parts of Africa and East Asia. Over the last fifty years the world’s population has more than doubled and projections say it will keep on growing, causing more demand for fish.

Discussion questions

What are the different kinds of fish that can be eaten and how are they usually sold?

Do you eat different fish dishes in different places e.g. at school, at home, on holiday?

What information is found on fish packaging and why is it important?

What words describe fish meals? Use words from all five senses.

Activities

List some fish dishes (e.g. fish cakes, kippers, scampi, sandwich fillings) and find out what kind of fish was used to make them.

Draw some fishy meal options on a paper plate and colour them in.

Hot seat some children to discuss ways in which fish can be eaten (fish soup, stew, fillets, fingers, cakes, paté, sandwiches etc...).

Bring in some fish packaging and see if you can find statements on it that describe why fish is healthy.

Have a fish tasting session - try a little smoked salmon, mackerel paté or tuna. Describe the taste, the smell and the texture.

Have the debate

I love fish. What do you think?

Further work

Take a school trip to a fishmonger or supermarket and watch how fish is prepared. Or, you could invite your school’s dinner ladies into your class and ask them questions about preparing and cooking fish.



Sushi originated in Japan and can contain raw fish

© Fajeen



Breaded New Zealand hoki fish burger

© M & J Seafood

Under the sea

A huge variety of creatures live in the sea, all perfectly suited to their watery world. Marine (saltwater) regions cover about three-quarters of the Earth's surface and include oceans, seas and estuaries. Just as on land there are forests, deserts, mountains and valleys, the world under the sea is full of different kinds of places where fish and other creatures live. Examples of underwater habitats are: caves, coral reefs, deep sea cliffs, tidal beaches, rock pools, sandy sea floor, kelp forests, open sea, underwater volcanoes – even sunken ships!

A diver took this picture of a busy coral reef. Colourful reefs make up an underwater 'city' full of hiding holes inhabited by all sorts of fish and sea creatures. Although corals are actually animals, they are often confused with plants. Some corals build hard skeletons in beautiful plant-like shapes, which build up to form the base of the reef and homes for the reef inhabitants like sponges, fish, sharks, turtles, shellfish, sea snakes, eels, starfish, anemones, rays and seahorses.

Many corals have a unique position in the food chain. Food chains almost always start with producers (plants). In corals, tiny algae live right inside the tiny coral polyps (like microscopic anemones) and use sunlight to provide food and oxygen to the coral. In turn, the coral provide a home for the algae, and essential nutrients from their waste. This is an example of a 'symbiotic' relationship, which means creatures are dependent upon each other for mutual benefit.

Like in a coral, each habitat is full of plants and animals that have evolved to exist together in their unique corner of the sea. Food chains and food webs link all the creatures and plants together and show who eats what. If the habitat, or one of the members of the food web, is disrupted, all the creatures that are part of the food web are affected.

Discussion questions

Where does a food chain start?

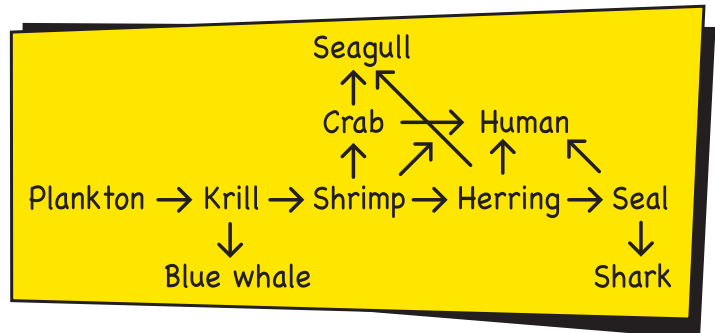
What is the difference between a food chain and a food web?

What kinds of creatures might you find in a coral reef? What do they eat and what eats them?

Discuss the other types of underwater habitats. Who might live in each one? What could affect the habitats?

