

Cromer Shoal Chalk Beds Marine Conservation Zone Education Pack

When the Marine Conservation Society's Agents of Change project consulted local people about the Cromer Shoal Chalk Beds Marine Conservation Zone (MCZ), it found that raising awareness of the MCZ and educating local people about it was considered very important. These resources have been produced to aid primary school teachers to do just that!

Why use these resources?

The MCZ provides a real-life context to teach a range of subjects across the curriculum. There is a fascinating world hidden below the surface of this popular seaside area: an amazing rare chalk reef, wonderful wildlife and Cromer crabs. This pack contains teaching ideas and resources for learning about them, the local landscape and the people that interact with it. If you can visit the coast here, it will really bring their learning to life!

How do I use them?

The pack contains a mixture of lesson ideas and resources under different themes. The MCZ provides a great focus for a topic in its own right, or you can dip into the resources for use in specific subjects. The overview shows you the National Curriculum objectives that can be covered under each theme so is a good starting point.



Cromer Shoal Chalk Beds Marine Conservation Zone National Curriculum links

Ages 4-7

Local Geography

Geography

Name, locate and identify characteristics of the four countries and capital cities of the United Kingdom and its surrounding seas

Use basic geographical vocabulary to refer to:

- key physical features, including: beach, cliff, coast, forest, hill, mountain, sea, ocean, river, soil, valley, vegetation, season and weather

- key human features, including: city, town, village, factory, farm, house, office, port, harbour and shop

Use world maps, atlases and globes to identify the United Kingdom and its countries, as well as the countries, continents and oceans studied at this key stage

Use simple compass directions (North, South, East and West) and locational and directional language [for example, near and far; left and right], to describe the location of features and routes on a map

Use aerial photographs and plan perspectives to recognise landmarks and basic human and physical features; devise a simple map; and use and construct basic symbols in a key

Local viewpoints and values

Citizenship

To recognise what they like and dislike, what is fair and unfair, and what is right and wrong

To share their opinions on things that matter to them and explain their views

What improves and harms their local, natural and built environments and about some of the ways people look after them

To realise that money comes from different sources and can be used for different purposes

To identify and respect the differences and similarities between people

Health Education

That mental wellbeing is a normal part of daily life, in the same way as physical health

How to recognise and talk about their emotions, including having a varied vocabulary of words to use when talking about their own and others' feelings

The benefits of physical exercise, time outdoors, community participation, voluntary and service-based activity on mental wellbeing and happiness

Wildlife (Science)

Science

Year 1 Animals, including humans

Identify and name a variety of common animals that are carnivores, herbivores and omnivores

Year 2 Living things and their habitats

Explore and compare the differences between things that are living, dead, and things that have never been alive

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

Identify and name a variety of plants and animals in their habitats, including micro-habitats

Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Year 2 Animals including humans

Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)

Cromer Shoal Chalk Beds Marine Conservation Zone National Curriculum links

Ages 4-7

Plastics

Citizenship

To take part in discussions with one other person and the whole class

To realise that people and other living things have needs, and that they have responsibilities to meet them

What improves and harms their local, natural and built environments and about some of the ways people look after them

Science

Year 1 Everyday materials

Distinguish between an object and the material from which it is made

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock

Describe the simple physical properties of a variety of everyday materials

Compare and group together a variety of everyday materials on the basis of their simple physical properties

Year 2 Uses of everyday materials

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

Art

To use drawing, painting and sculpture to develop and share their ideas, experiences and imagination

English

Persuasive writing, narrative writing

Beach Safety

Citizenship

To agree and follow rules for their group and classroom, and understand how rules help them

Rules for, and ways of, keeping safe, including basic road safety, and about people who can help them to stay safe

Health education

About safe and unsafe exposure to the sun, and how to reduce the risk of sun damage, including skin cancer

How to make a clear and efficient call to emergency services if necessary

English:

Explanation writing

Fishing in the MCZ (crab and lobster)

Design and Technology

Use the basic principles of a healthy and varied diet to prepare dishes

Understand where food comes from.

Local History

History

Significant historical events, people and places in their own locality

Other Maths & English ideas

Maths

Data collection and handling

English

Descriptive writing, recount, acrostic poems, speech punctuation

Beach visit support

A visit to the coast near the Marine Conservation Zone will bring the learning to life. For students, standing on the beach looking at the sea and thinking about the wildlife they've learned about beneath the waves is awe inspiring! There are ideas for beach activities throughout the resources to support a self-led visit or you can gain support for a visit from the following:

Norfolk Wildlife Trust

Rockpool and fossil sessions at West Runton:
norfolkwildlifetrust.org.uk/discover-and-learn/teachers/sessions/primary-sessions

Sheringham Learning, National Trust

Beach sessions including rockpooling and push netting. For more information contact:
sheringhamlearning@nationaltrust.org.uk



Field trip ideas

Scavenger hunt

A great way to explore the beach is to get the children to complete a scavenger hunt. They could work in pairs or small groups to collect a variety of things. These might include something:

- Smooth
- Rough
- Hard
- Soft
- Shiny
- Dull
- Colourful
- Twisted
- Jagged
- With a hole in
- Man-made
- Dead
- Natural but never alive
- An interesting stone
- A shell/three different types of shell
- Seaweed/three different types of seaweed

Land art or sand sculptures

Everyone loves building a sandcastle at the beach! Broaden it out into a sand sculpture, perhaps focusing on something you're learning, or create artworks using found materials.

Andy Goldsworthy can provide inspiration; he has made lots of artwork on the beach using pebbles. Check online to see his work.



Plastics

Teaching resources

Marine Conservation Society:

mcsuk.org/what-you-can-do/fun-learning/primary-learning/teaching-resources/lower-primary/marine-litter/

Kids Against Plastic:

kidsagainstplastic.co.uk/learn/

Final Straw Foundation:

finalstrawfoundation.org/get-involved/schools-and-resources/resources-for-schools-and-home-learning/

Applying the learning

Design posters about littering or another aspect of the plastic problem.

Write persuasive letters to national or local businesses or family members persuading them to ditch single use plastic. Or create persuasive leaflets.

Read *The Journey* by Neil Griffiths and Scott Mann. Rewrite the story to be about a plastic bottle dropped in a city and ending up in a river. Describe the journey to the sea. What does it pass? What creatures does it see? Who picks it up?

Organise a litter pick or beach clean

Organise a litter pick of your school grounds, local environment or beach. If you head to the beach, remember to check tide times. Useful information on organising a Beach Clean is available here:

<https://www.mcsuk.org/what-you-can-do/join-a-beach-clean/useful-guides-and-resources/guides-and-resources/>

Details of local volunteers that may be able to help with equipment or leading your beach clean can be found here:

<http://www.norfolkcoastalb.org.uk/partnership/beach-clean-events/691>

Surfers Against Sewage: Plastic Free Schools

Sign up your school to get support for auditing single use plastic in school, ditching it and challenging government and industry. Includes sacks and gloves for a litter pick. Work towards Plastic Free School Status.

plasticfreeschools.org.uk/

Local History

Museums

The area provides an opportunity for a local history study to find out about local seafaring history and culture.

The following museums in Cromer and Sheringham provide information, school visits and resources:

Henry Blogg Museum

rnli.org/find-my-nearest/museums/henry-blogg-museum

Cromer Museum

museums.norfolk.gov.uk/cromer-museum/learning

Sheringham Museum

sheringhammuseum.co.uk/index.php

Tourism

Visit Cromer Museum for their Seaside Special workshop to find out about Victorian holidaymakers in Cromer. Sheringham Museum has a similar workshop available about Sheringham.

Fishermen, lifeboatmen and shipwrecks

Visit the RNLI Henry Blogg museum to find out about the RNLI's most decorated lifeboat volunteer – Henry Blogg. Groups can join storytelling, immersive drama or science workshops to explore Cromer's incredible history of saving lives at sea.

Visit Sheringham Museum to see 5 lifeboats dating from 1867 and find out more about life in Sheringham in the past.

Fossils

The North Norfolk Deep History Coast is well known for its fossils, particularly the West Runton Mammoth. Visit Cromer Museum for their Deep History Coast session which includes a fossil hunt at the beach. Schools can also borrow their Deep History Coast Loan Handling Box.

Include a fossil hunt when you visit the beach. Belemnites are commonly found along the coast, particularly at East and West Runton. Information about where and how to fossil hunt is available here:

visitnorthnorfolk.com/Deep-History-Coast/deep_history_coast_fossils.aspx

English ideas

Speech punctuation

Pupils can apply what they have learned in English lessons about punctuating speech.

Pupils could select two pictures of creatures from the wildlife resources and imagine what the creatures might say to each other. This could be carried out in pairs with each child being one of the creatures. You might want to focus the conversation to be about fishing, plastic pollution or life in a rockpool.

Children could then write some dialogue using speech bubbles or the punctuation they have been learning.

Acrostic poem

Children could write an acrostic poem on a theme of your choice. It could be about a sea creature, plastics, crab pots or chalk...

Descriptive recount

Write a description of diving under the sea to see the Cromer shoal chalk beds.

Discuss description, noun phrases and using the senses. Children to collect notes on a planning sheet as they watch one of the videos. Pause from time to time to discuss adjectives/ names for things/adverbial phrases/ emotions.

Snorkel – Sheringham:
[youtube.com/watch?v=YKv5IyHqCBs](https://www.youtube.com/watch?v=YKv5IyHqCBs)

Scuba dive – West Runton:
[youtube.com/watch?v=WEgLWlsvhDk](https://www.youtube.com/watch?v=WEgLWlsvhDk)

The children could find a partner and tell them about the amazing snorkel/ dive they went on. What did you see? Hear? Feel?

As a class, write the opening paragraph together and then the children should write their recount.

5-10 minutes before the end, encourage them to end their description and sum up how they feel about their experience.

Reading and narrative writing

The Secret of Black Rock by Joe Todd-Stanton tells the story of a mysterious and misunderstood black rock.

Explore the story and how the feelings of the characters about the black rock change.

The children could rewrite the story to be 'The Secret of White Rock' giving it a local twist using the chalk and creatures that live in the MCZ and crab and lobster fishing.

Maths – Data handling

Collect data

Help get families talking about the Marine Conservation Zone at the start of the topic by creating a questionnaire sheet with the questions you would like the children to ask. Children could take a couple of sheets home and use them to survey family members or neighbours.

Data analysis

Pool the data from whole class - it may be easiest to do this without the children.

What does our data show? Explain that we can make these numbers easier to see by using a bar chart or pictogram.

Model drawing a bar chart or pictogram for one of the questions. Go over numbering and labelling axes, gaps between bars, title etc.

Give the children a set of data to enter onto a blank bar chart and ask them to write a sentence to explain what it shows.

Example questions:

Have you heard of the Cromer Shoal Chalk Beds Marine Conservation Zone?

