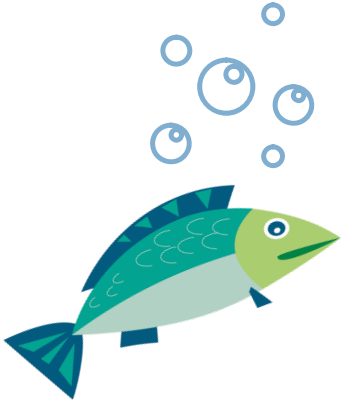
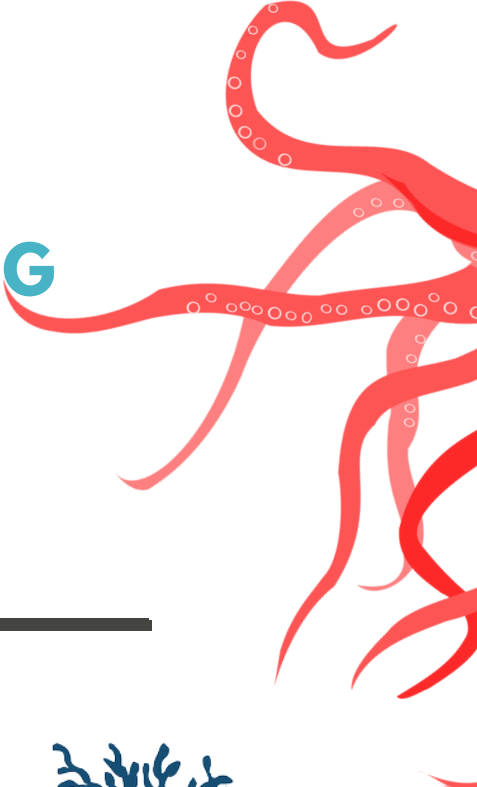




