

## Lesson Summary

Sharks are under threat from a number of issues, including poaching and by-catch in nets of the commercial fishing industry. Many shark species are endangered as a result of poaching.

This lesson will take approx. 60 mins.



## Subjects relevant to

English, Geography, History, Science and Social Science.

## Learning objectives

From this lesson students will:

- Learn about and discuss their knowledge of sharks.
- Understand why shark species are endangered.
- Discuss ways to help protect sharks.

## Preparation

- This lesson has been designed to provide a complete lesson, but can be stopped at any time and split over multiple lessons, should you wish to include your own discussion/questions or incorporate the lesson activities.
- Definitions of key terms have been provided at the end of the guide to assist with the learning process.
- Each lesson has case study options showing Sea Shepherd campaigns, including videos to provide students with a firsthand experience of ocean conservation in action.
- Depending on whether students are working in a classroom or remotely, you can choose to discuss questions in the class or use the online learning app.
- This digital lesson has an interactive option called student devices. If you choose this option ask the students to bring their mobile phones or tablets to the lesson.
- Should you choose the interactive option, it will run a quiz during the lesson. Recommendation: only use this interactive option in classes of up to 30 students.
- Students can sign up on their mobile device to the [www.LessonUp.app](http://www.LessonUp.app). They will be asked for a PIN code (this will appear automatically on slide 3 and will also show at the bottom of the screen). Students who sign up under a false name may be removed by the teacher.
- Students who do not have a mobile device can join the quiz with another student.
- If student devices is turned ON, you can opt to turn the sound and the share screen ON or OFF. Further on you can choose if you want to 'show ranking after each quiz' question. Doing so will create a competitive element, but it can be distracting. Recommendation: turn the 'show ranking after each quiz' OFF.
- The abovementioned options will also show if you click on the PIN code at the bottom of the screen.

## Lesson plan

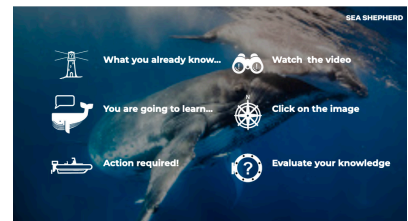
### Slide 1 Introduction

This lesson is provided by Sea Shepherd. Sea Shepherd is a marine conservation organisation with a mission to protect the ocean and marine wildlife. Sea Shepherd works globally on a range of issues impacting the ocean, running numerous direct action campaigns each year. These campaigns also include the protection of sharks.



### Slide 2 Lesson action icons

During the lesson we will use these icons to identify the learning actions.



### Slide 3 Lesson summary

In this lesson we will be talking about sharks and learn about the issues threatening their survival.

**INTERACTIVE JOIN** – ask students to go to [www.LessonUp.app](http://www.LessonUp.app)



### Slide 4 Empty ocean by 2050

Scientists estimate that by 2050 the ocean ecosystem will be on the verge of collapse, empty of fish and marine wildlife, unless immediate action is taken to deal with the issues impacting the ocean and all marine wildlife.

Show this video (2.53min), which explains how important all species are to our planet.

<https://www.youtube.com/watch?v=TLcA31VRIRU>



Discuss the video with the class and what it means.

### Slide 5 Sharks

Sharks have existed on this planet for over 450 million years, well before dinosaurs.

There are currently over 400 species of sharks that have been identified, but 143 of those species are threatened with extinction.



### Slide 6 Sharks

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“Who likes sharks and why?”

“For those that don’t, what is it about sharks you don’t like?”



### Slide 7 Shark species

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“Which shark species can they name and what key facts do they know about that species?”



### Slide 8 Whale sharks

The largest shark is the whale shark. Whale sharks grow are up to 13m (42.6feet) and are slow movers compared to other shark species. Like the baleen whales they filter feed, mainly on plankton.

Status – Endangered.



### Slide 9 Hammerhead sharks

Hammerhead sharks are called this because of the shape of their heads. While many other sharks are solitary the hammerhead swim in schools (also called a shiver) during the day and at night when hunting, they head their own way. They can grow to about 6 m (20feet) long and weight up to 600kg (1,323lbs).

