



Lesson 1: Salish Sea Stewardship

Primary Lesson Standard: ESE Standard 3: Sustainability and Civic

Responsibility – Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

Essential Questions:

- 1) What is a steward?
- 2) What is the Salish Sea?
- 3) Why does the Salish Sea need stewards?
- 4) How can I be a Salish Sea Steward?

Career Connections:

- 1) What is a marine biologist, and what kinds of careers can a marine biologist pursue?
- 2) How do marine biologists study the Salish Sea?

Learning Objectives:

Students will be able to:

- 1) Explain and illustrate their understanding of stewardship.
- 2) Identify the area of the Salish Sea and how they are connected to it.
- 3) Name some of the anthropogenic or human caused problems or impacts facing the Salish Sea.
- 4) Recognize how their studies and actions can impact the Salish Sea.
- 5) Explain what a marine biologist is, and what kinds of careers they pursue.

Key Concept: The Salish Sea is a transnational, geographically unique body of water that supports a highly diverse array of aquatic life including species of economic importance. Many anthropogenic threats face the Salish Sea, which students will be empowered to help alleviate by becoming Salish Sea Stewards and by using the Salish Sea Challenge to practice watershed healthy and climate friendly habits with their families.

Vocabulary: Estuary, transnational, steward, conservation, carbon footprint, greenhouse gas

Assessment: Please have students complete this prior to starting Lesson 1.

or [2nd Grade Preassessment Google Form](#)

Completion of the Salish Sea Challenge (found in the GSSC Student Notebook) after two weeks.

Lesson Instructions: *All parts of this lesson can be found in this document.*

Teacher Prep/Considerations:

Set up computer and projector. Review the Power Point to be sure background information is adequately understood to explain to students. Have the slideshow chart from Lesson 1 ready to review and add to if necessary.

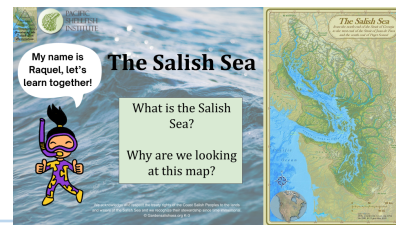
Watch:  The Salish Sea: An Ecosystem Divided by an Arbitrary Border (1:55 minutes)

Slideshow:  Salish Sea Stewardship

The Power Point is set up to guide you through the content of the lesson prompting discussion and content. Pictures of each slide with its corresponding number are included to help you keep track of where you are. **If a line is bolded, it is a question to ask students during the presentation.** New vocabulary words are underlined.

Slide 1: The Salish Sea

The Salish Sea is the 18,000 square kilometer body of water that we live next to! It stretches from the Strait of Georgia in British Columbia to Puget Sound, near Seattle, Tacoma, and Olympia. Its name comes from the native Coast Salish people, who have been its guardians since time immemorial. We are looking at this map because the Salish Sea is very important to the nature of the Pacific Northwest!



Slide 2: The Salish Sea

We live here, in Whatcom County. The waters off of our beaches are unique because the Strait of Georgia, the Strait of Juan de Fuca, and Puget Sound all mix and meet in this area.



Slide 3: What makes the Salish Sea unique?

The Salish Sea is unique in many interesting ways! It is the second largest estuary in the USA after the Chesapeake Bay.

What is an estuary? Where a large river meets the ocean, mixing freshwater and saltwater. The mixed saltwater with freshwater is called brackish water.

Estuaries are important for filtering out pollutants before they reach the ocean. Many rivers feed this estuary, including the local Nooksack, Skagit, the Nisqually river further south, and the Campbell river in Canada.

The Salish Sea boundary crosses over from the USA to Canada, making it transnational, meaning that it crosses country borders. Both the USA and

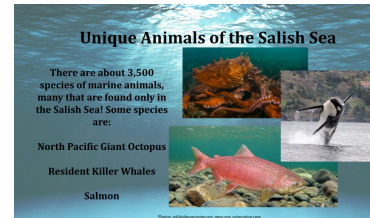


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and we recognize their stewardship since time immemorial.
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Canada have the responsibility to protect the Salish Sea, and they often work together to look after it.

Slide 4: Unique animals of the Salish Sea

The most amazing part of the Salish Sea is the diversity or variety of life that lives there! Many species are found here that are not found anywhere else in the world. The most famous are the resident killer whales, also known as Orcas. Other local species include salmon, octopuses, bivalves, dolphins, sea otters, rockfish, and many, many more! During this unit, we are going to focus on shellfish, which are an important type of animal because they are food for both us and many other animals. Shellfish are important because they clean the water by filtering their food.



Slide 6: Algae, Seaweed, and Plants of the Salish Sea

There are so many types of cool algae, kelps and plants that live in the Salish Sea! All of the types of plants and algae you see here are very important food for many creatures in the Salish Sea, including us!



Slide 7: Biodiversity

Can anyone explain what biodiversity is? Biodiversity is the variety of life in the world. In other words, the more species of animals, plants, and other living things there are, the more biodiversity in the world! We track different species by giving them names.

Every organism has more than one name; they have a common name and a scientific name. The common name is what we usually call living things, like an oyster or a clam. The scientific name helps to organize organisms into different groups. The 2-part scientific name for the Pacific oyster is *Crassostrea gigas* and the Manilla (steamer) clam is *Venerupis philippinarum*.

