DOLPHINS

TEACHERS GUIDE: PRIMARY SCHOOL (Age 8 – 11)

Lesson Summary

Dolphins are facing a number of issues, the main ones are being caught as by catch by commercial fishing vessels, entanglement in discarded fishing nets, plastic pollution, dolphin hunts and captivity.

This lesson will take approx. 45 mins.

Subjects relevant to

English, Geography, History, Science and Social Science.

Learning objectives

From this lesson students will:

- Learn about dolphins and their social behaviour.
- Learn about the human threats to dolphins.
- Understand ways we can protect dolphins.

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. 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.

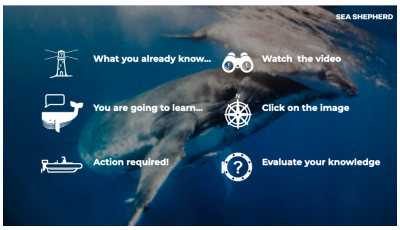
Lesson plan

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. Dolphins are one species Sea Shepherd are helping to protect.

Slide 2 Lesson action icons

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



Slide 3 Lesson summary

During this lesson we will learn about dolphins and discuss some of the threats to dolphins and porpoises.

INTERACTIVE JOIN – ask students to go to 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 urgent action is taken on the issues impacting the ocean and marine wildlife.

Show this video (2.53min), which explains how important all species are to our planet.
https://www.youtube.com/watch?v=TLcA31VRlRU

Discuss the video with the class and what it means.

Slide 5 Dolphin species

There are over 30 species of dolphin, most live in the ocean but there are five species that live in rivers.

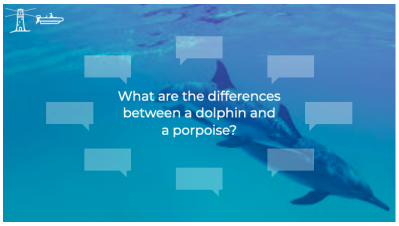
There are also seven species of porpoises.

Slide 6 Dolphins and porpoises

Ask students:
"Do know the difference between a dolphin and porpoise?"

Dolphins tend to have a more elongated beak, bigger mouths and more curved dorsal fins.

Porpoise have smaller mouths with spade-shaped teeth, the dorsal fin is more triangular shaped. They also don't communicate as much as dolphins.



Slide 7 Porpoise

There are seven porpoise species:

- Dall's porpoise
- Harbour porpoise
- Burmeister's porpoise
- Indo-pacific finless porpoise,
- Narrow-ridged finless porpoise
- Spectacled porpoise
- Vaquita

The Vaquita is the smallest at 1.5m (5feet) 54kg (120lbs). It is critically endangered with less than twenty animals left. They are only found in the Gulf of California off Mexico also known as the Sea of Cortez.

Slide 8 Whale or Dolphin

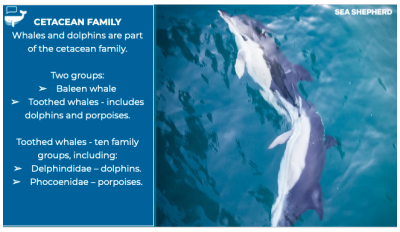
What's in a name?

Ask students are these whales or dolphins?

- Killer whale (Orca)
- Pilot whale
- Melon-headed whale
- False killer whale

They are technically both a whale and dolphin.

Slide 9 Dolphin species



All whales and dolphins are part of the cetacean family, which is divided into two groups:

- Baleen whales
- Toothed whales – which includes dolphins and porpoises.

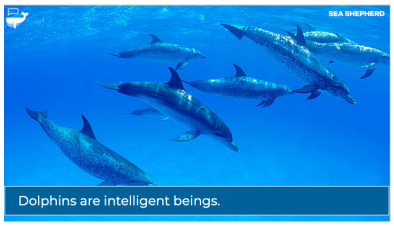
Toothed whales have 10 family groupings, including:

- Delphindidae – dolphins.
- Phocoenidae – porpoises.

These species are all part of the dolphin family:

- Killer whale (Orca)
- Pilot whale
- Melon-headed whale
- False killer whale

Slide 10 Intelligent beings

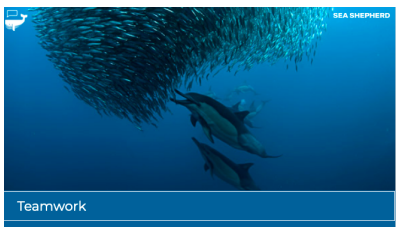


Dolphins are extremely intelligent mammals. The structure of the dolphin brain is very different from that of humans. The parts that deal with thought and cognition are more complex and a dolphin's brain is relatively larger than a human's brain.

