

SUSTAINABLE FISHING & REVIEW

OVERVIEW

Sustainable fishing means leaving enough fish in the ocean so that fish stocks remain healthy, looking after places where fish live [habitats] and ensuring people who fish can keep fishing.

The first set of activities provided here, investigate the idea of sustainable fishing as an alternative to overfishing.

The second set of activities, are designed to review learning from the entire topic, including new words and concepts that we have covered.

See accompanying slide sets [Sustainable Fishing](#) and [Review of the whole Overfishing & Sustainable fishing topic](#).

FOCUS QUESTIONS

- *What is 'sustainable fishing'?*
- *What new words and concepts have we learnt?*

LEARNING OBJECTIVES

- Explain 'sustainable fishing' and how it impacts on people and environments
- Use scientific and fisheries related vocabulary

LOCATION

Indoors

DURATION

45 mins +

LEVEL

Level 3 - 5

CURRICULUM

Science

Social Science

Tikanga-ā-iwi

Pūtaiao

Hauora

NEXT STEPS

- Ecology
- Science & the Sustainable Catch



MATERIALS

- Slide set [Sustainable Fishing](#)
- Slide set [Review](#)
- This [Teacher Outline](#)
- Something to write with
- Copies of [Unsustainable fishing cards](#) (Pages 6-27)
- Scissors
- Access to computer & internet (for film clip and animation creation)
- Key term Worksheet
- Kahoot Quiz access


PROCEDURE

Sustainable fishing

1. DISCUSS what sustainable fishing means (according to the Marine Stewardship Council) [slide 21].
2. WATCH the award winning Marine Stewardship Council film [My Dad the Fisherman](#) [14:46] and complete the [Kahoot QUIZ](#) [slide 22].
3. EXPLORE more deeply some fishing practices that are not examples of sustainable fishing. WATCH the short film [1:00] about [bycatch and how it can be managed](#).
4. Reinforce learning using the [Unsustainable fishing cards](#) [slide 23] [page 6-27]. NOTE: In this activity we explore examples of unsustainable fishing to develop understanding about what exactly is and isn't sustainable fishing!

Card Set 1: (EASIER)

- a. There are two sets of cards (version 1 and version 2)
- b. Print, cut and hand out – one set per group.
- c. Start with version 1. Match the title to the correct picture.
- d. Use version 2. Match the correct description of the issue to the correct title/picture.

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- e. Discuss what learners know about each issue. How are these NOT examples of sustainable fishing? Record any questions learners have. How might we find the answers to these questions?

Card Set 2: HARDER

- a. Print, cut and hand out – one copy of all cards in card set 2 per group.
- b. In groups, match green text questions (smaller cards) with the correct answer (blue text cards). If you are short on time you could give learners one issue per group rather than all issues.
- c. Alternatively give every learner in the class one card only and they have to go around the room asking questions to find the learner who has the question or answer to their card.
- d. Share and discuss - How are these NOT examples of sustainable fishing? What did we learn? What do we want to know more about? How might we find this information?

EXTENDING

Card set 1 EASY

- a. To extend, use the picture cards (only) from Card set 1. Each group has one picture card. Learners pick three words they would associate with, or use to describe, their issue [some words are provided on the final page as examples (see Extension: Unsustainable fishing cards)].
- b. Group share, play hangman or have groups act out one or more of their words. Discuss how these issues are not examples of sustainable fishing.

Further extension: HARDER:

- a. Research one of the issues further. Create a paper or electronic poster.
- b. Select a particular endangered species or habitat to research.
5. INVESTIGATE how the Marine Stewardship Council deals with unsustainable practices [see also teacher notes in notes section below slide 24] [slide 24].
6. EXPLORE what sustainable fishing looks like in Aotearoa NZ and CONSIDER what you do to look after the sea [slide 25].
7. CONSIDER the three principles used by the Marine Stewardship Council to determine sustainable fishing [slides 26 & 27]. These are covered in more depth in the topics 'Science and the Sustainable Catch', 'Protecting the Marine Environment' and 'Fisheries Management'. Additional and more detailed information is available on [A guide to the MSC Fisheries Standard](http://www.msc.org/tangaroa).



