

Fishing in the Cromer Shoal Chalk Beds Marine Conservation Zone

Ages 7-11



National Curriculum links

Ages 7-11

Sea to sandwich

Design and Technology

Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Geography

Describe and understand key aspects of human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

Sustainable fishing in the MCZ

Citizenship

To research, discuss and debate topical issues, problems and events.

Why and how rules and laws are made and enforced, why different rules are needed in different situations and how to take part in making and changing rules.

To recognise the role of voluntary, community and pressure groups.

Crab recipes

Design and Technology

Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

Suggested order of learning

Activity 1

Sustainable Seafood Lesson 1

The lesson [What do we eat and where does it come from?](#) isn't directly linked to the Cromer MCZ fishery, but the seafood shopping list activity is great for linking Maths (data handling) to the topic. The [Fisheries Fact File](#) could be used in guided reading.

Activity 2

Sea to sandwich

Start by asking students how they think crabs get from the sea into a sandwich. Go through the [slides](#) that explain how crab pots work and life as a fisher.

In pairs or groups, give them the [Sea to Sandwich image cards](#) but not in order. There are two sets of images to choose from, A: with captions or B: without captions.

Give them a few minutes to see if they can sort them. This should lead to some interesting discussions. Get the children to share any main points that came up during their discussions and anything that surprised them.

Use the [slides](#) to go through the images in number order, explaining what's happening at each stage.

Ask the children to make any changes to the order of their images. Can they take it in turns to explain the process of sea to sandwich? Ask them how many people are involved and what their jobs are. There are additional [videos](#) to show a fisherman at work.

This session could be taken further in English through explanation writing.

Activity 3

Sustainable fishing in the MCZ

Use the [Sustainable fishing in the MCZ slides](#) in the presentation to develop pupils' understanding of possible threats from fishing to the MCZ and how these are being managed.

The learning feeds into the game in the next session.

Activity 4

Sustainable Seafood Lesson 2

The [Let's go fishing](#) lesson introduces different fishing methods with an interactive game. Check out the suggestions below to adapt the game to focus on crab fishing and the fishing methods outlined in Activity 3.

After the first round, ask pupils to suggest management ideas for the crab fishery and try them out. Here's a checklist of methods covered:

Minimum Landing Size - small crabs are released after being caught. Designate some children as small crabs (you could use stickers).

Berried crabs are released after being caught. Some children could be given balls to carry to represent the eggs.

Limit number of licenses - only allow a maximum of 3 fishers.

Limit the potting effort (number of pots and days they can fish) so children are limited to just 3 goes at being a fisher.

Quotas - fishers are limited to catching just 3 crabs each.

No-fishing zones - spaces where the crabs can be safe as they cross.

You can reset numbers of crabs as you play because new crabs hatch and grow each year.

Activity 5

Crab recipes

Use the [recipe slides](#) to prepare and cook your own crab dishes.

