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Learning Scenario

Learning Scenario 9 - 11

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From the sea to my plate

The activities in this scenario are aimed at helping learners aged 9 to 11 to discover the journey of seafood from the sea to the plate, to learn about the seafood systems, the different careers in this sector, and the relationship between our food, the environment and marine biodiversity.

Objectives:

- Learners identify the connection between seafood & fish consumption, human health and the natural environment
- Learners prepare and eat seafood under the supervision of an adult.

General Information

Age: 9 to 11 year old

Subjects: natural science, nutrition, biology, geography, civic education, maths

Keywords: seafood, fish, food, ocean, biodiversity, cooking, fishing

Who is this for? Teachers, science museum/center explainers

Other societal actors you can involve: chefs, fishers, fishmongers, fish or seafood farmers, fish or seafood processors (e.g. canning factory)

Sustainability competences[1]:

Embodying sustainability values	Embracing complexity in sustainability	Envisioning sustainable futures	Acting for sustainability
• Valuing sustainability • Supporting fairness • Promoting nature	• Systems thinking • Problem framing	• Futures literacy • Adaptability • Exploratory thinking	• Individual initiatives

[1] Bianchi, G., Pisiotis, U., Cabrera Giraldez, M. GreenComp – The European sustainability competence framework. Bacigalupo, M., Punie, Y. (editors), EUR 30955 EN, Publications Office of the European Union, Luxembourg, 2022; ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040

Activity 1 – Understanding the seafood system

Duration: 45min-1hour

Material:

- A set of cards per group (see resources below)
    - Five sets of cards are available:
        - Fish fingers
        - Canned tuna
        - Frozen shrimps
        - Fresh mussels
        - Smoked salmon
    - Feel free to create cards for other products.
- Blank A2 paper
- Blue tack (better than glue as it allows students to move items)
- Pens, pencils, colour pens, markers
- Solution sheet (for educators only)

Set up:

- Prepare tables and chairs for groups of 4 to 6 learners
- Place all the material on the table, with a different set of cards per group. Make sure you shuffle the cards.
- Keep the solution sheet with you.

Introduction:

"We're going to explore how seafood and fish get from the water to your plate. It's not magic! It takes many steps and many people. You're going to work in teams to discover and draw the seafood journey from ocean to plate. At each table, you have cards with all the steps to prepare a popular seafood or fish product. You'll use the cards, discuss what they mean, and place them in the correct order. This is called systems thinking — looking at the whole process and how things are connected."

Encourage them to think about:

- What jobs are involved?
- What transport is used?
- Where do people work?
- What happens to the seafood before we eat it?
- What happens to waste?

Instructions:

The group work should take about 20minutes.

1. In each group, students take turns reading the cards aloud. Encourage them to discuss and group cards to facilitate their reflection.
2. Each group uses the cards to build a poster showing how the seafood/fish product resulting from their card is made. They can use blue tack to stick the cards as they wish, draw arrows, icons, add extra notes to illustrate what happens at each step.
3. The educator keeps a solution sheet and goes from one table to another to guide students.

Debrief:

- Each group presents their poster to the rest of the class. The educator verifies the response using the solution sheet.
- After the presentations, the educator opens the discussion:
    - "What surprised you about the journey of this product from ocean to plate?"
    - "Which job do you think is most important and why? Which job do you think is the hardest and why?"
    - "What would happen if one of the steps were missing?"
- The posters are placed on a board or a wall at school for students to consult.

To go further: invite a fisher, fishmonger or fish farmer to the class to do the activity with you and explain their job to the group.

Activity 2 – Understanding the impact of overfishing

Duration: 30-45min (depending on length of the debrief)

Material:

- one bowl or midsize container per group
- 30 marbles (or items of similar size) per group – 15 in one colour and 15 in another colour
- A bag of extra marbles for the teacher/educator (about 10 extra marbles per group)
- 4 teaspoons per group
- 4 small bowls, cups or other small-sized containers
- Timer
- A pen and worksheet printed per group (A4)

Set up:

- Prepare tables and chairs for groups of 4 children
- Place the bowl in the middle of the table, with 30 marbles in it. The teacher or educator keeps the bag of extra marbles with them.
- Provide each child with a teaspoon and a small bowl.
- Provide each group with a pen and recording sheet.

Introduction:

"Imagine that the bowl in the middle of your table is the sea and the marbles are fish. Fish of the first colour are male fish, and fish of the second colour are female fish. You are fishers, and your spoons are your fishing gear. We will go to sea together to catch fish, we will go four times, once per season of the year. Your goal is to catch as many fish as you can so you can earn money and feed your family."

