

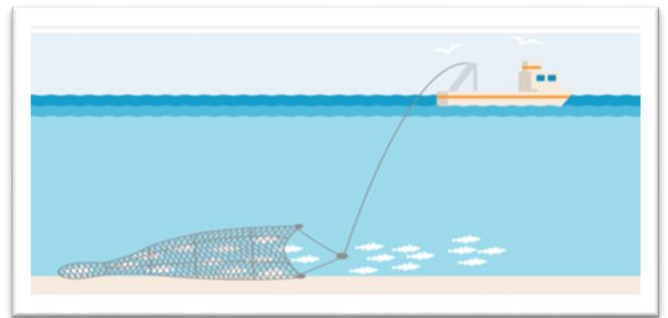
# FISHING METHOD WORKSHEET

## Fishing methods

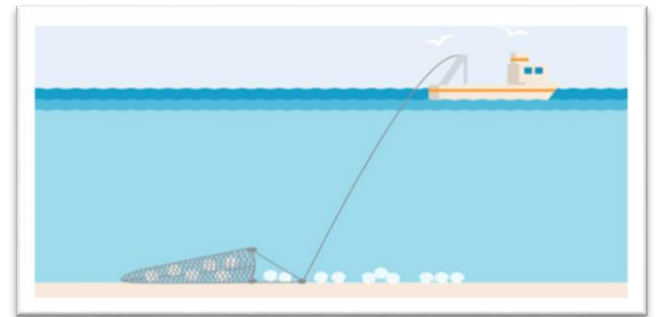
Different methods and types of gear are used in fishing. The fishing method and gear used depends on the type of fish and where they are found. Fishing needs to be efficient to be economically viable. Different fishing methods have different environmental impacts. The impact of fishing varies depending on how gear is used and modified. Often, fishing gear and techniques can be altered to reduce negative environmental effects. Environmental effects of fishing include bycatch [catch of non targeted marine creatures] and habitat damage [damage to the place where fish live].

## Bottom Trawling

Bottom Trawlers use cone-like nets with a closed end [cod-end]. They catch fish living at great depths (like Orange Roughy) or fish living on or near the seafloor. Bottom trawling can damage the sea floor, especially where fragile or sensitive habitats exist. Modifying fishing gear can reduce the impacts of trawling, for example by minimising contact with the seafloor.



*Bottom Trawling*



*Dredging*

## Dredging

Dredges tow rigid structures on the seabed to harvest bivalves [shellfish with two shells] such as scallops and oysters. Dredging is typically used on sandy bottoms so is less likely to affect more fragile habitats. One impact of dredging is that it can stir up sand and smother other habitats. In Aotearoa New Zealand, dredging is used to catch scallops, or tupa, and the famous Bluff Oysters.



*Orange Roughy*

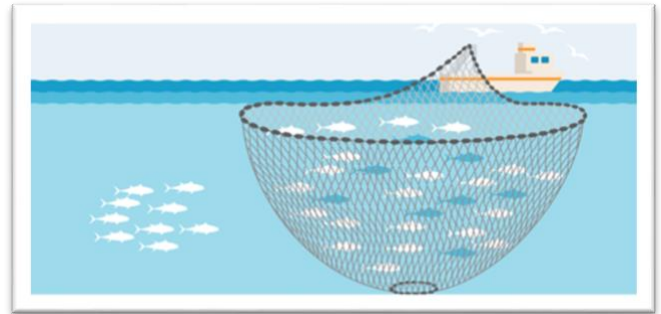


*Tupa / Scallop*

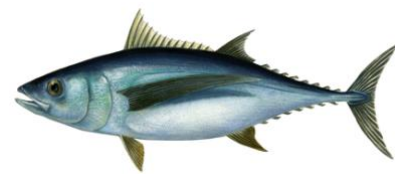


### Purse seiners

Purse seiners use a vertical net 'curtain' to surround schools of fish in the open ocean. The bottom of the net is then drawn together. They target single-species pelagic [mid-water] fish like tuna or mackerel. In Aotearoa New Zealand kahawai are caught using purse seine. There is also a method known as the Danish Seine method where nets are weighted and often larger than purse seines. In Aotearoa New Zealand this method can be used to catch snapper and gurnard.



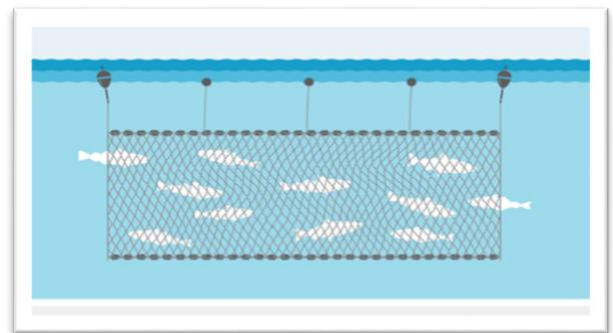
*Purse Seine*



*Albacore Tuna*

### Gill nets

Gill nets are a curtain of net that target schooling fish. Drift gill nets have no impact on the seafloor but can catch non target species [bycatch]. Set gill nets are attached to the seafloor. In Aotearoa New Zealand, pātiki or yellow belly flounder are caught using set gill nets. Gear modification (like changing the net mesh size or using acoustic pingers [that make a sound] to deter marine mammals) can help reduce bycatch.

