

Grade

8-12

Ocean Wise Magazine Editorial

In this lesson students are encouraged to explore our local British Columbia waters and identify native aquatic species that we commonly consume, and critically deduce if the animals that we are catching, and how we are catching them, are sustainable. Students will get the opportunity to identify common seafood dishes by exploring the gallery and finding the animals based off the description given in the worksheet. Once all are found, students will decide if the harvesting method of these animals was sustainable or not, and create a visual of ecosystems effected by unsustainable practices.

Students will be able to:

- [1]** Identify local marine life that we commonly consume
- [2]** Examine if how we are catching our seafood is sustainable or not
- [3]** Explain the effects that unsustainable harvesting methods have on the ecosystem

LEARNING ENVIRONMENT

- Individual / Pairs
- Gallery: Treasures of the B.C. Coast & Pacific Canada Pavilion

MATERIALS

- "Ocean Wise" Worksheet
- A pencil
- Clipboard or Binder
- Pencil Crayons if desired

Steps

Students should have some previous knowledge of the difference between fishing and farming techniques when it comes to harvesting seafood. As well, reviewing the impacts that habitat damage, the loss of animals in an ecosystem, and overfishing can have on the ecosystem and those living within that environment. Please see the section 'Helpful Information' for details of pre-teaching material.

1) Review in class (15 min). Before arriving at the aquarium, review types of fishing and farming methods. A helpful source that includes photos is: <http://www.seafoodwatch.org/ocean-issues/fishing-and-farming-methods>

2) Ingredient Hunt (20-30 min). Have students (equipped with their worksheets) explore the *Treasures of the [B.C. Coast](#)* and the *[Pacific Canada Pavilion](#)* in search for animals that will make up the main ingredient on the meals provided in the worksheet. Students will have to look at the description given, and decide which animal fits the role for that meals main ingredient, and record which exhibit they found the animal.

3) Ocean Wise Stamp of Approval (5-10 min). After step one, students will have to decide if the main ingredient on each meal given was harvested sustainably or unsustainably based on the method in which they were fished.

4) Impacts Illustration (15-20 min). Students will choose one of the animals that they deemed harvested unsustainably and illustrate the impact that this fishing method can have on the ecosystem in the enclosure the student found the main ingredient animal in.

Helpful Information

Attached to the students worksheet is a page in which briefly describes harvesting methods mentioned in the program, impacts of unsustainable fishing and Ocean Wise' criteria for recommendations.

Ocean Wise

<http://www.oceanwise.ca/>

Fishing and Farming Methods

<http://www.seafoodwatch.org/ocean-issues/fishing-and-farming-methods>

Using Cameras at the Aquarium: Please ensure cameras are used carefully around animal habitats. Use camera straps to avoid dropping devices into the water/habitats. When photographing in dark galleries, avoid use of the camera flash to avoid reflection and ensure good quality results. Consider taking photos on an angle (as opposed to directly facing glass habitats) even in well-lit galleries.

Aquarium Meeting Spot: The Vancouver Aquarium can be a busy place so locating a pre-arranged meeting space for your class is essential to reinforce learning during your visit. Some spots to consider include the Underwater Dolphin and Arctic Galleries, the Exploration Gallery, and outdoors, weather permitting.

Teacher Background Information: On the same page as you found this lesson (link), under the heading 'Lesson Enrichment' you will find a link to the Aquarium AquaFacts and a detailed 'Vancouver Aquarium Resource Guide' which contain relevant background information pertaining to marine species. The Vancouver Aquarium recommends pre-teaching relevant content as means of making your class visit a more meaningful learning experience.

Extension Activities

Post Activities:

- Discuss farming versus fishing methods when it comes to harvesting seafood and which methods may be better sustainable options for catching local seafood.
- Get students to observe the Ocean Wise options available if they go shopping or eat at a restaurant. Using the Ocean Wise app. Students can look at which area the ingredient was harvested and how, and discuss why this may be deemed sustainable.
Link to Ocean Wise app: <https://itunes.apple.com/ca/app/ocean-wise/id415709335?mt>

British Columbia - Prescribed Learning Outcomes

Grade 8

Science - Consider social, ethical, and environmental implications of the findings from their own and others' investigations (Competencies)

Social Studies - Make ethical judgments about past events, decisions, or actions, and assess the limitations of drawing direct lessons from the past (ethical judgment)

Grade 9

Science - Consider social, ethical, and environmental implications of the findings from their own and others' investigations (Competencies)

Science – Sustainability of Systems (Content)

Social Studies - Recognize implicit and explicit ethical judgments in a variety of sources (ethical judgment)

Grade 10-12

TBD with new curriculum, Fall 2017

9 Things to Consider *About How We Catch Our Seafood*



1/ Overfishing

We are catching too many fish, too fast, in which the population of an animal cannot repopulate itself fast enough to keep up with human demand.

2/ Habitat Damage

Some fishing practices can create damage to marine crucial habitats, in which it could destroy resources for marine species such as food, shelter, etc.

3/ Bycatch

Animals that are caught in fishing gear, in which are not the intended target. These animals are unmarketable, undersized or endangered species.

4/ Purse Seine

Is a type of net that will encircle a school of fish, and like using a draw cord, will enclose around them and then can be hauled onto the boat.

5/ Jig

Harvesting that uses a fishing rod with a lead sinker that has a hook molded into its soft body. Uses a jerky, vertical motion to catch and attract fish.



6/ Gillnets

Uses a net that is suspended in the water column, this technique will entangle and trap fish that cannot see the net, and getting their gills caught in the webbing.

7/ Traps

These are enclosures that have bait in them to lure animals in, but they are not able to get back out. Most traps are made for selective and certain animals.