Seafood Education Kit



A RESOURCE GUIDE FOR
**TEACHERS LEADING
CHANGE**



Grades 2-3

<http://education.ocean.org>

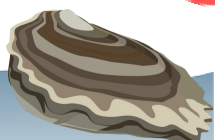
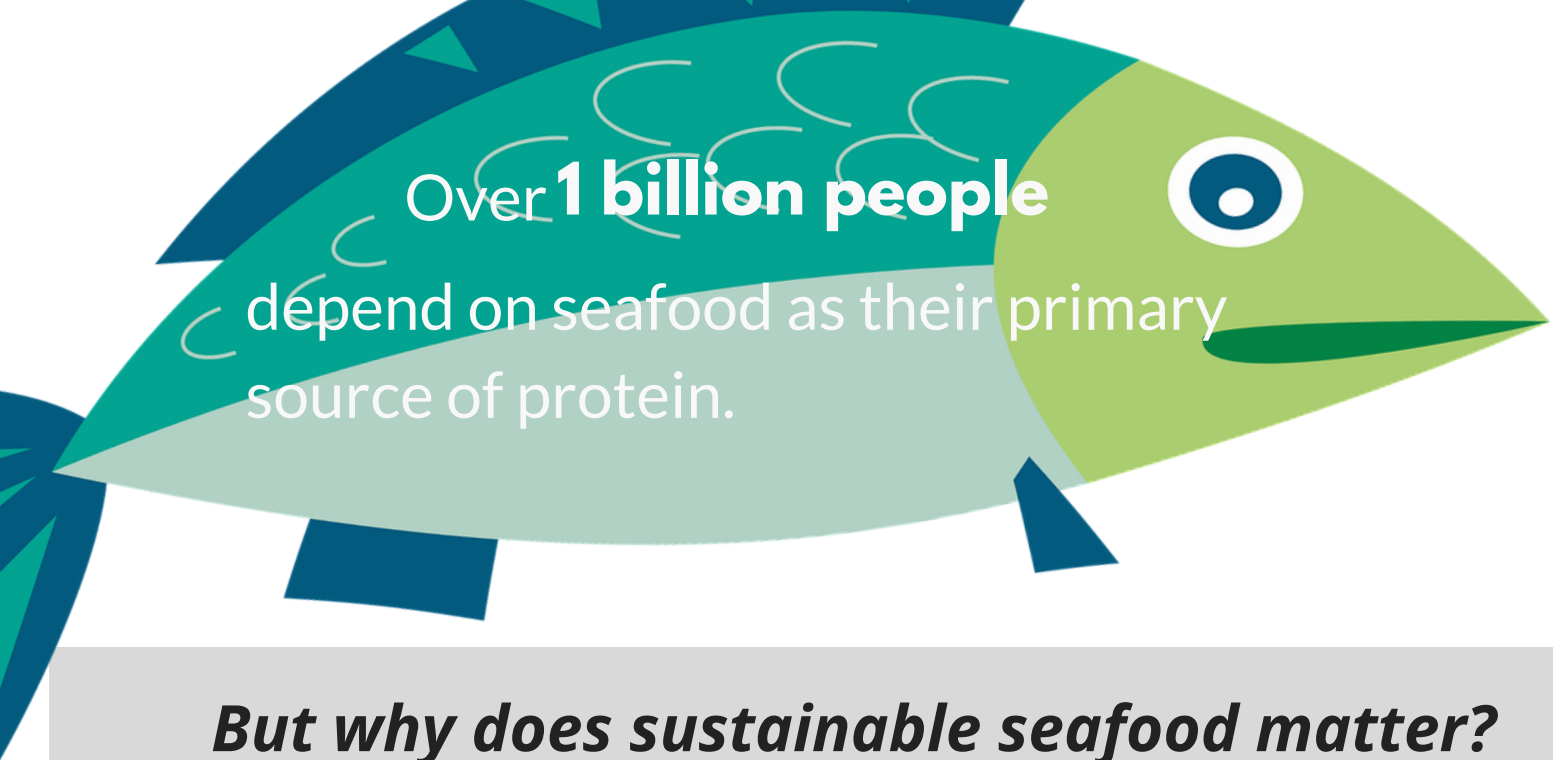


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*Help us inspire our
youth to lead advocacy
for sustainable
seafood...*

**and protect our
ocean.**

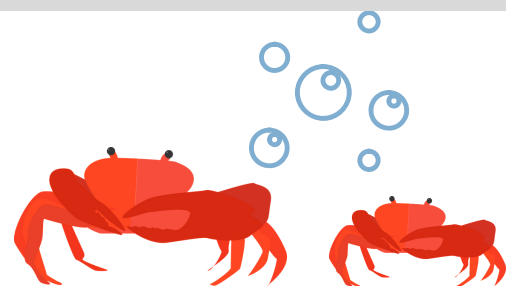


But why does sustainable seafood matter?

Overfishing is one of the **biggest threats facing our oceans today**. Roughly 90 percent of the world's assessed fish stocks are now fully fished or overfished according to the most recent report by the UN's Food and Agriculture Organization (FAO). This **leaves just 10 percent of fish stocks** underfished – a number that has decreased almost continuously since 1974. Choosing sustainable seafood helps to replenish fish stocks.

Why is our world's ocean essential?

- Our ocean maintains earth as we know it by **regulating the climate**, supplying oxygen to the atmosphere, and by maintaining the lives of the millions of organisms that make up the complex marine food web.
- Beyond the animals that live directly in the ocean, the marine ecosystem also **supports terrestrial creatures** such as bears, birds, and humans.
- Humans need the ocean as a source of food, for our **livelihoods**, as part of our cultures, and for a healthy life.