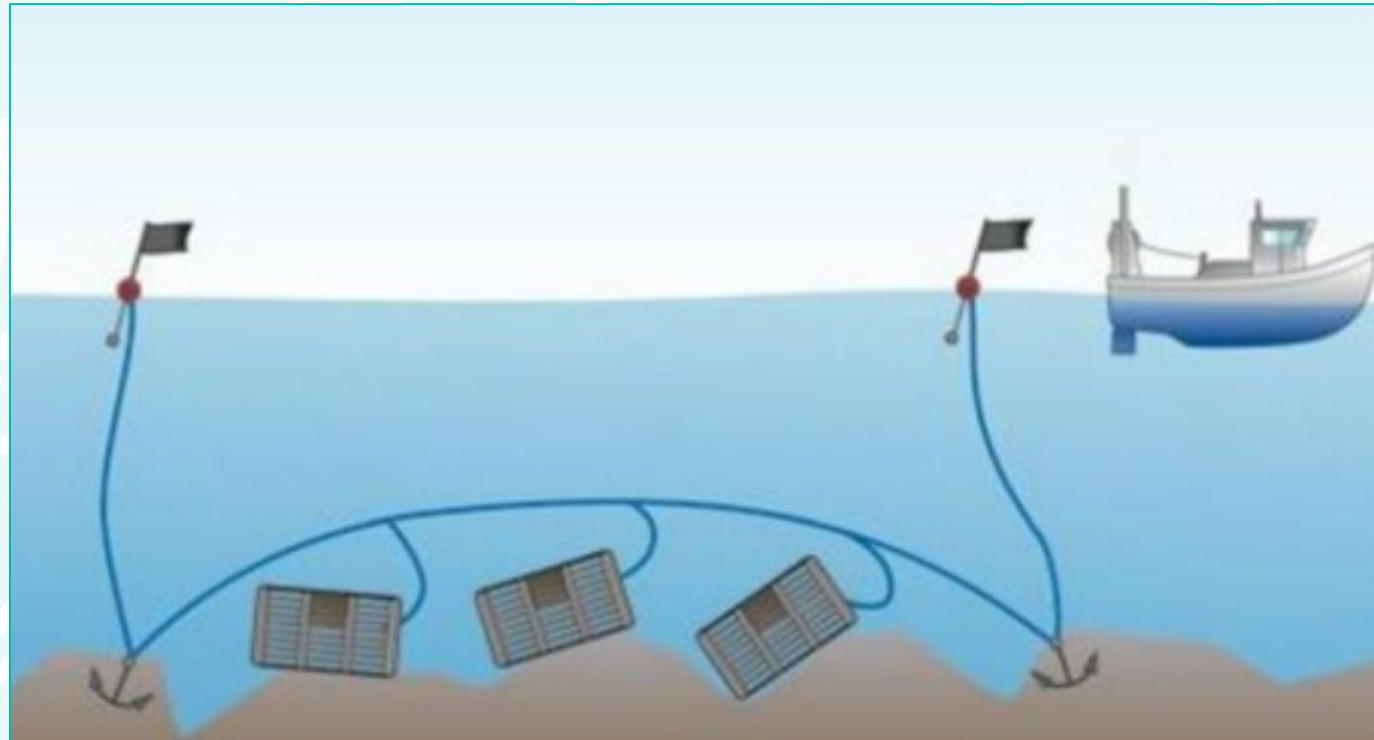
**Have you ever seen
crab pots stacked up
by the sea?**



How do crab pots work?

The crab pots are laid in lines called shanks.

There are usually 10 to 25 pots per shank depending on the size of the boat.



How a parlour (crab) pot works:

1. Bait (dead fish) is secured inside the pot between two pieces of cord

2. Crabs and lobsters want to eat the bait so they move around the pot until they find a way in

3. The crabs and lobster find an entrance. It's easy for them to crawl into the wide opening and drop into the pot



4. When they finish eating, they look for a way out. They can't get out the way they came in because it's narrow and high up

6. The slope leads into the 'parlour' which they drop into and stay until the pot is emptied by a fisher

5. They find a way to go, but this takes them up the net slope

Life as a fisher

Crab fishers are out on the water most days, weather permitting, from March to October and less often during the winter.

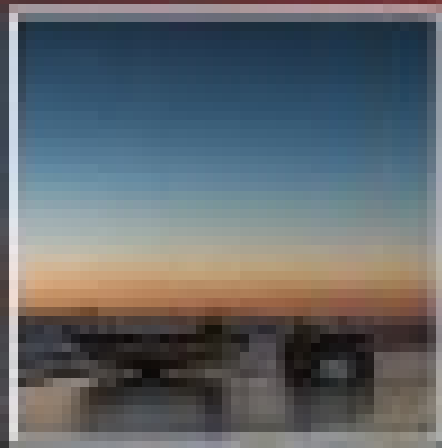
Many have small boats that they operate single-handedly, though some have crew of up to four people. Depending on tides, they can have early morning starts in the dark. They go out in varying weather conditions so long as the wind and waves are not too strong.

In winter, the cold temperatures mean there are fewer crabs around so they use this time of year to fix damaged pots and carry out maintenance of their boats.