Yes/no

Do you know when it was created?

a) 1953 b) 1986 c) 2005 d) 2016

Do you know about the purple sponge in the sea here?

Yes/no

Do you know much about the creatures in the sea here?

A lot/a bit/nothing

What do you most like doing in the sea?

Surfing/swimming/snorkelling/paddle boarding/none of these

On a scale of 1 to 5 how much do you love the sea?

(1 – not at all to 5 – loads!)

Ages 4-7 – Beach safety

Beach safety

RNLI Beach Safety teaching resources for lower primary:
[rnli.org/youth-education/education-resources/lower-primary](https://www.rnli.org/youth-education/education-resources/lower-primary)

General beach safety information here:
[rnli.org/safety/beach-safety](https://www.rnli.org/safety/beach-safety)

Arrange a visit from RNLI to your school:
[rnli.org/youth-education/educational-visits](https://www.rnli.org/youth-education/educational-visits)

Sun safety

BBC: [bbc.co.uk/cbeebies/watch/sun-safety-for-kids](https://www.bbc.co.uk/cbeebies/watch/sun-safety-for-kids)

Lesson plans and resource from Care In the Sun (note Northern Irish resource with different key stages):
[careinthesun.org/sun-protection/school-activities/](https://www.careinthesun.org/sun-protection/school-activities/)

Register for free to access resources:
[soltansunready.com/for-schools](https://www.soltansunready.com/for-schools)

SKCIN is a national skin cancer and melanoma UK charity that has free resources available to schools that register and work towards gaining Sun Safe School Accreditation:
[sunsafeschools.co.uk/](https://www.sunsafeschools.co.uk/)

Tides

Introduce the tides and the effect of the moon on tides.

BBC: [bbc.co.uk/teach/class-clips-video/little-stargazing-the-moon-and-the-sea/zb7tf4j](https://www.bbc.co.uk/teach/class-clips-video/little-stargazing-the-moon-and-the-sea/zb7tf4j)

Always check tide times before visiting the beach:

- Buy a Norfolk tide table to plan ahead.
- Free predictions for up to 4 months ahead are available here: [tides4fishing.com/uk/england](https://www.tides4fishing.com/uk/england)

Applying the learning

Design beach safety posters.

Involve the children in conducting a risk assessment at the start of a beach visit.

Introduction to the Cromer Shoal Chalk Beds Marine Conservation Zone

Ages 4-7



Cromer Shoal Chalk Beds Marine Conservation Zone

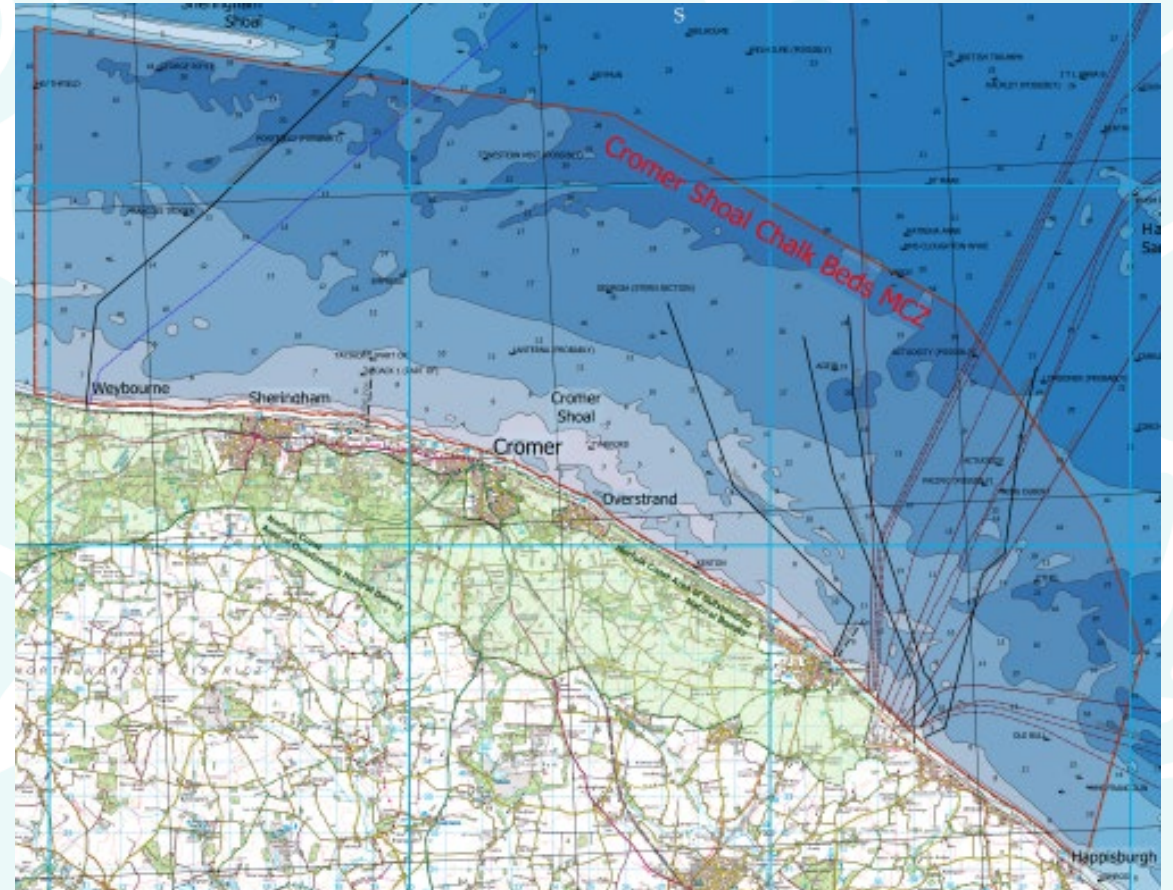


Cromer Shoal Chalk Beds Marine Conservation Zone

A shoal is a **shallow area of sea**.

Can you see the different shades of **blue** on the map?

The pale parts on the map are shallow.



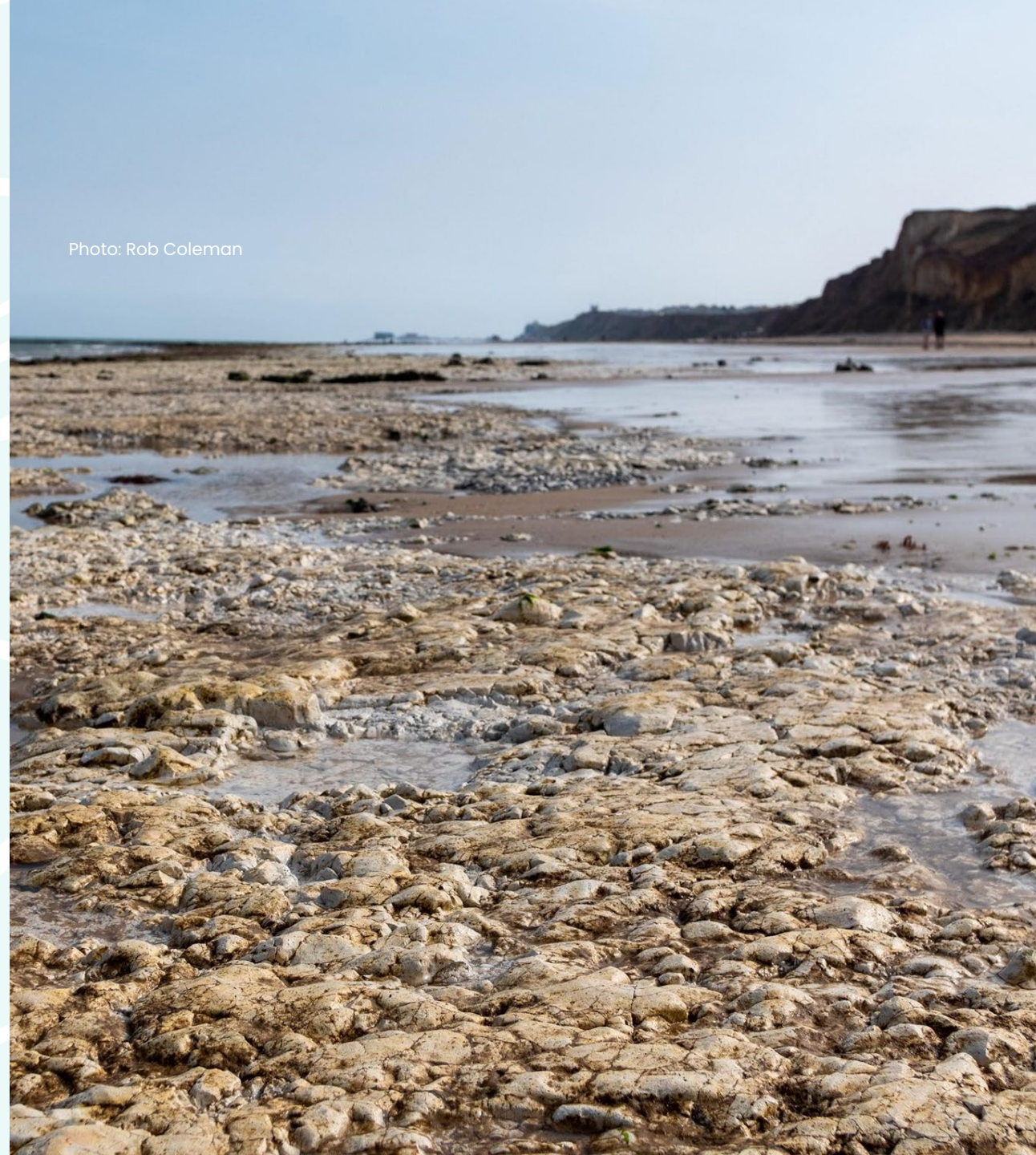
Cromer Shoal Chalk Beds Marine Conservation Zone

Chalk is a type of rock.

It is a **fragile, white rock**.

You can see some of the chalk exposed at low tide at some beaches.

Photo: Rob Coleman



Cromer Shoal Chalk Beds Marine Conservation Zone

This refers to the seabed or **sea floor**.

Part of the seabed here is made of chalk.

It is sometimes called the chalk reef.



Cromer Shoal Chalk Beds Marine Conservation Zone

Marine is relating to the **sea**.

Where else have you heard the word
'marine'?



Cromer Shoal Chalk Beds Marine Conservation Zone

Root word = **conserve**

To keep it from being changed or spoiled
by human activity



Cromer Shoal Chalk Beds Marine Conservation Zone

An area

In this case: the area where marine conservation happens.



