HABITATS: THE UK'S ROCKY SHORE

Links to National Curriculum

Science

- Identify and describe a variety of common animals including fish, amphibians, reptiles, birds and mammals (**Year 1, Animals**).
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores (**Year 1, Animals**).
- Identify and name a variety of plants and animals in their habitats (**Year 2, Living things and their habitat**).
- 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 (**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 (**Year 2, Living things and their habitats**).
- Recognise that living things can be grouped in a variety of ways (**Year 4, Living things and their habitats**).
- Construct and interpret a variety of food chains, identifying producers, predators and prey (**Year 4, Animals, including humans**).

KEY LEARNING OBJECTIVES

1. To identify and describe a variety of plants and animals on the UK's rocky shore.
2. To understand that animals can be carnivores, herbivores or omnivores.
3. To understand how plants and animals on the rocky shore have adapted to their challenging environment.
4. To understand how different habitats provide for the needs of animals and plants, and how they depend on each other.
5. To describe how animals obtain their food from plants and other animals, introducing the idea of a simple food chain.

Notes to Teachers

- Activities given are suggestions only. The main purpose of the lesson plan and presentation is to provide key information and visual aids for teachers to adapt to their needs.
- The PowerPoint presentation runs alongside the plan and all slides are referred to in the lesson plan. Please feel free to modify the presentation by adding your own slides or deleting those you don't need.

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SUGGESTED STARTER ACTIVITY

Slide 4: Question and answer session, producing a mind map of the children's ideas:

- What is it like at the seashore?
- How many of the children have been rock pooling?
- What could they find at the rocky shore?

TEACHER INPUT

Slides 5-6: A rocky shore consists of rocky ledges with pools of salt water, boulders and pebbles.

Slide 7: In this harsh rocky world, there are lots of challenges. The tide moves in and out everyday, so it is changing all the time – wet, then dry, then wet again etc. When the tide is out and the sun is shining, rock pools can get very hot and water levels very low. When it rains, the saltwater is diluted by rainwater. So anything that lives on the rocky shore has to cope with conditions that can change every few hours.

But the rock pools are filled with all sorts of life - a community of hardy algae and animals, each specially adapted for coping with the harsh environment around them.

What Grows on the Rocky Shore?

Very few land plants can grow on the rocky shore, as the water is too salty. But algae can thrive there, especially seaweeds. Algae do not have true stems, roots or leaves, as normal land plants do and most do not flower. They have special features that enable them to grow in such a hostile habitat:

Slide 8: **Sea Lettuce** – a seaweed that can form dense patches on the seashore, especially in mid summer. If detached from where it is growing by the waves, it is able to live by floating freely on the water.

Slide 9: **Bladderwrack** – a seaweed that has pairs of air bladders, which float fronds towards the light on the surface of the water.

Slide 10: Sea Grass – flowering algae that form vast meadows (or beds) on the sea floor. Some beds can be seen at low tide, whilst others are permanently immersed in seawater. They complete their full life cycle underwater and even have waterproof pollen!

Slide 11: Plankton – countless tiny plants and animals that float and drift in the world's oceans. These living things or organisms fill a very important place at the start of the food chain.

Animals of the Rocky Shore

KEY WORDS

Vertebrates – animals with a backbone.

Invertebrates – animals without a backbone.

Crustaceans – invertebrates with a hard outer shell that protects animals from predators and prevents water loss. Crabs, lobsters, barnacles and shrimps are all crustaceans.

Molluscs –Invertebrates with soft unsegmented bodies, usually enclosed in a shell.

Echinoderms –Invertebrates with spiny skin – starfish, urchins and sea cucumbers.

Fish – mostly cold-blooded vertebrates, usually with scales and they breathe through gills.

Herbivore – an animal that only eats plants.

Carnivore – an animal that only eats meat.

Omnivore – an animal that eats plants and other animals.

Scavenger – an animal that eats dead animals that they find.

Predator – an animal that lives by killing and eating other animals. The animals they eat are called the prey.