Biodiversity	
Pacific Oyster	Manila Clam
Kingdom: Animalia	Kingdom: Animalia
Phylum: Mollusca	Phylum: Mollusca
Class: Bivalvia	Class: Bivalvia
Order: Ostreoida	Order: Veneroida
Family: Ostreidae	Family: Veneridae
Genus: <i>Crassostrea</i>	Genus: <i>Venerupis</i>
Species: <i>C. gigas</i>	Species: <i>V. philippinarum</i>
Scientific name: <i>Crassostrea gigas</i>	Scientific name: <i>Venerupis philippinarum</i>

Slide 8: Threats to the Salish Sea

There are many threats to the health of the Salish Sea nowadays. Humans have caused a lot of problems for the sea, including pollution, ocean acidification, overfishing, changes to the coastline, and ship traffic, among others. You will learn more about these issues throughout these lessons. Fortunately many scientists, politicians, and industries are working on solutions! You can be part of the solution too. You can be a Salish Sea Steward by taking actions with your family and by learning about careers and jobs that you can do to help the Salish Sea and the creatures that live in this diverse habitat. During this unit, we will become Salish Sea stewards by participating in the Salish Sea Challenge.



Slide 9: What is a steward?

What is a steward? A steward is someone who takes care of something. There are all different kinds of stewards, but today we are going to talk about stewards of nature. Here are some famous nature stewards. **Can you name the scientists in the photos?**



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Left: Steve Irwin (zookeeper and conservationist)

Middle: Greta Thunberg (climate activist)p

Right: Dr. Burt Webber (marine biologist)

You probably don't know who the person on the right is! His name is Burt Webber, and he is a marine biologist who actually named the Salish Sea. He studied the Salish Sea and now teaches students about it at Western Washington University.

You don't have to be famous or have a degree to be a nature steward! We can all be nature stewards through our daily actions.

Slide 10: We can scoop our poop!

Rain washes pet and livestock poop down storm drains and into our waters. Harmful bacteria from *poo*-lution can make people and animals sick and cause harmful algae growth that affect the health of the Salish Sea.



Slide 11: We can be wildlife smart!

Feeding wildlife causes an increase in their population, and they make more waste in the area where feeding occurs. It can also make wildlife more aggressive, destructive, and once human food is taken away leads to starvation. Make sure to stay away from wildlife too. The more used to humans they get, the more they rely on us to survive.



Slide 12: We can be yard smart!

Your yard is a place that can be a minefield of pollution. Especially if you use fertilizers, pesticides, or have animals, but you can do more to help prevent pollution from your yard getting into waterways. Wash your car at car washes, plant native plant species in your yard, and don't put toxins down storm drains.



Slide 13: We can reduce our carbon footprint!

How much electricity and gas you use is a big factor in your carbon footprint. **What is a carbon footprint?** It is the total amount of greenhouse gases that are made through our actions. Greenhouse gases are harmful chemicals in the air that pollute our atmosphere and waters. The less electricity and gas that we use everyday, the smaller our carbon footprint will be! We can do this by carpooling, walking, or riding our bikes.



Slide 14: We can compost our food and yard waste!

Food and yard waste, otherwise known as organic waste, can be a big problem if it's not dealt with properly! When organic waste goes to a landfill, it breaks down and releases a harmful greenhouse gas called methane. When organic waste is composted, it breaks down naturally and can be used as climate friendly fertilizer.



Slide 15: We can reduce, reuse, and recycle!

We can reduce the amount of plastic (another harmful pollutant) that we purchase by switching them out for reusable alternatives. We can reuse



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plastics and other goods, like clothing, instead of throwing them away after the first time we use them. We can recycle materials like plastic, metals, and paper.

Slide 16: Let's Take the Salish Sea Challenge!

Introduce the Salish Sea Challenge, which is a series of everyday and common household habits that students can adopt to help conserve the Salish Sea, making them a Salish Sea Steward.



Worksheet: Go over the challenge with your students, then encourage them to take it home and go over it with their parents as “homework”. Ask them to fill out the table of actions, and count how many times they do it over two weeks. This is their homework project during the unit.

Scoop it, Bag it, Trash it! Carry bags to clean up your dog's poop when on walks. 	Learn about your system! Ask an adult if you are on septic or sewer. 	Plant native trees, vegetation or cover crops. 	Buy local products to support our farmers and reduce transportation. 	Turn off lights, appliances, and computers when not in use. 
Recycle! When you use plastic items make sure to clean and properly recycle them. 	Ride a bike instead of driving. 	Put high energy using items like water heaters on timers. 	Clean up! Pick up trash near a local stream or beach. 	Reuse! Get creative and find ways to give your items a second life. 
Properly dispose of toxic materials instead of putting them down the drain, in the trash, or on the ground. 	Reduce your plastics by finding a plastic free or reusable alternative to a single use item. 	FREE		Keep wildlife wild by not providing easy access to food or shelter that can cause populations to grow too large. 
Take public transportation instead of driving. 	Go to a car wash instead of washing your car in the driveway so soap doesn't go down the storm drains. 	Conserve water! Turn off the tap while brushing your teeth or take shorter showers. 	Buy something used instead of new to lower your carbon footprint. 	Clean up after your pets: scoop the poop, bag it, and trash it. 
Carpool instead of driving by yourself! 	Low carbon diet: emphasize nutrient-dense, plant-based foods! 	Bring a reusable water bottle instead of single use plastic. 	Walk instead of driving. 	Compost food waste. 

Date	Action	Number or tally times completed

Career Connections:

(Optional) Listen: [“The Salish Sea” by Holly Arntzen](#)

Optional Extensions: Cool Jobs: Aquatic Ecology

- [Garden of the Land and Sea Worksheets](#) additional materials
- Want to look at how kelp interacts with other sea creatures in the food chain? [Watch this video](#).
- Want more worksheets and coloring pages? You can print and work through this [seashore packet](#).
- [Sea Creature Yoga Video](#) - follow along with the yoga poses inspired by some of our favorite sea creatures, including kelp!