Reviewing Key Concepts

8. Review the entire Overfishing and Sustainable Fishing Topic using the summary quiz on [Kahoot](#) [slide 28]. Create an ANIMATION to convey the story of sustainable fishing making sure that key terms from [Key Term Worksheet](#) are included [slide 28].

KEY WORDS

Overfishing

Sustainable fishing

Fishery

Migration

Marine

Ocean

CURRICULUM LINKS

Nature of Science (Level 3-5)

- Investigating in science
- Communicating in science
- Participating and contributing

Living World (Level 3-5)


- Ecology

Social Science (Level 3-5)

- Understand how people make decisions about access to and use of resources (Level 3)
- Understand how formal and informal groups make decisions that impact on communities (Level 4)
- Understand how people's management of resources impacts on environmental and social sustainability (Level 5)

Tikanga-ā-iwi

- *Kotahi tonu te matua o te tangata Māori, ko Ranginui e tū nei, ko Papa-tū-ā-nuku e takoto nei.* Place and Environment

- 
- *E tama, e hine, tangata i ākona ki te whare, tū ana ki te marae, tau ana.* The Changing World
 - *E kore e ngaoko te rākau ki te tīkina i te pūtake whakangaoko ai engari, me tiki ki te matamata.* The Economic World

Pūtaiao

- The Natural World: The Biological Environment: Investigate the effect of human actions, and natural processes, on an Aotearoa ecosystem (Level 6+)

Hauora

- Relationships to earth and sky (natural environments) (Level 4+)

CARD SET 1: UNSUSTAINABLE FISHING CARDS

[VERSION 1]



Image: [Dive SSI](#)

Shark finning



Bycatch



Ghost nets &
thrown away
fishing gear



Places [habitats]
where special sea
creatures live



Endangered sea creatures

CARD SET 1: UNSUSTAINABLE FISHING CARDS

[VERSION 2]

Sharks are caught and their fins are cut off. The body of the shark is thrown back in to the sea. Shark fins are used to make soup. People pay a lot of money for a bowl of shark fin soup!

Shark finning



Image: [Dive SSI](#)

Other sea animals are sometimes caught by fishers by mistake. Sea birds try to eat the bait on hooks. Whales, dolphins sharks, turtles, fish and other animals can be caught by mistake in nets.

Bycatch



Fishing gear (like nets and lines) sometimes gets lost or thrown away at sea. This fishing gear carries on catching fish and other sea animals. This is called 'ghost fishing' and these nets are called ghost nets. Ghost nets can carry on catching sea animals for a long time.

Ghost fishing



There are some very delicate sea creatures living on the seafloor and the places [called habitats] where these creatures live are special! Fishing can damage these special places [habitats].

Places [habitats] where special sea creatures live



Endangered sea animals are animals in danger of becoming extinct. This means there will be none left alive in the sea. An animal is considered endangered or "threatened" when there are very few of them alive. If not done well, endangered animals can be caught during fishing by mistake.

Endangered sea creatures



CARD SET 2: UNSUSTAINABLE FISHING CARDS

SHARK FINNING

HOW MANY TYPES
[SPECIES] OF SHARK ARE
THERE?



There are more than 1,000 types or species of sharks and rays, with new species still being discovered every year.

WHAT IS SHARK FINNING?



Shark finning is the removal of any fins of a shark and discarding the rest of the shark (often still living) in to the sea.

HOW MANY SHARKS ARE KILLED EACH YEAR FOR THEIR FINS?



We think that around 100 million sharks may be killed each year, many for their fins (WWF, 2020).

HOW HEALTHY ARE SHARK NUMBERS [POPULATIONS]?



