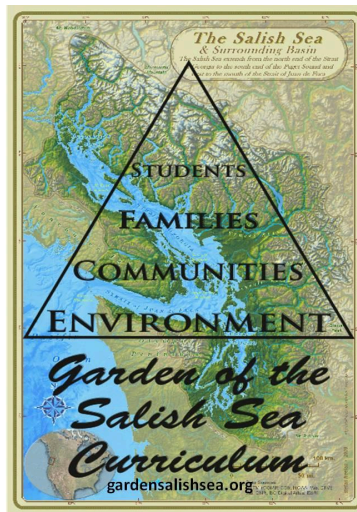
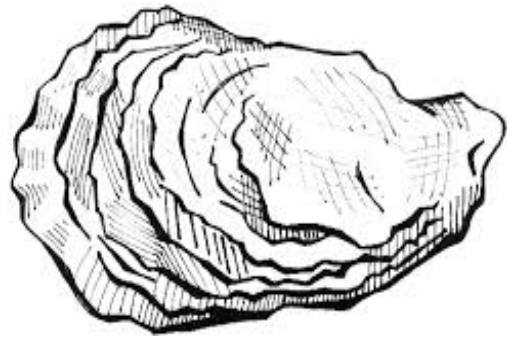


Teacher _____

Name _____

Gardens of the Land and the Sea



We acknowledge and respect the treaty rights of the Coast Salish Peoples to the unceded lands and waters of the Salish Sea and we recognize their stewardship since time immemorial.

Gardensalishsea.org 1st Grade

Garden of the Salish Sea Curriculum

Our Goal: Motivate students, families and communities in practicing stewardship of local watersheds by understanding shellfish, coastal ecosystems and human impacts. Inspire students to study and pursue science careers.

Our Mission: Support a healthy Salish Sea that can nourish us, through hands-on (K-12) education and community outreach.

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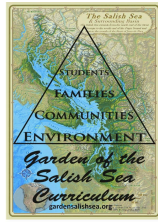
Vocabulary

- **Agriculture** – The growing and care of food.
- **Aquaculture** – The human production of aquatic organisms throughout part or all their lifecycle. Examples include oyster farms, fisheries, and hatcheries.
- **Biome** – A biome is like a big neighborhood where lots of different plants, animals, and even bugs all live together. Each biome has its own special climate, like whether it's hot or cold, and it's home to different kinds of friends, like trees, flowers, and animals.
- **Bivalve** – A mollusk with two parts of a shell attached by a hinge; Oysters, clams and mussels are examples.
- **Brackish Water** – Brackish water is like a mix of two types of water: it's not as salty as the water in the big ocean, and it's not as fresh as the water we drink.
- **Calcium Carbonate** – An inorganic salt that shellfish use to build their shells.
- **Carbon Footprint** – The total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions.
- **Climate** – The average weather conditions for a particular location over a long period of time.
- **Conservation** – A movement focused on protecting species from extinction, maintaining and restoring habitats, enhancing ecosystem services, and protecting biological diversity.
- **Crustacean** – An arthropod of the large, mainly aquatic group Crustacea, such as a crab, lobster, shrimp, or barnacle.
- **Ecosystem** – A biological community of interacting organisms and their physical environment.
- **Estuary** – The tidal mouth of a large river, where the tide meets the stream.
- **Filter Feeder** – A type of animal that gets its nutrients from sorting out tiny plants and animals (including disease causing bacteria and viruses) from water as it breathes. An oyster can filter up to 50 gallons of water each day!
- **Food Chain** – A food chain is like a lineup of who eats who in nature.
- **Food Web** – A food web is like a big dinner party in nature. It's a group of plants and animals that all depend on each other for food.
- **Foot** – A muscular organ found in all molluscs that they use to move around.
- **Gills** – Organs that allow fish and other aquatic animals to breathe underwater.
- **Habitat** – The natural home or environment of an animal, plant, or other organism.
- **Harmful Algal Bloom** – A sudden bloom of harmful algae caused by pollution.
- **Intertidal Zone** – The area along the shore of the oceans that is exposed during low tides and covered during high tides. Intertidal means between the tides. The intertidal zone is an important habitat for many animals including shellfish and juvenile salmon.
- **Invertebrate** – An animal without a backbone.
- **Mollusk** - Soft bodied invertebrates that often make a shell and appeared on earth 500 million years ago.
- **Nutrient** – Substances required by organisms to grow and reproduce.