Some of the most common creatures you can expect to find on the rocky shore are:

Slide 12: Brittle Stars are echinoderms and usually have 5 arms covered with spines. Some can swim but most crawl along the seabed using their flexible arms. Their name refers to how easily their arms fall off when touched. They can also cast off an arm if injured – not a problem for them as they can grow another arm within months! They are omnivores, eating both algae and feeding on plankton and detritus (decaying matter). They are often eaten by their relative the common starfish!

Slide 13: Limpet - these are dome shaped molluscs and are very well adapted for a life on exposed rock surfaces. Each limpet has its own 'home' – an exact spot on the rock where it stays when the tide is out. When the tide covers their rock, the limpets leave their base and wander about, grazing on young seaweeds on the rock surface (they are herbivores). Before the tide goes out, each limpet returns to its own 'home'. They can attach and hold onto rocks with huge force and when they die they leave a scar on the rock surface.

Slide 14: Periwinkle – these are molluscs with rounded, smooth shells. The edible or common periwinkle is the largest of the winkles, about 3.5cm with a more pointed shell. They are herbivores. Common periwinkle can live for many days without food or water. They have an operculum – a trapdoor-like structure that they can use to seal themselves inside their shell, trapping water inside with them and gills, that enable them to breathe underwater.

Slide 15: Hermit Crab – these crustaceans usually live in the shells of molluscs, as their own outer shells are very soft. As they grow, they search for a bigger shell to fit into. Unlike other crabs they walk forwards and backwards, instead of sideways. Hermit crabs are omnivores and scavengers.

Slide 16: Shore Crab – these are common on all shores. They are carnivores and scavengers and eat most animals, especially molluscs like periwinkles. They can often be found hiding under large algae and stones.

Slide 17: Edible Crab – has a 'pie crust' edge to the shell, so quite easy to identify. When disturbed it curls its legs under its body and into a ball to protect itself. They are carnivores and feed on smaller animals.

Slide 18: Acorn Barnacle -These are crustaceans and relatives of shrimps, crabs and lobster. They are sharp, shelled little creatures that attach themselves firmly to rocks, withstanding the biggest of waves. You can often see lots of these on the upper shore when they're closed up and waiting for the tide to come back in. But when in water they are more active – 6 pairs of feathery legs stick out of the top, sweeping thorough the water and catching food (they are omnivores).

Slide 19: Common Prawn - a crustacean related to crabs and lobsters. Young prawns are see-through so they are well camouflaged. They flick their tails and shoot backwards quickly to escape from danger. If you put your bare feet carefully into a rock pool, prawns might come and eat your dead skin – a prawn pedicure! Prawns are omnivores and are prey to a large number of fish – cod, plaice and haddock will all feed on prawns.

Slide 20: Beadlet Anemone – these look like flowers but are actually animals. They are carnivores and use their tentacles to sting shrimps, fish and other small animals that they eat. Sea anemones rarely move and are usually found attached to a hard surface such as a rock, seashell or the back of a crab. They can survive on the upper parts of shores by retracting their tentacles, reducing their surface area to a minimum and trapping water inside their bodies.

Slide 21: Blenny – these are the fish most likely to be found when rock pooling. They are adapted to being both submerged by the sea and being exposed to air. They can breathe out of water and can be seen sitting on rocks next to a rock pool. Blenny are carnivores, eating acorn barnacles and molluscs.

Slide 22: Seagull – gulls are seabirds that are able to drink seawater. "Seagull" is a generic term encompassing lots of different gull species including herring gulls, black-headed gulls, common gulls and black-backed gulls. They all have special glands above their eyes that remove excess salt from their bodies. A seagull's diet includes insects, earthworms, small rodents, small fish, reptiles and amphibians, so they are carnivores and scavengers. Herring gulls, (like the one featured on the slide), also like eating the leftovers of human picnics and have even been known to steal food from out of people's hands!

WHAT IS A FOOD CHAIN?

A food chain or web shows how animals eat the plants and other animals around them. The chain usually starts with a plant, the plant gets eaten by an animal, then the animal gets eaten by a bigger animal and so on.
Producers – plants get energy from the sun and use it to make their own food, so they are called producers.
Consumers – animals eat the plants and other animals. They do not make their own food so are called consumers.

Slide 23 shows a very simple rocky shore food chain. Please see activity below to create more food chains.