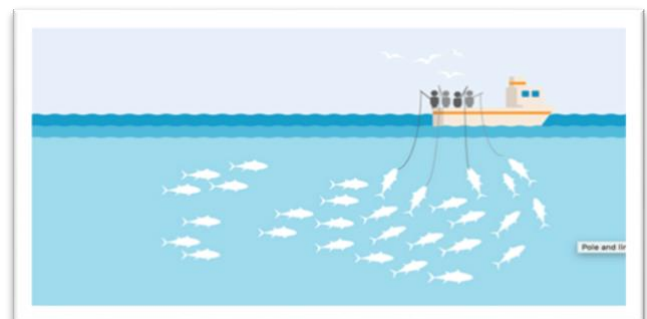


*Gill net (above)*

### Pole and line fishing

Pole and line fishers catch tuna and other large pelagic [midwater] fish one at a time and has little bycatch or habitat impact. Some albacore tuna in Aotearoa New Zealand are fished using this method.

*Pole and line (below)*

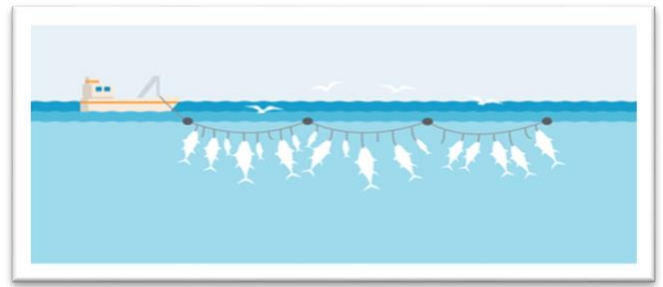


### Long lining

Long liners trail a long line with many hooks, usually behind the boat. Long lines can be set for pelagic [mid-water] or demersal [bottom living] fish. Long lines can catch unwanted marine species [bycatch]



including seabirds. Seabirds are attracted to the bait and can get caught on hooks. Seabird bycatch can be reduced by tying brightly coloured ribbons to the fishing lines which deters the birds. In Aotearoa New Zealand, much of our snapper is caught via longline.



*Longlining*



*Tāmure / Snapper*

## WANT TO LEARN MORE?

**Read more:** The MSC website to find out more about [fishing methods and gear types](#)

**Explore:** The story of one Kiwi fisherman working for better transparency and innovation to improve his fishing - [Better transparency & better innovation = #BetterFishing!](#)

**Extension:** Review data for Aotearoa New Zealand protected species that have been caught using different fishing methods in a [summary of observed captures](#) (you can click on the numbers to further explore catches of each species)

**Test your knowledge:** Using 4.1 Fishing method matching cards

5. Bycatch of seabirds from long line fishing can be reduced by



# QUESTIONS

## What did we learn?

### Multiple choice

*Circle the correct answer*

1. Bottom trawling is used to catch fish that are
  - (a) Close to the surface
  - (b) Pelagic
  - (c) Deep water or on the seafloor
  - (d) Surface dwellers
2. Which of the following methods is usually used to catch scallops?
  - (a) Dredging
  - (b) Bottom trawling
  - (c) Gill netting
  - (d) Purse seining
3. In Aotearoa New Zealand kahawai are often caught using
  - (a) Purse seine
  - (b) Bottom trawling
  - (c) Pole and line
  - (d) Long line
4. A set gill net differs to a floating one because
  - (a) It is set at night
  - (b) It is attached to the seafloor
  - (c) It is weighted
  - (d) It is set at sea

- (a) Adjusting the heading of the boat
- (b) Fishing after mid day
- (c) Baiting lines with squid
- (d) Attaching brightly coloured ribbons to the lines

### True or false

*Read the statement and circle or underline the correct answer – either 'true' or 'false'*

1. Bottom trawling can damage the sea floor, especially where fragile and sensitive habitats exist. True or False
2. Purse seiners are a vertical net 'curtain' that surrounds a school of fish in the open ocean, then the bottom is drawn together. True or False
3. Seabirds are seldom caught on long-lines as they are never attracted to bait. True or False

### Extra for fast finishers!

*Use your own paper to answer the following...*

1. Think about each fishing method. Write a list of methods that are likely to impact the seafloor and a list of methods that might involve bycatch.
2. Based on your current understanding, which fishing method do you think would have the least impact on the environment. Justify your answer.

# FOR TEACHERS



## Answers

### Multiple choice

1 (c); 2 (a); 3 (a); 4 (b); 5 (d)

### True or False

T, T, F

## Further Extension

Find the Species tab on the [Seafood NZ](https://www.seafood.govt.nz/) site. Explore one fish species and find the method of fishing used to catch that species (under the sustainability tab). In groups, race against the clock to list the different species caught using each fishing method. Share results as a large group. Record results in a table. Graph the results using a simple bar graph (x axis fishing method; y axis number of species caught using this method) and / or a pie graph.