Age 6-11 years

Habitats & Adaptations

Self-guided learning

This guide provides you with information and pupil activities linked to key displays throughout SEA LIFE London Aquarium that can be used to explore the topic of Habitats & Adaptations during your visit. By drawing out the points included in this guide, you will be able to introduce or recap on the key learning outcomes and provide pupils with a fantastic real-life context for learning.

Workshops

Workshops to consolidate this learning are also available. Further details about workshops can be found on our website or by speaking to our team before your visit.

Other topics in this series:

- Food Chains & Ecosystems
- Behaviour
- Conservation

Contents

Learning objectives

By completing this tour pupils will:

- Become familiar with a range of different marine environments.
- Understand that all living things require shelter and access to food in their habitat.
- Be able to identify adaptations animals have developed to improve their ability to live in their habitat.
- Learn that ecosystems are made up of interdependent animals living in the same environment.

Introduction

Use the questions on this page to introduce this topic to pupils before starting your tour.

Questions:

What is a habitat?

A habitat is the natural home or environment of an animal, plant or other organism. It provides all the things needed for survival. Let's start by thinking about our own habitats…

What do you need to stay alive?

The most important thing we all need is food. We also need somewhere that can keep us warm enough and sheltered from rain or snow. Can you find both of these things in your home? Then it makes a good habitat for you!

Humboldt Penguins live on the Pacific coasts of Peru and Chile – what do you think are the biggest threats to their survival?

Humboldts are in serious decline, and the main reasons are thought to be overfishing of the fish and crustaceans they prey on; entanglement and drowning of the birds themselves in fishing nets and disturbance caused by the collection of their guano (droppings) for use as fertiliser. There are probably fewer than 10,000 pairs left in the wild, living close to the sea where they nest between March and December and can have two broods of one or two chicks each year. Severe weather is also a problem for them, leading to flooding of nests, and changing Pacific currents can sometimes cause a severe shortage of food. Humboldt Penguins, especially chicks, are also at risk from gulls, vultures, foxes and seals.

So now we understand a bit more about what a habitat is we can start our trip around the SEA LIFE London Aquarium and have a closer look at the different habitats that marine creatures live in.

Remember to hand out exploration sheets to each pupil - these will be needed for activities on the tour.

Teacher's map

Activities

Shark Reef Encounter
- Feeding times:

14.30

Rockpool
- **Who's at home in the rockpool?** pupil activity
- **Rockpool** discussion notes (p4)

Nemo's Coral Caves
- **Home sweet home** pupil activity
- **Clownfish** discussion notes (p5)
- Feeding times:

15.30

Tidal Reach
- **Octopus anagrams** pupil activity
- **Octopus** discussion notes (p6)

Ray Lagoon
- **Which Ray?** pupil activity
- **Rays** discussion notes (p7)
- Feeding times:

11.30

Seahorse Temple
- **Seahorse** discussion notes (p8)

Rainforests of the World
- Feeding times:

12.30 16.30

Ocean Tunnel
- **Sea turtle wordsearch** pupil activity
- **Sea turtle** discussion notes (p9)
- **Adapted for life** pupil activity
- **Sharks** discussion notes (p10)

For more information on feeding times please check at the admissions desk on arrival.

ROCKPOOL

Visit Area: ROCKPOOL

Rockpools are very difficult places for creatures to survive - with huge waves, strong currents, changing water temperatures, harsh sunlight and lots of predators! Creatures commonly found in this habitat include starfish, anemone, crabs, sea toads and grey mullet.

Questions:

How do you think the starfish manages to survive in this difficult environment?
It has thousands of tiny suckers under each arm which it uses to attach itself to the rock.

Crabs are animals that can't attach themselves to the rock. What do you think helps protect them against predators?
They use their claws and are well camouflaged against the rocks, making them hard to find. They also have a tough shell for protection.

As you know, one of the most important elements of an animal's habitat is that the right sort of food is available. What do you think starfish eat?
Starfish can eat a range of different things, including mussels. They use the suckers on the underside of their arms to pull food towards the mouth in the centre of their body.

What about mussels. How do you think they get food?
Mussels get all of their food by filtering the water around them for tiny animals and plants called plankton. Rockpools are perfect places for them to live as new plankton is brought in every time the tide fills the pool.