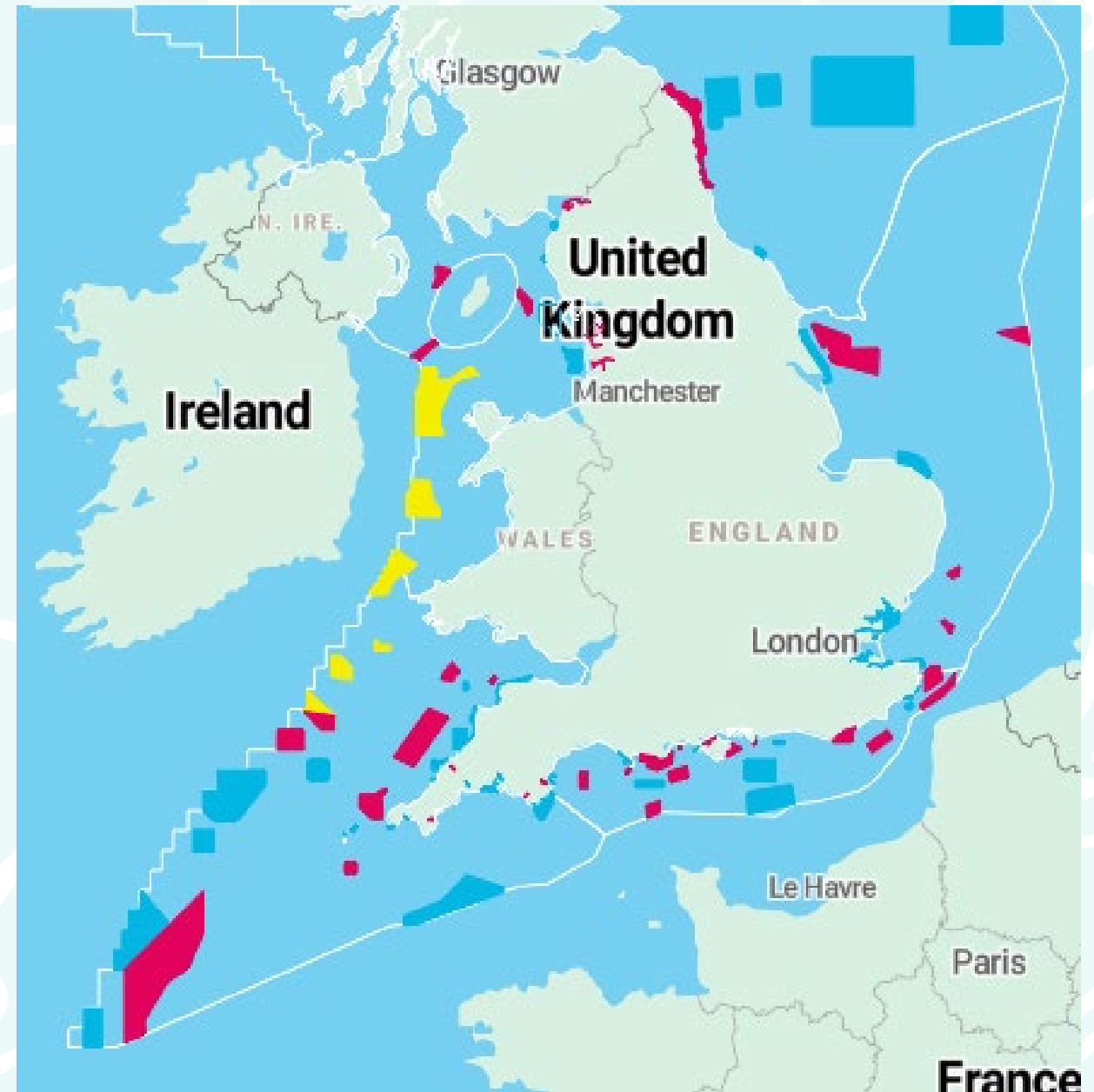


**Let's find out a bit more about the
Cromer Shoal Chalk Beds
Marine Conservation Zone**

Cromer Shoal Chalk Beds Marine Conservation Zone was designated in **2016**.

This map shows the **91** Marine Conservation Zones.

Can you spot the Cromer Shoal Chalk Beds MCZ?



Taken from: <https://www.wildlifetrusts.org/marine-protected-areas/england>

The Marine Conservation Zone starts 200m off the beach & extends about 10km out.



The chalk beds have holes, arches and ridges up to 3m high. These provide great places for wildlife to live.

It is the largest chalk reef in Europe.



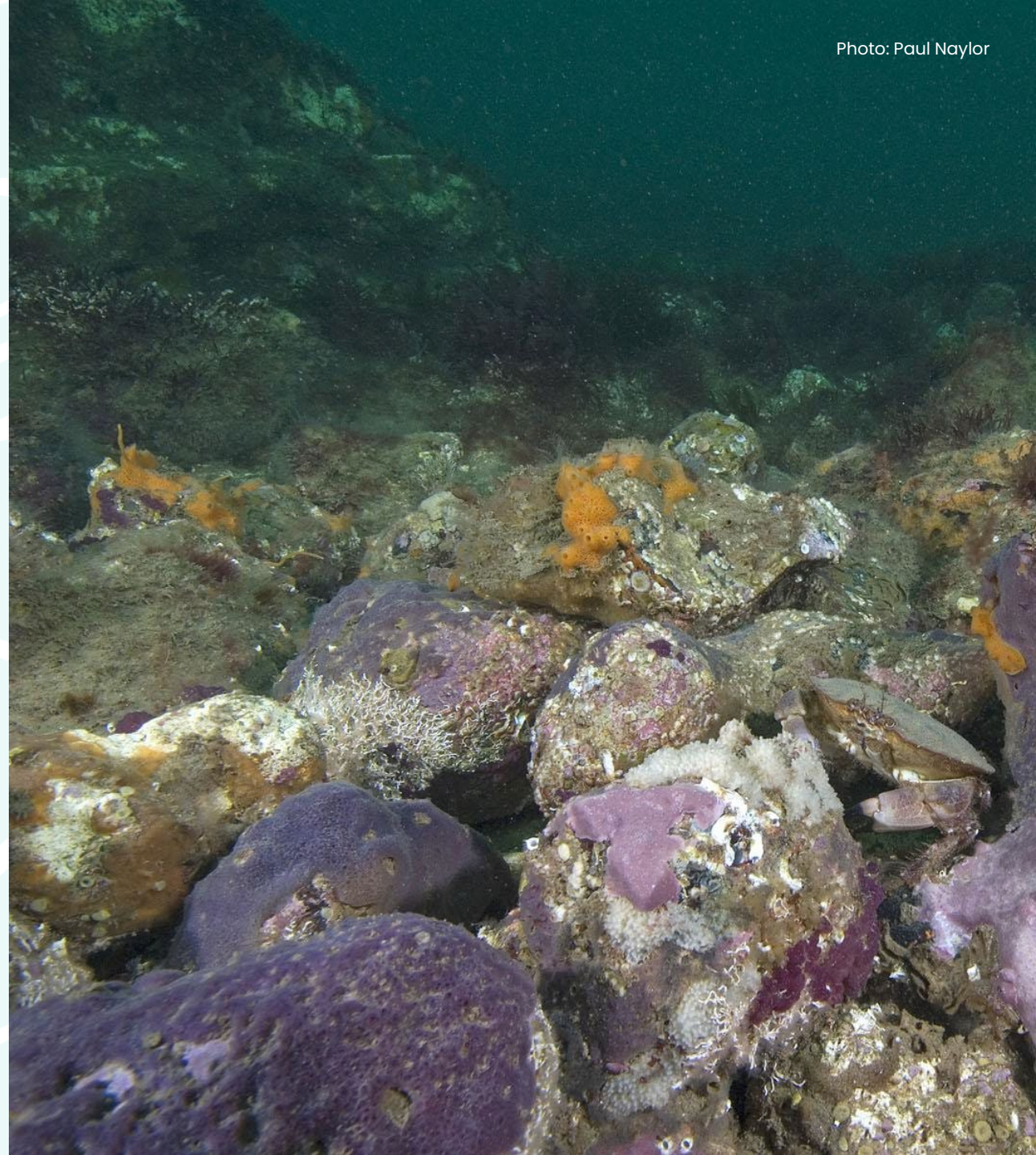
The chalk also provides a surface for marine life such as sponges and seaweeds to attach or burrow into.

These crabs attach pieces of sponge to their shells for camouflage!



In 2011 some divers noticed a purple sponge, and with the help of scientists they realised it was new to science! It is the only place in the world where it is known to live.

In 2021 a competition was organised that a local schoolgirl won. She named it **Parpal Dumplin** because it is purple and looks a bit like a dumpling!



Fishing

Fishing is the main activity in the MCZ but not for fish... for crabs and lobsters! There is a long history of fishing here and it is an important industry for the area.

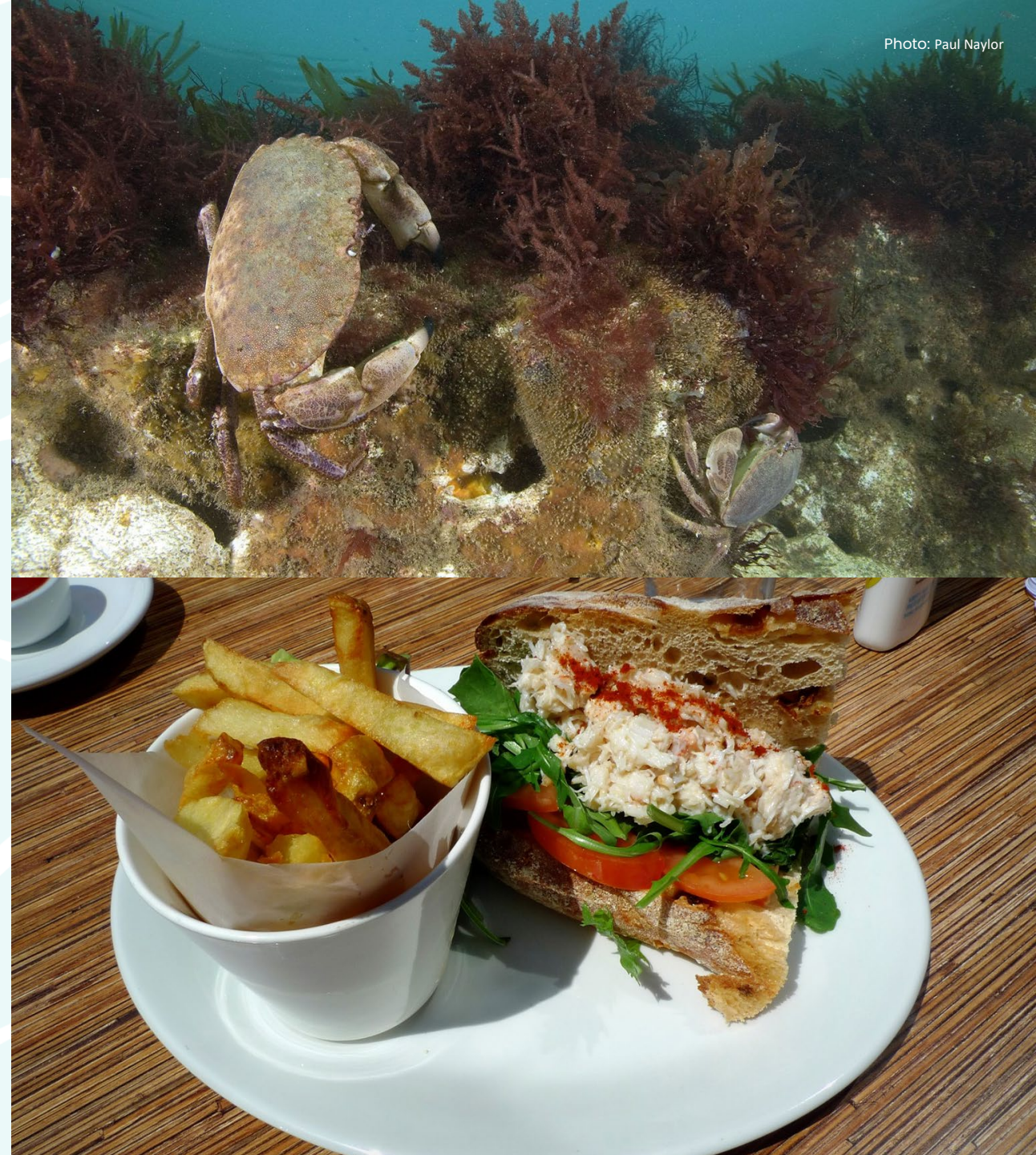
Crab pots are the traps used for catching the crabs and lobsters.