Given where their eyes are positioned it means they can see above and below themselves all the time.





There are several species of hammerhead sharks: the Greater Hammerhead and Scalloped Hammerhead are currently listed as critically endangered. Smoothed Hammerheads are listed as vulnerable and with declining populations will soon be classified as endangered.

### Slide 10 Great White Shark

The Great White Shark is the one most recognised. They can measure up to 8m (26feet) long and weight over 3,000kg (6,614lbs). Great white sharks can live up to 70 years.

With declining populations white sharks are also listed as vulnerable.



### Slide 11 Oceanic White Tip Shark

This shark is known by several names and lives in tropical and warm seas. It is a member of the requiem shark family, who are slower swimmers. It lives up to 20 years and is on average up to 2.5m (98 inches) and weights up to 70kg (150lbs).

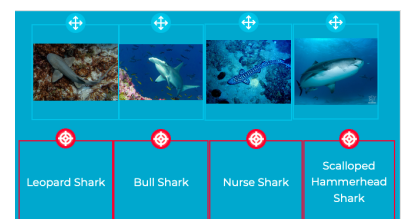
Oceanic white tip sharks hunt in schools and are known for their feeding frenzy. They are very curious and are known to follow ships.

Status: With declining numbers they are critically endangered.



### Slide 12 Shark species

Drag and drop to match names with image.



### Slide 13 Shark babies

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“How sharks are born – hatch from eggs or live birth?”

All sharks hatch their young in eggs, most sharks like the Great White Shark hatch the egg inside and the baby develops until it is born alive and fully functional. Tiger sharks are also fully functional at birth. A tiger shark may have anywhere between 10 to 80 babies.





Other species lay eggs and hide them in pockets in rocks or coral to protect them until they hatch. Shark babies are called pups.

### Slide 14 Shark features

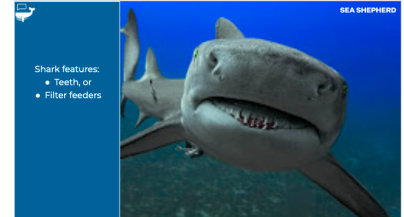
One defining feature is how they feed. They either have:

- Teeth, or
- Filter feed.

Most shark species have teeth, but theirs are embedded into their gums, rather than bone like ours. While we have one row of teeth they have several.

A shark can lose a tooth every 8 - 10 days. As they lose a tooth a new one moves up from the rows behind.

Filter feeds, whale sharks, basking sharks and the megamouth shark, feed as they swim. They open their mouths filter plankton and zooplankton from the water.



### Slide 15 What do sharks eat?

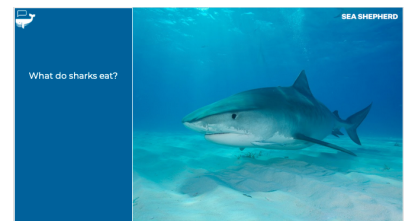
Most sharks are carnivorous so they like to eat other animals. They prey upon fish, dolphins, whales, seals, turtles and sea birds.

Most are considered to be scavengers. They will find sick and weak fish, or what they can find on the ocean floor, such as dead whales.

Sharks do have strong hunting skills and can surprise their prey with their speed. Some shark species do hunt in groups. Sharks will try to disable their prey and then drag them to the ocean floor to drown them.

Despite their skills most sharks can only tell if something is really food by taking a test bite. They have been known to take bites out of surfboards, buoys and other rubbish mistaking it for food.

Young sharks especially, while honing their skills, will make these mistakes.

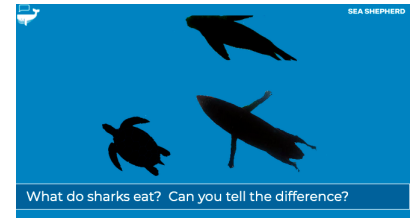


### Slide 16 What do sharks eat?

While some people fear sharks and being bitten, as a matter of fact most sharks do not see humans as food. They do however like seals and turtles.

Have a look at this image. Ask students if they think a shark would be able to tell the difference?

