

# Conservation

## Self-guided learning

This guide provides you with information linked to key displays throughout the SEA LIFE Center Michigan which can be used to explore the topic of conservation during your visit. By drawing out the points included in this guide you will be able to introduce or recap on key learning outcomes and provide students with a fantastic real-life context for learning.

## Other topics in this series:

- Behavior
- Habitats & Adaptations
- Food Chains & Ecosystems

## Contents

Introduction	2
Teacher's map	3
Teacher's notes	4-8
Student exploration sheets	9-10

## Learning objectives

### By completing this tour, students will:

- Become familiar with a range of different marine creatures and environments.
- Learn about a variety of threats affecting different species.
- Understand that human activity can have a big impact on marine creatures.
- Find out what steps they can take to help protect vulnerable marine species and their habitats.
- Find out about the work SEA LIFE is doing to protect the ocean and its creatures for future generations.



# Introduction

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

## Questions:

**Our oceans are home to lots of really amazing creatures. However big or small, each creature is equally as important. Do you know why?**

Every creature plays an important role in its environment and is relied upon by other creatures and plants for lots of different reasons – including food and protection. If any species is removed from its habitat, perhaps because it becomes extinct, this can have a big impact on the other species living there.

**Why do you think a species might become extinct?**

There are many reasons why a species might become extinct. Some causes are natural, such as changes to the weather, while others are the result of human activity like hunting, pollution or destruction of habitats.

**Can you think of any other words for protecting ocean creatures?**

Another word that can be used is conservation. SEA LIFE is very passionate about conservation and is involved in a lot of projects around the world to help breed, rescue and protect at risk marine creatures

**So now we know a little more about conservation, let's start our trip around SEA LIFE to find out about the threats facing marine creatures and learn what we can all do to help.**

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



# Teacher's map



# ROCKPOOL

## Visit Area: TOUCHPOOL

Rockpools are very difficult places for creatures to survive - with huge waves, strong currents, changing water temperatures, harsh sunlight and lots of predators! Unfortunately human activity is also having a negative effect on rockpool creatures.



## Questions:

### How many different creatures can you identify in the rockpool?

The rockpool is likely to contain: common sea stars, anemone, shore crab, edible crab, sea toad, hermit crabs and grey mullet. One other creature found in the rockpool that we can't see without a microscope is called plankton (which is made up of tiny animals and plants).

### How do you think human activity is having an effect on a creature as tiny as plankton?

The Earth is getting warmer because people are adding heat-trapping gases to the atmosphere, mainly by burning fossil fuels. This is called the "greenhouse effect". The oceans are getting warmer too, making it harder for plankton to survive. Over the last 50 years, the amount of plankton has almost halved.

### Why does it matter if there's less plankton?

It matters because lots of animals rely on eating plankton to survive. For example, in rockpools, mussels eat plankton, so if the number of plankton goes down, then fewer mussels can survive.

### What else do humans do that can have a bad effect on rockpools?

People often try to remove creatures from the rockpool which can easily cause them injury. Trash and pollution from humans can end up in rockpools too, often causing terrible damage to the creatures and their habitats.

#### FACT

Hermit crabs live in colonies of up to 100 or more.

#### FACT

If the Sea Anemone is not eaten or destroyed, it can live for decades.



## Activity: Respecting rockpools

Ask students to identify the creatures they can see in the rockpool and then color them in on their exploration sheet. Students can then touch creatures under the guidance of a SEA LIFE expert.

**PROTECT**

## You can help!

We should always take our trash home after we've visited the beach and make sure any rockpools we find aren't disturbed. We should also try to reduce the amount of energy we consume at home.



# CLOWNFISH

## Visit Area: CORAL REEF

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 venomous tentacles of sea anemones!



## Questions:

**How do you think clownfish can live inside an anemone without being killed by its tentacles?**

Clownfish are immune to the anemone's venom. There are advantages for the anemone too, as the clownfish eats parasites and algae from its tentacles – helping to keep it clean and healthy.

**Although this habitat helps keep clownfish safe from predators, they are still at risk from human activities. What do you think these are?**

Anemones and clownfish need healthy coral reefs to survive, but lots of human activities like pollution and destructive fishing (including dynamite fishing) are damaging the coral. But the most serious threat to coral reefs is climate change. If the world's oceans get too warm then coral cannot survive and will start to die off, along with the anemones and the clownfish that live within them.

**How do you think we can help reduce climate change?**

By making small changes to our everyday lives, we can all play a part in reducing climate change. We should switch off lights and appliances at the wall if they are not being used, reduce water waste by switching off the tap when brushing our teeth and choosing to walk or cycle short distances instead of going in the car.

**FACT**  
25% the world's coral reefs are already damaged beyond repair.

**FACT**  
25% of all marine fish species live on coral reefs.



## Activity: Coral reefs under threat

Human activity is slowly destroying the world's coral reefs. Ask students to find the words related to the threats in the word search on their exploration sheet.

**PROTECT**

## You can help!

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



# RAYS

## Visit Area: STINGRAY BAY

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. A large number of ray species are now vulnerable. Certain species of Skate, Electric Ray and Sawfish are critically endangered.