Crabs

Cromer crabs are famous! The crabs love hiding in the holes in the chalk.

Photo: Paul Naylor



Tourism

Lots of people visit the area on day trips or for their holiday and visit the beach.



Other activities in the area include boating, diving and snorkelling.



What does the Marine Conservation Zone do?

The MCZ aims to:

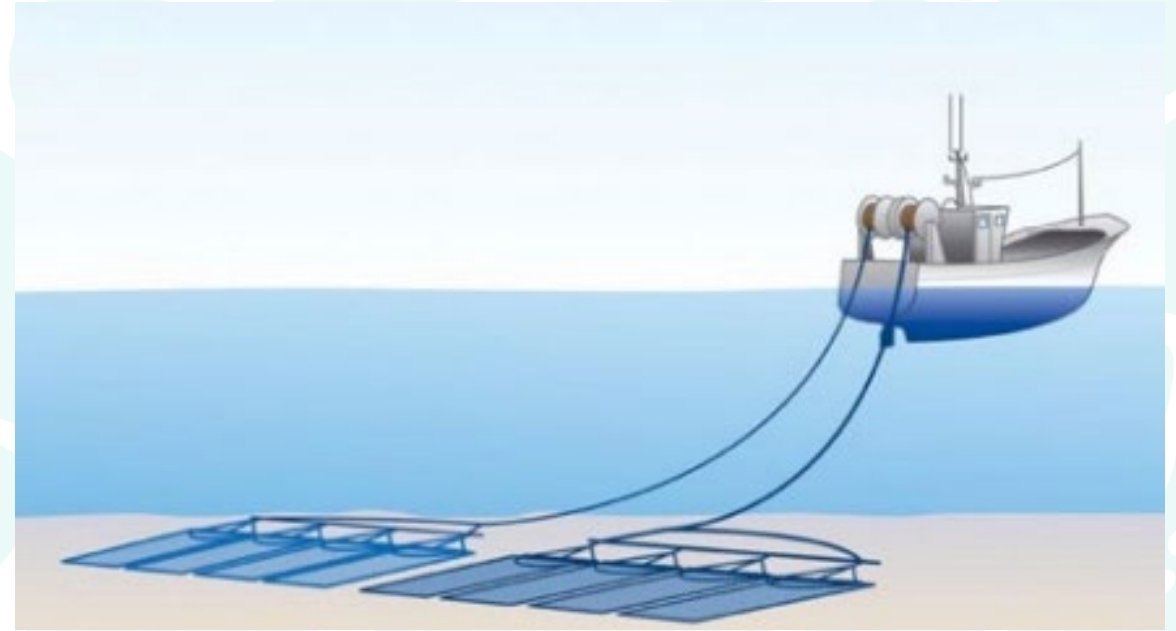
- Keep the chalk reef in good condition
- Provide benefits for people that live, work and visit the area

This means that activities can continue so long as they don't harm the chalk beds or the wildlife that lives there.

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

Damage from trawling and dredging in the MCZ

Trawling and dredging is banned in most of the MCZ.



Overfishing

If too many crabs and lobsters are caught, there would be none left.

Fishermen measure the crabs they catch. Crabs that are too small must be put back. The bigger crabs that are allowed to be caught have lived long enough to lay eggs.



Photo: christaylorphoto.co.uk

Beach cleans

Litter is sometimes dropped by visitors or fishing gear can get lost. This can cause problems for wildlife, particularly with plastics.

People volunteer at beach cleans to collect rubbish to keep it out of the sea.



Summary

- Cromer Shoal Chalk Beds Marine Conservation Zone is a special place.
- The chalk on the seabed provides a special habitat for lots of wildlife.
- Fishing is an important industry in the area.
- Humans need to make sure they do not damage or harm this place and its wildlife.

Local geography

Ages 4-7



Activity 1

UK countries, cities and seas

Children should use an atlas to label the four countries and their capital cities on a blank map of the UK. Can they tell you where Norfolk is? Colour Norfolk and label Norwich. Which sea can you see if you stand on a beach in Norfolk? *Answer: The North Sea.* Can they find the names of any other seas around the UK? *Answers: English Channel, Irish Sea, North Atlantic Ocean.* Add these labels to the map.

Play a game to reinforce the learning. On a large blank map that the whole class can see, place [Gus the Gull](#) somewhere on the map. Which country/sea/city is he in? The children can refer to their own maps to help them work it out.

Look at a world map and/or globe. Can they find the United Kingdom? Look at the Atlantic Ocean and North Sea. What do they think is the difference between 'sea' and 'ocean'? Explain that seas are parts of the ocean and are usually partly surrounded by land. They are all joined together so a boat or a fish could travel through them all. This opportunity could be used to identify continents and oceans.

Show the children the [map of the Cromer Shoal Chalk Beds MCZ](#). Explain that it is a special part of the sea that is protected. The boundary line marks the space but there isn't a fence or anything there - the fish and other sea life can swim in and out of the space.

Activity 2

Gus the Gull – compass and directional work

Using the [MCZ map](#) and [Gus the Gull](#) children can practise using compass directions and locational and directional language. First explore the map looking at the compass marker and reading the place names together. Example questions:

- Gus is flying above Cromer. If he flies north what will he see? Use this opportunity to reinforce the name of this sea: *North Sea.*
- Gus is in Weybourne. If he flies east, what is the first town he will come to? *Answer: Sheringham.*
- Which town is nearest to Happisburgh? *Answer: North Walsham.* If Gus was in Happisburgh, which direction would he have to fly to get to that town?
- If Gus was at the west end of the Marine Conservation Zone, which village would he be near? *Answer: Weybourne.*
- If Gus was at the east end of the Marine Conservation Zone, which village would he be near? *Answer: Happisburgh.*
- If Gus flew from Sheringham to Cromer, which direction would he be travelling? *Answer: East.*

Extension: The children could work together to come up with other questions to challenge the class.

Activity 3

Geographical features

In photos

Choose a photo from the selection below and display it for the class. What things can they see? Ask the children to add labels for:

Cromer: beach, cliff, coast, sea, vegetation, woodland, town, church, house, shop, pier, groyne, lifeboat station, theatre, car park.

Sheringham: beach, cliff, coast, woodland, sea, vegetation, town, house, shop, groyne, lifeboat station, golf course

In maps

Look at and compare the images with aerial photographs that show a bird's eye view (bing.com/maps and select aerial view). Can the children identify the features they labelled on the images in the aerial ones?

Change the view to Ordnance Survey and compare aerial images with OS maps. What are the similarities and differences? Is there more or less information? What do the main features look like on the map? Explain that maps also give a view from above (bird's eye view) but use colours and symbols to represent things. The key on a map says what the different symbols mean.

Using a small part of an aerial image, can the children draw a simple map? They can decide what symbols to use for key features and create a key. This activity could be carried out on a larger scale - at the beach on the sand, on the playground with chalk or in a natural space using sticks.

Curriculum links – Geography objectives:

Ages 4-7

UK countries, cities and seas

Name, locate and identify characteristics of the four countries and capital cities of the United Kingdom and its surrounding seas

Use world maps, atlases and globes to identify the United Kingdom and its countries, as well as the countries, continents and oceans studied at this key stage.

Compass directions and directional language

Use simple compass directions (North, South, East and West) and locational and directional language [for example, near and far; left and right], to describe the location of features and routes on a map.

Geographical features in a photo

Use basic geographical vocabulary to refer to:

- key physical features, including: beach, cliff, coast, forest, hill, sea, ocean, river, soil, valley, vegetation, season and weather
- key human features, including: city, town, village, factory, farm, house, office, port, harbour and shop