Whole class activity

String game for a class of 30. Draw this picture of a food web on the board, showing arrows:



Cut these cards out:

6 plankton, 5 krill, 5 shrimp, 3 crabs, 2 seagulls, 4 herring, 2 seals, 1 shark, 1 blue whale, 1 human

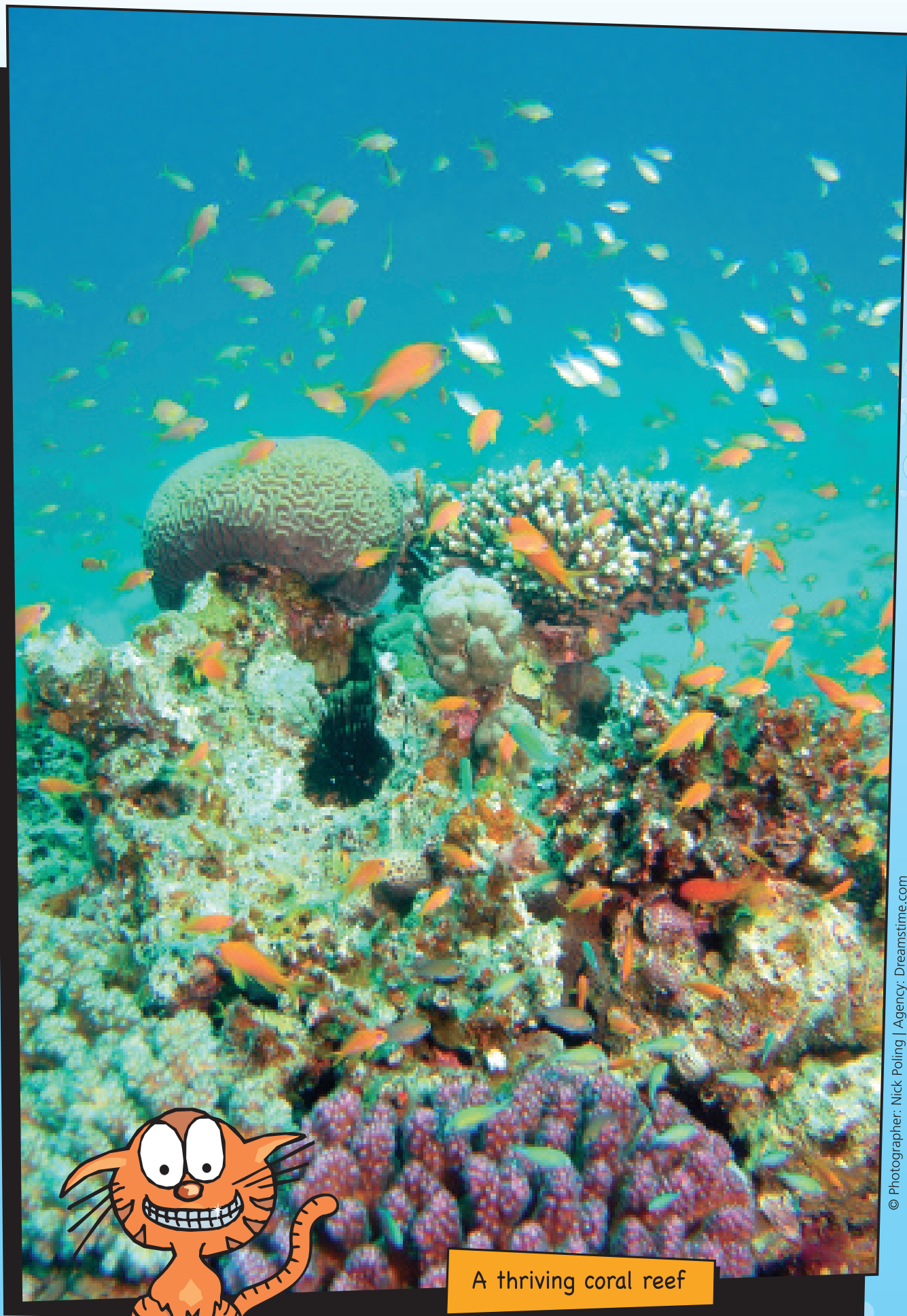
Stand the children in a circle. Give each child a card to show which species they are. The first child (pick any one) holds onto the end of a ball of string and passes the rest of the ball to a species they eat or one that eats them. A shrimp could pick krill, crab, human or herring, because these species are linked in the food chain. The first child rolls the ball across the floor to the second one, who repeats the process. Continue until every child is connected by the string at least once. Now decide on a species that is in decline because of habitat change (try one low-mid in the food chain), and ask those children to let go. Watch how this affects the web. Then have each remaining child look at the food web on the board. If they are no longer connected to a food source, they should let go too. Repeat this for each stage – watch the food web fall apart. It may help to go around the circle and have each child consider his situation and decide to let go or hold on. Use this game to explore the interdependency of species within a habitat.