The video on the next slide shows a Cromer fisherman's day at work out on his boat.

Life as a fisher

KEEP HAULING



Fishing on a Cromer crab boat

Sea to Sandwich

Edible (brown) crabs live in the sea.





Photo: christaylorphoto.co.uk

Being a fisher can mean some early morning starts depending on the tides.

They go to their pots which are marked with flags.

They haul in their pots. The fishers use a winch to help raise the pots.



The pots are emptied.



The crabs and lobsters are measured and checked.



Photos: christaylorphoto.co.uk



If they are too small or are berried (have eggs) they are thrown back.

The crab pots are baited.

Fishers use a variety of bait –
scad, flounder, gurnard and
salmon heads are commonly
used.



The pots are stacked in the boat then taken to another area.



Photo: christaylorphoto.co.uk

The pots are lowered back into the sea



The fishers empty other shanks of pots then head back to shore with their catch.

When back on shore, the crabs and lobsters are transported alive to the factory.



Photo: Rob Coleman



Photo: Rob Coleman

The crabs and lobsters are stored alive at the factory.



Lobsters are stored in tanks of circulating, filtered seawater.



Crabs are stored in large boxes.

The crabs and lobsters are stunned and then cooked.



This all happens on a conveyor belt through the stunner and into the boiling water.

They are then chilled and stored before being 'dressed.'



Dressing a crab means the meat is removed from the shell.



The meat is put back in shells that have been cleaned and sterilised in boiling water.

Dressing a crab!

See a crab being dressed at
Davies Fish Shop in Cromer:



A male has a narrower apron, larger claws and a flat bottom.



JONAS
SEAFOOD
**COOKED FROZEN
DRESSED CRAB**
Net weight: 95g (Cancer payarus)

Produced and packed in Great Britain. Traditionally not caught in the North Sea. Store frozen at -18°C or below. Defrost in fridge over 24 hours. Use immediately after defrosting. Caution: May contain shellfish. Allergens in bold and underlined below.
Ingredients: **Crab** (*Decapoda*), salt.

0.095 FROZEN ON **BEST BEFORE**
WEIGHT 1g **18 NOV 21** **18 NOV 22**

Nutrition Information per 100g (Typical values)	
Energy	484 kJ
	115 kcal
Fat	4.1g
- Of which saturates	0.7g
Carbohydrates	<0.5g
- Of which sugars	18.7g
Protein	0.8g
Salt	0.8g

Jonas Seafood Ltd.
Shelton Hill Way, Cromer, Norfolk, NR27 5LW
Tel: 01 263 515444

gB
NUTR

The dressed crabs are then labelled and boxed up ready to transport to the wholesaler, supermarket or restaurant.



The crabs are ready to be bought and eaten!



Sea to Sandwich

Can you put the pictures in the correct order to show how a crab becomes a crab sandwich?



A crab sandwich ready to eat



The fisher collects the pots in



The crabs are cooked



Crabs are taken to the factory



Packed ready for sale



A crab is living in the sea



The crabs are dressed



Pots laid in shanks in the sea



Transported to supermarket or restaurant



The crabs are taken out of the pots and measured

Sea to Sandwich

Can you put the pictures in the correct order to show how a crab becomes a crab sandwich?



Sea to Sandwich

Did you get them in the right order?

1.



A crab is living in the sea

2.



The pots are laid in shanks in the sea

3.



The fisher collects the pots in

4.



The crabs are taken out of the pots and measured

5.



The crabs are taken to the factory

6.



The crabs are cooked

Sea to Sandwich

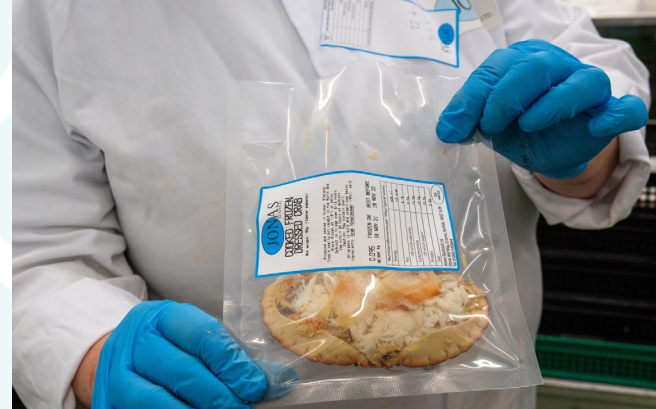
Did you get them in the right order?