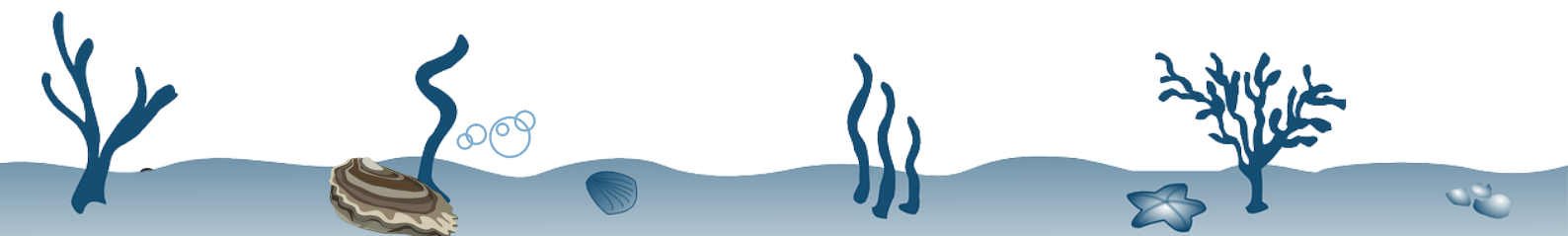
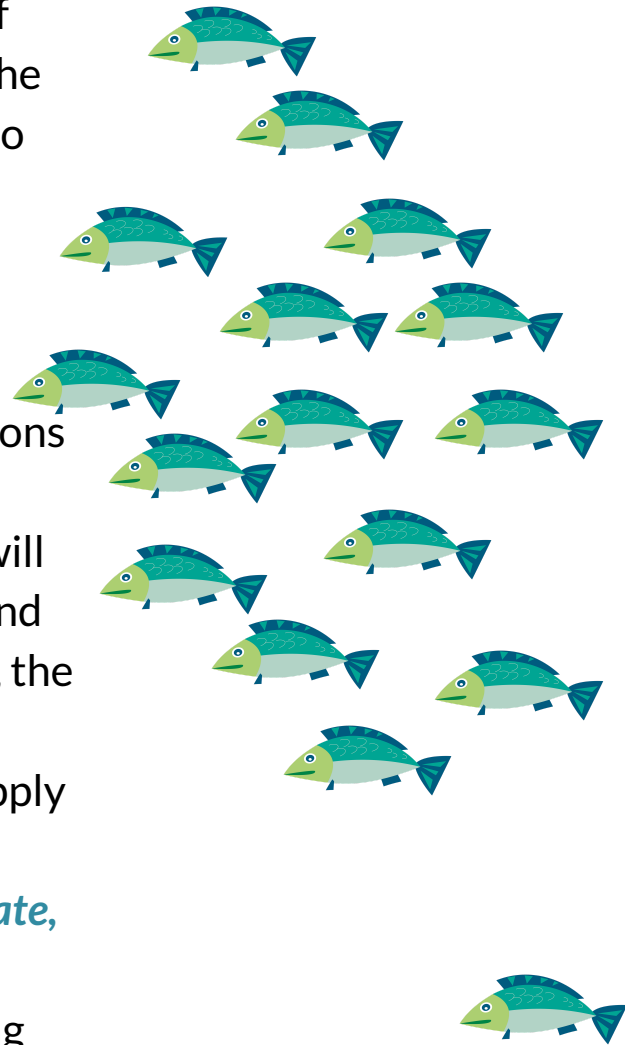


Dear Teachers...

The seafood industry is an expansive business that touches upon many corners of human life; ranging from supplying protein in our diets, to providing employment for communities, to being a tool of creativity and history for seafood chefs. With the many avenues seafood shapes, it is significant to highlight how *the growing demand for it is contributing to declining fish populations.*

Especially, as the planet faces environmental challenges such as *climate change, ocean acidification and habitat destruction*, conversations about *resource extraction* have become particularly relevant. In this section, students will learn about key terms related to aquaculture and wild fishing, the criteria of sustainable seafood, the social and economic factors that influence the industry to thereafter analyze, interpret and apply their findings in hands-on and inquiry based activities. The ultimate objective being to *educate, equip and empower students to be stewards for sustainable seafood choices.* Thank you for caring and helping us build a sustainable future for our oceans!

Best fish wishes,
The Ocean Wise Education Team



“I will keep my garbage out of rain drains because they lead to streams, rivers and lakes.”