- **Ocean Acidification** – The increase in acid in the ocean, causing shells to dissolve.
- **Organism** – An individual animal, plant, or single-celled life form.
- **Overfishing** – When too many fish are caught and it hurts the ecosystem.
- **Photosynthesis** – The process of turning sunlight, carbon dioxide, and water into energy and oxygen.
- **Phytoplankton** – Microscopic drifting microalgae that obtain their energy from sunlight by photosynthesis
- **Plankton** – Greek for wanderer, they are microscopic plants, animals or bacteria that are carried with the current. They provide a crucial source of food to larger organisms.
- **Predator** – An animal that hunts and catches other animals for its food.
- **Salish Sea** – Body of water that extends into both Washington State and British Columbia.
- **Scavenger** – An animal that eats other animals that have already died.
- **Shellfish** – Mollusks like clams and oysters and crustaceans like shrimp and lobsters that have shells.
- **Sea Star Wasting Disease** – A deadly disease that causes sea stars to waste away.
- **Sea Vegetable** – Seaweed that is safe to eat.
- **Species** – A class of living things of the same kind.
- **Steward** – Someone who looks after something other than themselves.
- **Substrate** – The surface upon which an organism (juvenile oyster) attaches itself.
- **Sustainable** – Taking what we need from nature without hurting it, so it can keep being wonderful for a long time.
- **Transnational** – Extending across national boundaries.
- **Vertebrate** – An animal with a backbone or spinal column.
- **Zooplankton** – Tiny free-floating animals.

Cool Facts about the Salish Sea & Shellfish

- The Salish Sea is named after the Coast Salish peoples who have lived along its shores for over 10,000 years. It includes the Strait of Juan De Fuca, the Puget Sound, the San Juan Islands, the Gulf Islands, the Strait of Georgia, and Hood Canal.
- Over 7 million people live within the watershed of the Salish Sea.
- Most oysters can make pearls with the same material that their shells are made of.
- There are 30,000 species of bivalves and more than 8,000 species of them are oysters.
- Shellfish have growth rings that record the seasons, like trees do.
- Olympia oysters, once abundant in the Salish Sea, are now scarce and efforts are now being made to bring them back.



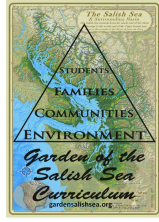
Lesson 1



Salish Sea Steward Challenge

Cross off the actions you already take to be a Salish Sea Steward! As you take other actions, cross them off too. Try to cross off as many boxes as you can! Whenever you take these actions over the next two weeks, record them on the next page. After two weeks, put your actions into this form: <https://forms.gle/AoeZXKQ91kWGUsd6>

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. 	Don't Strain Your Drain! Spread out laundry and dishwasher loads to avoid overloading the system. 
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. 



Lesson 2



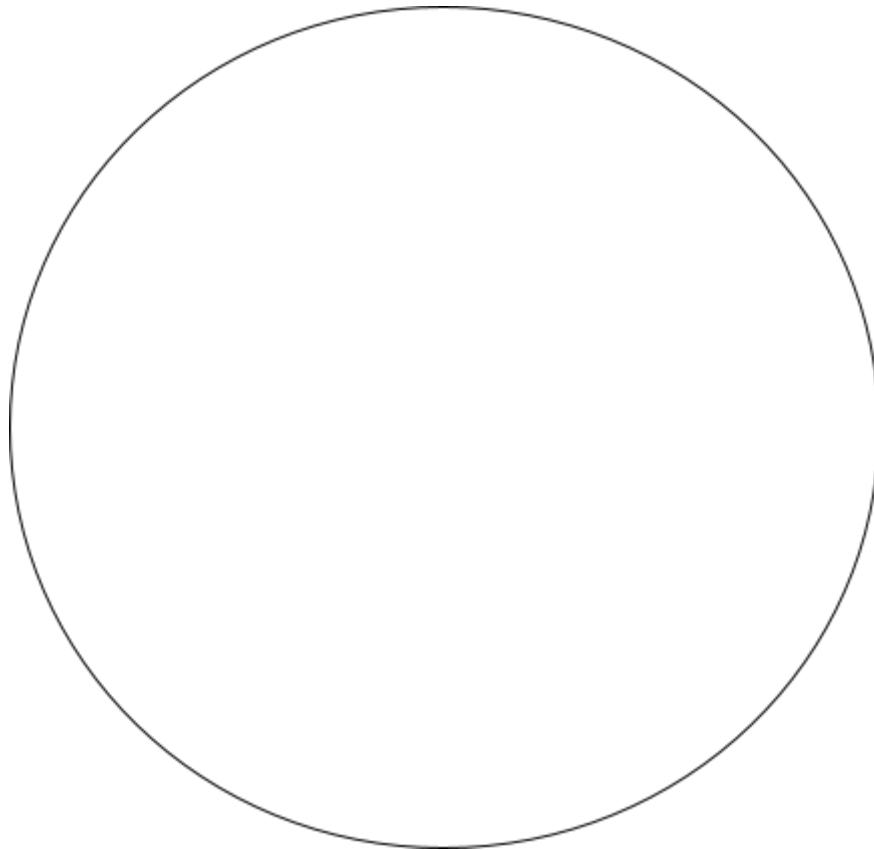
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Food Web Foundations