Do you know what each of these are?  
- Seal, surfer and sea turtle.



### Slide 17 Smell

Sharks have an amazing sense of smell and can detect blood in the water miles away. They can use this when searching for injured marine wildlife to feed on.

Ask students:

“What circumstances would make it dangerous to go in the water if sharks can smell blood?”

Discuss what action they should take to ensure they are safe from a shark encounter.

Examples:

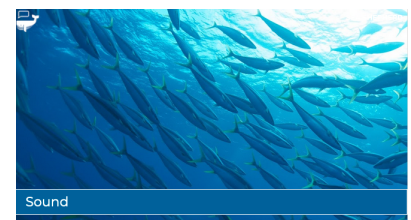
- Don't go into the water if you have a cut and are bleeding.
- Avoid swimming if there is someone fishing in the area.
- Don't go into the water if there are other fish feeding in the area.
- Don't go into the water if there is dead marine wildlife in the water or on the beach, like stranded whales.



### Slide 18 Sound

Sharks can also hear really well, they have millions of hair cells in their ear that help them sense vibration in the water.

This allows them to detect sounds from far away. Because sound travels further under water sharks can hear up to 400 metres away. Sharks can detect the movement of a fish or marine animals splashing around in the water.



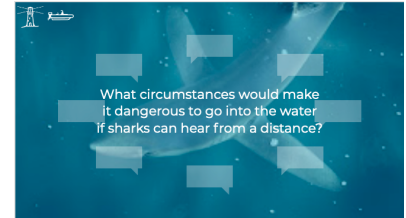
### Slide 19 When should you stay out of the water?

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“What circumstances would make it dangerous to go in the water if sharks can hear from a distance?”

Examples:

- If there are seals or dolphins in the water.
- If there is someone fishing in the area.
- If there are other fish feeding in the area.
- If there are large schools of fish or what is called a bait ball.



### Slide 20 Electoreception

Sharks also have something called electoreception. Around their face they have tiny black dots that are like sensors, that pick up on electrical pulses.

When they get close to prey these sensors help to guide the shark to the exact location.

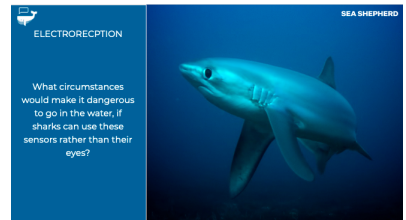
They actually don't use their eyes to see close up, they roll their eyes back into their head to protect them and use their sensors to guide them to their prey.

Ask students

“What circumstances would make it dangerous to go in the water, if sharks can use these sensors rather than their eyes?”

Examples:

- If there is poor light where you can't see the shark – dawn and dusk are especially bad times when sharks are more likely to be feeding.
- If the water is murky.



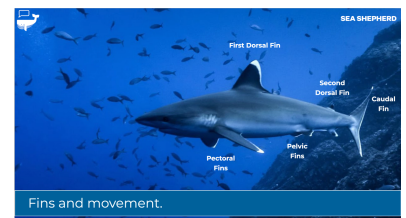
### Slide 21 Fins and movement

How do sharks move through the water?

The shark's fins help it to move through the water and give it balance.

They have a number of different types of fins. (See diagram)

Without fins the shark would just sink to the ocean floor and drown.





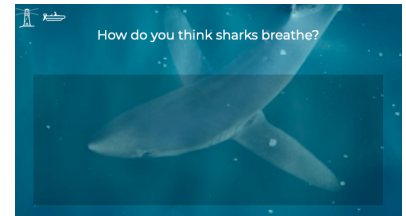
## Slide 22 How do sharks breathe?

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“How do you think sharks breathe?”

There are two ways of breathing, one requires the shark to constantly be moving through the water. Movement helps push water through their gills and they extract the oxygen from the water.

The second method used by some sharks, particularly when they are resting, is to suck water into the gills and extract the oxygen. They don't have to rely on movement.



## Slide 23 Why important to the ocean ecosystem?

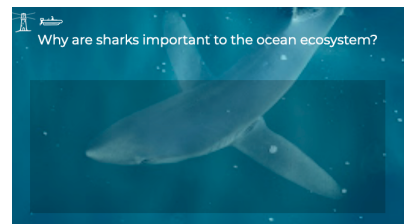
Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

‘Why are sharks important to the ocean ecosystem?’