LESSON 1

GRADES

2-3

Students will be able to:

- ✓ Identify the stages of the water cycle
- ✓ Understand how they are connected to marine life via the water cycle
- ✓ Label stages of the water cycle and use drawings or words to show their connection to the water cycle

No matter where you live, you are connected to the water cycle; ranging from rain and snow to the water you drink. These connections extend to the wildlife with whom we share the land, lakes, ocean and rivers. The water cycle is an impressive force of nature that has varying states throughout its rotation and these states create a large branch of connections with people, animals and ecosystems. This exercise of critical analysis will facilitate a basic understanding of the water cycle and link the water cycle to the students' personal experiences.

The Earth has one big ocean with many features



All humans are connected to water.

Materials

- Student Workbook
- Pen/Pencil
- Audio/visual system
- 3 pieces of paper labelled with A,B or C
- Tape

Suggested Books

- 'One Well: The Story of Water on Earth' by Rochelle Strauss
- 'Drop Around the World' by Dawn Publications
- 'Water Is Water' by Miranda Paul

? CRITICAL QUESTIONS

Why is water important? What is the water cycle? What are the stages of the water cycle? Why is the water cycle important to humans? How are humans and marine animals connected through the water cycle?

▶ LESSON GUIDE

- 1) **Workbook Page 1:** What is the water cycle? The water cycle is a massive force of nature that recycles all water through different physical states: liquid, solid and gas. This means that all water is connected! The same water humans rely on is the water animals rely on too. Learn about key terms of the water cycle by labelling the page in your workbook.
- 2) **Activity:** Water cycle voting game on [Google slides](#). Have three areas designated to be voting areas A, B and C marked by a piece of paper with the assigned letter on it. The students reply to the slide prompts by standing in the corresponding letter of their choice. Have the kids explain their choice before revealing the answer.
- 3) **Reflection:** Encourage students to respond to the questions below by journaling using **workbook page 2:**
 - a) How are you connected to the water cycle?
 - b) How are fish connected to the water cycle?
 - c) How is water connected to the health of fish and humans?



RESOURCES (Click on them!)

- [It's AumSum Time: Water Cycle for Kids](#)
- [Science World: Water Cycle Game](#)
- [Crash Course Kids: The Great Aqua Adventure](#)
- [South East Water: Natural Water Cycle Online Game](#)
- [Ocean Futures Society: We are all connected to the ocean](#)
- [Worksheetplace.com: Water Cycle Worksheets](#)
- [Junior Biologist Club: Go With the Flow](#)
- [Yellow Fish Road](#)

“I will talk to my family about the life cycle stages of arctic char and arctic char aquaculture.”

LESSON 2 GRADES 2-3

Aquaculture is a growing industry that yields large amounts of seafood for us to consume worldwide. To evaluate how aquaculture raises and harvests seafood, this lesson will introduce key life cycle stages of arctic char via an active game of song and play. The students will understand this basic system of aquaculture and how those methods relate to the fish life cycle. Introduce the key terms with the slideshow attached. Also, as the teacher feel free to explore [Monterey Bay's Fishing and Farming Methods](#) page to review key concepts.

Students will be able to:

- ✓ Learn about the key life cycle stages of arctic char
- ✓ Label the life cycle of arctic char
- ✓ Participate in a discussion about raising and harvesting arctic char

The ocean made the earth habitable



A variety of seafood that we eat can be produced in an aquaculture/farmed environment..

Materials

- Student Workbook
- Pen/Pencil
- Audio/visual systems

Suggested Books

- 'Pea Soup and the Seafood Feast' by Anna Burger -
- 'What's It Like To Be A Fish' by Wendy Pfeffer
- 'Meat and Fish' by Izzi Howell



CRITICAL QUESTIONS

What is aquaculture? What are the key terms of aquaculture? How does a fish life cycle relate to aquaculture?