Dolphins show signs that they experience feelings of pain, fear and loss similar to the way humans do. For example, when family members are taken from a pod.

They have a similar emotional connection with family and form social bonds similar to ours. Dolphins have been seen carrying around dead calves on their back for days, which could be interpreted as morning a loss.

Slide 11 Teamwork



Dolphins work together as a team to hunt for fish and protect each other from predators. For example, sharks trying to take a single dolphin may find themselves under attack from the whole pod.

Dolphins are capable of using tools and solving problems. We have been able to teach dolphins relatively sophisticated artificial languages, but we have been unable to decode their many vocalizations or language. This raises the question of which species is "smarter"—dolphins, who can learn and understand what people want of them, or humans, who still have to learn or understand what dolphins might be telling us.

Slide 12 Orca

Orca or Killer Whales are the largest of the dolphin family. Their original name was actually Whale Killer as they are one of the few species on this planet that will hunt and eat whales, some much bigger than Orca's. They are considered to be a top predator in the ocean, working as team to target their prey. They are highly intelligent.

Orca's live in family pods and hunt together. The young especially the males remain by mum's side for most of their lives and help to baby sit younger brothers and sisters.

Orca's can live for over 100 years.

Slide 13 Bottlenose dolphins

Bottlenose dolphins are the most common and well known dolphins. Bottlenose dolphins aren't always as nice as they look, they can be pretty rough with other dolphins when they are competing for food. They are known to form a pod of mixed species, happily interacting with other dolphin groups and even whales.

Slide 14 Hectors dolphins

Hector's dolphins are at serious risk of becoming extinct. They are found in New Zealand waters only. They have unique colouring and their dorsal fin is rounded.

Maui dolphins are a sub-species of the Hector's dolphin with less than 100 left.

Slide 15 Dolphin calf

Dolphins are mammals giving birth to live young. Depending on the species a calf will stay with its mum for 18 months to 8 years.

Dolphin calves spend most of their early months swimming next to mum or even ride on her back. This helps it to keep up with the pod.

The bond between mum and baby is similar to ours, so the mums are sad and mourn when they lose a baby.

Slide 16 Sounds / echolocation

Dolphins have their own language, even within each group or pod they will have their own form of communication. They use unique sounds like clicks and whistles to talk to each other.

For dolphins hearing is a key sense, they use it more than sight, particular as waters can get dark and murky,

While dolphins have very good eyesight they use a sonar, known as echolocation, to locate objects. Whales and dolphins use echolocation and sounds to find their way while hunting as well as to communicate with each other.

Using echolocation means an animal emits a sound and waits for the echo to return. These echoes help them determine what objects are around them and how close these are.

Show this video (1.15min), which shows pantropical spotted dolphins. Listen for the clicks and whistles:
https://www.youtube.com/watch?v=kLAtfDnLCUc

Slide 17 What dolphin eats

Dolphins mainly eat small fish, crustaceans and squid. Crustacean are animals such as krill, prawns, crabs and crayfish.

Larger species like Orca, prey on whales, sharks, seals and other dolphins.

Dolphins are intelligent and have learned to hunt as a team. When they find a school of fish they circle around the fish, in order to herd them together and catch them. When they are hunting close to shore they use their tails to kick up dirt from the seafloor to make a circle of murky water around the fish. Then as the fish try to jump out of the water over the dirty water the dolphins can catch them.

Dolphins have also been seen using tools to help them when hunting, like for instance using sea sponges on their rostrum (nose) to protect it while digging around on the seabed looking for food. This protects them from pieces of rock or broken coral.

Slide 18 Important to the ocean

Dolphins, like whales and sharks are a very important part of the ocean they help to keep the ecosystem in balance. Dolphins help control populations of fish and squid, keeping the numbers under control, which balances the impact of each species in the ecosystem.

Slide 19 Predator

The two natural predators of dolphins, are orcas, who will eat other dolphin species, and sharks.

Dolphin pods work together to protect each other. Sharks can find themselves under attack from a dolphin pod, ending up having to retreat from the fight.

Slide 20 What are the threats to dolphins and porpoises?"

Ask students to answer via www.LessonUp.app or discuss in classroom.

"What do you think are the biggest threats to dolphins and porpoises?"

Slide 21 By-catch

By-catch is basically anything that gets caught in the nets and which the fishermen don't want or cannot sell. By-catch mostly gets thrown back into the oceans as rubbish.

Given the size of fishing of commercial fishing nets, dolphins can easily become trapped. Around 300,000 dolphins and whales die each year in fishing nets.

