TOOTHFISH POACHING

TEACHERS GUIDE: SEONDARY SCHOOL (Age 11 – 16)

Lesson Summary

Overfishing is emptying the ocean, with 90% of fisheries already overfished.. This lesson explains about illegal fishing in relation to Antarctic and Patagonian Toothfish.

This lesson will take approx. 45 mins.



Subjects relevant to

English, Geography, History, Math, Science and Social Science.

Learning objectives

From this lesson students will:

- Understand the current status of the ocean and fisheries.
- Understand the impacts of IUU activity on toothfish.
- Learn about the life cycle of toothfish.

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.

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Lesson plan

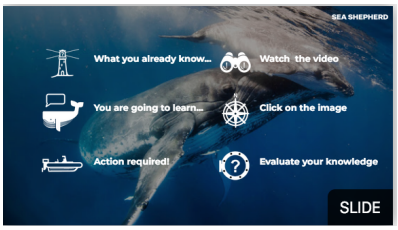
Slide 1 Introduction

This lesson is provided by Sea Shepherd. Sea Shepherd was founded in 1977 and is a marine conservation organisation working to protect the oceans and marine wildlife. Sea Shepherd works globally on a range of issues impacting the oceans, running numerous direct action campaigns each year. IUU is one area Sea Shepherd is working on to help stop illegal fishing.



Slide 2 Lesson action icons

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



Slide 3 Lesson goal

This lesson explains about illegal fishing in relation to Antarctic and Patagonian toothfish and methods being used to tackle illegal fishing.

INTERACTIVE JOIN – ask students to go to www.LessonUp.app



Slide 4 What do you already know?

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

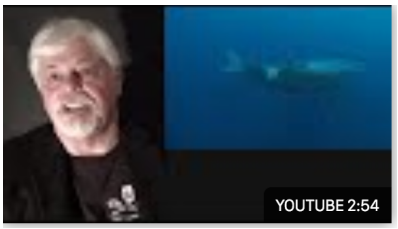
"What do you already know about toothfish poaching?"



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Slide 5 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 on the oceans and marine wildlife.



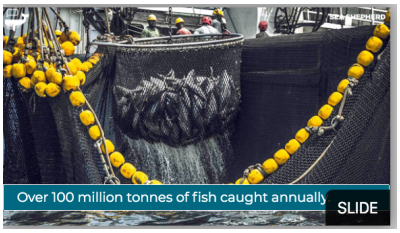
Show this video (2.53min), which explains how important all species are to our planet.
https://www.youtube.com/watch?v=TLcA31VRlRU

Discuss the video with the class and what it means.

Slide 6 Overfishing the ocean

One of the reasons for this is overfishing of the ocean.

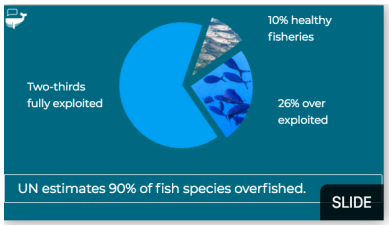
It is estimated that over 100 million tons of fish is caught each year. Fish is the largest traded commodity in the world.



Slide 7 Ocean 90% Overfished

This slide shows how much of the ocean has already been overfished.

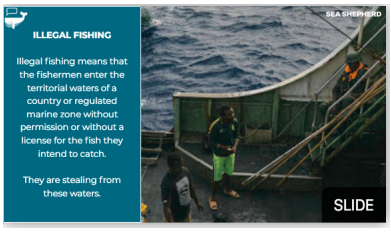
The United Nations believes two-thirds of the world's fisheries are fully exploited and 26% are over-exploited, which means that only 10% of our planet's fisheries are healthy.



Slide 8 Illegal, Unreported Unregulated (IUU) Fishing

The growing demand for seafood supports the illegal fishing trade. IUU activity has a big impact on the ocean ecosystem.

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. In basic terms they are stealing from these waters.



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Slide 9 Unreported fishing

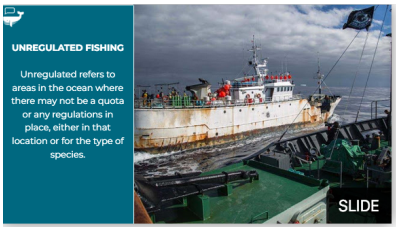
Unreported means that a fishing vessel may have a license with an allocated quota for fishing a particular species, such as tuna, but then catches more than their quota states and they don't report it. This can also be legally licensed fishing vessels that fail to declare the full amount of their by-catch. When vessels are inspected the information recorded in the fishing log books are compared against what is in the fish holds of the vessel.