LESSON GUIDE

1) **Introduction:** Introduce the key terms of aquaculture with the slideshow attached [here](#).

As a main goal of aquaculture is to successfully raise sea animals or seaweed to maturity for consumption (the [National Aquaculture Association Kids Corner](#) article emphasizes this point), we'll focus on arctic char as an example of how life cycles are connected to aquaculture. Arctic char is raised via land based systems in the Yukon, Nova Scotia, New Brunswick, Quebec, B.C and Manitoba.

2) **Workbook Page 3:** Review and fill in the blank of the life cycle. Watch [Arctic Char Eggs from Whitehorse](#) to showcase how the arctic char life cycle takes place in an aquaculture facility.

3) **Activity:** Divide an open space into 4 sections. The students begin to mingle in the first section as "eggs" and the teacher is on the outside overseeing the group as the fish farmer.

Students start by walking around singing "Eggs, Eggs, Eggs" (to the tune of your choice) until the teacher says: "Next stage!". At that cue, the students will scurry to find a partner to play rock, paper, scissors. Winners cross into the next section to be smolt in which they will then sing "Smolt, Smolt, Smolt". The losers will remain in the egg section to sing "Eggs, Eggs, Eggs" again. The game continues until most have reached the spawner stage.

4) **Reflection:** What were the stages you experienced as a growing fish? As you went through the arctic char life cycle, why would the fish farmer want to move you to a different tank? Think about size differences and the amount of food a growing fish needs. How often do you think the seafood you've eaten has come from aquaculture? *Surprise:* Aquaculture provides half of all seafood people eat. So there's a very good chance you have eaten seafood from aquaculture!

Optional: Adjust the number of stages in the game your class completes as needed.



RESOURCES (Click on them!)

- [CBC: Arctic Char Eggs from Whitehorse](#)
- [National Aquaculture Association Kids Corner](#)
- [DFO: Lesson Plan- Salmonids in the Classroom-Primary](#)
- [WGCU Curious Kids: Aquaculture](#)
- [The Conservation Fund: What is land-based fish farming?](#)
- [Canadian Aquaculture: Canadian Farmed Arctic Char](#)
- [Easy Science for Kids: Life cycle of a fish](#)

“I will help my family learn more about the Ocean Wise Seafood Guide and choose sustainable seafood.”

LESSON
3
GRADES
2-3

This module will outline how the seafood we eat is a direct reflection of how we treat our oceans. This lesson prompts exploration of where our seafood comes from and how consumers are connected to that process. This exploration is facilitated by comparing and contrasting everyday habits to the impacts upon sea life to showcase how healthy seafood are a central component of supporting healthy communities. This relationship is reciprocated in healthy communities supporting healthy oceans.

Students will be able to:

- ✓ Make inferences about how their actions impact ocean health
- ✓ Identify how healthy sea life connects to healthy communities
- ✓ List what food we eat that comes from the ocean and learn the characteristics of a healthy ocean

The ocean is a major influence on climate and weather

Healthy oceans support healthy humans.

Materials

- Student Workbook
- Pen/Pencil
- Audio visual system

Suggested Books

- 'Reduce, Reuse and Recycle: The Secret to Environmental Sustainability: Environment Textbooks' by Baby Professor'
- 'The Earth and I' by Frank Asch
- 'Compost Stew' by Mary McKenna Siddals
- 'Michael Recycle' by Ellie Bethel

CRITICAL QUESTIONS

What is ocean health? How does ocean health relate to seafood? How do people contribute to ocean health? Why is ocean health important for marine life and humans? How can you contribute to ocean health?