7.



The crabs are dressed

8.



Packed ready for sale

9.



Transported to the supermarket or restaurant

10.



A crab sandwich ready to eat!

The North Norfolk crab fishery

This video shows crabs being dressed and served at Rocky Bottoms café:



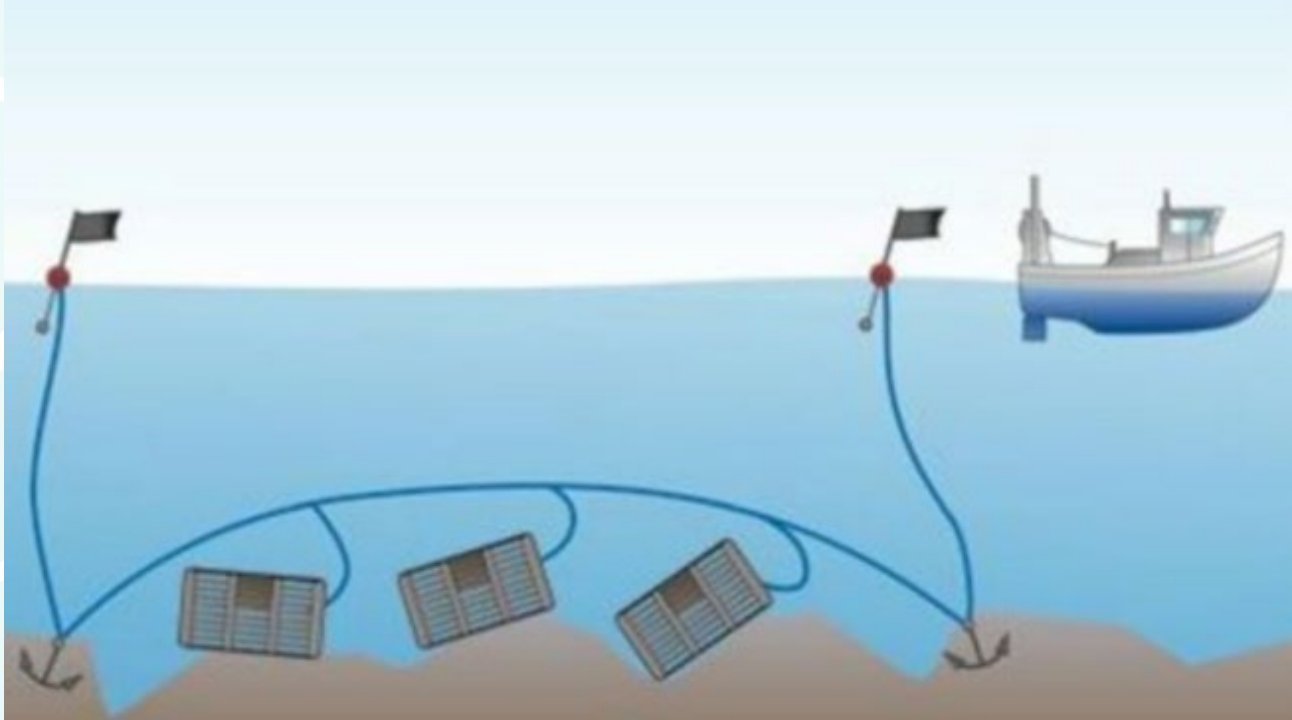


**Sustainable fishing in the
Cromer Shoal Chalk Beds
Marine Conservation Zone**

Fishing in the MCZ

Crab fishing is an important part of the economy in North Norfolk; it employs many people and brings money to the area.