We can see that the animals in the rockpool depend on the other animals for food. What do you think would happen if all of the mussels in a rockpool died out?
With no mussels for food the starfish would die. All of the creatures in the rockpool are part of one ecosystem. It is delicately balanced with each creature playing an important role.

Activity: Who's at home in the rockpool?

Ask pupils to identify the creatures they can see in the rockpool and then colour them in on their exploration sheet. Pupils can then touch creatures under the guidance of a SEA LIFE London Aquarium expert.

PROTECT

You can help!

We should always take our litter home after we've visited the beach. We should also be respectful of any animals we might find in a rockpool and make sure that they are never disturbed.

CLOWNFISH

Visit Area: NEMO'S CORAL CAVES

Clownfish live on sheltered coral reefs found in the warm tropical waters of the Indian and Pacific Oceans. Within their habitat they find a very unusual place to hide - amongst the poisonous tentacles of sea anemone!

Questions:

This might sound like a strange place to live but can anyone tell me why this makes a perfect habitat for the clownfish?
The clownfish is immune to the anemone's poison so can live there without fear. But more than that, the anemone's tentacles also provide protection from other predators that might try to eat it.

Can you think of anything else that a clownfish needs to survive that it can get from the anemone?
The clownfish can also find food. It feeds off the leftovers of other fish the anemone catches. They have even been known to eat the dead tentacles from the anemone!

This immunity to the anemone's poison is called an adaptation. Does anyone know what an adaptation is?
An adaptation is a feature which an animal develops, normally over millions of years, which makes it easier for them to survive in a specific environment.

Can you think of any other adaptations?
How about the penguin's thick layer of fat which allows him to live in cold areas or the octopus's ability to squeeze in to tiny spaces?

FACT
All clownfish are born male!

FACT
If a female dies, a male clownfish in the group can change sex to take her place.

Activity: Spot the habitat

Clownfish live amongst the poisonous tentacles of the anemone on coral reefs. Ask pupils to identify the correct habitat on their exploration sheet and then draw a clownfish within it.

PROTECT

You can help!

Don't touch anything if you go snorkelling and never buy products made from coral or other marine creatures.

OCTOPUS

Visit Area: TIDAL REACH

The Common Octopus can be found across a really wide range of waters – from the southern coast of England to the coast of north-west Africa. It's a master of survival and can live in lots of different environments. It particularly likes coral reefs where there are plenty of places to hide.

Questions:

Where do you think an animal as big as an octopus could hide?
The octopus's body is boneless so it can squeeze into really tiny spaces the size of a pound coin to hide from predators.

An octopus is very intelligent and can solve problems. How do you think it solves the problem of defending its home?
An octopus will collect shells and other objects to construct a fort around its home for extra protection.

Can you guess what predators octopuses have?
Octopuses most common predators are Moray Eels. Some seals, whales, sharks and even sea turtles eat octopuses too!

The octopus also has some other amazing ways of avoiding predators; do you know what these are?
It can change the colour of its skin instantly to camouflage against any background, or even just to display its mood! And if an octopus is threatened by a predator it can spray ink to cloud the water, helping it to escape.

FACT
A female octopus can lay over 150,000 eggs at one time!

FACT
Some octopuses crawl along the seabed, tucking their arms into small openings to search for food.

Activity: Octopus Anagrams

Octopuses have some great ways to avoid getting caught by predators. Ask pupils to solve the clues and unscramble the anagrams. The correct answers are 1. Ink 2. Colour 3. Bones.

PROTECT

You can help!

Be careful when on the beach or in the sea not to disturb creatures and their habitats.

RAYS

Visit Area: RAY LAGOON

Rays are strange flat looking creatures that use their wings to glide through the ocean. They live in oceans and seas all over the world, mostly on or near the seabed. Some species choose a habitat close to the shore, whilst others live over 3,000 metres beneath the surface in the deep ocean!

Questions:

Why do you think rays have such flat bodies?
Most rays use their flat bodies to float close to the sea floor. This means that they can suck their food (mussels, clams and oyster) off the seabed and if they need to, they can bury themselves in the sand to hide from predators.