LESSON GUIDE

- 1) **Introduction:** Introduce the concept of ocean health: what does a healthy ocean mean to you? Brainstorm on a whiteboard with students discussing what does a healthy ocean look like versus an unhealthy ocean?
Examples: if there's garbage in the ocean is that healthy or unhealthy for the ocean? If the temperature rises does the ocean have a fever?
- 2) **Activity:** How does the health of our ocean relate to the seafood we eat? Follow the prompts in the presentation [here](#) to have the students vote true or false about the statements about seafood production, consumption and ocean health.
- 3) **Workbook Page 4:** Complete the page to outline the connections between our everyday actions, ocean health and the seafood we consume.
- 4) **Reflection:** Repeat the slideshow activity and discuss how the students' answers are different the second time round. Highlight the actions students wrote down to keep the ocean healthy. What animals are in the ocean? What seafood do people eat? How are our actions connected to the seafood we eat? Why is it important to keep our oceans healthy?

RESOURCES (Click on them!)

- [Recycle Nation: fun Activities to Teach Kids Sustainable Practices](#)
- [The Chalkboard: 15 Sustainability Activities and Ideas for the Classroom](#)
- [What is Sustainability by Mocomi Kids](#)
- [EU Environment on Aquaculture & Sustainability](#)
- [Being Ocean Wise blog post](#)
- [Ocean Wise on Responsible Aquaculture](#)

“I will share stories about local people who either work in fish farms or fishing boats.”

LESSON 4

GRADES
2-3

In discussing the dynamics of aquaculture, it's important to address the value of wild fishing to ensure the balance of understanding the various forms of sustainable seafood. This lesson highlights key wild fishing methods through learning about the day in the life of a girl named Roe who's growing up in a Canadian fishing family. The students will learn about wild fishing and its connection to generations of Canadians—especially the role of women in the industry.

Students will be able to:

- ✓ Observe the outcomes of wild fishing.
- ✓ Identify key terms of wild fishing.
- ✓ Engage in a story about women in the fishing industry.

The ocean and humans are interconnected



Humans have a significant connection to wild fishing

Materials

- Student Workbook
- Pen/Pencil
- Audio visual system

Suggested Books

- 'Five Silly Fishermen' by Roberta Edwards
- 'Fishing in the Air' by Sharon Creech
- 'Kids Incredible Fishing Stories' by Shaun Morey



CRITICAL QUESTIONS

What is wild fishing? What are key terms related to wild fishing? Who is involved in wild fishing? Why is wild fishing important?



LESSON GUIDE

- 1) **Workbook Page 5 & 6:** Introduce key terms by using the word search provided.
- 2) **Activity:** Read out loud 'The Fishy Story of Roe' to have a glimpse in the day of the life of a fishing family and learn what wild fishing means to those within the industry.
- 3) **Workbook Page 7:** Now that the terms have been reviewed and the story read, complete the worksheet where the student draws themselves with Roe to demonstrate how they connect to the ocean and can write down a question they'd like to ask Roe about fishing .

Optional: This is a true story based on the life of Tiare Boyes who grew up in a fishing family with an environmental activist mother and a father with a Masters in marine biology so she calls her upbringing 'pretty fishy'. Learn more about Tiare Boyes under the 'Resources' section.



RESOURCES (Click on them!)

- [Bycatch Activity: MyFish Education](#)
- [Pew: What is Bycatch?](#)
- [Seafood Watch: How is Seafood Caught: Bottom Trawling](#)
- [Gulfnews: Canadian fisherwoman breaks social stereotypes](#)
- [BBC Earth: Tiare Boyes Narrates Video of the System of Wild Pacific Fishery Management](#)
- [Sandra Merk: How the Wild Pacific Halibut Fishery is Managed and Monitored](#)

“I will visit a local park and discover a variety of different habitats. ”

LESSON 5

GRADES
2-3

Ecosystems are interconnected systems made up of living (biotic) and nonliving (abiotic) components which support life. Aquaculture systems mimic natural ecosystems to raise and harvest healthy seafood with the basic needs of the animals being met to ensure survival. Your students will collaboratively create their own fish farm to demonstrate their understanding of marine ecosystems and the basic needs of all animals .