People also feel that fishing for Cromer crabs is an important part of the local heritage. It has been happening here for centuries and crab pots have been used to catch crabs and lobsters since the 1860s.



What does the Marine Conservation Zone do?

The role of the MCZ is to:

- Maintain it in favourable condition
- Provide social, environmental and economic benefits

It is a 'sustainable use site.' This means that fishing and other activities can continue in a Marine Conservation Zone if they are **sustainable**.

What does sustainable mean?

Sustainable = Able to carry on without harming the environment

If humans damage or harm the place and its wildlife, they won't be able to keep fishing, boating and diving here as there wouldn't be crabs and lobsters to catch or wildlife to see.

There are laws and guidance that protect the area, and these may change over time.

Potting

Fishing for crabs using pots (potting) has been happening along the north Norfolk coast for over 150 years. To be sustainable it must be carried out in a way that means it can continue for many centuries to come.

In general, potting is considered 'low impact' as it is a selective form of fishing with very little bycatch. This is because other creatures are not caught, or if they are, they are released.



How is the Cromer Shoal Chalk Beds MCZ protected?

Eastern Inshore Fisheries and Conservation Authority (IFCA) manages the inshore marine environment and fisheries (to 6 miles off the coast) for Norfolk.

Their work includes:

- **Monitoring** fishing and its impact on the environment.
- **Regulating fishing and enforcing fishing byelaws.**
- Working with many **stakeholders** with the aim of balancing conservation and fishery objectives.

Eastern IFCA has an **Adaptive Risk Management** approach to their management of the Cromer Shoal Chalk Beds Marine Conservation Zone. This means they will bring in new laws or amend existing laws if evidence suggests there is a need.

These slides state the regulations and laws in place in 2023.