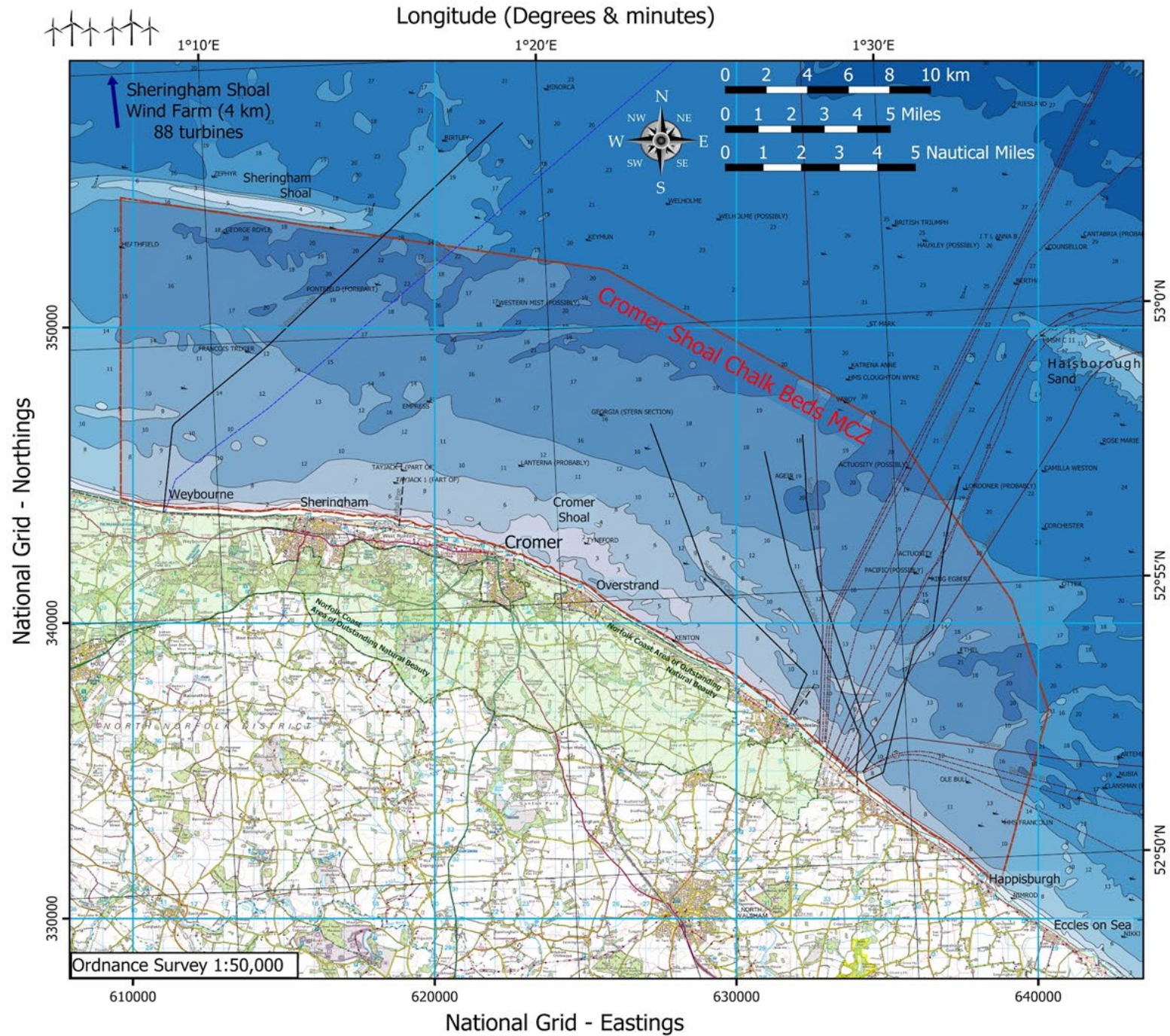
Geographical features on a map

Use aerial photographs and plan perspectives to recognise landmarks and basic human and physical features; devise a simple map; and use and construct basic symbols in a key

Meet Gus the Gull!



Photo: Rob Coleman



Cromer and the Cromer Shoal Chalk Beds Marine Conservation Zone



Key	
Cromer Shoal MCZ	Navigation markers
North Coast AONB	N cardinal mark
Bathymetry (m)	E cardinal mark
0	W cardinal mark
2	Port lateral mark
5	Pipelines and Cables
10	Gas Pipeline
15	Outfall Pipe
20	Pipeline
30	Submarine Cable
50	Telephone Cable
Spot depths	
Obstructions	
Wreck	

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 Contains OS data © Crown copyright and database right [2019]
 © Crown copyright and database rights [2019] Ordnance Survey (100025252)
 © British Crown and OceanWise, [2019]. All rights reserved. Licence No. EK001-2018082. Not to be used for Navigation.
 Designated areas: © Natural England, 8 October 2019. These boundaries are licensed under the Open Government Licence 3.0. **OGL**
 Map Projection is OSGB1936 / British National Grid.

National Grid - Northings

National Grid - Eastings



Cromer



Cromer



Cromer



Sheringham



Sheringham



Sheringham

Field trip ideas when visiting a Norfolk beach

1. What country are we in? What county are we in? What is this sea called?

2. Which way is north? Can you face east/west/south? What can you see to the east?

Mark the compass points in the sand. Practice following directions on the beach as a whole group to begin with, then in smaller groups or pairs with the children giving the directions. E.g. take three steps to the east. Now take one step north.

3. If you visit Cromer or Sheringham, take copies of the photographs with you. Can the children spot the things from the photographs? What are they called? Are they how they expected?

4. Take copies of aerial photos, Ordnance Survey maps and the children's own maps with you.

Can the children spot the things in the aerial photos and OS map? What things can they see that aren't on the map?

Does their own map represent what is there? What do they like about their map? What could they do to improve their map?

Using an aerial photo, can the children create their own map in the sand? They could draw with their fingers and add stones, shells etc to represent different things.

Wildlife in the MCZ

Ages 4-7



Wildlife in the MCZ

The wildlife of the MCZ offers an interesting context for teaching about feeding relationships and habitats. There are some slides to introduce the wildlife of the MCZ before looking in more detail at a particular unit. Rockpooling sessions provide great hands-on learning experiences linked to science.

National Curriculum objectives (ages 4-7):

Diet and food chains

Year 1 – Animals, including humans

- Identify and name a variety of common animals that are carnivores, herbivores and omnivores

Year 2 – Living things and their habitats

- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Rockpooling

Year 2 – Living things and their habitats

- Explore and compare the differences between things that are living, dead, and things that have never been alive
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

- Identify and name a variety of plants and animals in their habitats, including micro-habitats

Year 2 – Animals including humans

- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)



Activity 1

Food chains

Year 1

Discuss the terms carnivore, herbivore and omnivore. Give children copies of the [images](#) of creatures and 'I eat' [information](#). They should then cut and sort them into the three groups. Use the [slide](#) given to check their work.

Year 2

Give the children copies of the [food chain pictures](#). They should then use the 'I eat' [information](#) to create a food chain – cut out the images, order and draw arrows. The arrows must show the direction of the transfer of energy from the food.

Discuss the terms herbivore, carnivore, omnivore. Children can then label the herbivores, omnivores and carnivores on their food chains. Afterwards, use the [slides](#) to check their food chains.

Food chains provided:

[Seaweed, prawn, sea bass, seal](#)

[Plankton, mussels, starfish, herring gull](#)

[Algae, periwinkle, lobster, human](#)

These food chains have been chosen to show the range of plants that support life in the sea.

The reality is that these food chains are part of a very complex food web with many creatures eating a wide range of things.

Activity 2

Rockpooling

Year 2

Living, dead, never been alive activity

The beach is a great place to explore and find a wide range of things that are living, dead or have never been alive.

Let the children see what they can find. Draw a table into the sand with the headings 'living,' 'dead' and 'never been alive'. Gather together and ask the children to take turns adding the things they have found to the table. Do they all agree?

Explore the rockpools at Sheringham or West Runton beach at low tide to find a variety of life. Children use pictures to identify the creatures and plants they find. Encourage the children to carefully lift rocks and seaweed to find creatures that are hidden, then return rocks to the position they were found.

Can they name any creatures? What do animals need to survive? (food, water, air/oxygen, shelter/protection from waves & predators) How do they get these from their rockpool habitat?

Guidance about rockpooling can be found here: [NMMC How to rockpool](#).

Our [Rockpool Fact File](#) has some useful information.

Take a look at Essex Wildlife Trust's [Shoreline Identification Guide](#).

Whiteboard and printable resources about rockpool species available here: [Benny the Blenny rockpool poster](#)

Norfolk Wildlife Trust and the National Trust at Sheringham Park also offer rockpooling sessions.

Wildlife in the MCZ

Much of the wildlife in the Marine Conservation Zone is hidden beneath the surface but it is pretty amazing!

Watch the video on the next slide to see some of the amazing creatures that live there. Many can be seen in the rockpools on Sheringham and West Runton beaches on a good low tide.



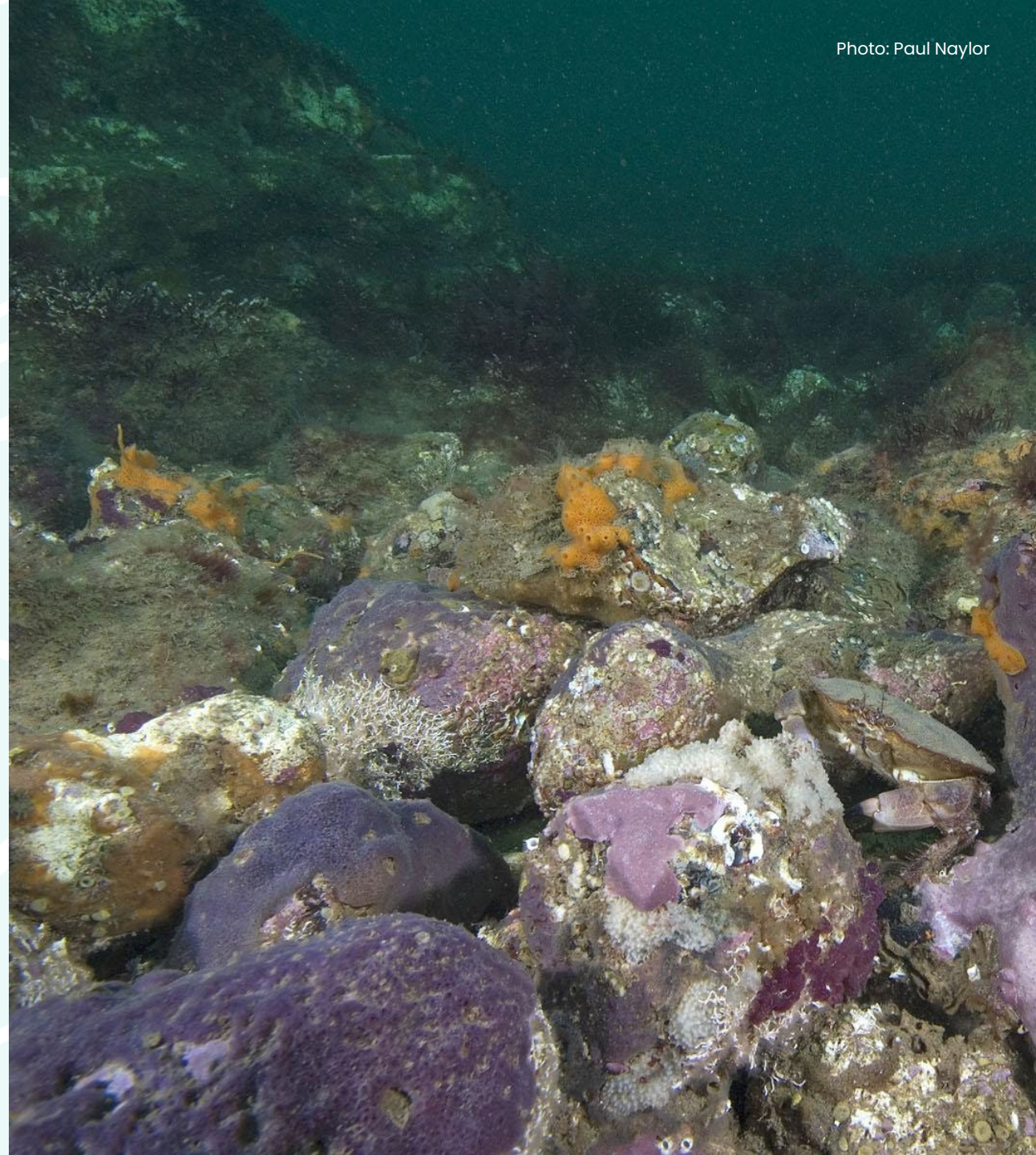
Wildlife in the MCZ



Parpal Dumplin

In 2011 some Seasearch divers noticed a purple sponge and with the help of scientists they realised it was new to science! It is the only place in the world where it is known to live.