Slide 10 Unregulated fishing

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. They aren't controlled by a particular country or form part of any regulated zone. Fishing vessels can head to these areas knowing no one is likely to be patrolling or monitoring fishing activity.

Regulating the fishing industry is a huge task, given the size of the oceans and the scale of commercial fishing operations. There are thousands of illegal fishing vessels out at sea catching marine wildlife.



Slide 11 Species targeted - Toothfish

Commercial fishing operations are targeting high value species such as toothfish.

Both Patagonian and Antarctic toothfish are unique long-lived icefish species that are particularly vulnerable to over-exploitation due to their slowness to reach sexual maturity and high market value.

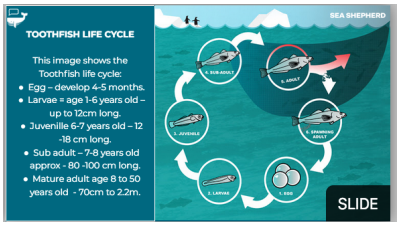
They are distinctive in that they live in Antarctic waters in depths of 300 (984 feet) to 2,500 meters; (1.5miles) the coldest waters on Earth. As a result of this freezing habitat the Antarctic Toothfish has evolved antifreeze-like proteins in its blood, which with limited scientific research we still know very little about.



Slide 12 Toothfish life cycle

This image shows the Toothfish life cycle:

- Egg: develop 4-5 months.
- Larvae: age 1 – 6 years old – up to 12cm long.
- Juvenile: 6-7 years old – 12 -18 cm long.
- Sub adult: 7-8 years old approx. 80 -100 cm long.
- Sexually mature adult: age 8 to 50 years old 70cm to 2.2m.



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Slide 13 Illegal poaching



Illegal fishing of toothfish has shown to have a devastating effect on toothfish populations, leading to collapse and closure of some fishing areas.

10% of Antarctic and Patagonian toothfish are caught illegally.

Toothfish is called 'white gold' because it can sell for a high price. In fish markets and restaurants it is called Chilean sea bass.

Slide 14 Question



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

"Why does overfishing have a bigger impact on a slow developing species like toothfish?"

Answer: Population reduces fast when catching younger immature fish, before they have an opportunity to reproduce.

Slide 15 Fishing for toothfish



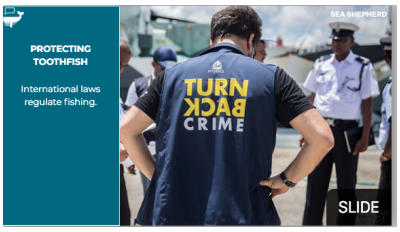
Illegal fishing operations will use gillnets.

Gillnets are walls of netting set in a straight line that are very effective at trapping fish. Using floats on the surface the length of the lines can be adjusted to set the nets at varying depths. They are usually set several kilometres below the surface and can be many kilometres long.

The use of gillnets goes back several centuries. The traditional versions were made of organic materials, such as hemp, which means that if they were lost at sea they would breakdown and not be an issue for marine wildlife. Current nets are made from plastics and can float in the oceans for many years to come trapping unsuspecting marine wildlife. These earlier nets also had a much larger mesh that would allow younger fish to escape, allowing them time to grow and breed. Earlier cultures, which relied on fish, knew that to protect future fish numbers they had to take the more mature fish and only what they needed to survive.

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Slide 16 Protecting marine wildlife from illegal fishing



In many countries and regions there are laws and regulations in place to help regulate fishing and protect marine ecosystems. These regulations help to provide the framework for the legal fishing industry and the basis upon which law enforcement agencies can detect, suppress and combat fisheries crimes.

International laws

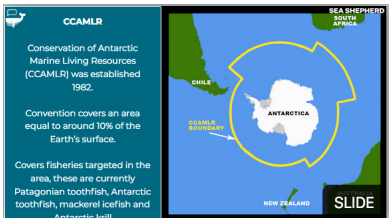
In international waters there are regulations in place agreed upon via the United Nations, including restriction on driftnet fishing.