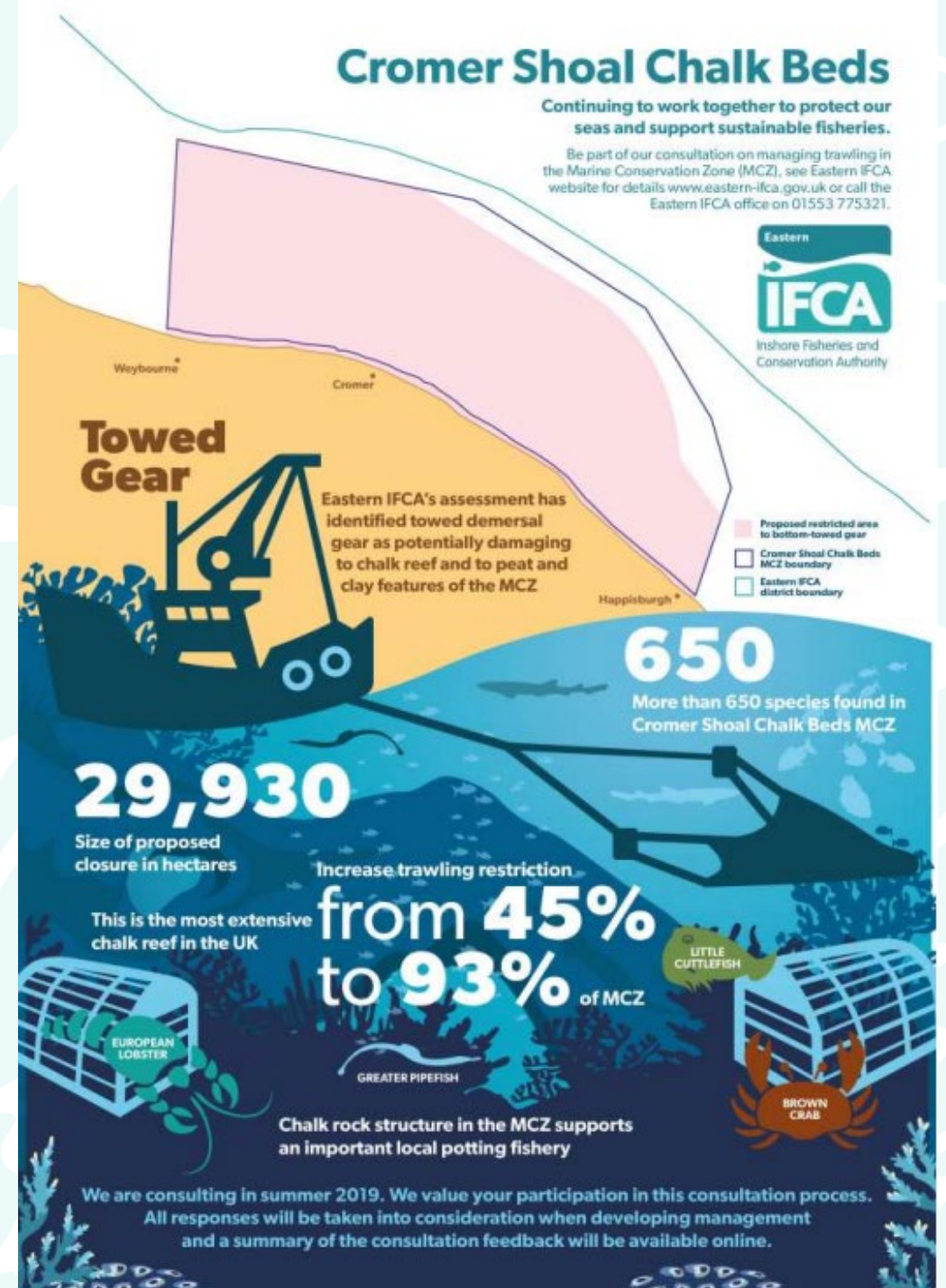


Damage from trawling and dredging in the MCZ

Trawling is a type of fishing where nets are dragged along the seabed, which can cause damage to the habitat.

Over 50 years ago, local fishermen recognised this and urged the fishing managers to introduce a trawler-free zone in the sea between Blakeney church and Mundesley church out 3 nautical miles.

This rule only covered 45% of the MCZ area so in 2021, the trawling byelaw was altered to increase this to 93% of the MCZ.



Overfishing

Overfishing is catching fish (or crabs!) faster than they can reproduce causing numbers to decline.

This is not sustainable. There are fishing regulations and laws to help prevent this.

Limits on sizes of crabs and lobsters taken

Fishers in this area are not allowed to land crabs that are smaller than 115mm across their shell. This is known as the Minimum Landing Size (MLS). Any that are smaller get thrown back.

This means the crabs have at least one chance to breed before they are caught.

A pot often catches up to 30-40 crabs, sometime more, but the fisher may only keep 3 or 4 of them!

In other parts of the sea, the MLS is bigger. It is 140mm for much of UK waters.



Berried and soft crabs

Any female crabs and lobsters that have eggs on them are described as being 'berried' and must be thrown back.

It is the same for soft-shelled crabs that have recently moulted. However, these are rarely caught because they tend to hide up until their shells harden.