## Questions:

### What human activities do think threaten rays?

Like lots of fish in the ocean, rays are at risk from overfishing. They are often caught in fishermen's nets accidentally while they are fishing for other species.

Damage to habitats from coastal development and marine pollution are also common threats to rays.

### Can you think of any reasons why humans would try to catch rays deliberately?

In some parts of the world, the Manta Ray is hunted for a part of its body called the 'gill raker'. This is used in traditional medicine, but sadly there is no evidence that it has any (medicinal) value.

Thousands of rays are killed every year for their gill rakers.

### Although some species of rays can live for over 50 years, they tend to produce very few babies. Why might this be a problem?

If a species of ray is under threat, it can take a lot longer for it to naturally increase its population again. If the population continues to decline quicker than it can recover, there is a risk the species will become extinct.

### 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

Rays are a member of the shark family.

### FACT

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



## Activity: Which ray?

Ask students to look at the information boards around the display and try to identify the different species of rays. Discuss how they differ.

**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 MANGROVE

Seahorses are one of the most fascinating creatures in our ocean. There are around 33 different species, but sadly many of these are now endangered due to human activity. As many as 150 million seahorses are killed every year to provide ingredients for traditional medicines, which is just one of many threats they face.



## Questions:

**When a seahorse finds a partner that it likes, most will stay together for the rest of their lives. Why do you think this is a problem for their survival?**

If a seahorse's partner is killed it can take a very long time for it to find another one. Sometimes it may never find a replacement. This means it will stop reproducing and fewer baby seahorses will be born.

**Reports suggest that the number of seahorses in the world has reduced by as much as 50% in the last 5 years. Why do you think so many seahorses are dying out?**

Pollution and waste from human activity is destroying their habitat. Seahorses are sold as souvenirs because they keep their shape and texture after drying out. Many end up as ingredients in traditional medicines.

Seahorses are also taken from the wild and sold as pets, but because they are so difficult to look after only 1 in every 1,000 will survive more than 6 weeks in a home aquarium tank.

**What do you think SEA LIFE is doing to protect seahorses?**

SEA LIFE has one of the biggest breeding networks in the world which is helping to secure the future of over 13 different species. They are also working with scuba divers and fishermen to help map where seahorses are found so that they can be better protected.

### FACT

The smallest seahorse is around 1 inch long (about the size of a small paperclip).

### FACT

The longest is about 14 inches long (longer than a school ruler.)



## Activity: Partners for life

Most seahorses stay with the same partner for their whole lives, which can mean that if their partner dies they will stop reproducing. Ask students to look at the puzzle and work out which two seahorses are partners.

The correct answer is B & E.

**PROTECT**

## You can help!

A lot of waste ends up in our seas, so try to throw less away and recycle as much as you can. Never buy dried seahorses as souvenirs or medicines and other products made from seahorses.



# 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. Lots of people are scared of sharks attacking them, but only Great White, Bull and Tiger Sharks can be considered actively dangerous.



## Questions:

### How many sharks do you think humans kill every year?

Around 70 million sharks are killed every year! Some scientists think that 90% of the world's sharks have disappeared from the oceans in the last 30 years. Because of this, lots of sharks are now endangered (or nearly extinct).

### Why do you think sharks are killed by humans?

In many countries, fishermen catch sharks for their fins, which is used to make shark fin soup. Often, after the fin is cut off, the shark is thrown back into the sea where it helplessly sinks and dies. SEA LIFE is campaigning to ban this horrible way of killing sharks.

### Why else might humans try to catch sharks?

Many sharks are also killed by sports fishermen, who like to catch them simply because they are big animals with a ferocious reputation. Lots of fishermen also kill sharks for their teeth and jaws which they sell as souvenirs or ornaments.

### Why do you think it is important to protect sharks?

Sharks are really important to underwater ecosystems (the communities they live in). If they are wiped out, the animals beneath them in the food chain will multiply very quickly as they won't be getting eaten by sharks anymore! The prey of these other animals will eventually disappear too, as there are so many predators feeding on them.

**FACT**  
Sharks have existed for over 400 million years.



## Activity: Sharks at SEA LIFE

Ask students to identify which species of shark live in the SEA LIFE center and whether they are endangered or not. Ask them to draw a picture of their favorite species of shark on their exploration sheet. The endangered species are: Great White, Great Hammerhead and Whale Shark.