Alternative: if you are based inland, you can refer to the bowl as a river or a lake rather than a sea.

Rules:

- Each of you will use only one hand and one spoon to fish.
- Each season will last 10 seconds.
- After each season, you will count how many fish each of you caught and how many fish are left in the sea, and write this down on your paper.
- After each season, the fish reproduce! For every pair of female and male left in the sea, the educator/teacher will add 1 new fish of a random sex to the sea. For instance, if you have 5 pairs of fish left, you will receive 5 new fish.
- If no pair of fish is left, the sea is empty forever!

Rounds/Seasons:

- You will play 4 rounds. Use a timer to keep them to 10 seconds.

- At first, most groups will overfish.
- By round 2 or 3, some groups will already have an empty bowl.

Debrief:

- Ask the group the following questions:
    - What happened to your sea?
    - What do you think it means if the sea is empty forever?
        - What does it mean for the predators who eat the fish?
        - What does it mean for the fishers and all the people who work with seafood (refer to activity 1)?
        - What does it mean for you?
    - Why do you think some still have fish in their sea and not the others?
    - How could we have fished differently to still have fish in all of your seas?

- Introduce the concept of **responsible fishing**: when we eat too much of the same fish, it means we ask fishers to catch a lot of the same fish in the ocean. But when we catch too many, there aren't enough fish left in the sea, and they cannot reproduce. This means the number of fish decreases until there are none left. When we fish too much like this, it is called **overfishing**. But if we eat different species of fish instead of always eating the same ones, then fishers can catch fewer of each fish species, and this gives time for all the fish to reproduce and keep the ocean full. This is **responsible fishing**.

- Optional: ask the group to share the names of different species of fish they know they can eat. You can also propose other species by consulting the Mr.Goodfish website or app.

- Optional: watch a video about overfishing. Here are a few examples:

    - What is sustainable fishing? Education resource for teachers – Marine Stewardship Council (starting from 11 years old)
    - Mission Ocean: Overfishing - Ampere
    - Will the ocean ever run out of fish? Ayana Elisabeth Johnson

To go further: invite a fisher, fishmonger or fish farmer to the class to do the activity with you and explain their job to the group. Or show a video with a portrait of a seafood professional in your local language. Here are some links where you can find examples of videos:

- EU Aquaculture – we work for you with passion
- EU Campaign – Taste the Ocean (recipes)
- EU video – Sustainable fisheries for sustainable development

Homework – Seafood in my plate

Duration: one week (at home) following one or both of the activities above

Material :

- One worksheet per student, printed on one side, A4
- A camera, a printer, scissors and glue OR colour pens
- A pen
- Blue tack, tape or pins and a board or available space on a wall in your classroom

Introduction:

We learnt about responsible fishing and the people who produce our seafood. We also learnt that we need to eat a variety of seafood rather than always the same. So now we are going to try this at home. During the week, ask your family to help you cook one meal with fish or seafood. Fill in the worksheet with the name of the dish, the ingredients, the steps to prepare the recipe, and a picture or a drawing of the dish. In one week, we will present our recipes to each other.

Debrief:

In class, ask each student to share the dish they had and ask them to share their impressions (how was the taste? Was it difficult or easy to cook? What did the other members of your family think of this recipe?).

Have them pin their worksheet on a board or a wall for a few days and encourage them to take a look at the recipes and to take pictures.

You might also consider collecting all the worksheets and making a small booklet of recipes to give out to all the students, so they can bring it home.

Alternative: if feasible, you can replace this homework with a cooking session in your school, science centre or museum. Pick an easy seafood or fish recipe to prepare with the children (e.g. sardine spread, fish cake, fish pie, fish tacos/wrap/sandwich…). You can invite a chef or fishmonger to do this with you, and propose that the families participate too. If you wish to use this alternative, please start by verifying local health & food safety rules related to cooking with children.