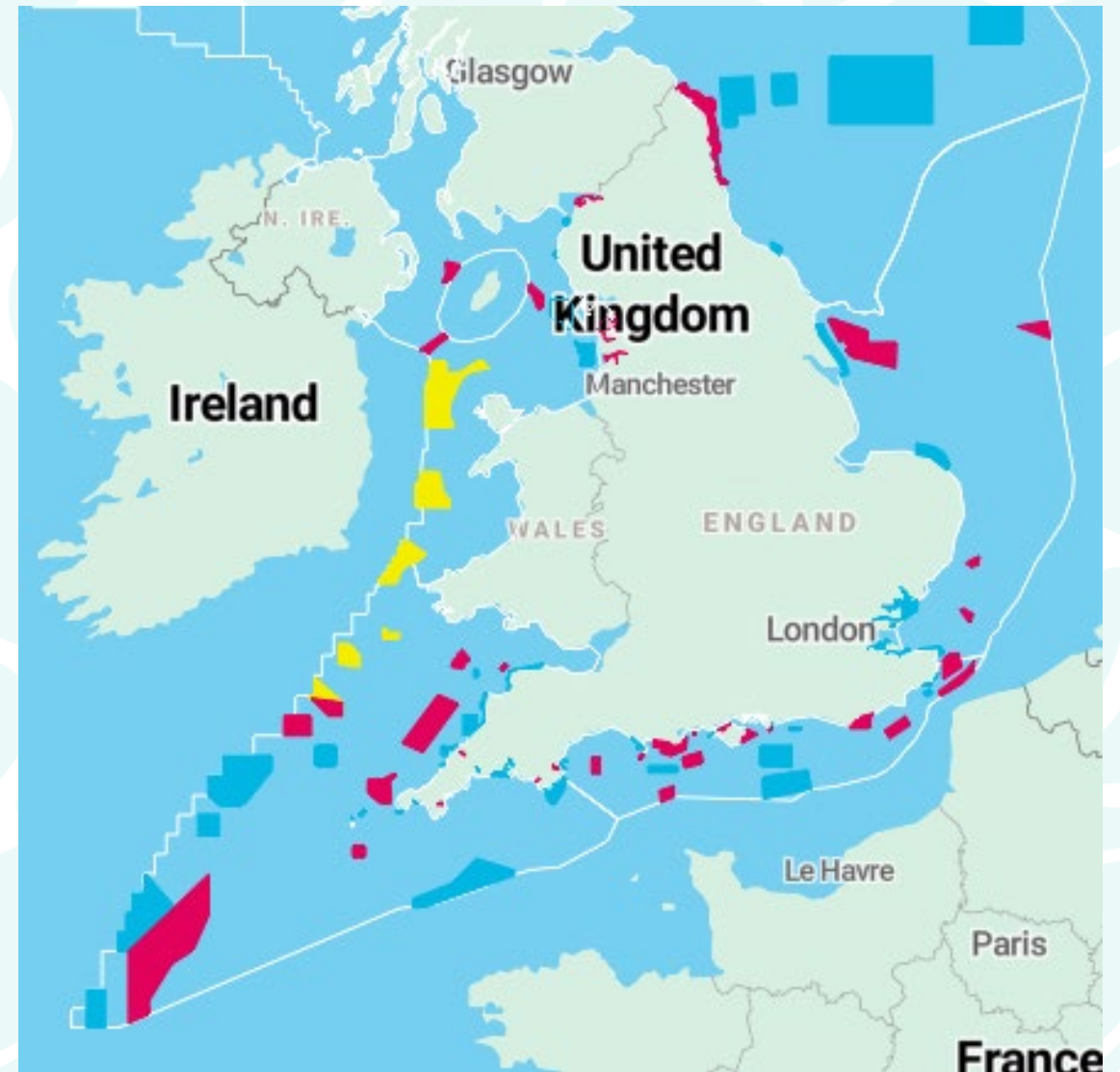


Understanding crab numbers

Fish and crabs can migrate large distances – there are no borders in the ocean!

This makes understanding crab populations tricky. International cooperation is needed to help understand populations more fully.

The crabs do not stay inside the MCZ!



Maximum Sustainable Yield

Currently (in 2023) there are no limits on:

- the number of licences issued
- the catch effort (number of pots or days of catching allowed)
- quotas (the number of crabs and lobsters fishers are allowed to land).

In recent years, the number of fishers has decreased but the catch effort has increased.

Environmental impact of potting in the MCZ

In 2019 a study found that potting fisheries were linked to physical damage to chalk outcrops.

Chalk is a soft rock and the pots and ropes can rub it, wearing it away. The pots and anchors can also break the rock when they strike it. Though this damage is considered small, collectively it affects the conservation objectives of the MCZ. There have been up to 8000 pots counted on the chalk reef on one day.

In 2020, Natural England stated that management of lost and stored pots is required as they are thought to pose the most risk to the chalk beds.