Have the debate

Is it best to be at the top of the food chain, in the middle or at the bottom? Divide the group and find reasons for and against each position.

Further work

The well-known rhyme "There was an old lady that swallowed a fly" tells the story of an imaginary food chain (words at www.fishandkids.org). Change the words to make a new rhyme based on a real marine food chain.



© Photographer: Nick Poling | Agency: Dreamstime.com

A thriving coral reef

A day in the life

A fisher's day starts very early. Whatever the weather, a crew has to go out to "set" their nets or lines, or bring in the catch. Some boats go out from port every day and need to come back in time for the first fish auction of the day at 5.00 a.m. Other boats are much bigger and can stay at sea for weeks on end.

In these, the fish are put in vast freezers in the 'hold' of the boat soon after they are caught. When the freezers are full the boat goes to a port to sell the frozen fish and re-stock with food, fuel and everything needed for the next trip. The crews on these boats sometimes do not see their families for several months and travel around the whole world looking for fish.

Whether it is a big or small boat, every member of the crew has an important job to do and they all have to trust the captain or "skipper" who will decide where to look for fish and how to avoid bad weather. In many countries, fishing boats, big and small, have hi-tech electronic equipment on board that helps the skipper locate fish, read the weather and stay in touch with people on land. In other places, fishers still rely on their practical skills and local knowledge to help them find fish. They have learnt how to judge what weather is coming too. Understanding weather is an important way to keep safe. Over the years, thousands of lives have been lost at sea, especially because of surprise storms, and this is still a real danger. Local traditions and superstitions (in Scotland, don't whistle into the wind and don't say 'salt', 'rat', 'salmon' or 'pig') have grown up around fishing, which the fishers believe help get them home safely. Some fishers and sailors even used to believe that having a woman on board would mean the trip was doomed.

Conversely, in South Korea there is a village where only women do the fishing – they dive for shells, sea urchins and pearl oysters. In the UK, all fishers used to be men, which is why we know the term "fisherman" so well. Women were very important to the fishing industry too because their work was to bring in the catch, repair nets and prepare the fish for the auction. Sometimes nearly all of the women from a town would travel from port to port for months to follow where their town's boats would land and do their part of the work. Times have changed and women now own boats, are skippers and work as crew members. Men are also very involved in receiving the catch and doing the "heading and gutting" in big factories near the port.

Discussion questions

What are the risks of being a fisher?

If you were a fisher what would you enjoy and what would you dislike?

What are the differences between fishing on a small boat and a big boat?

Imagine being a fisher. Use your five senses to describe the experience on board a fishing boat and in a fish factory.

Why are fish so important to us?

Whole class activities

Play 'The fisher's cat...'. Each person chooses an adjective to describe the cat and adds it to the list. The first player says "The fisher's cat was an ambitious cat", followed by the second person "The fisher's cat was an ambitious, bold cat" and so on all the way to the end of the alphabet. Think of characteristics a fisher might need and use these to describe the cat.

Split the class into groups and role-play the crew of a fishing boat. Act out the problems that might be experienced by fishermen and how these could be solved.

Have the debate

Compare fishing to other jobs. Is fishing easier or more difficult?