Slide 17 Regional fisheries management organisations (RFMO)



These organisations are international bodies that help to regulate fishing, using the sustainable fisheries management practices discussed earlier. Cooperation between different countries on the management of some highly migratory species is important. Where a species moves between different countries and also in international waters, individual management of fishing runs the risk of the species being overfished quickly. Setting quotas for larger areas helps to really protect the species. It also creates a framework to tackle illegal fishing activities in these areas.

Slide 18 Case Study – CCAMLR



The Southern Ocean around Antarctica has long been an area that attracts fisherman and illegal poachers, because of the easy access to large numbers of fish and whales, resulting in a high demand for species like krill and toothfish from this region. But overfishing of these species risks damaging the ecosystem and leaving other marine wildlife without a food source.

In 1982 the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) was established. Its aim is to conserve Antarctic marine wildlife and protect ecosystems from over fishing.

Even though CCAMLR has 25 member countries and a further 11 that have accepted the Convention, this does not stop countries from operating illegally in the area.

The Convention covers an area equal to around 10% of the Earth's surface. Within the CCAMLR there are defined areas that are individually controlled. This means each area can be assigned a fishery type such as research, exploratory or established, or it can be off limits to fishing altogether.

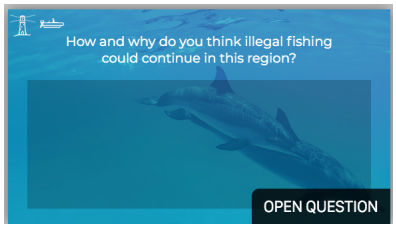
The Convention covers fisheries targeted in the area, these are currently Patagonian toothfish, Antarctic toothfish, mackerel icefish and Antarctic krill.

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Each fishery type has a set catch limit which aims to ensure the long-term sustainability of the fishery. Where and when these catches may take place, is also set, to manage the impact on each regional ecosystem. All catches are to be reported to CCAMLR in order to properly monitor and check actual catches.

Slide 19 Question

While many countries follow these restrictions and operate within the guidelines set down by the Convention, some do not and operate illegally in the area.



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

"Why and how do you think illegal fishing could continue in this region?"

Possible answers:

- There is a lot of money to be made by catching species like toothfish.
- The CCAMLR region is a large area and not many countries are willing to patrol these areas to search for and catch illegal operations.

Slide 20 Detecting and stopping illegal fishing

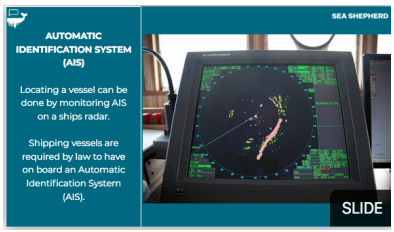
One way to reduce overfishing and stop illegal activity in this region is by detecting and detaining illegal fishing operations and monitoring the catches of legal fishing vessels.



Which tools can be used to achieve this?

Slide 21 Automatic Identification Systems (AIS)

Locating a vessel can be done by monitoring AIS on radar. Shipping vessels are required to have on board an Automatic Identification System (AIS), which shows the location and identification details of the vessel. By monitoring the position of vessels authorities can detect illegal activity in protected areas, such as marine reserves.

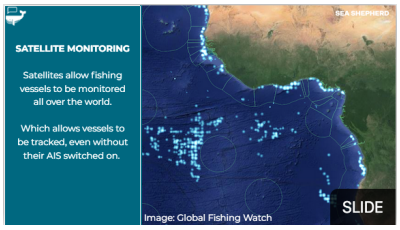


Illegal operating vessels often have their AIS switched off, which means their identification details and position can not be traced back to them.

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Slide 22 Satellite monitoring

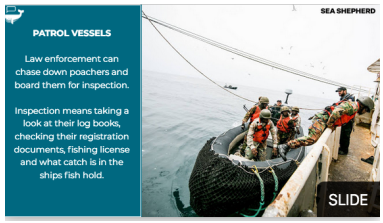
Satellites allow fishing vessels to be monitored all over the world. This allows vessels patrolling for illegal activity to find the location of potential illegal activity in protected areas.



Slide 23 Patrol vessels

The best way to deter illegal activity is to patrol the seas.

Using a patrol vessel that is faster than the fishing vessels, law enforcement can chase down poachers and board these for inspection. Inspection means taking a look at their log books, checking their registration documents, fishing license and what catch is in the ships fish holds.

