



The Big Blue Ocean Cleanup's objective is to offer a Key Stage 2-Key Stage 3 curriculum unit to provide children with an understanding of how ocean pollution impacts on the natural world and inspire them to do something about it.

This will be achieved in 4 topics.

- 1. Seabirds**
- 2. Oceans and Currents**
- 3. Pollution Analysis**
- 4. Looking to the future**

Each topic aims to provide a basic understanding around the title theme, as well as outlining key points and how they are linked.

The lesson plans are designed to have the video presented at the start of the lesson. These videos raise the key points that will consequently be further developed within the teaching material provided, to give an overall contextual understanding. Each lesson will also contain various suggested activities that can be included/adapted/excluded from the lesson as you deem necessary.

The lesson plans are also colour coded to hopefully make it simple for you to follow:

Grey – The video narrative – the information raised within the videos.

Black – Teaching Information – extra information to explain the points raised in the video and give them context. This is the information to be relayed to the children in the way you see fit. NOTE: Some concepts are complicated and although it has been simplified as much as possible, we do understand the teaching information may not be fully suitable for younger KS2 classes, therefore please adapt as necessary. We hoped by providing you with all the information, we could give you the understanding and enable you to choose what information would be most important for your class.



Green – Key point summaries – The key points highlighted by the section of teaching information/activity. If no other extra information is retained by the students, then it is hoped they will be able to retain the key points. These key points are linked and as a minimum should allow the students to follow the lesson context from the start to finish.

Blue –Activity/Class Question: Our suggested activities/ class questions. Please adapt as you feel necessary.

Key words and definitions. Will be presented in a box.

Topic One: Seabirds

Video 1: <https://www.bigblueoceancleanup.org/education-programme>

The video summarises key points regarding seabirds and plastic pollution as well as ways we can help as individuals. The lesson should develop knowledge around these key points and help students understand how the key points are linked to one another.

Start glossary of key words and their definitions, throughout lesson add to as necessary.
-Key words will outlined in italics and a separate box, with a corresponding definition.



Overall Learning Objectives:

- 1. Learn about Seabirds, how they live, how they behave and how they feed.**
- 2. To understand how seabird species are different and how they are similar.**
- 3. To learn how plastic is starting to affect seabirds and understand how the similarities between all seabirds means they are all under threat from plastic.**
- 4. To learn how we can start to help: Identifying how our individual actions can help reduce the impact plastics are having on seabirds.**

Video Information:

Birds that spend most of their lives at sea are known as seabirds. They depend on the oceans to supply much of their food.

They have strong relationships with many other sea creatures such as tuna fish, dolphins, turtles, sharks, squid and much smaller organisms known as zooplankton.

All seabirds return to land to breed, except Emperor Penguins who lay their eggs on the frozen ocean. Some of these species are very familiar. They come in all shapes and sizes and many are found around the coast of the UK.

Additional teaching information:

Seabirds have strong relationships with lots of different marine animals: These relationships are their interactions with other marine animals:



Predator relationships: Seabirds are predators to many marine animals. This means they eat many marine animals: (For example fish or squid.)

Prey relationships: Seabirds are prey for many shark species. (For example Great White Sharks in South Africa are known to feed on seabirds that are floating on the sea surface. -Please emphasize this doesn't happen in the UK!)

Indicator relationships: Many marine animals from tiny zooplankton to dolphins can help seabirds identify where they can find their food: they provide indicators. (For example, a seabird might see lots of dolphins splashing around in the water – this suggests/indicates to them that there might be a lot of fish nearby for them to eat as that is what the dolphins are chasing.)

Suggested initial activity (adapt relative to year group):

Identifying UK seabirds.

Talking through and identify different seabird species that live around the UK.

-**Fun fact:** A seagull isn't actually a species of seabird. A seagull is the collective term for many gulls species: these include:

Herringgulls (the most common – Pale grey wings, pink legs)

Lesser black backed gull (Dark grey wings, yellow legs)

Great black backed gull (Black wings, pink legs)

Common gull (similar to herringgull but much smaller and thinner beak)

Other UK seabirds include

-Puffin

-Gannet

- Cormorant

-Fulmar

-Manx Shearwater

-Kittiwake

-Razorbill

-Common tern



-Albatross (very rare, but occasionally spotted off the UK coast)

Key Point to be made from the activity: Comparing the pictures of UK seabirds to show they come in all shapes and sizes: they are very diverse.

Diverse: A wide variety of characteristics: shapes, sizes, colours and textures. (For example, the differences between an Albatross, a seagull and a penguin – colours, shapes, sizes, feather textures differ etc).

Video information:

Seabirds come in all shapes and sizes, from the wandering albatross, which has a wingspan of over 3 meters, to the storm petrel, which is about the size of a sparrow!

The albatross can travel across the sea for many miles, taking advantage of the wind generated just above the waves that allows them to rise quickly. They then glide downwind, finding another wave and gliding again. This allows them to travel long distances without flapping their wings.

The albatross feeds almost exclusively from the ocean surface because they can only dive underwater a few feet. They mainly eat fish, fish eggs and squid. They return to land to breed.

A female albatross breeding in the Pacific lays a single egg and both parents take it in turns to incubate the egg for 2 to 3 months. For the first few weeks after the chick hatches it needs constant attention and lots of food! The parents feed the chicks by regurgitating food into their throats. This is made up of whatever they have eaten in the ocean.

Teaching information:



Because seabirds are so diverse, they find their food in many different ways and they travel across the ocean in different ways. Some seabirds such as albatrosses travel great distances, covering thousands of miles. They do this by increasing their flying efficiency – they take advantage of wind generated above waves, which enables them to rise and glide over the sea without needing to flap their wings which would use a lot of energy. This allows them to cover great distances. Other seabirds that cannot take advantage of the wind generated by waves travel less and stay closer to land.