In 2021 a competition was organised that a local schoolgirl won. She named it Parpal Dumplin because it's purple and looks a bit like a dumpling!



Threats to wildlife in the MCZ

Despite being hidden from view, the wildlife faces some threats.

The Marine Conservation Zone designation means that work is happening to protect the wildlife from these threats.

Threats include:

- Litter
- Wind farm development
- Fishing



Beach cleans

Litter is sometimes dropped by visitors or fishing gear can get lost. This can cause a problems for wildlife, particularly with plastics.

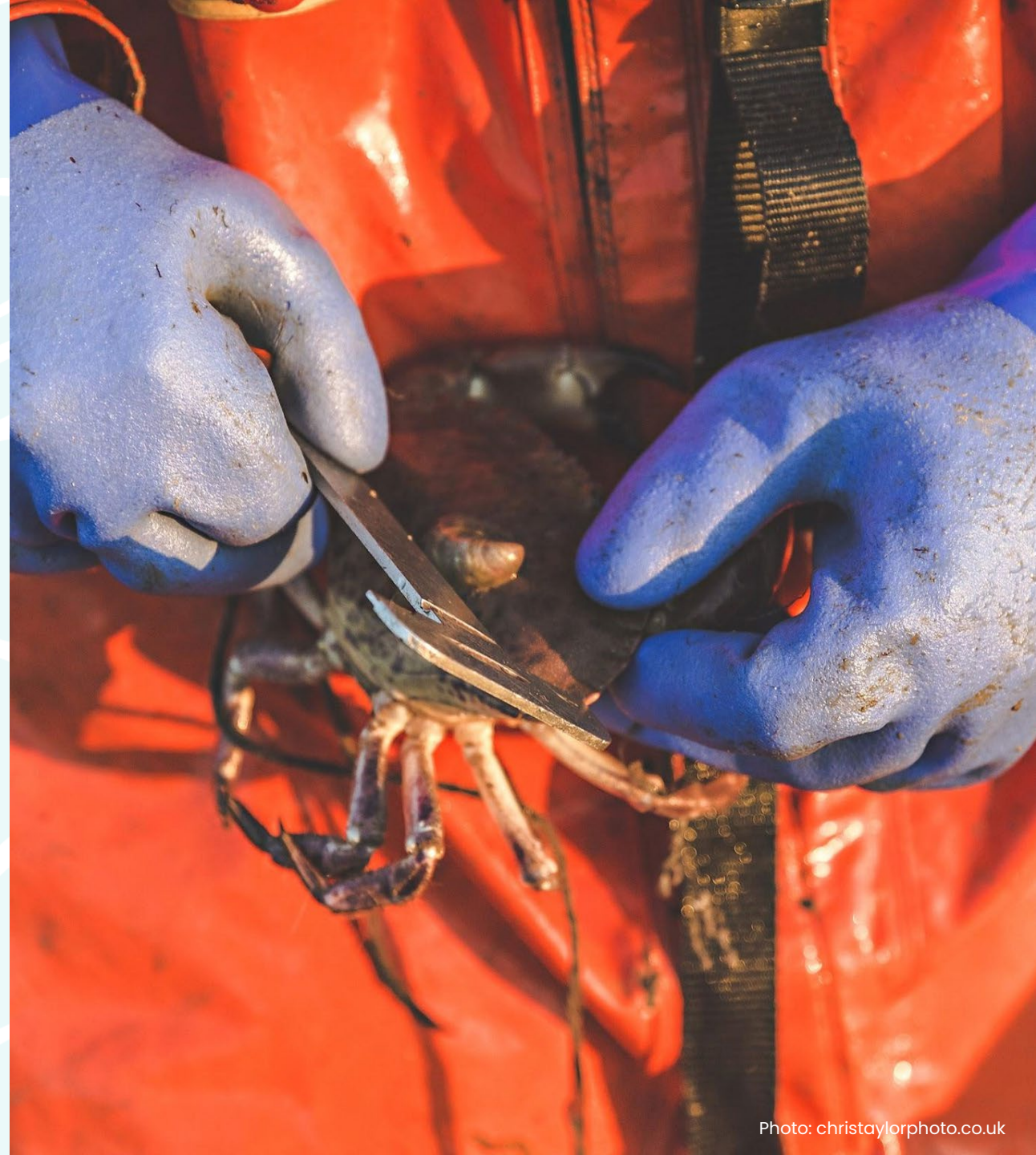
People volunteer at beach cleans to collect rubbish to keep it out of the sea.



Fishing

The fishers need to be careful that they don't harm the MCZ.

- They must not keep crabs that are too small.
- Crab numbers are monitored to make sure fishers aren't catching too many.
- There is guidance to lower the impact of the pots and ropes on the chalk and wildlife.



Amazing wildlife

There are lots of amazing creatures living in the Cromer Shoal Chalk Beds Marine Conservation Zone.

Threats to the wildlife that lives there are being monitored and new laws may be brought in to help the wildlife.



Herbivores, omnivores, or carnivores?



Photo: christaylorphoto.co.uk

Sea Bass

I eat shrimps, periwinkles, prawns, crabs and smaller fish.



Photo: Rob Coleman

Herring Gull

I eat eggs, starfish, crabs, fruit, grains and worms.



Common Starfish

I eat periwinkle, mussels, barnacles and limpets.



Limpet

I eat algae on rocks and young seaweed.



Photo: Rob Coleman

Seal

I eat fish, crabs, squid and octopus.



Photo: Rob Coleman

Prawn

I eat seaweed, carrion and small shrimp-like creatures.



Photo: Rob Coleman

Periwinkle

I eat algae on rocks and young seaweed.



Human

Herbivore



Limpet

I eat algae on rocks and young seaweed.



Photo: Rob Coleman

Periwinkle

I eat algae on rocks and young seaweed.

Omnivore



Photo: Rob Coleman

Herring Gull

I eat eggs, starfish, crabs, fruit, grains and worms.



Photo: Rob Coleman

Prawn

I eat seaweed, carrion and small shrimp-like creatures.



Human

Carnivore



Common Starfish

I eat periwinkle, mussels, barnacles and limpets.



Photo: christaylorphoto.co.uk

Sea Bass

I eat shrimps, periwinkles, prawns, crabs and smaller fish.



Photo: Rob Coleman

Seal

I eat fish, crabs, squid and octopus.



Photo: christaylorphoto.co.uk

Sea Bass

I get my energy from shrimps, periwinkles, prawns, crabs and smaller fish. I am eaten by seals and humans.



Seaweed

I get my energy from the sun. I am eaten by crabs, periwinkles, worms, prawns and shrimps.



Photo: Rob Coleman

Prawn

I get my energy from seaweed, carrion and small shrimp-like creatures. I am eaten by crabs, fish and sea anemones.



Photo: Rob Coleman

Seal

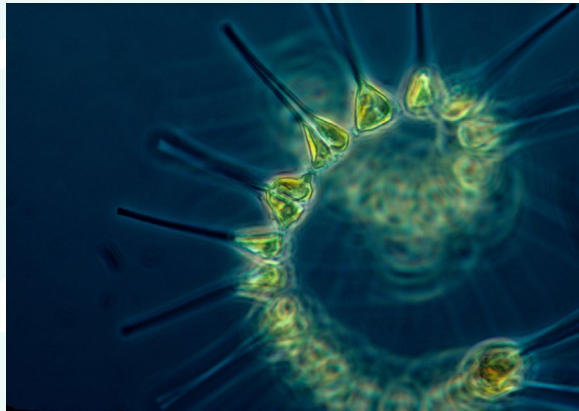
I get my energy from fish, crabs, squid and octopus. I don't have any predators.



Photo: Rob Coleman

Herring Gull

I get my energy from eggs, starfish, crabs, fruit, grains and worms. I do not have any predators.



Phytoplankton

I get my energy from the sun. I am eaten by barnacles and mussels.



Common Starfish

I get my energy from periwinkle, mussels, barnacles and limpets. I am eaten by crabs, seabirds and fish.



Mussels

I get my energy from plankton. I am eaten by humans, dog whelks, seabirds and starfish.



Human



Lobster

I get my energy from crabs, sea snails, sea urchins and starfish.
I am eaten by humans.



Algae

I get my energy from the sun.
I am eaten by limpets and periwinkles



Periwinkle

I get my energy from algae on rocks and young seaweed.
I am eaten by crabs, lobsters, seabirds and fish.



Seaweed

I get my energy from the sun. I am eaten by crabs, periwinkles, worms, prawns and shrimps.

Producer



Prawn

I get my energy from seaweed, carrion and small shrimp-like creatures. I am eaten by crabs, fish and sea anemones.

Herbivore



Sea Bass

I get my energy from shrimps, periwinkles, prawns, crabs and smaller fish. I am eaten by seals and humans.

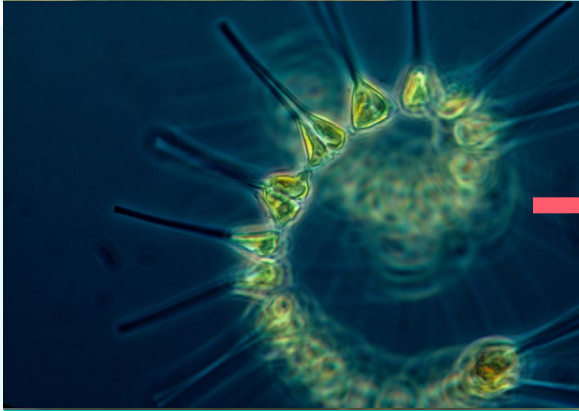
Carnivore



Seal

I get my energy from fish, crabs, squid and octopus. I don't have any predators.

Carnivore



Phytoplankton

I get my energy from the sun.
I am eaten by barnacles and mussels.

Producer



Mussels

I get my energy from plankton.
I am eaten by humans, dog whelks, seabirds and starfish.

Herbivore



Common Starfish

I get my energy from periwinkle, mussels, barnacles and limpets.
I am eaten by crabs, seabirds and fish.

Carnivore



Photo: Rob Coleman

Herring Gull

I get my energy from eggs, starfish, crabs, fruit, grains and worms. I do not have any predators.

Omnivore



Algae

I get my energy from the sun.
I am eaten by limpets and periwinkles



Periwinkle

I get my energy from algae on rocks and young seaweed.
I am eaten by crabs, lobsters, seabirds and fish.