Further work

Research some traditions and superstitions that have grown up around fishing. Can you think of other superstitions? Why do you think people believe in these?



Catching mackerel using a handline off the coast of Cornwall, England

© John Spaul



A British longliner catching Patagonian toothfish in the Southern Ocean

© Argos Georgia Limited



The downside of fishing

This picture shows a porpoise – a marine animal like a small dolphin – that has drowned after being caught in a fishing net. Porpoises breathe air and even though they are strong underwater swimmers, getting tangled in a net will keep a porpoise submerged for too long.

Porpoises eat fish and they are often found near big shoals. This makes them vulnerable to being caught accidentally by fishers who are also trying to catch the fish. Other creatures that often get caught up in fishing nets are dolphins, turtles, whales, seals, sharks and other sea creatures including small species like eels and crabs. Species that are accidentally caught are called 'bycatch'. Seabirds can also become bycatch because they dive for fish that are being caught on fishing lines and can swallow the hooks and drown. Sometimes a bird may catch a fish containing a hook and the fishhook might hurt the chicks when they are fed the fish. Reducing bycatch is an important task for fishers. They use the help of scientists who understand the habits and behaviour of sea creatures.

Some fishers attach 'pingers' to their nets to warn dolphins and porpoises not to come near. Pingers are small waterproof devices that emit a beeping noise that sea mammals swim away from to avoid getting tangled in the net.

In some places fishers catch too many fish, even young ones that haven't had a chance to breed. This is called overfishing and means that the number of fish in the area decreases. Over time, other species that depend on the fish for food might go hungry and fishers might be unable to catch any more fish in these places. Some fishers are responsible and manage their fisheries well to make sure this doesn't happen.

Another problem is illegal fishing. Like the old-fashioned pirates, illegal fishers use their boats to steal, but they are not looking for gold, they want fish to sell. There are strict rules about fishing and the illegal fishers break these rules, for example by:

- Fishing during a 'closed season': At these times, fish are supposed to be left undisturbed for breeding.
- Fishing too much: Weight limits are set on how much fish can be caught every year and after this is done, fishing is supposed to stop.
- 'High-grading': Sometimes when fishermen get to their weight limit, they choose the best ones, and dump the rest back dead or dying so they can catch more of the valuable fish. This gets them the most money for their catch, but is a very destructive practice because it's often the small fish that haven't bred yet that get thrown back.
- Catching endangered species: Some fish are endangered, which means they might become extinct, and none of these are supposed to be caught.

Sometimes fishers do not earn very much money from their work if there are no fish to catch and sell and they cannot pay for new boats or new equipment. In this situation they can face real problems and often have to stop fishing altogether and find a new way to earn money. In some places whole towns that once were alive with a thriving fishing industry now have very little fishing happening and this means unemployment and poverty may develop.

Discuss the picture

How does this picture make you feel?

Why are nets difficult to escape from? What might happen to a sea creature that gets entangled in a net?

If you were a fisher how could you prevent bycatch from your boat?

Why are science and technology important for the future of sea life?

If you were shopping for fish, would you be able to tell if it was illegally caught?

Whole class activities

Bring in a net (or fishnet stocking!). Show how small objects can pass through (small fish can escape) while larger objects are caught (big fish). Discuss how fishers can use this to help avoid catching small (immature) fish.

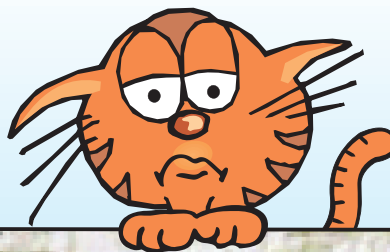
You can buy 'dolphin-friendly' tuna in the shops. Other creatures that live in, or depend on, the sea might also be affected by fishing. Make a list on the board of other creatures that might be affected by fishing.

Have the debate

Should fishers catch as many fish as they can now, or leave some for later? Why?

Further work

Research some collective nouns for sea creatures (e.g. a bed of oysters, a shoal or school of fish, a pod of dolphins, a school of porpoises, a colony of seals, a raft of puffins, a tread of terns).