8/ Diver Hand Harvesting

Using SCUBA equipment, a fisher will dive down to the ocean floor, selectively hand harvesting animals that can be found.

9/ Types of Trawls

Large nets that have weights on the end, in which are dragged behind boats. Can either be dragged on the ocean floor or at mid-water levels.

What
is on
every
Ocean



Wiser's wish list
this Season?

Seafood harvesting in which **limits the amount of damage** done to aquatic habitats, and negative interactions with other species.

Harvesting species that are **abundant** and **resilient** to fishing pressures.

Well managed harvesting that has a management plan based off of research.

Harvesting that **limits the amount of bycatch** on non-targeted and endangered species.

Now that you have identified and found the animals that make up our main ingredients, consider the harvesting method. Is this an adequate way of harvesting seafood, or not so much? Once you have decided if it is sustainable or not, place an Ocean Wise mark of approval



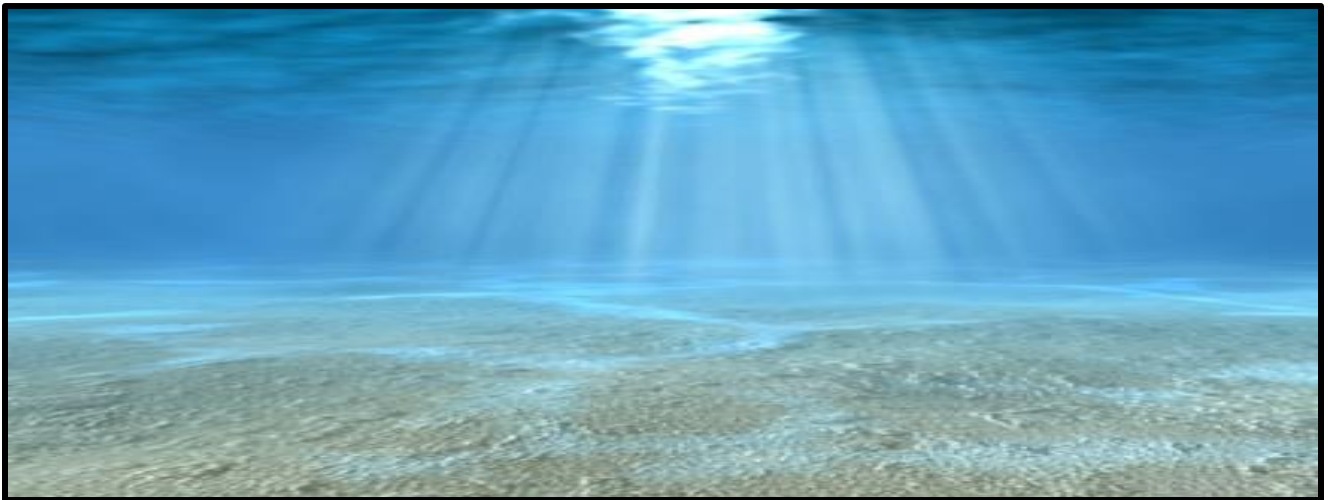
for each meal that is deemed sustainable.
Hint: there should be 3 that are approved and 3 that are not.

Before and After **Spot the Differences**

In the box provided below, you must draw a before and after image of the enclosure that held your unsustainably harvested animal. You will choose one out of the three ingredients from above that you marked as not recommended by Ocean Wise and show the impact that this type of harvesting can have on the ecosystem observed in that enclosure (in the gallery) in which you found the unsustainable ingredient in.

Was it over fished? Habitat damage? Bycatch? What happens to the living and nonliving things in this enclosure?

Before



After



Chef's Meals of the Month

Savory Seafood

In this section you will find six different meals that include six different main seafood ingredients. After reading each dish's description, you must find the main seafood ingredient, of each meal, out in the *Treasures of the B.C. Coast* & the *Pacific Canada Pavilion* galleries. You must then record which enclosure the animal was found, and the animal's name, in the allotted space.

Linguine

This ingredient is known for the type of sushi it makes, but can also be added to many other dishes to make it quite delicious! It can be found in many different colors, from green, red and purple. This small but spiked creature usually can be found on our ocean floors.

Harvesting Method:
Diver

Where am I found? _____

Creamy BC

Chowder

This taste bud tingling dish is made up of an ingredient found right on our very own British Columbia Coast. This small, but delicious morsel is also pleasing to look at before you devour it, as it has an enticing red or brown color, with vibrant red and white striped legs!

Harvesting method:
Trap caught

Where am I found? _____

Creamy BC Chowder



West Coast

Burger

A new take on a long time classic, the Burger! The main ingredient can be found in both fresh and saltwater, and is usually a combination of black and silver, and can even be green and red colors. This animal is known for its hooked jaw and very sharp teeth; don't cut yourself while eating it!

Harvesting Method:
Gillnet

Where am I found? _____

Rillettes

We won't be pickling this fish like most European countries do; instead we will be making a scrumptious rillettes out of this ingredient. This fish can be described as flashy for its smaller size due to its metallic silvery color and forked hind fin.

Harvesting Method: Purse Seine

Where am I found? _____

Fish Cakes using

This ingredient has vast numbers in the Alaska region, making it very accessible to us here on the British Columbia coast! Known for its three dorsal fins, dark upper body speckled mid body, and grey underbelly, and is closely related to the ingredient used in the "Spicy Tomato Coulis".

Harvesting Method: Trawl

Where am I found? _____

with Spicy Tomato Coulis

This meal's main ingredient is one that you might recognize from many seafood menus, and is quite commonly used by seafood lovers in British Columbia! The grey and black spotted animal may not look like much, but who wouldn't want to eat a fish that has a barbel beard?

Harvesting Method: Jig

Where am I found? _____