Lost pots

Occasionally, pots may get separated from their shank or lose their markers during storms, by getting snagged on rocks or rope being cut by a boat propellor. Lost pots cause problems by:

- Continuing to catch crabs and lobsters when they are lost. This is known as **ghost fishing**.
- **Scraping and wearing away the chalk seabed** as the pots and ropes move in the currents. This can damage the life that is attached to the rocks.
- Costing the fishers **time and money** when they replace lost pots.

Code of practice

A code of practice was drawn up in 2021 to help minimise the damage to chalk from pots. This is a voluntary agreement.

Cromer Shoal Chalk Beds Byelaw 2023

A new byelaw means that fishers must:

1. Have permits to use crab pots inside the MCZ.
2. Mark all their pots so they can be identified.
3. Retrieve pots they lose.

It is a flexible byelaw. This means new measures may be introduced if research and monitoring suggests they are needed to keep the chalk reef in good condition.

Research and monitoring

Research and monitoring is being carried out to better understand the issues:

- Mapping the seabed and fishing activity to better understand the area and its use.
- Remotely operated vehicles are being used to film pots on the chalk to help assess the extent of the damage.
- No-fishing areas are being set up to compare the impact with areas that are fished.

The findings will help make decisions on how to manage the fishing in the MCZ.



The Good Fish Guide

The Marine Conservation Society's Good Fish Guide is updated each year.

It gives an idea of how sustainable the fishing is for different species in different parts of the sea.

The Cromer fishery is part of the Southern North Sea: Eastern IFCA district.

Find out more on the website: mcsuk.org/goodfishguide/

Crab recipes

Have a go at making some savoury recipes using Cromer Crab!

Recipes include:

- **Crab sandwich**
- **Crab cakes (like fishcakes!)**
- **Crab and sweetcorn chowder**

Crab sandwich

Ingredients

- Bread
- Butter
- Crab meat
- Mayonnaise
- Salt
- Pepper
- Lemon juice
- Lettuce

Method

1. Butter the bread.
2. Mix the crab meat with some mayonnaise, a squeeze of lemon juice and season with salt and pepper.
3. Spread the mixture onto the bread.
4. Add some lettuce and top with another slice of bread.
5. Serve!

Crab cakes

Makes 10 x 6cm crab cakes

Ingredients

- 3 spring onions
- ½ a bunch of fresh flat-leaf parsley
- 1 large free-range egg*
- 750g cooked crabmeat
- 300g potatoes
- 1 tsp ground pepper
- 1 tsp cayenne pepper
- Pinch of salt
- Plain flour*, for dusting
- Olive oil

*Recipe can be made gluten free by substituting gluten-free flour

*The egg can be substituted by egg-free mayonnaise

Method

1. Peel, boil and mash the potatoes and leave to cool.
2. Trim and finely chop the spring onions.
3. Pick and finely chop the parsley.
4. Beat the egg.
5. Combine the crab meat, potatoes, spring onion, parsley, pepper, cayenne and egg in a bowl with a little salt.
6. Shape into 6cm cakes.
7. Dust with flour.
8. Shallow-fry in oil over a medium heat for about 5 minutes each side or until golden brown.

Crab chowder

Ingredients

- 1 tbsp olive oil
- 1 small/medium onion, chopped
- 2 celery ribs, chopped
- 2 medium carrots, peeled + chopped
- 2 leeks, sliced into half-moons
- 2 large potatoes, peeled and diced into small cubes
- 1 bay leaf
- 1 tsp paprika
- 1 tsp ground pepper
- 1½ tsp salt
- 1 litre vegetable stock
- 2 large tins sweet corn
- 500g fresh crab meat
- 100ml milk
- 100ml single cream
- ¼ cup finely chopped fresh parsley

Method

1. In a large hob to oven dish, gently fry onions, celery, carrots, and leeks until soft.
2. Add potatoes, bay leaf, paprika, pepper, salt and vegetable stock. Cook for about 8-10 minutes until the potatoes are halfway done.
3. Puree 2 cups of the vegetable mixture in a food processor or blender until smooth. Stir the mixture back into the pot.
4. Add sweetcorn, crab meat, milk and cream. Cook uncovered for about 8 minutes.
5. Stir in parsley and serve!