Sharks help to keep ecosystems in balance.  
Their scavenger behavior helps to keep the ocean floor clean of dead animals.

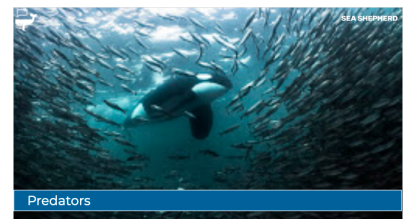
They help to keep other species stronger, by preying on the old, sick and weak members.

Sharks help to control other predator species, particularly in reef ecosystems. Controlling smaller predators helps to protect the smaller species that keep reef ecosystems flourishing. Sharks are crucial for healthy reef ecosystems.



## Slide 24 Predators

Sharks have very few natural predators, some species have been known to prey on other sharks but the main predator is the killer whale or Orca.



### Slide 25 What are the main threats to sharks?

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“What are the main threats to sharks?”

“Why are they becoming endangered?”



### Slide 26 Humans

The main threat to sharks are humans.

Over 100 million sharks are killed each year by humans.



### Slide 27 Poaching

Fishing operations are set up to intentionally take sharks illegally. These poachers are part of the illegal network that supplies shark fins and shark liver oil, contributing to the death of millions of sharks each year.



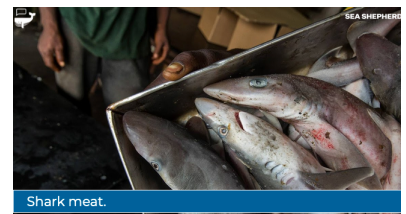
### Slide 28 Why are sharks targeted by poachers?

Some are caught for food, but not as many as are thrown away. Shark meat is sold by many names around the world.

Oceanic Whitetips are one species targeted for their meat.

Ask students:

“Which names have you seen for shark meat?”



## Slide 29 Shark finning

The majority of sharks caught are killed just for their fins.

Most of the shark is not used for food, the poachers just cut the fins off the shark and then throw the shark back into the ocean to drown.

Shark fins are used for herbal remedies, but most are just used to make Shark Fin Soup. Shark Fin Soup has no real taste, but it is a sign of wealth in some Asian cultures and people pay a lot of money for it.



## Slide 30 Shark liver oil

Along with their fins sharks are killed to extract the oil from the liver.

Shark liver oil has been used as a folk remedy for healing wounds and many other ailments, including cancer. These claims have not been scientifically tested.

It was once believed that sharks didn't get cancer and therefore must be immune. We now know that sharks do get cancers and tumors.



## Slide 31 By-catch

Sharks are often caught as by-catch in the nets of the commercial fishing industry.

By-catch means that they are not the intended catch and they either do not want or cannot legally sell the catch. They mostly get thrown back into the oceans as rubbish, a real waste of life.

Shark fishing or finning is banned in many countries, making it often illegal to keep this by-catch.

Given how sharks breathe it is difficult for them to survive extended periods of time trapped in fishing nets. They can't move around. Which means most trapped in commercial fishing nets will not survive.



## Slide 32 Abandoned, lost and dumped fishing gear

ALD fishing gear or ghost nets are difficult to see floating in the ocean, trapping unsuspecting marine wildlife, including sharks.

For more information on this topic see the Lesson: Abandoned, Lost and Discarded fishing gear.





### Slide 33 Overfishing

With 90% of the ocean already over exploited this means that food sources for marine species, including sharks, are disappearing.

As a consequence sharks are coming closer to shore to chase food sources.

When sharks are spotted, and shark sightings increase, it often is just a sign they are hunting and following schools of fish.



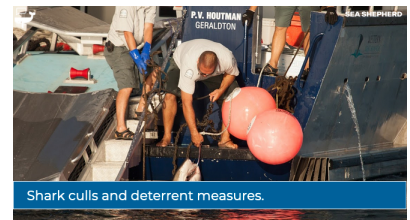
Overfishing the ocean

### Slide 34 Shark culls and deterrent measures

After a shark incident there are often calls to cull sharks to protect people. The aim is to remove sharks from the area.