Order of the cards for "Fish fingers":

1. Fisher catches white fish (e.g. cod, pollock)
    - Note: it is also possible to use fish from fish farms.
2. Fish is frozen.
    - Note: fish is frozen on the boat before it is brought to shore. It is likely the students will find this one difficult to place.
3. Fish is unloaded at the port.
4. Fish is inspected by sanitary authorities.
    - Note: sometimes, inspections can take place at sea. If students place this card before, it is an acceptable answer.
5. Fish is transported to a processing plant or factory.
6. Fish is cut into sticks.
    - Note: during this procedure, some of the fish sticks are culled: this means that, if their shape is not uniform, they are taken out of the production and used for other purposes (e.g. animal feed).
7. Fish is battered and breaded
8. Fish is fried.
9. Fish sticks are frozen.
10. Fish sticks are packaged, weighted and labelled.
11. Fish sticks are delivered to a supermarket.
12. Someone buys the fish sticks and brings them home.
13. Someone cooks the fish sticks.
14. Someone eats the fish sticks.

Order of the cards for "Canned tuna":

1. Fisher catches tuna far offshore.
2. Tuna is unloaded at the port.
3. Tuna is inspected by sanitary authorities.
    - Note: sometimes, inspections can take place at sea. If students place this card before, it is an acceptable answer.
4. Tuna is transported to a processing plant or factory.
5. Tuna is cut into pieces.
6. Tuna is cooked.
7. Tuna is cleaned of bones and skin.
8. Tuna is added to a can with oil or water and sealed.
9. The can is sterilised with steam.
10. The can is packaged, weighted and labelled.
11. The can is delivered to a supermarket.
12. Someone buys the canned tuna and brings them home.

13. Someone cooks with canned tuna.
14. Someone eats the tuna.

Order of the cards for "Frozen shrimps":

1. The shrimp farmer harvests shrimps on their farm.
    - Note: Shrimps can also be harvested by fishers from the sea.
2. Shrimps are inspected to ensure quality.
    - Note: inspections on shrimp farms can also take place before harvest. Inspections on shrimp farms usually include control of the water quality, contaminants (pesticide, metals, bacteria), hygiene, and feed among other aspects.
3. Shrimps are transported to a processing plant or factory.
4. Shrimps are thoroughly cleaned.
5. Shrimps are graded (sorted by size).
6. Shrimps are peeled.
    - Note: sometimes, shrimps are not peeled at the processing plant and are sold whole, with their shell. Students may place this card between buying the frozen shrimps and cooking them. This would be right.
7. Shrimps are frozen.
8. Frozen shrimps are packaged, weighted and labelled.
9. Frozen shrimps are delivered to a supermarket.
10. Someone buys the frozen shrimps and brings them home.
11. Someone cooks the shrimps.
12. Someone eats the shrimps.

Order of the cards for "Fresh mussels":

1. The farmer harvests mussels on their farm.
    - Note: Mussels can also be harvested in the wild by fishers from the sea or on the coast.
2. Mussels are inspected to ensure quality.
    - Note: inspections on mussels farms can also take place before harvest. Inspections on farms usually include control of the water quality, contaminants (pesticide, metals, bacteria), hygiene, and feed among other aspects.
3. Mussels are transported to a processing plant or factory.
4. Mussels are thoroughly cleaned.
5. Mussels are graded (sorted by size).
6. Mussels are packaged, weighted and labelled.
7. Mussels are delivered to a fishmonger.
8. Someone buys the mussels and brings them home.
9. Someone cooks the mussels.
10. Someone eats the mussels.
11. Someone throws the mussel shells.

- Note: this is if the mussels were sold in their shells. Sometimes, the shells are removed at the processing plant (e.g. for frozen mussels, cooked mussels in brine…)

Order of the cards for "Smoked salmon":

1. The salmon farmer catches salmon on their farm.
   - Note: Salmon can also be harvested by fishers from the sea or rivers.
2. Salmon is inspected to ensure quality.
   - Note: Inspections on salmon farms can also take place before harvest. Inspections on salmon farms usually include control of the water quality, contaminants (pesticide, metals, bacteria), hygiene, and feed, among other aspects.
3. Salmon is transported to a processing plant or factory.
4. Salmon is gutted and filleted.
5. Salmon is cured in a mixture of salt and sugar to remove moisture.
6. Salmon is rinsed and dried.
7. Salmon are smoked.
8. Smoked salmon is sliced.
9. Smoked salmon is packaged, weighted and labelled.
10. Smoked salmon is delivered to a supermarket.
11. Someone buys smoked salmon and brings it home.
12. Someone cooks the smoked salmon.
13. Someone eats the smoked salmon.

Worksheet | Homework

Seafood in my plate

My name:

This week, I cooked seafood/fish with my family.

The name of the recipe is ..... .

The ingredients of this recipe are:

- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....