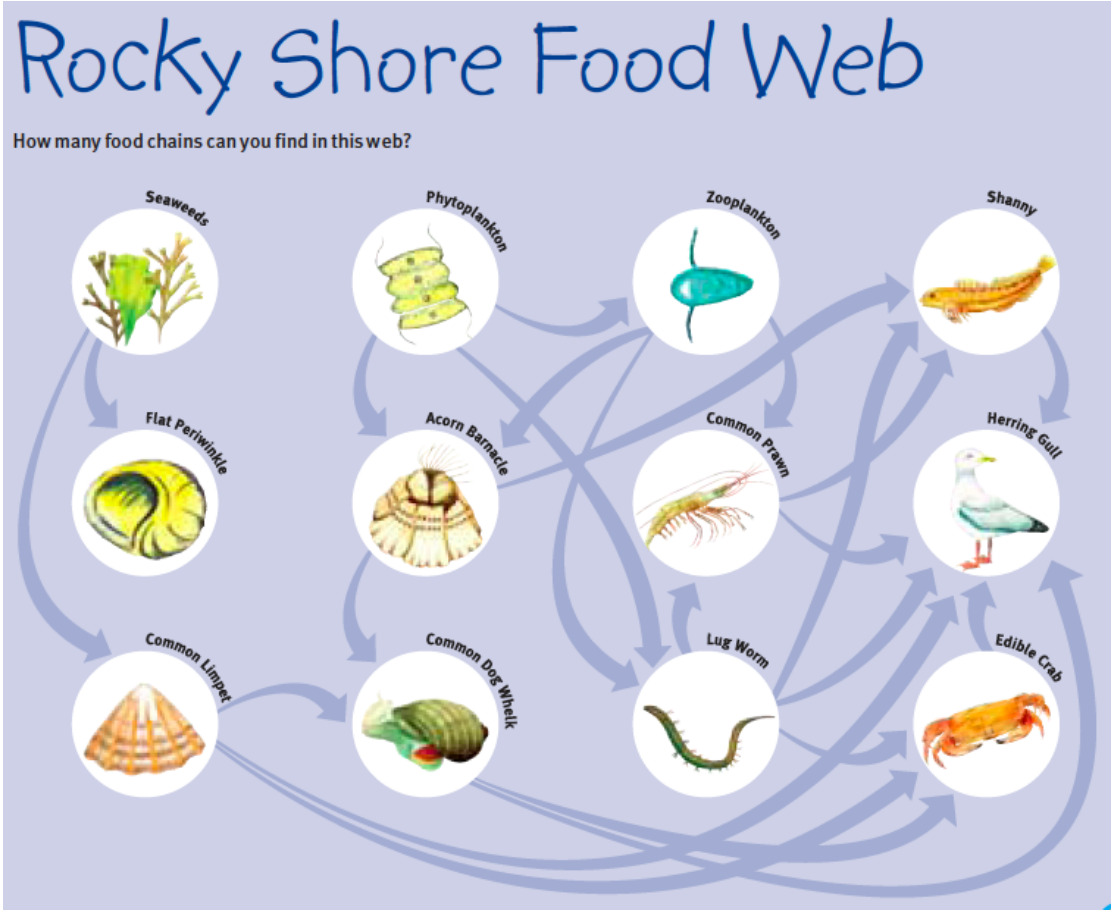
SUGGESTED ACTIVITIES

Poster Design
The children could design an illustrated poster about the plant and animal life you can find on the rocky shore and why it is such an interesting habitat to visit.

Design a Sea Creature
Ask the children to design their own rock pool creature. It should have features that enable it to withstand the harsh tidal conditions on the rocky shore.

Research Task: Pollution
Seas and seashores are under continual threat from pollution. Ask the children to research the dangers facing the seashore (e.g. oil spills, sewage, litter, toxic chemicals), the problems this causes for plant and animal life and any solutions.

Food Chains
Using the diagram below, how many food chains can the children find?



We value your feedback!

Let us know what you thought of this lesson plan by completing this Google Form https://forms.gle/cGAwi9AWXfSZgrYa9. **Thank you!**