Ask students: “If you remove a few sharks from the area, what do you think will happen?”

- New sharks will move in and take over the territory.
- Sharks migrate between areas so new ones will pass through the area.
- If there is a food source in the area, baitfish or dead whale, it will continue to attract sharks.



Shark culls and deterrent measures.

### Slide 35 Shark nets and drum-lines

To protect swimmers at beaches shark nets might be installed or they may use drumlines. These are designed to either keep the sharks out of the swimming area, or attract them to the drumline where they will be caught on baited hooks.

Ask students:

“What issues can you see with using these methods to protect swimmers?”

- Other marine wildlife in the area might be caught or stopped by the nets, affecting the balanced ecosystem.
- Other marine wildlife also may get caught on the drumlines trying to take the bait.
- Baited drumlines will attract sharks to the area, when they smell the bait.
- Non target species, like migrating whales, also get caught in the nets or drumlines.
- During bad weather the nets could come loose, allowing sharks to pass through.



Shark nets and drum lines.

## Slide 36 Should we kill sharks to protect humans?

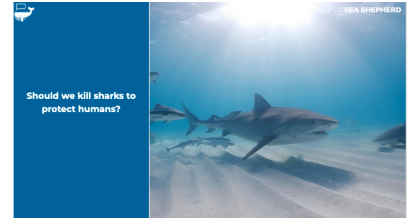
Ask students: “Do you think it is necessary to kill sharks so people can swim in the ocean?”

Reasons why sharks shouldn't be culled

- The ocean is home to sharks and all marine wildlife, humans enter the ocean for entertainment.
- Sharks are just looking for food, to survive.
- Most sharks don't intentionally kill people. Usually the shark will take a test bite to see if something is edible. Unfortunately shark teeth are very sharp and can easily cause fatal wounds, causing the prey to bleed to death.
- Shark culls are cruel, they use bait to intentionally lure sharks and randomly kill them.

Fact: On average less than 100 people a year are injured or die around the world due to shark encounters. Over 100 million sharks are killed each year.

More people die each year by falling from ladders, getting stung by bees, or drowning at beaches, than people do from shark encounters.



## Slide 37 Alternatives

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

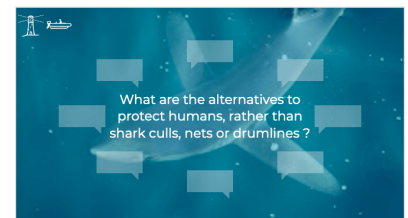
“What are the alternatives to protect humans in the ocean, rather than shark culls, shark nets or drumlines?”

Some of the alternatives available:

- Eco-barriers – instead of shark nets these are a hard barrier that marine wildlife don't get trapped in.
- Shark shields and other personal devices that swimmers or surfers can wear or put on the board to deter sharks coming near.
- Shark spotters, or aerial surveillance by helicopters or drones to monitor for sharks and warn swimmers.

Alternatives previously discussed:

- If sharks are in the area don't go in the ocean.
- Don't swim near anyone fishing.
- Don't swim near seals if sharks are around.
- Don't swim or surf near bait balls – schools of baitfish.
- Don't go in the water if you have an open wound that is bleeding.
- Don't enter the water when there is poor light and you cannot see sharks – dawn and dusk are especially bad times when sharks are more likely to be feeding.
- If the water is murky.



Some shark species, like oceanic whitetips or tiger sharks, are more dangerous to be in the water with due to their curious nature. It is important to remember these are wild animals in their own habitat.

## Slide 38 How can we protect sharks?

Ask students to answer via [www.LessonUp.app](http://www.LessonUp.app) or discuss in classroom.

“What can we do to help protect sharks from becoming extinct?”