**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.



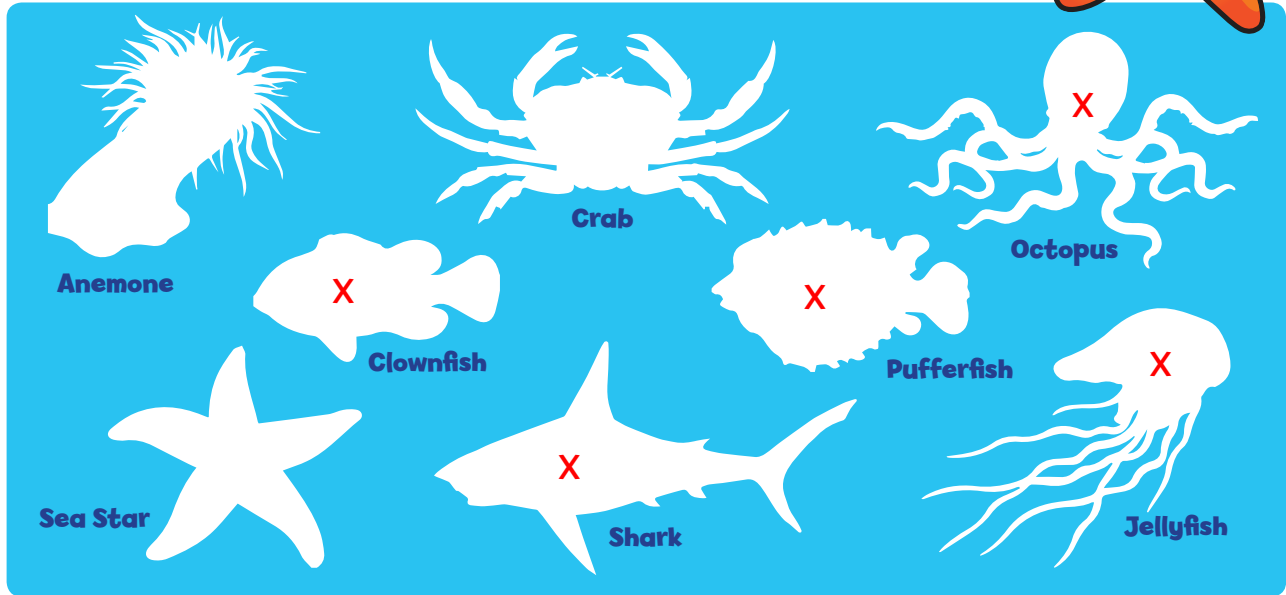


# Find out about conservation

## Respecting rockpools

Trash and pollution can destroy the home of rockpool creatures. Find out which creatures live in the rockpool and color in their shapes when you spot them.

Remember not to remove any animals you find in rockpools.



## Coral reefs under threat

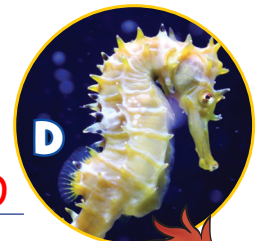
Lots of different things can threaten coral reefs and destroy the home of creatures like the clownfish. How many of the words below can you find in the word search?

**Climate Gases Warming Bleaching Coral Pollution Fishing**



## Partners for life

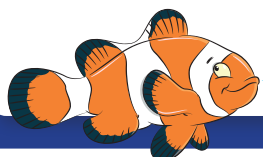
Most seahorses stay together for life, so it's important human activity doesn't split them up. Look at the puzzle below and work out which two seahorses are partners.



       
Answer here



Seahorses can look forwards and backwards at the same time!



A quarter of the world's coral reefs are already destroyed.

# Find out about conservation

## Endangered Sea Turtles

Unscramble these words about some of the threats faced by sea turtles.

1. Sadly, some people hunt sea turtles for their beautiful:



2. Sea turtles can get caught in nets and lines used for:



3. Often sea turtles mistake lights from houses for the:



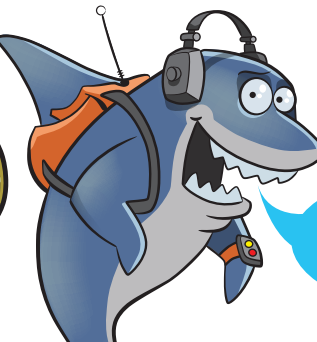
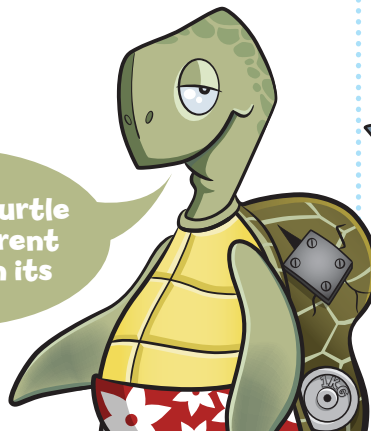
4. New buildings and roads can destroy areas where sea turtles lay their:



5. SEA LIFE rescues and cares for sea turtles that are injured or:



Each species of turtle has a different pattern on its shell.



There are over 350 species of shark in the world.

## Sharks at SEA LIFE

Find out which species of shark are kept at this SEA LIFE center and whether they are an endangered species or not.

### Great Hammerhead Shark



- Endangered
- Not endangered

### Great White Shark



- Endangered
- Not endangered

### Tiger Shark



- Endangered
- Not endangered

### Nurse Shark



- Endangered
- Not endangered

### Blacktip Reef Shark



- Endangered
- Not endangered

### Whale Shark



- Endangered
- Not endangered

Draw a picture of your favorite species of shark in the space below.