Students will be able to:

- ✓ Identify key components of ecosystems
- ✓ Understand the connections between the needs of animals and humans
- ✓ Provide examples of the 4 basic needs of marine animals

The ocean supports a great diversity of life and ecosystems

The environment supplies key components for the survival of animals and humans

Materials

- Student Workbook
- Pen/Pencil
- Audio visual system
- Magazines
- Glue and scissors
- Poster Paper
- Coloring utensils

Suggested Books

- 'Over and Under the Pond' by Kate Messner
- 'Dory Story' by Jerry Pallotta
- 'The Big of the Blue' by Yuval Zommer

? CRITICAL QUESTIONS

What is an ecosystem? What are some characteristics of ecosystems? How do these characteristics help animals to survive? How are the survival needs of animals similar to those for humans? How does aquaculture provide these basic needs?

▶ LESSON GUIDE

- 1) **Introduction:** What is a marine ecosystem? It is a community of animals that live in water that survive on what the habitat offers. An ecosystem must offer: food, shelter, oxygen and water. Sea creatures need these 4 basic components to survive just like us humans!
- 2) **Workbook Page 8:** Provide this worksheet or use this [slide](#) to identify (by circling or writing down individually) the terms that are basic needs for marine animals.
- 3) **Activity:** Break the class into groups with each group receiving a blank piece of poster paper; they can create their own type of fish farm that must include: food, shelter, oxygen and water for their fish to survive. The terms circled/written beforehand on the worksheet/slide are to inspire the students for what to include in their farm. Additionally, magazines can be provided to cut out pictures to be used in creating their fish farm.
- 4) **Reflection:** Have a couple students share their fish farm with the class. Discuss with the class what was easy and challenging about this activity. Why is it important for a fish farm to have these 4 basic components?

💡 RESOURCES (Click on them!)

- [Barefoot Books: 'A Hole at the Bottom of the Sea'](#)
- [STEM Curriculum for Aquaponics](#)
- [MrOliver and Company: Aquatic Ecosystems](#)
- [Scholastic: Aquatic Ecosystems](#)
- [Smile and Learn- Aquatic Animals for kids](#)
- [Squamish Nation Stewardship](#)
- [Sciencing: Aquatic Ecosystem Facts](#)

“I support people who promote and provide sustainable seafood by choosing Ocean Wise menu items .”

LESSON
6
GRADES
2-3

The seafood industry is not only important because it supplies us with food and resources, but it also provides countless jobs for those who are involved in both aquaculture and wild fishing. These jobs support livelihoods and furthers the importance of supporting sustainable seafood to ensure these roles are stable for future generations. Students will reflect upon how ocean health is important to them and to others.

Students will be able to:

- ✓ Demonstrate an understanding of social connections to marine life
- ✓ Observe how sea life relates to individuals they know
- ✓ Identify jobs within the seafood industry

The ocean, and the life in the ocean shapes the earth



Sea life has a major social impact

Materials

- Student Workbook
- Pen/Pencil
- Audio visual system

Suggested Books

- 'Chefs and What They Do' by Liesbet Slegers
- 'The Little Fisherman' by Margaret Wise Brown
- 'A Salmon for Simon' by Betty Waterton

? CRITICAL QUESTIONS

How are people connected to the ocean? Who is employed by the seafood industry (farmers, restaurant owners, fishermen, retail etc.)? Why is ocean conservation important to people?

▷ LESSON GUIDE

- 1) **Activity:** Introduce the concept that marine life not only supports the health and balance of our environment, but also has connections to peoples' lives. To have the students engage with the various ways in which people rely on the ocean, read the stories/watch the videos listed in the resources and discuss these connections.
- 2) **Workbook Page 9:** Match the voice blurb to the person to match the fisherman, the seafood chef and the fish scientist to their job description. Afterwards, have the students draw in the blank space who else is connected to the ocean that wasn't featured (such as a fish farmer or a consumer) and have them write in the voice blurb to describe the connection.
- 3) **Reflection:** Use think/ pair /share to discuss the following: who did they match to each blurb? How are you connected to seafood? How do these connections make sustainable seafood choices important?

💡 RESOURCES (Click on them!)