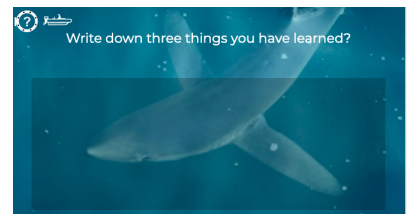
- Help stop the sale of shark fin and shark liver oil products. Reducing the demand to stop the illegal activity.
- Reduce the demand for shark meat.
- Create awareness about the declining rate of sharks in the ocean.
- Help to change peoples’ attitudes towards sharks, reducing the fear of sharks and creating awareness on how to protect themselves when encountering a shark.



## Slide 39 What did you learn?

Ask students to answer the following question using [www.LessonUp.app](http://www.LessonUp.app) or discuss in the classroom.

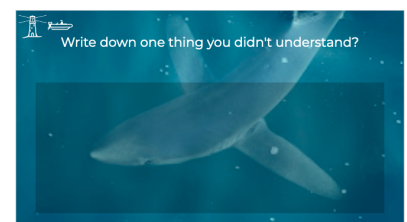
“Write down three things you have learned?”



## Slide 40 What don't you understand?

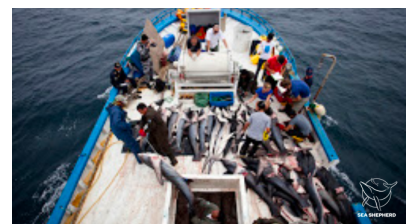
Ask students to answer the following question using [www.LessonUp.app](http://www.LessonUp.app) or discuss in the classroom.

“Write down one thing you didn't understand?”

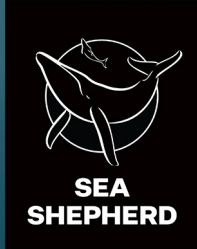


## Slide 41 Case Studies

Sea Shepherd Case Studies cover a number of Sea Shepherd campaigns and show videos of some of our work to help protect sharks. These can be used to enhance the learning experience from this lesson.







# SHARKS

TEACHERS GUIDE: PRIMARY SCHOOL (Age 8 – 11)

[Slide 42 Close](#)



## Case Study Options

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- Case Study – Operation Albacore
- Case Study – Operation Sola Stella
- Case Study – Galapagos
- Case Study – Operation Apex Harmony
- Case Study – Apex Harmony – Timor Leste
- Case Study – Operation Gambian Coastal Defense
- Case Study – Operation Guegou
- Case Study – Operation Jodari
- Case Study – Operation Vanguard

### Key Definitions

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**By-catch** - is basically anything that is caught in fishing nets or on lines that the fishermen don't want or are not allowed to legally sell.

**Ecosystem** - a biological community of interacting organisms and their physical environment.

**Endangered** - the survival of the species is threatened, seriously at risk of extinction.

**Extinction** - the state or process of being or becoming extinct. No longer in existence.

**Ghostnets** - abandoned, lost and discarded nets that float in the ocean and which are still trapping marine wildlife.

**IUU** - Illegal Unreported and Unregulated Fishing.

**Illegal fishing** - means that the fishermen enter the territorial waters of a country or regulated marine zone without permission or without a license for the fish they intend to catch.

**Poaching** - illegally hunt or catch (marine mammals or fish) that is not one's own or in contravention of official protection.

**Overfishing**: The United Nations believes two-thirds of the world's fisheries are fully exploited and 26% are over-exploited, which means that only 10% of our planet's fisheries are actually healthy. Overfishing in this context looks at fishing that depletes a population to a level that reduces its population.

**Overfished populations** - depleted the numbers of fish in specific area) by excessive fishing. Even though these numbers could still be considered sustainable, they could ultimately lead to the collapse of fisheries.

**Shark finning** - the practice of removing fins from sharks.

**Unreported** - means that a fishing vessel may have a license with an allocated quota for fishing a particular species, such as tuna, but then catches more than their quota states and without reporting the extra catch.

**Unregulated** - refers to areas where there may not be a quota or any regulations in place, either in that location or for the type of species. There are areas of the ocean that are not subject to any regulation.

### YOUR FEEDBACK

We value your feedback and would be pleased to hear your thoughts about this lesson and activities. Any comments, suggestions or requests for further information can be sent to [education@seashepherdglobal.org](mailto:education@seashepherdglobal.org).