These are the steps to cook the recipe:

1. .....
   .....
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2. .....
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3. .....
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4. .....
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5. .....
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6. .....
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7. .....
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8. .....
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9. .....
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10. .....
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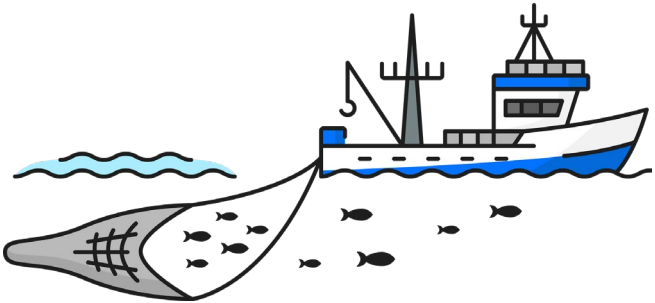
.....

I paste a photo of the dish or I draw the dish here:

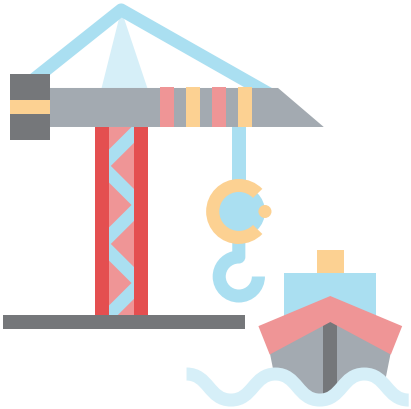
Record your catch in the table below

	The sea	Player 1:	Player 2:	Player 3:	Player 4:
Winter	There are … female fish and … male fish left in the sea after this season.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.
Spring	There are … female fish and … male fish left in the sea after this season.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.
Summer	There are … female fish and … male fish left in the sea after this season.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.
Autumn	There are … female fish and … male fish left in the sea after this season.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.	This season, I caught … female fish and … male fish.

Fisher catches tuna far offshore



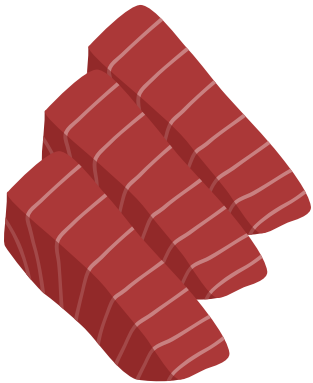
Tuna is unloaded at the port



Tuna is inspected by sanitary authorities

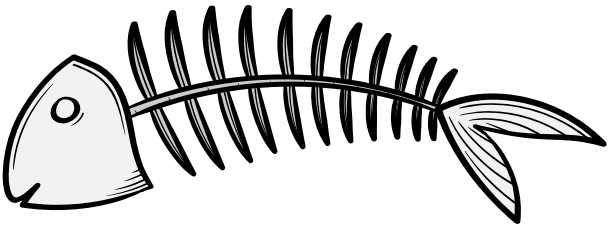
Tuna is transported to a processing plant or factory

Tuna is cut into pieces



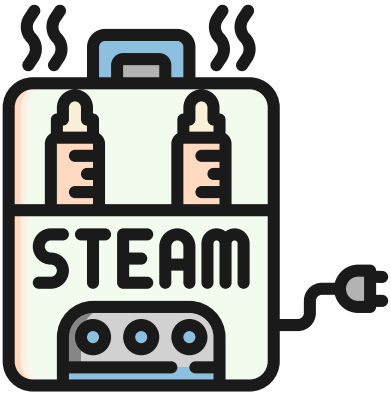
Tuna is cooked

Tuna is cleaned of bones and skin



Tuna is added to a can with oil or water and sealed

The can is sterilized with steam



The can is packaged, weighted and labelled

The can is delivered to a supermarket

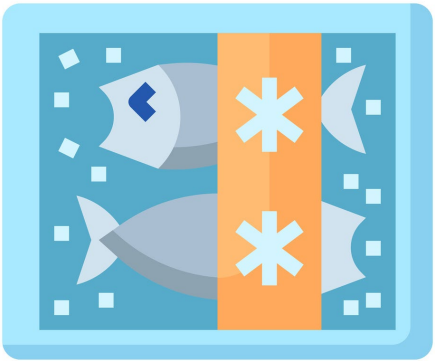
Someone buys the canned tuna and brings them home