Many (more than 30%) of all known shark and ray species are in danger of extinction [dying out].

More than half of some groups of sharks have disappeared because of shark fishing (Smithsonian, 2013).

WHY ARE SHARKS SO SOUGHT AFTER?



Sharks are worth lots of money!

Past Chinese emperors valued shark fin soup as a medicine and it was also a symbol of power and status! Today a bowl of shark fin soup is worth a lot of money for the same reasons!

ARE THE FINS OF ALL TYPES OF SHARK EQUALLY SOUGHT AFTER?



Shark fins are considered valuable.

The larger fins [like those from 'whale sharks', and 'basking sharks'] are especially sought after (SharkStewards.org).

DOES THE OCEAN EVEN NEED SHARKS?




Yes! If there are less sharks then this affects the whole ocean community.

HOW QUICKLY DO SHARKS RECOVER WHEN TOO MANY ARE CAUGHT?



Sharks are slow growing, have long life spans and are slow to reproduce [have babies]. This means that when too many sharks are caught it can take a long time for the number of sharks to get back to normal.



HOW IS THE MARINE
STEWARDSHIP COUNCIL
HELPING TO PUT AN END
TO SHARK FINNING?



Those engaged in shark finning are not allowed to get the Marine Stewardship Council blue fish tick label!

CARD SET 2: UNSUSTAINABLE FISHING CARDS

ENDANGERED MARINE SPECIES

HOW CAN FISHING HARM
ENDANGERED THREATENED &
PROTECTED MARINE SPECIES?



Yes. Endangered, threatened and protected species can be caught accidentally along side fish [this is called bycatch].

Birds, turtles, sharks and marine mammals can be drawn to fishing boats, and caught by mistake on hooks or in nets.



WHAT IS BYCATCH AND IS IT A BIG PROBLEM?



Bycatch is when sea creatures are caught by mistake sometimes in nets and by hooks. It is thought that over 300,000 small whales, dolphins, and porpoises die by getting caught in fishing nets each year (WWF, 2020a).

HOW CAN ENDANGERED THREATENED AND PROTECTED SPECIES BE PROTECTED FROM BEING ACCIDENTALLY CAUGHT?



Changes can be made to fishing gear to make it less likely to catch birds, sharks and marine mammals. Many people are working all around the world to help protect endangered, threatened and protected species from being caught by fishers.

WHAT DOES ETP MEAN AND WHY IS IT USED?



Endangered, Threatened and Protected (ETP) species is a term used by those who look after [manage] marine fisheries.

HOW DOES THE MARINE STEWARDSHIP COUNCIL MAKE SURE THAT ENDANGERED SPECIES ARE LOOKED AFTER?



When a fishery is looked at by the Marine Stewardship Council, they look at how fishing in that fishery affects the whole marine environment including any Endangered, Threatened or Protected (ETP) species.

CARD SET 2: UNSUSTAINABLE FISHING CARDS

GHOST FISHING

WHAT ARE GHOST NETS?



Ghost nets are nets that have been lost or thrown away at sea.

DO GHOST NETS CONTINUE TO CATCH MARINE LIFE?



Yes. They continue to catch fish. They also get tangled with other animals such as turtles, dolphins, birds, sharks and seals. Hundreds of animals can be caught in just one net.

WHAT HAPPENS TO GHOST NETS OVER TIME?



Some lost or thrown away fishing lines and nets can stay as they are for a very long time. Others can quickly turn in to tiny pieces of plastic. These bits of plastic can be wrongly seen as food by marine life.

DO WE KNOW HOW MANY GHOST NETS THERE ARE IN THE SEA?



No. But in 2015, a 268 tons of nets, ropes, and other fishing material was found in just one very small bit of sea [called the Baltic] (WWF, 2020). We think that 640,000 tonnes of fishing gear is lost each year, and that fishing gear makes up 10% of all marine rubbish (FAO).