How do you think the colour of their skin helps them to survive in their habitat?
The brown and olive colouring on their skin helps to camouflage them once they settle on the ground. This makes them invisible to predators.

Can you think of any other simple ways rays might avoid predators?
Rays have been known to reduce their activity at times when the threat from predators is highest.

Do you think rays always use their eyes to hunt?
Scientists don't think so. Rays use special sensors called ampullae of Lorenzini, which can detect the tiny electrical charges given off by their prey.

Do you think rays are dangerous?
Most rays aren't dangerous as they don't have a venomous stinger (called a spine) on their tail, but some rays like the Cownose Ray do, and can use it to defend themselves against predators.

FACT
The Manta Ray is the biggest of its species with 'wings' that can span almost 7 metres across!

FACT
Rays are a member of the shark family.

Activity: Which ray?

Ask pupils to look at the information boards around the display and try to identify the different species of rays. Discuss how they differ. There are 5 in total – Spotted, Painted, Native Thornback, Blonde & Undulate.

PROTECT

You can help!

We can help by supporting campaigns to set-up Marine Conservation Zones across the globe. Try to avoid eating skate, it's a member of the ray family.

SEAHORSES

Visit Area: SEAHORSE TEMPLE

Seahorses are one of the most fascinating creatures in our oceans. There are nearly 50 different species that have evolved over 40 million years. Seahorses can normally be found in tropical and temperate waters that are shallow and sheltered.

Questions:

Do you know why it is called a seahorse?
The seahorse gets its name from its long snout that looks a bit like a horse's.

What do you think a seahorse uses its long snout for?
The long thin shape of a seahorse's snout is very useful for helping it to catch food. They can use it to get food out from tiny cracks in coral and rocks or even suck up food by breathing in quickly.

What does a seahorse use its fins for?
Like most fish it uses its fins to swim, but what is unusual is that the seahorse is one of the only fish that swims upright. This means it isn't very quick. According to Guinness World Records seahorses are the slowest fish in the ocean!

Look at the unusual shape of its tail - how do you think this helps it to survive?
The seahorse spends most of its life clinging on to seagrass or other perches with its strong tail. This prevents it from being swept along by currents and allows it to eat the other tiny animals that are swept passed it. This is vital to its survival, as it isn't a very strong swimmer.

What makes the seahorse different to nearly every other animal?
Unlike most other animals, it is the male, not the female, which gives birth. Each male has a special pouch for carrying fertilised eggs until they hatch. A seahorse is also a very loving animal – it chooses one partner and stays with it for life.

FACT
A seahorse can look forward and backwards at the same time!

FACT
The bony spine on a seahorse makes it unappetising to predators.

Activity: Fascinating facts

Ask pupils to look out for other fascinating facts about seahorses as they look around the displays. Discuss these as a group.

PROTECT

You can help!

Never buy dried seahorses as souvenirs or medicines and other products made from seahorses.

SEA TURTLES

Visit Area: OCEAN TUNNEL

Sea turtles have existed for around 215 million years, making them one of the oldest surviving species on Earth! Dinosaurs still ruled the Earth when the first sea turtles evolved. And like dinosaurs, sea turtles are also reptiles.

Questions:

What do we know about reptiles?
Reptiles are cold blooded. This means they need to stay in a warm environment to keep their body temperature up. To help keep warm, most sea turtles live in warm tropical waters.

How long do you think a Green Sea Turtle can stay underwater for?
When they are swimming around being active, Green Sea Turtles need to visit the surface for air every few minutes but when they are resting, they can stay underwater for up to 5 hours!

Some Green Sea Turtles can live for over 100 years and weigh 200kg. What do you think they eat to get as big as this?
As herbivores they eat plants that can be found on the sea floor but they also occasionally eat small animals like jellyfish, crabs and fish.

Do you think Green Sea Turtles spend all of their time in the water?
No, female Green Sea Turtles don't. Every 3 to 6 years they make their way to an isolated beach where they dig a deep hole with their flippers and lay their eggs – between 200 and 300 at a time! Sometimes they have to swim huge distances to arrive at the correct beach.