The issue of dolphins being caught in purse seine fishing nets was raised many years ago, when the tuna fishing industries in the Pacific were caught capturing whole pods of dolphins in their nets.

Investigations into this industry uncovered footage of tuna seiners intentionally catching dolphins to find tuna, resulting in the deaths of whole pods. This investigation led to new conditions and requirements for fishing nets and how to operate nets.

This is when the 'dolphin safe' logo was introduced on tins of tuna. Unfortunately the tuna industry is still responsible for many deaths of dolphins, sharks, turtles and even whales.

Slide 22 Why do dolphins get caught with tuna?

Ask students to answer via www.LessonUp.app or discuss in classroom.

"Why would dolphins be caught with tuna or other species?"

- Feeding on same food sources.
- Dolphins travel on the surface, where as albacore may be 20m under the surface and tuna could be 50 to 500m below the surface.

Slide 23 Entanglement in fishing gear

Fishing nets that are abandoned, lost or dumped overboard from commercial fishing vessels are also dangerous for dolphins and other animals.

They float in the oceans like death traps waiting to catch unsuspecting marine life. These nets are referred to as ghost nets.

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

Slide 24 Marine debris

Plastic pollution concerns all marine wildlife. Each year over 12 million tonnes of trash finds its way into the ocean.

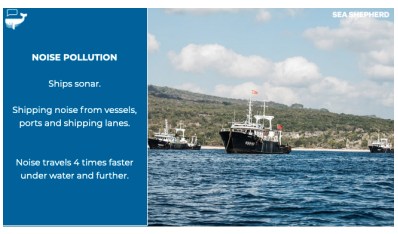
Ask students why they think this is an issue for dolphins?

They can't always distinguish the difference between rubbish and food, when they do. It often is too late and they might have already swallowed it, or have gotten entangled, unable to free themselves.

Ocean pollution kills hundreds of thousands of marine animals each year.

Slide 25 Noise pollution

Dolphins and whales use echolocation, which is like the sonar that we use on boats.



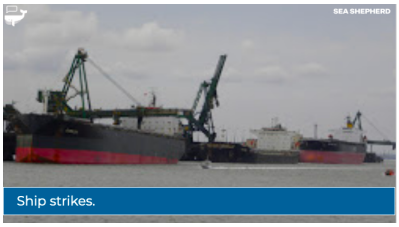
This means that the sonar on some boats, like navy ships, can interfere with a dolphin's natural sonar. Which means it can stop them from being able to find their way or hunt. This can result in these animals becoming disorientated and sometimes beaching themselves.

Noise pollution from shipping
Sound travels 4 times faster under water and it travels further, so imagine the noise coming from a port or shipping lane. Imagine living in a constantly noisy environment and how stressful that might be for marine wildlife.

All this noise may reduce the ability of dolphins and whales to communicate with each.

Slide 26 Ship strikes

Shipping is the main way that goods are transported around the world. Up to 90% of cargo is transported over water.



Ship strikes.

Increases in shipping over the last 50 years, has led to two issues. The first we have already talked about, noise pollution. The second is ships hitting marine wildlife.

For dolphins the main threat comes from smaller faster vessels, such as speed boats and jet skis.

There are laws in place that restrict the speed of vessels in areas close to shore, to protect dolphins and whales, but not everyone respects them.

Slide 27 Oil spills

Another issue with a huge impact on the health of our ocean are oil disasters and toxic waste.

Oil spills and chemical pollution.

These can have a devastating impact on marine ecosystems and take decades for the area to start to recover.

Some 40% of oil produced is shipped around the world in tankers and over the years there have been a number of accidents with oilrigs and tankers.

In the Gulf of Mexico in 2010 an oilrig doing exploratory drilling had a blowout, resulting in oil leaking into the surrounding ocean for 3 months.

The chemicals used to disperse the oil from the ocean surface are also toxic, with some even causing cancers. They can also cause the oil to be dropped to the seafloor, coating everything in a layer of oil, killing everything on the seabed.

Exposure to the oil and chemicals can have long term impacts for the health of marine animals like dolphins and whales, including birth defects in their calves.

Slide 28 What other chemicals end up in the ocean?

Ask students to answer via www.LessonUp.app or discuss in classroom.

"What other chemicals might be ending up in the ocean?"

- Household chemicals.
- Medications
- Chemicals from agriculture run off.
- Pesticides and weed killers used in gardens.

Slide 29 Dolphin hunts

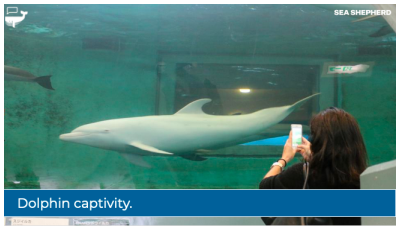
There are a number of places around the world where dolphins are hunted.