Lobster

I get my energy from crabs, sea snails, sea urchins and starfish.
I am eaten by humans.



Human

Producer

Herbivore

Carnivore

Omnivore

Fishing in the Cromer Shoal Chalk Beds Marine Conservation Zone

Ages 4-7
Design and Technology



Learning objectives

Sea to sandwich

Design and Technology

Understand where food comes from

Crab recipes

Design and Technology

Use the basic principles of a healthy and varied diet to prepare dishes

Activity 1

Sea to sandwich

Start by asking the children 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 crab fisher in Cromer, then the slides explaining how a crab gets from the sea into a sandwich.

In pairs or groups, give the children the [Sea to Sandwich images](#) but not in order. Give them a few minutes to see if they can sort them into order. Go through them with the children to check they have them ordered correctly.

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. You may also like to explore our Sustainable Seafood resources for [lower primary](#).

Activity 2

Crab recipes

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

The recipes included in the lesson plan are below:

- Crab sandwich (great to link with the [Sea to Sandwich session](#))
- Crab cakes (like fishcakes)
- Crab and sweetcorn chowder

Check out our [Good Fish Guide](#) for seafood ratings and more recipe ideas.

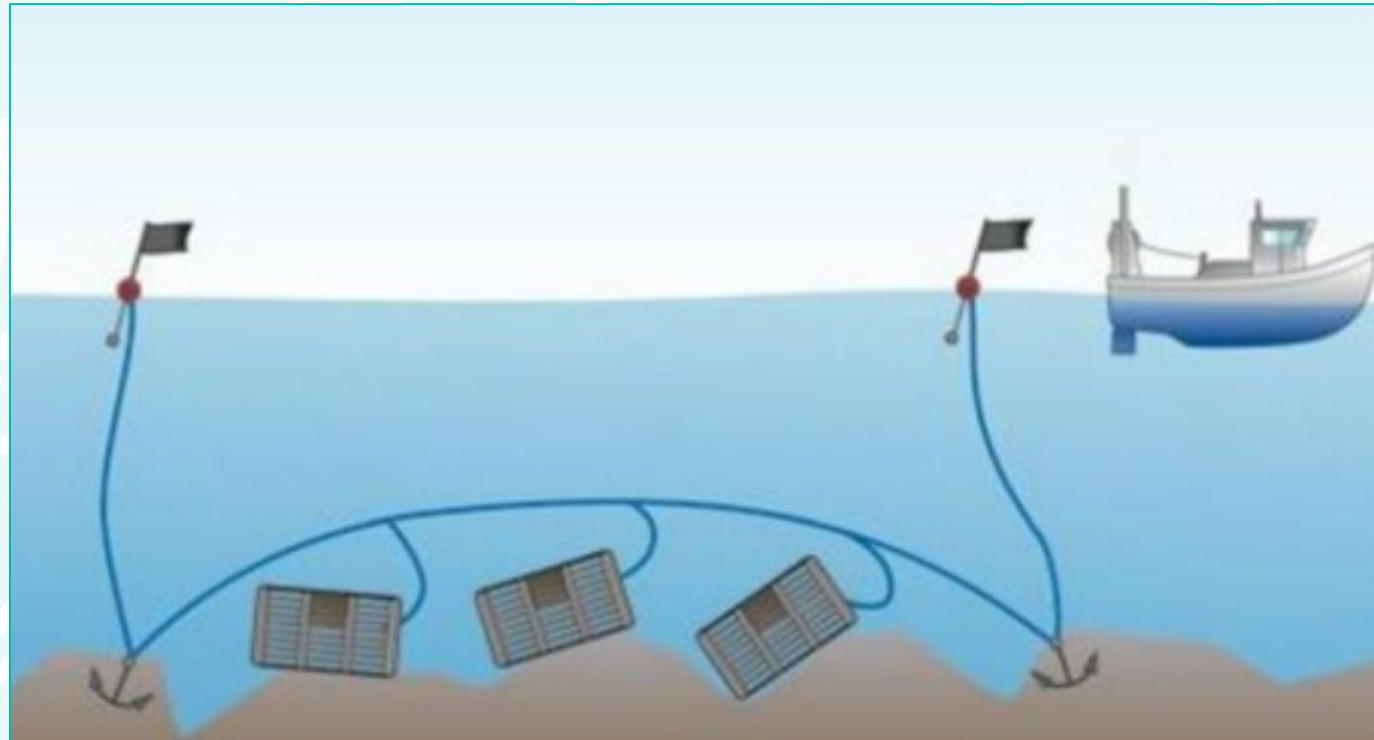
**Have you ever seen
crab pots stacked up
by the sea?**



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.

Depending on tides, there can be early starts in the dark. They go out in varying weather conditions so long as the wind and waves are not too strong.

The cold temperatures in the winter mean there are fewer crabs, so this time of year is used to fix damaged pots and carry out maintenance of 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.



Photos: christaylorphoto.co.uk

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.



Photo: Rob Coleman



Photo: Rob Coleman

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 Kg 18 NOV 21 18 NOV 22

Nutrition Information per 100g (Typical values)	
Energy	484 kJ
Fat	1.15 g
-Of which saturates	0.7g
Carbohydrates	0.5g
-Of which sugars	0.5g
Protein	18.7g
Salt	0.5g

Jonas Seafood Ltd.
Shelton Hill Way, Cromer, Norfolk, NR27 5LW
Tel: 01263 515444

gB
NUTR

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



Photo: Rob Coleman



Photo: Rob Coleman

The crabs are ready to be bought and eaten!

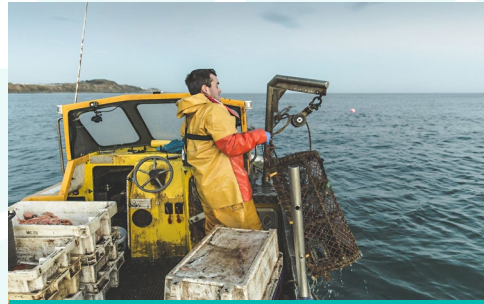


Sea to Sandwich

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

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:



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!

Viewpoints and values

Ages 4-7



Viewpoints and values

This resource is to get pupils thinking about the role of the sea in their own lives. It works well as part of a unit of work about the sea or can be used as a stand-alone lesson.

The session includes:

- Exploring the many ways the ocean affect our lives
- Finding out about the viewpoints of some people local to the Cromer Shoal Chalk Beds MCZ
- Children explore their own feelings about the sea
- Ideas to use during a visit to the beach

National Curriculum objectives:

Citizenship

- To share their opinions on things that matter to them and explain their views;
- What improves and harms their local, natural and built environments and about some of the ways people look after them;
- To realise that money comes from different sources and can be used for different purposes.
- To identify and respect the differences and similarities between people

Health Education

- That mental wellbeing is a normal part of daily life, in the same way as physical health.
- How to recognise and talk about their emotions, including having a varied vocabulary of words to use when talking about their own and others' feelings.
- The benefits of physical exercise, time outdoors, community participation, voluntary and service-based activity on mental wellbeing and happiness.



Activity 1

How do we use the sea?

Start by getting the children to discuss their own use of the sea and create a class mind map titled 'the ocean and us.'

- What things do you do when you visit the sea?
- Do you use/eat anything that comes from the sea?
- Can you think of other things people get from the ocean?
- Is there anything else the oceans do for us?

You can find more information about what the ocean does for us in the [Amazing Ocean Fact File](#). Use the fact file to add other ideas for your mind map that are suitable for your class.

The video [What did the ocean ever do for us?](#) provides a great overview of the topic.

Activity 2

People's viewpoints

Split the class into groups, giving each group one of the [viewpoint sheets](#). They need to read through it and consider the main points:

- What do they like about the sea?
- Why do you think that is?
- Do their feelings for the sea affect what they do?
- What would they say to you?

Ask the children to write what the person thinks about the sea in a thought bubble and what they might say to you about the sea in a speech bubble. This could be a shared writing activity or completed individually. They should then draw the person and stick the thought and speech bubbles on.

Return to the class mind map made at the start of the lesson. Is there anything we can add to it? Make sure the physical and mental well-being benefits as well as the jobs it provides for others are included.

Activity 3

What does the sea mean to me?

Now ask the children to consider their own responses to the sea. They should do this individually as it is a chance for them to consider their personal thoughts and feelings. They can use the [sheet](#) provided to write and draw their response.

- What do I like to do at the seaside?
- How do I feel about the sea? Why?
- What else is good about the sea?



Shelly – Beach Clean Organiser

The sea and me

I grew up in Bacton and have spent many days on the beach. I run beach cleans as a volunteer, covering the beaches from Trimingham to Sea Palling. My group is called North Norfolk Beach Cleans. I also volunteer for Friends of Horsey Seals during the pupping season.

How I feel about the sea

I love the beach and sea. It makes me feel good when I am with other people helping nature. Walking up sand dunes and along the beach carrying heavy bags keeps me fit! It is fun and relaxing too.

The MCZ

It is important to look after the area. People need to see and learn about the habitat and wildlife in the MCZ. The sea plays an important part in looking after our planet so we need to look after it.

My message

Go out and enjoy the beauty of the beaches and sea. Learn about the sea and how every creature and plant plays an important part in the balance and health of our oceans and planet. Do little things like pick up litter, put litter in the bin, try to reuse wherever possible and avoid single-use plastic.



Chris – snorkeller, photographer and lifeboat crew member

The sea and me

I've lived in Sheringham all my life and enjoy walking along the beach (often with a bag for any rubbish I find), swimming in the sea, surfing and taking my boat out at Blakeney Point to see the seals. I enjoy snorkelling when the sea is clear to see the amazing sea life and take lots of photos and video. I am also in the lifeboat crew at Sheringham.

How I feel about the sea

I love the way the sea changes so much between the seasons. From snorkelling in clear, warm water in summer to watching huge waves lash the beach in a winter storm. I really enjoy snorkelling and making the short films to show other people what a special place the chalk reef is. I am on the lifeboat crew because I like to help people in trouble and it can be fun to go out on the lifeboat.

The MCZ

It is important to find the balance between looking after the sea life of the MCZ and letting all of the users of the sea (crab fishermen, snorkellers, swimmers) do what they want to do. We need to make sure our Blue Flag beaches stay pollution-free and that our seas have as little plastic and rubbish thrown into them as possible as this harms the wildlife.

My message

The MCZ is a special place and needs our help so next time you go to the beach take a bag and pick up any rubbish you find. The fish will thank you!



Philip – RNLI lifeboat volunteer

The sea and me

I was a fisherman at Cromer catching crabs, lobsters, whelk and herring. I joined the RNLI lifeboat and was on the crew for thirty years. Since I retired from the crew, I have taken on other roles at the RNLI Lifeboat Station. I go to the lifeboat station every week to raise public awareness about water safety. I was also in the RAF on Air Sea Rescue Launches. I walk my dog on the beach. My dog loves to swim in the sea!