Someone cooks the canned tuna

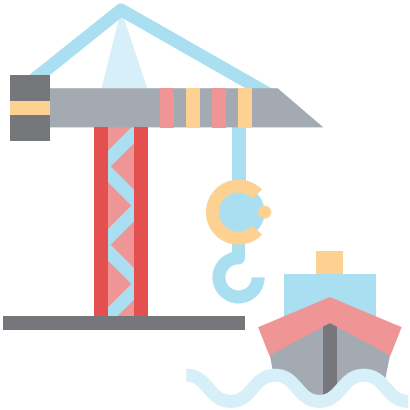
Someone eats the tuna

Fisher catches white fish

Fish is frozen



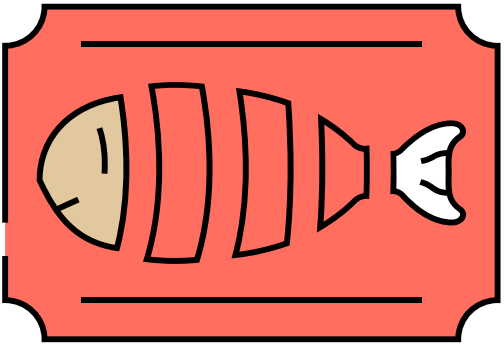
Fish is unloaded at the port



Fish is inspected by sanitary authorities

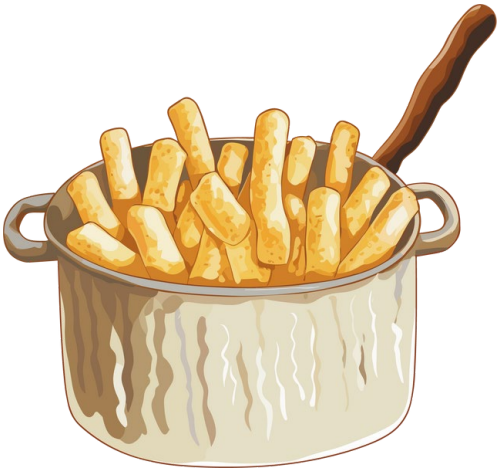
Fish is transported to a processing plant or factory

Fish is cut into sticks

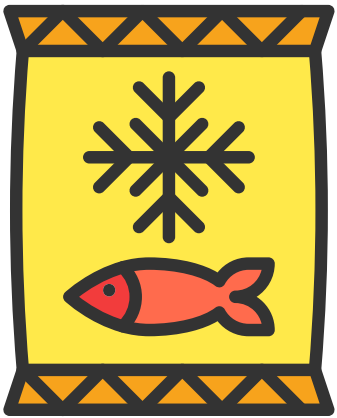


Fish is battered and breaded

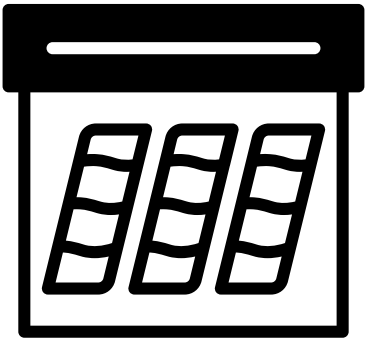
Fish is fried



Fish sticks are frozen



Fish sticks are packaged, weighted and labelled



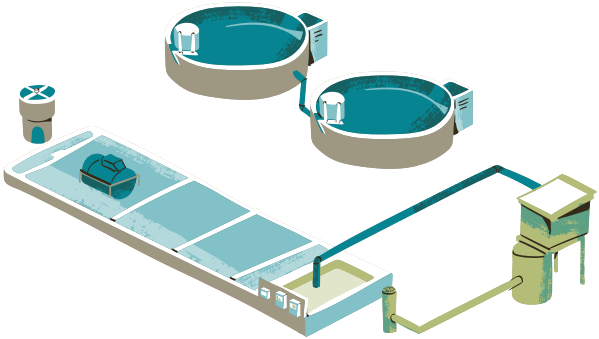
Fish sticks are delivered to a supermarket