The main reasons for the hunts are:

- The dolphins are caught and used for bait to catch fish and sharks. This happens in places like Peru, where it is illegal to kill them, but fishermen kill thousands of dolphins each year for bait to catch sharks.
- For meat for human consumption. This happens in Japan, Faroe Islands, Greenland.
- To be taken into captivity for entertainment. This happens for instance in Taiji, Japan.
- For their teeth. In the Solomon Islands dolphins have been killed for their teeth, which are used as decorations and as a form of currency.

Slide 30 Captivity

The fisherman in Taiji, Japan make a lot of money for capturing dolphins and selling them to marine parks/aquariums. The marine parks then make money by having the dolphins entertain visitors.



Who doesn't love watching dolphins swim and jump around in the water, but captivity is not a happy place for any dolphins, regardless of whether it is bottlenose dolphins or orca's.

Why do you think a dolphinarium might be a sad place for a dolphin to be?

- Dead fish rather than fresh – not as healthy and not stimulation to hunt.
- This dead fish is full of medications as dolphins in captivity can get very sick and very depressed.
- Taken from their family groups – how would you feel being separated from your family & friends?
- Put into tanks with foreign animals that may not communicate the same way. Think how scary it would be being stuck in a foreign country not speaking the language.
- Size of the tanks –Instead of open oceans they spend the rest of their lives in a tiny pool or pen where they can only swim around and around in circles.

- No stimulation – they rely on echolocation and sounds – Concrete walls prevent sound traveling, no fish to catch, ocean currents or waves.
- Pools and chemicals in environment – their water is re-used and dosed with chemicals to keep it clean.
- They are kept hungry and forced to learn tricks for food just to entertain us humans.

For more information see the Lesson – Dolphin Captivity.

Slide 31 How can we protect dolphins?

Ask students to answer the following question using www.LessonUp.app or discuss in the classroom.

"How do you think you can help protect dolphins from some of the issues we have discussed?

Slide 32 Protecting dolphins

How can help protect dolphins:

- Don't support captivity.
- Help to shutdown dolphinariums.
- Think about noise pollution if out on the water on a boat and be careful to watch for dolphins so they don't get hit.
- Reduce demand for fish, particularly from industries with high levels of dolphin by-catch.
- Help fight plastic pollution – reduce your use of single use plastics or join in beach clean ups.

These areas can be expanded as classroom discussions or research projects on ways students can help in each area.

Slide 33 Question?

Ask students to answer the following question using www.LessonUp.app or discuss in the classroom.

"Name five issues impacting dolphins?"

Slide 34 Question?

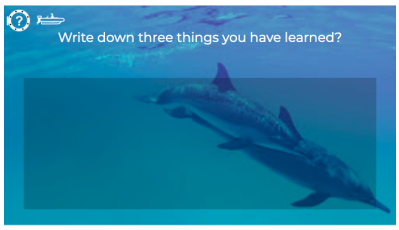
Ask students to answer the following question using www.LessonUp.app or discuss in the classroom.

"Why are so many dolphins and other marine species caught by commercial fishing nets?"

Slide 35 What did you learn?

Ask students to answer the following question using www.LessonUp.app or discuss in the classroom.

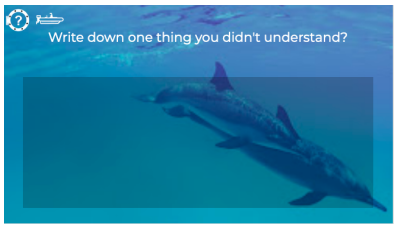
"Write down three things you have learned?"



Slide 36 What don't you understand?

Ask students to answer the following question using www.LessonUp.app or discuss in the classroom.

"Write down one thing you didn't understand?"



Slide 37 Case Studies

Sea Shepherd Case Studies cover a number of Sea Shepherd campaigns and show video of some of our work to protect dolphins. These can be used to enhance the learning experience from these lessons.

Slide 38 Close

Case Study Options

Case Study – Operation Albacore
Case Study – Operation Dolphin By-Catch
Case Study – Operation Milagro
Case Study – Operation Backbone
Case Study – Plastic Pollution

Key Definitions

Baleen – a filter-feeding system inside the mouth of a whale.

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.

Echolocation - the location of objects by reflected sound, in particular used by animals such as dolphins and bats.

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.

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

Sonar - a system for the detection of objects under water by emitting sound pulses and detecting or measuring their return after being reflected.

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.