As well as travelling in different ways, seabirds feed in different ways too. Some seabirds such as Gannets dive to great depths to catch fish, whereas other seabirds such as Albatrosses feed on what they find within a few meters of the surface. They eat widely different things and find them in widely different ways.

But one thing all seabirds have in common is they need to return to land (or in the case of the Emperor Penguin: solid ground in the form of frozen sea ice) to breed and lay their eggs. The parents usually take turns incubating the eggs and once the chick has hatched, take turns to forage for food to feed their chick. This is food found at sea and stored in the bird's stomach to be later be regurgitated for the chick.

Key Point to be made from teaching information: Seabird diversity results in differences in how they travel and how far they go. It also results in differences in how they feed. BUT the overall similarity across all seabirds is: they return to land to breed and can only feed from what they find in the ocean and can only feed their chicks this too.

Following on from the information provided in the video: By 2020 99% of all seabirds will suffer from plastic ingestion.

Activity 2: Introduce ways in which seabirds and their chicks are under threat from plastic pollution. (All information you may want to cover is provided below in the teaching information)

- This could be through a class discussion: How might seabirds and their chicks be affected by plastic in the ocean?

OR



- Group class and provide paper and pen. Allow them to talk within the group and write out/bullet point/draw ways a seabird might be affected by plastic.

Encouragement/prompting to cover:

- Macroplastic – causes entanglement -> Lost Fishing nets causes Entanglement – concept called ghost fishing.
- Microplastic – is ingested

Teaching information

Plastics are present within all of the ocean. The most substantial marine pollutant is now marine plastic, and microplastics specifically are believed to account for 92% of this pollutant. Marine plastic can be categorised as either macro or microplastic. Macroplastics are items over 5mm in size, whereas microplastics are items smaller than 5mm.

Microplastics are so small they are easily swallowed by seabirds and taken into their body: a process called ingestion.

Macroplastic: Plastic items in the sea over 5mm in size.

Microplastic: Plastic items in the sea less than 5mm in size.

Plastic Ingestion: When an animal eats plastic in the ocean, it is a process called plastic ingestion: it has ingested plastic. It is a scientific word for “eat”.

Plastic ingestion usually occurs as the particles are mistaken for food or accidentally swallowed by the seabirds because they are in the water along with their food. These plastic particles are sadly then regurgitated as part of the fish soup and fed to their chicks.

Fishing equipment such as nets and lines are also causing huge problems for seabirds: They are attracted towards fishing boats and nets because of the fish, but can easily get entangled in the nets which commonly causes injury or even drowning.

A lot of fishing gear is also discarded or lost overboard into the ocean, this gear and netting is made of long-lasting plastic which drifts in the ocean and is equally likely to entangle seabirds. The process of animals becoming entangled in discarded fishing net is known as ghost fishing.



Plastic Entanglement: *Animals that become trapped in plastic items in the sea. (For example: Lovelace in Happy Feet is a penguin suffering from plastic entanglement: He has plastic packaging from drinks cans around his neck. Other examples are seals or dolphins with fishing wire wrapped around flippers)*

Ghost Fishing: *Fishing nets that are no longer part of fishing boats, that have thrown away into the ocean or have broken off the boats. These drift through the sea and accidentally catch fish, turtles, dolphins and seabirds that come into contact with it. Because they are no longer managed by humans, they drift and causes unnecessary deaths of many animals including seabirds. This is why it is “Ghost” fishing.*

Key Point to be made from Activity 2 and teaching information: Common similarity between all seabirds is they can only feed themselves with what they find in the ocean and therefore they can only feed their chicks this too. With the amount of plastic pollution in the ocean increasing and seabirds now accidentally ingesting these plastics, many species are under threat from this pollution problem.

Equally, because seabirds spend a lot of at sea, they are under threat from entanglement from both active fishing gear and discarded fishing gear. Entanglement in discarded fishing gear is a process known as ghost fishing.

NOTE: This information regarding plastic ingestion will be followed on and further developed in Lesson 2.

Video information:

Good waste management has been found to massively reduce the amount of plastic entering the ocean. There are many ways we can individually make a difference:



Stop using single use plastics: - plastic cups, plates, plastic straws, balloons, even food packaging such as crisp packets. Reduce the amount you use and try to use alternatives where possible

Single use: An item of plastic that has one purpose only and must be thrown away once used. For example plastic cups, plates, plastic straws, balloons, even food packaging such as crisp packets

Activity 3 (Adapt as appropriate- Could be in class, could be written homework depending on time): How we can help:

Individually/in pairs/small groups give out the task of planning a birthday party/school fundraiser etc: But the key to the planning is to use as little single use plastic as possible.

Key things to encourage students to cover:

- What equipment would be used? (For example: plates/bowls/cutlery-)
- Where would it come from? (For example, would it be bought from a shop or from home).
- How it would be used - could it be recycled?
- What alternatives could be used instead of plastic? (For example Paper straws, food leftovers go into Tupperware's rather than cling film. Party bags could be paper bags rather than plastic)
- Give examples of specific waste management (recycling of paper plates, plastic food packaging, glass bottles etc).



Key Point from activity 3: Identifying how individual actions can help reduce the impact plastics are having on seabirds and exploring different methods to put this into action. – reducing plastics/using alternatives.

Thank you

Lesson plan material provided by Ellen McArthur, MSci Marine Biology 2019,
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Please do not hesitate to get in contact if you have any questions or queries. I will endeavour to reply as soon as possible. Any feedback will also be greatly appreciated.

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