FACT
A tagged Green Sea Turtle was recorded to have travelled around 6,000 miles across the Pacific from Mexico to her birthplace in Japan in 368 days!

FACT
Some turtles can live for more than a year without food!

Activity: Sea turtle wordsearch

Ask pupils to find the sea turtle related words in the wordsearch on their exploration sheet: reptile, beach, eggs, swim, flipper, plants. This activity can either be completed during the discussion or at a later time.

You can help!

Sea turtles often mistake plastic bags floating in the sea for jellyfish. Thousands die every year choking on these plastic bags. It's very important we use a 'bag for life' not a plastic bag.

SHARKS

Visit Area: OCEAN TUNNEL

There are over 350 species of shark in the world, living in all kinds of different habitats from warm tropical waters to icy polar seas. Some live in the deep, dark waters of the ocean, while others prefer sunlit waters close to the surface.

Questions:

What do you think the Blacktip Reef Shark eats?

A better question is what they don't eat! These hungry predators eat more or less anything they can get hold of whether it is small fish, an octopus, shrimp or even a sea snake.

Why do you think the Nurse shark is brown? Also can you see any of their teeth?

Nurse sharks spend lots of time sitting on the ocean floor. Even though they are sharks they need to hide from their predators which can be other sharks so by having brown skin it helps the camouflage against the ocean floor. Also this species of shark eats shellfish, crustaceans and conch (large snail like creatures) so they need strong crushing jaws and a powerful suck rather than big sharp teeth!

If you look closely you'll see a spiky ridge around the Bowmouth Guitar Shark's eyes and fins. Why do you think it has this?

The Bowmouth Guitar Shark has adapted to help protect the important parts of its body from being attacked by larger predators. Bowmouth Guitar Sharks prefer sandy or muddy flats and areas next to coral reefs or mangroves, where they hunt for food like shrimps, crabs and shellfish. They are commonly found in the tropical Indian and Pacific Oceans.

FACT
Sharks never run out of teeth - some get through as many as 30,000 in their lifetime!

FACT
To help disguise themselves, sharks have a dark top half and a pale belly.

Activity: Adapted for life

When you arrive at the Ocean Tunnel, identify two different sharks and ask pupils to draw a picture of each on their exploration sheet. Discuss their similarities and differences and explain how these help sharks survive in their habitats.

PROTECT

You can help!

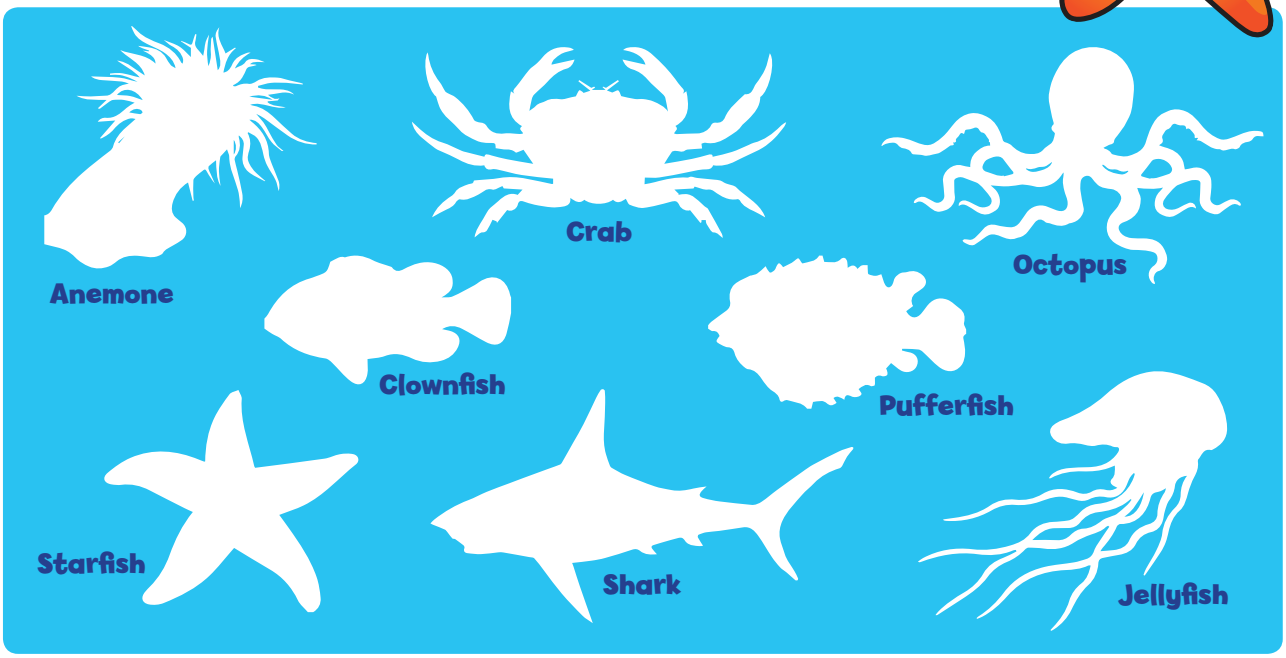
We can help sharks by supporting campaigns to set-up Marine Conservation Zones across the globe. We should also never buy products made from sharks or eat shark fin soup.