A porpoise has been trapped by a fishing net and has drowned

© WWF



CONSUMER POWER

The fish we eat comes from all around the world, but how does it get to us? If you buy fish straight from a fishing boat you can find out a lot about it. You know where it is from and you can easily find out how it was caught by asking the fisher. But if you eat fish at school or in a café, or buy it from a shop or a market stall then it has probably had a long journey to get to you and it is more difficult to find out where it was caught.

Fishing is not the only job in the seafood industry. Other jobs include buying, weighing and counting, auctioning, carrying and transporting, heading and gutting, checking freshness and quality, creating recipes, cutting to size, dipping in breadcrumbs, designing packaging, cooking, serving and selling. Each of these jobs needs special skills and knowledge. Even a simple tuna sandwich has had lots of people involved and has travelled a long way to get into your lunch box!

All of this work is happening all over the world. Families in almost every country eat fish regularly and lots of people want more fresh, tasty fish. This demand for more fish is part of the reason why overfishing has become a global problem. The fishers are under pressure to take more fish from the sea, and some of them are taking too much. That could mean that the fish will disappear altogether in some places, and all of the jobs that depend on fishing will be at risk.

Many fishers are using sustainable fishing methods. This means they are leaving enough fish in the seas and there are more fish to catch year after year. It also means that the other creatures in the sea are not in danger from their fishing methods. There is an easy way for shoppers to spot fish that has come from a sustainable source, simply look for the eco-label. An eco-label is not a brand or a logo, it is a way of showing that a food product has been produced in a sustainable way. Organic food has an eco-label on its packaging to show that it has been produced without the use of chemicals. The blue, oval Marine Stewardship Council (MSC) eco-label is for wild-caught fish from seas, rivers and lakes. You can see it on the mackerel shown in the picture.

Discussion questions

What are all the tasks that need to be done to get a fish from ocean to plate? Who does what?

Many people make a living from fish and seafood. What happens if fish disappear from the seas?

How can choosing the MSC eco-label on fish products help to secure the future of fishers? Why does this also help to save sea creatures?

Whole class activities

Role-play the supply chain. For each job identified, write a list of jobs each person would have to do to make sure the fish gets from boat to plate smoothly. Discuss which job you would like to do. Think about the problems that may occur in the supply chain if there are less fish to catch in the sea.

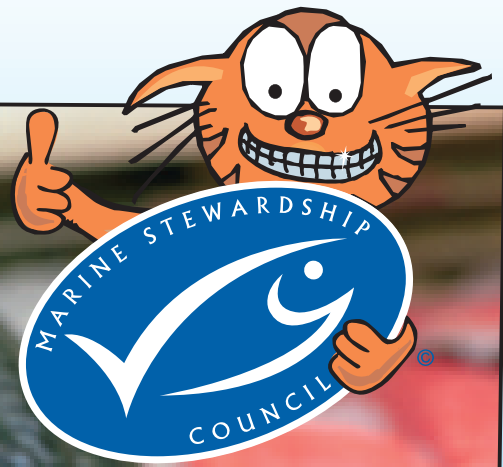
Bring in some fish packaging, some with the eco-label, some without. Ask the class to sort these and discuss what the label means. Which are the best fish to buy?

Have the debate

Form three groups and have each argue a side: 'everyone should look for the MSC eco-label when buying fish' OR 'people should eat less fish' OR 'fishers should only catch fish using sustainable methods'.

Further work

On a big piece of paper design a fish finger factory. Draw the whole fish arriving in a big box, and in different rooms, draw the machinery and people that turn it into fish fingers. Don't forget to design some really eye-catching packaging using the MSC eco-label.



Sourced from a fishery certified to the Marine Stewardship Council Standard
www.msc.org

**Fresh
Cornish
Whole
Mackerel**

£4.29
kg
£1.95 lb

Caught in the
North East Atlantic

Fresh mackerel for sale in a UK supermarket, showing the MSC eco-label