How I feel about the sea

I love the beauty and power of the sea. I also love the way the beach, the colour of the sea and the weather are always changing. I volunteer for the RNLI because I want to help others to have fun whilst keeping safe. I also enjoy being part of the lifeboat team.

The MCZ

I feel it is important that we protect and maintain the chalk reef so it can carry on as it has for many years. It is also important that fishermen can carry on and earn a living.

My message

My main message is to respect the sea and keep safe. Always have an adult with you when you swim. Learn how to float (starfish float on your back) – it is the one thing that will save you if you end up in the water. Visit rnli.org to find out more about keeping safe at the beach.



Ben – Surf school manager

The sea and me

I run a surf school and surf shop in Cromer. I teach surf and stand up paddle board lessons but most of the time I'm managing the business. I love surfing and aim to get out whenever there are waves! My love for the sea began when I was about 10 years old and started going sea fishing.

How I feel about the sea

I am lucky that I get to combine my hobby with my work! I love the sense of freedom I get when I go surfing. The sea is so vast. Surfing, stand up paddleboarding and generally being in and by the sea are good for my fitness and mental well-being. It really helps me relax, be refreshed and continue positively with life.

The MCZ

It is important that there is a balance in the way the MCZ is looked after. Tourism is a really important. People come here to surf, enjoy the view, see the wildlife and eat Cromer crabs.

My message

The North Norfolk coast is like a giant, free playground! Visit it and experience it. Take your shoes off and feel the water on your feet, go for a swim, try surfing lessons and make sure you keep safe. You will love it. The coast needs to be looked after for the future and the young people to come.



Kevin – Crab and lobster business manager

The sea and me

I grew up part of a fishing family, helping to dress crabs in our kitchen when I was young. I was a trawler fisherman when I left school. In 1995, I set up my company and fished for crabs and lobsters. In 2013, we moved into our current factory which meant I didn't have time to go out on the boat anymore. The factory now processes up to one million crabs a year.

How I feel about the sea

Having grown up in a fishing family, the sea and crabs have always been part of my life. Trawler fishing was a job to earn money but now I enjoy running my own business. I no longer go out to sea but I enjoy keeping up with the fishermen when I go to collect the crabs.

The MCZ

It is important for everyone to take a balanced view and look at others' points of view. We need to find a way for the fishing to keep going. Without the Cromer Crab, we would lose a way of life for many, jobs and the flavour of North Norfolk would change. Fishing practices may have to change a little to make sure they can keep going.

My message

The fishermen only take some of the crabs: lots of small ones are put back. Potting has a much lower impact on the sea habitat than trawling. Try some crab and lobster!



John – Fisherman with a fish shop

The sea and me

The sea has always been part of my life. My father was a fisherman and his father too. I go out on my boat fishing several times a week, weather permitting. On the days I don't go out, I go and look at the sea instead. The crabs, lobsters and fish I catch are sold in our fish shop in Cromer. I was in the crew on the RNLI Cromer lifeboat crew for 36 years.

How I feel about the sea

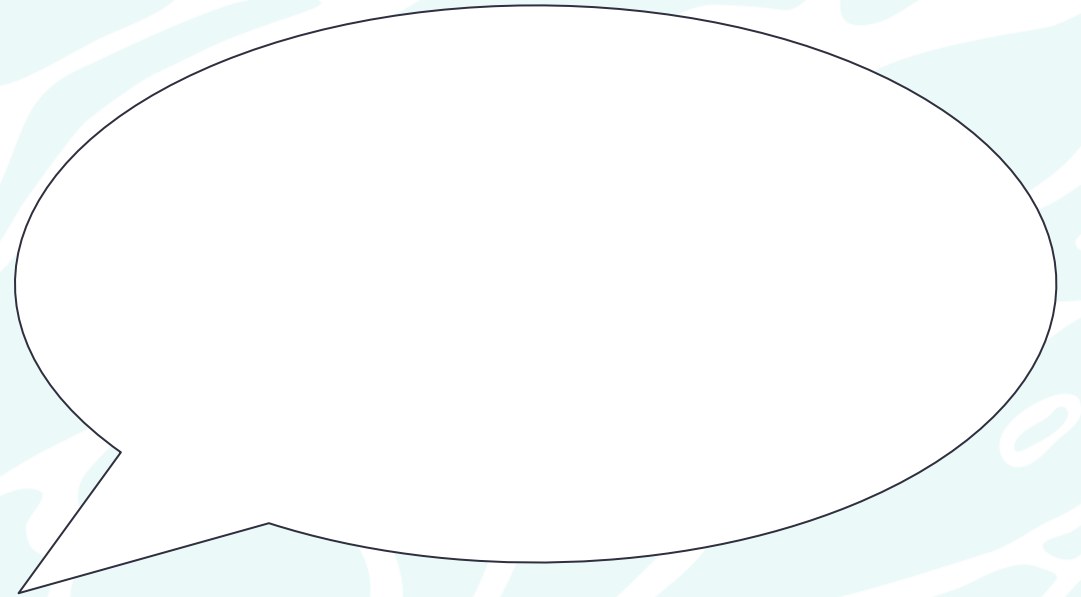
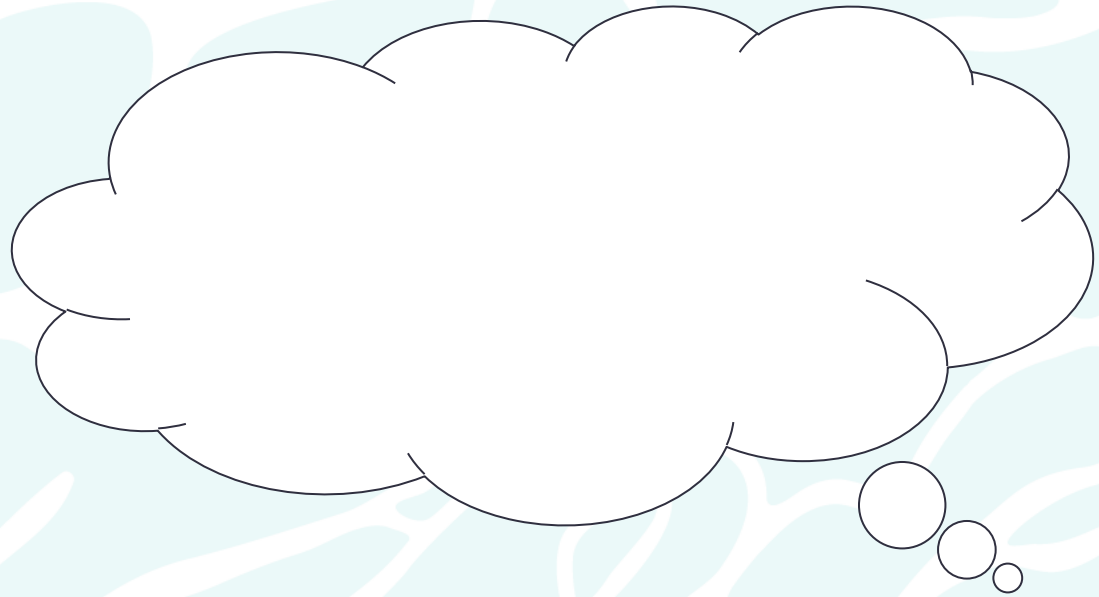
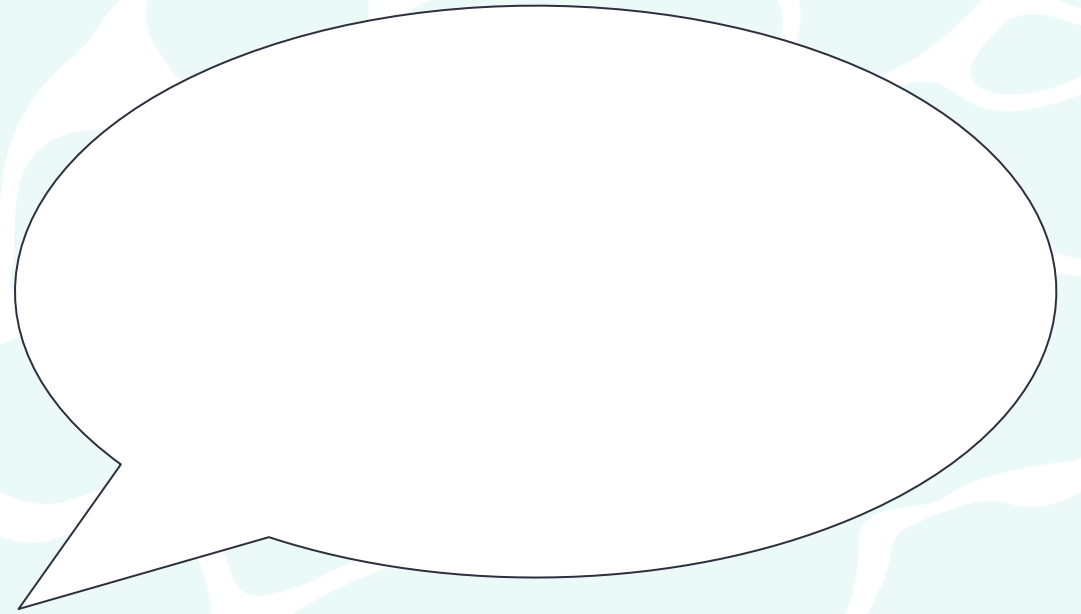
I am lucky that I enjoy my job. There are days when being out on my boat is the best place in the world! The early mornings watching the sun come up are beautiful. There's a real sense of freedom when you're out on the sea but you have got to respect it.

The MCZ

It is important to protect the balance between nature and man. The MCZ needs looking after. It is also a place where people earn a living. There are not many young people getting into fishing these days and it would be a huge loss if the local crab industry ended. It is important for Cromer and Norfolk.

My message

We are lucky to have the chalk shoal here. There are very few food miles when you eat a Cromer crab because most are caught just a mile or two off the beach!



The Sea and Me by:

How do I feel about the sea?
Why?

What do I like to do
at the seaside?

What else is good
about the sea?

Use this space to write and draw your thoughts about the sea:

Visiting the beach

A visit to the beach can be a great opportunity to get the children to consider their personal feeling about being there and the physical and mental well-being benefits of being by the sea. Point out the effort needed to walk on sand. Share your own feelings about being on the beach. Here are some other ideas:

Explore their senses

Gather ideas, thoughts and words to describe each sense.

They could use this to write poetry about the sea.

Pebble pledge

A great activity if you have been learning about environmental issues relating to the sea.

Invite the children to hunt for a special pebble that they really like. Whilst hunting, encourage them to consider what they could do to help the oceans. Gather together and the children place the pebbles into a pile or circle whilst making a pledge. Invite them to share their pledge if they want to.