Name:

Find out about habitats

Who's at home in the rockpool?

Find out which of these creatures live in the rockpool and colour in their shape when you spot it.
Be careful – some of these definitely don't live in rockpools!



Adapted for life

There are many different types of shark whose bodies have changed over the years to perfectly suit their habitats.
Draw two sharks that have different bodies.

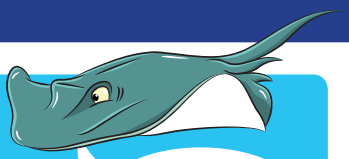
1

2

Find out about habitats

Which ray?

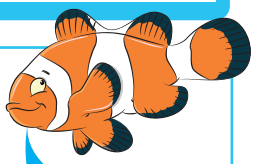
Write down the names of the ray species you found in Ray Lagoon.



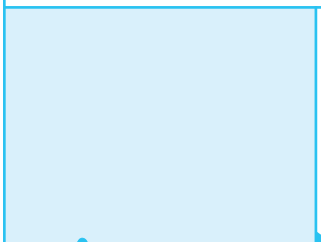
Which of my friends did you see?

Home sweet home

Clownfish have a very unusual habitat, but what is it? Choose the right one and draw a clownfish in it.



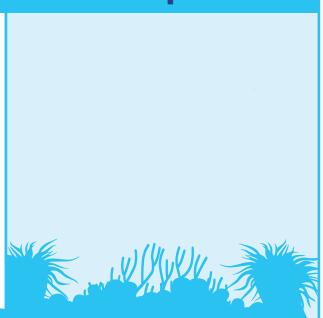
Where do I live?



Sea grass

Rockpool

Beach



Anemone & coral

Octopus anagrams

Unscramble these words about octopuses.

1. Octopuses defend themselves by spraying:

K N I

_ _ _

2. To camouflage themselves they can change:

U C R O O L

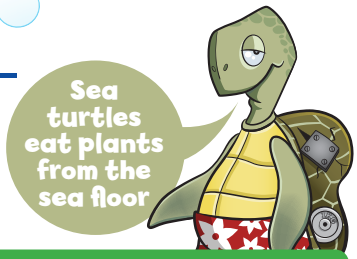
_ _ _ _ _ _

3. They can also squeeze into tiny spaces as they don't have any:

O N E B S

_ _ _ _ _

Sea turtle wordsearch



Sea turtles eat plants from the sea floor

E	X	X	O	H	Y	E	N	P	V	T	F
G	M	M	B	U	Q	L	Q	C	R	P	V
G	K	S	B	P	Y	I	W	E	O	O	V
S	B	N	I	V	K	T	P	R	M	U	S
P	L	A	N	T	S	P	S	V	U	W	A
X	T	L	W	B	I	E	U	C	R	Q	C
O	P	M	S	L	E	R	E	N	F	D	T
M	N	W	F	X	P	A	R	B	D	O	B
G	I	S	W	P	R	U	C	P	M	V	D
M	N	D	W	F	A	Z	X	H	V	I	Q
G	A	G	M	D	D	R	G	S	Z	U	C

Find these words about sea turtles in the grid:

Reptile Beach Eggs
Swim Flipper Plants