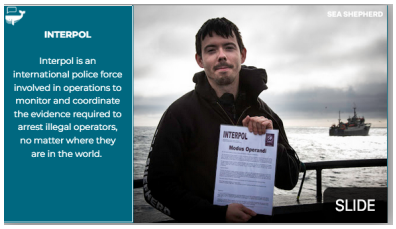


Law enforcement agencies

Each country has its own agencies, such as fisheries agencies, coast guard, navy or marines that are tasked to monitor fishing activities and tackle the issue of IUU. In areas like the Southern Ocean, which are large and remote, law enforcement bodies are less likely to patrol, leaving such areas open for poachers to raid.

Slide 24 INTERPOL

Internationally Interpol is involved in operations to monitor and collect the evidence required to arrest illegal operators, no matter where they are in the world. Interpol can also issue purple notices against vessels, requesting participating countries to detain the vessel once it enters their waters.



Illegal fishing vessels are often well prepared, they may have forged papers showing the vessel is registered in multiple countries.

Once a vessel is identified as having been operating illegal its flag state, the country where the vessel is flagged/registration will be asked to remove them from their ships register.

Vessels that break the law and fish illegally can be blacklisted by countries or RMFO's. Once these return they will be arrested.

Where some evidence has been gathered against an illegal operator, but not sufficient to prosecute the ship or it cannot be located, Interpol can issue what is called a Purple Notice against them.

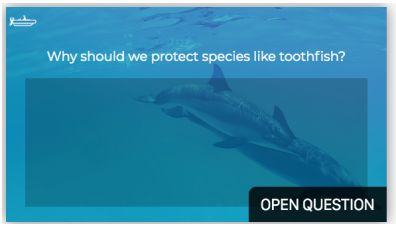
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A Purple Notice is for the provision of information on modi operandi, procedures, objects, devices or hiding places used by criminals. Which means that Interpol are looking for information on the ships activities and evidence against them, such as fishing gear that has been used to illegal fish. It could be the vessel has tried to evade an investigation into their activities by fleeing a port or a countries' waters, or they have false registration details.

Slide 25 Question

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

"Why should we protect species like toothfish?'



Slide 26 Question

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

"How can IUU activity be detected?"



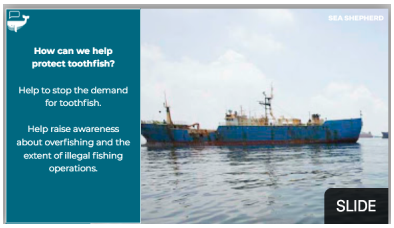
Slide 27 How we can help protect toothfish

While Sea Shepherd works with law enforcement to stop illegal poachers, everyone can take some simple actions to help.

What can you do to help protect toothfish?

- Help to stop the demand for toothfish, which drives the illegal poachers.
- Help raise awareness about overfishing and the extent of illegal fishing operations.

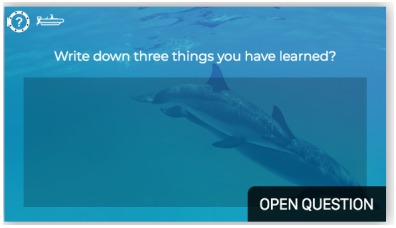
What else do you think you could do to help?



Slide 28 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?"

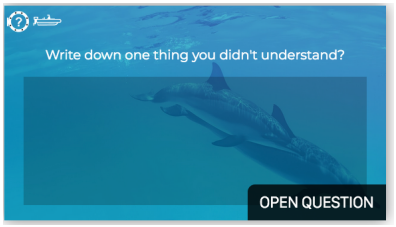


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Slide 29 What don't you understand?

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 30 Next step

To further study the toothfish poaching industry use the Sea Shepherd Case Study – Operation Icefish, which documents our campaign to locate 6 illegal toothfish poaching vessels, our pursuit of the notorious toothfish poacher the Thunder for 110 days and our work to remove 72km of illegal gillnets from the water.



Slide 31 Close



Case Study Options

Case Study – Operation Icefish

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Key Definitions

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.

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.

AIS – Automatic Identification System.

CCAMLR - Convention for the Conservation of Antarctic Marine Life Resources.

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

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

Overfishing - depletion of fish numbers by excessive fishing.

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

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

RFMO – Regional Fisheries Management Organisations.

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.

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