HOW MUCH OF THE OCEAN'S
RUBBISH IS DISCARDED
FISHING GEAR?



It has been said that almost half [46%] of all plastic found in the 'Great Pacific Garbage Patch' is thought to be fishing nets (Nature Journal).

WHY WEREN'T GHOST NETS
SUCH A PROBLEM IN THE OLD
DAYS?



Our ancestors fished less & nets were made from string, flax or natural fibers! Now most fishing gear is now made from plastic. Plastic monofilament fishing line can take 600 years to degrade (Marine Stewardship Council).

DOES THE MARINE
STEWARDSHIP COUNCIL
CONSIDER GHOST FISHING
WHEN DECIDING IF A FISHERY
CAN HAVE THE BLUE LABEL?



Yes. The effect of ghost gear is one of the things the Marine Stewardship Council looks at when deciding if a fishery can have the Marine Stewardship Council blue fish tick label.

WHAT ACTION WAS TAKEN BY
MARINE STEWARDSHIP
COUNCIL "BLUE LABEL"
LOBSTER FISHERS TO REDUCE
THE EFFECT OF GHOST GEAR?



Some European lobster fisheries have put the boat name and number on all lobster pots so any lost pots can be retraced back to the boat. They have also limited the number of replacement tags available. This makes fishers not want to lose their pots.

WHAT ACTION WAS TAKEN BY
MARINE STEWARDSHIP
COUNCIL BLUE LABEL COD
FISHERIES TO MANAGE AND
REDUCE THE EFFECT OF
GHOST GEAR?



In an Alaskan cod fishery, biodegradable escape panels [ones that will break down and stop working in a short time] were put in all fishing pots to reduce the problem of ghost fishing from lost pots.

CARD SET 2: UNSUSTAINABLE FISHING CARDS

ENDANGERED HABITATS

IF TOO MANY FISH ARE
TAKEN OUT, WHAT CAN
HAPPEN TO THE SEA?



WWF says “when too many fish are taken out of the ocean it creates an imbalance that can lead to a loss of other important marine life, including endangered species”



HOW CAN DELICATE SEAFLOOR MARINE AREAS BE AFFECTED BY FISHING




Fishing gear can affect delicate seafloor habitats.

This can happen for example, during bottom or benthic trawling which involves the towing of a trawl or fishing net along the sea floor.

WHAT ARE 'ENDANGERED' OR DELICATE MARINE HABITATS



Places on the sea floor with endangered or slow growing marine creatures such as sea pens and sponges, or delicate places that are breeding grounds for sea animals.



HOW DOES THE MARINE
STEWARDSHIP COUNCIL MAKE
SURE CERTIFIED FISHERIES
DON'T BADLY AFFECT AREAS
THAT ARE FISHED?



In order to receive the Marine Stewardship Council blue fish tick label, fisheries must show they do little harm to the areas where they fish. A fishery will not achieve the Marine Stewardship Council blue label if it causes much harm to the sea floor.

WHAT OTHER WAYS ARE
ENDANGERED OR DELICATE
PARTS OF THE SEA
PROTECTED?



Many countries are now seeing the need to set aside or protect some parts of the sea floor from fishing. Changing the way fishing happens and reducing the amount of fishing can also help look after the seafloor.



HOW MUCH OF THE NEW
ZEALAND SEAFLOOR IS
PROTECTED?



More than a third of New Zealand
waters are closed to bottom trawling
and dredging.

EXTENSION: UNSUSTAINABLE FISHING CARDS

Sharks	Fins	Soup	Chinese meal	Endangered
Highly valued \$	Seabirds	Whales & dolphins	Sharks	Fishing hooks
Fishing nets	Plastic	Lost nets	Thrown away	Danger!
Death!	Waste	Cruelty	Sad	Happy
Accidental!	Sea Floor	Delicate	Unseen	Deep
Broken	Clever Gear	Fish	Drifting	Entangled