- [Ned Bell: How to Source Sustainable Seafood](#)
- [Ocean Wise: Top 10 Frequently Asked Questions About Ocean Wise](#)
- [Parks Canada: Coast Salish Peoples Clam Gardens](#)
- [MOA: Musqueam: An Introduction- Hunting and Fishing](#)

“I will share what I learned about fish farming and continue to ask questions!”

This final module is built to prompt students to reflect on their overall learning of sustainable seafood and be confident in asking questions about the industry. It is a fun filled game that encourages students to acknowledge the importance of ocean health while also having the opportunity to practice questioning the industry to learn more.

LESSON
7
GRADES
2-3

Students will be able to:

- ✓ Critically evaluate seafood sustainability and technology
- ✓ Develop their own interpretations of seafood sustainability
- ✓ Participate in group discussions and reflect upon the value of sustainable seafood

The ocean is largely unexplored.



Aquaculture is a valuable resource for sustainable seafood.

Materials

- Student Workbook
- Pen/Pencil
- Audio visual system

Suggested Books

- 'World Without Fish' by Mark Kurlansky
- 'Why Should I Save Water' by Jen Green
- 'Skyfishing: (A Grand Tale with Grandpa)' by Gideon Sterer

CRITICAL QUESTIONS

Why are healthy oceans important? What is aquaculture? What questions about sustainable seafood linger? Why is it important to ask questions about where our food comes from?

LESSON GUIDE

1) **Activity:** To elaborate on what the students have learned from this education kit and what they would like to discuss further is the following relay game (Video of game inspiration for the relay found [here](#). The sticky note and writing down answers portion isn't shown in this video):

- a) Divide the students into 2 teams in an open space. The teams are standing in opposite corners of the space from each other.
- b) In each team's corner, place on a hard surface 3 headings (poster paper on a wall, blank notebook etc.) with space with the following: 'Why is Ocean Health Important?', 'What is Aquaculture?' and 'What Questions Do You Have about Seafood?'. Have writing utensils nearby to write answers.
- c) The relay begins with students from opposite teams hopping through hula hoops one at a time until they meet with the team member hopping over from the opposite direction.
- d) Once the two students of opposite teams meet in the middle, they play rock paper scissors. Winner receives a sticky note from the teacher. Both students hop back to high five the next participant.
- e) The student with the sticky note writes down an answer to one of the 3 question headings and places it in the appropriate column. Continue until all students have participated.

2) **Reflection:** Have the students reflect on what they wrote by having them explain their answers and questions.

RESOURCES (Click on them!)

- [AquaKidsTV: Sustainable Seafood Part 1](#)
- [Ocean Wise Sustainable Seafood Homepage](#)
- [AquaKids: Sustainable Seafood Part 2](#)
- [AquaKidsTv: sustainable Seafood Part 3](#)

Rubric for Teachers: Unit Evaluation

This rubric can be used as an evaluation of the student's performance throughout this unit. You will find the same rubric in the student workbook to help them understand how they may be evaluated.

Elementary Level

Criteria Category	Extending	Proficient	Developing	Emerging
Questioning	-Ask questions that are based on information that connects lesson to personal experiences	-Makes independent observations and uses curiosity to make questions	-Can make some independent observations to engage in the activity	-Engages in observation, with adult guidance
Procedures and Evidence	-Expresses an understanding of the data gathered	-Gathers simple data	-Collects some data provided	-Gathers simple data, with adult guidance
Perspectives and Ethics	-Engages in opportunities to promote ethical choices/sustainability	-Illustrates ethical responsibilities in connection to seafood	-Recognizes at a basic level their personal connection to seafood	Observe that seafood has a connection to humans, with support
Communicating	-Provides an opinion based in personal reflections and/or observations	-Communicates orally and in writing their observations and ideas reflecting on personal experience of place	Shares orally and in writing observations with some personal reflection	-Can communicate observations, with support

Special Thanks!

Tiare Boyes

Natividad Chen

Mitchell Sattler

Kate Keogh