Someone buys the fish sticks and brings them home

Someone cooks the fish sticks

Someone eats the fish sticks

The farmer harvests mussels on their farm

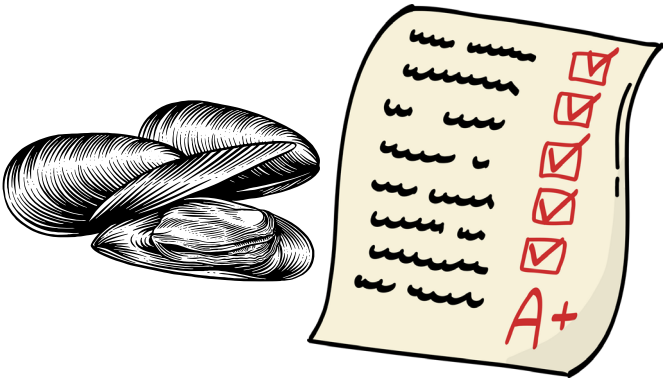


Mussels are inspected by sanitary authorities

Mussels are transported to a processing plant or factory

Mussels are thoroughly cleaned

Mussels are graded (sorted by size)



Mussels are packaged, weighted and labelled

Mussels are delivered to fishmongers

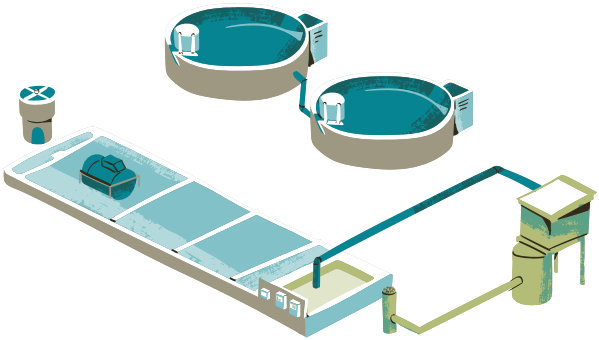
Someone buys the mussels and brings them home

Someone cooks the mussels

Someone eats the mussels

Someone throws the mussel shells

The farmer harvests shrimps on their farm

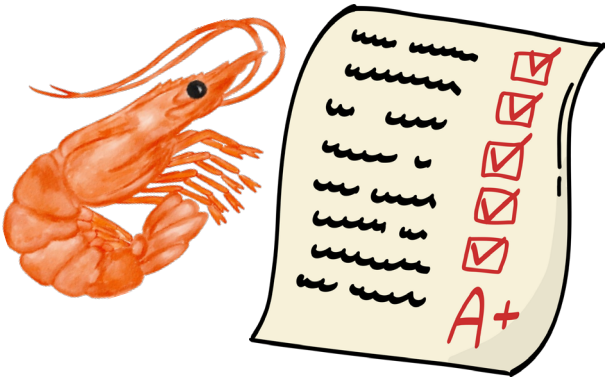


Shrimps are inspected by sanitary authorities

Shrimps are transported to a processing plant or factory

Shrimps are thoroughly cleaned

Shrimps are graded (sorted by size)



Shrimps are peeled

Shrimps are frozen

Shrimps are packaged, weighted and labelled

Shrimps are delivered to a supermarket

Someone buys the frozen shimps and brings them home

Someone cooks the shrimps

Someone eats the shrimps

The salmon farmer catches salmon on their farm

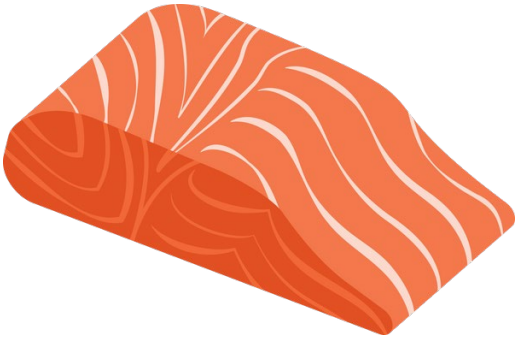
Salmon is inspected by sanitary authorities

Salmon is transp orted to a processing plant or factory

Salmon is gutted and filleted

Salmon is cured in a mixture of salt and sugar to remove moisture

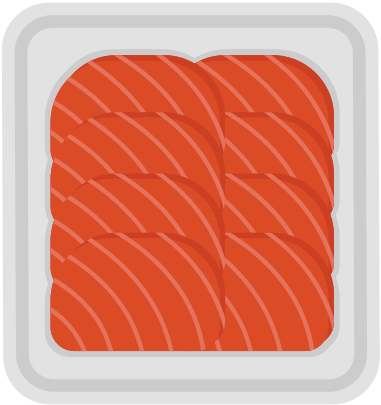
Salmon is rinsed and dried



Salmon is smoked

Salmon is sliced

Salmon is packaged, weighted and labelled



Salmon is delivered to a supermarket

Someone buys the smoked salmon and brings them home

Someone cooks the smoked salmon

Someone eats the smoked salmon

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