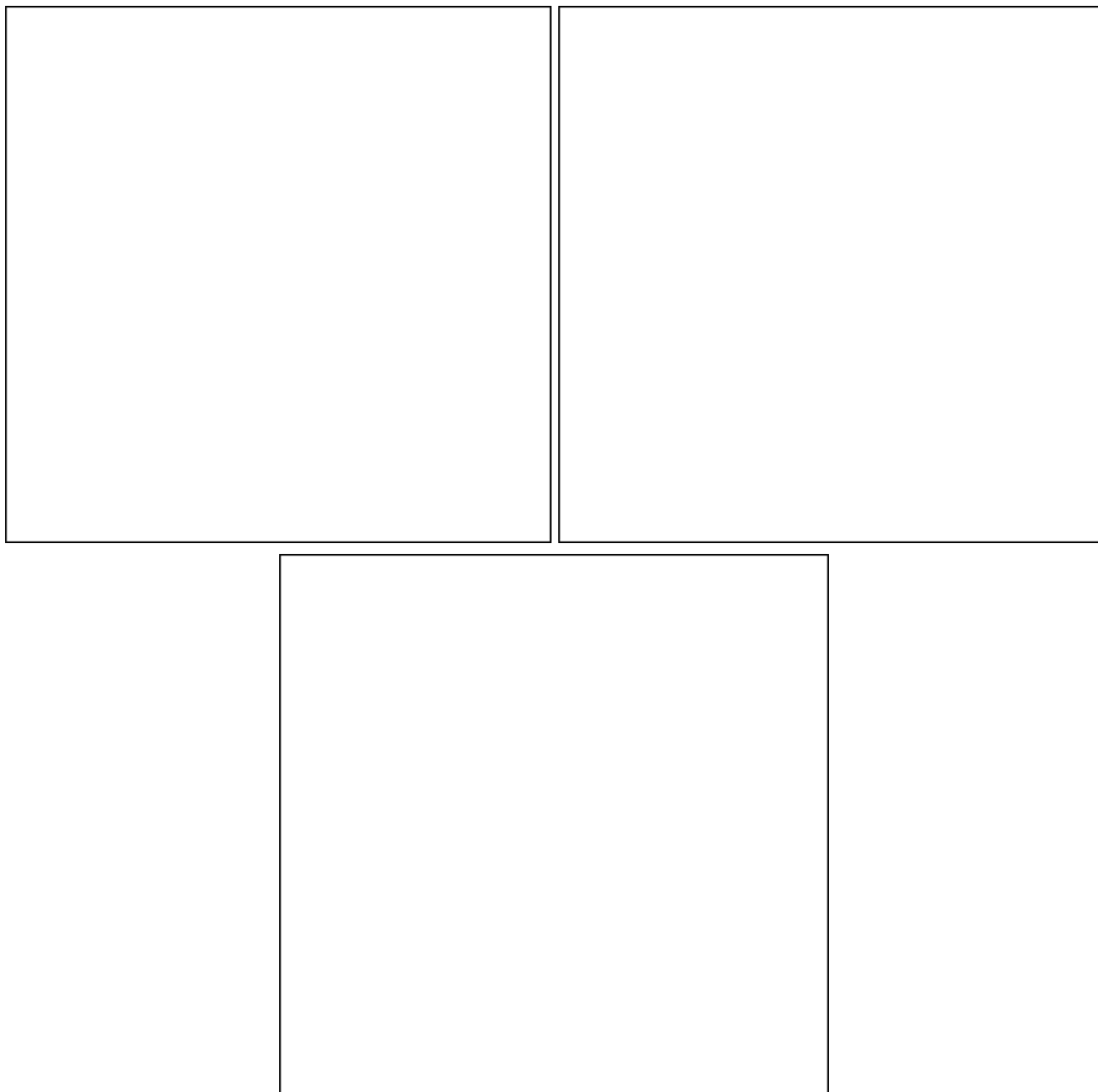
Remember that phytoplankton are the base of the food chain. Just like plants on land, phytoplankton are green because they make their own energy from the sun.

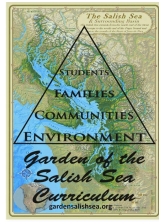
Look at what you can see through the microscope.

Draw it here:



Draw three marine animals that you think eat plankton:

Three empty rectangular boxes are provided for drawing. Two boxes are positioned side-by-side at the top, and a single, wider box is centered below them. All boxes are empty and have black outlines.



Lesson 3



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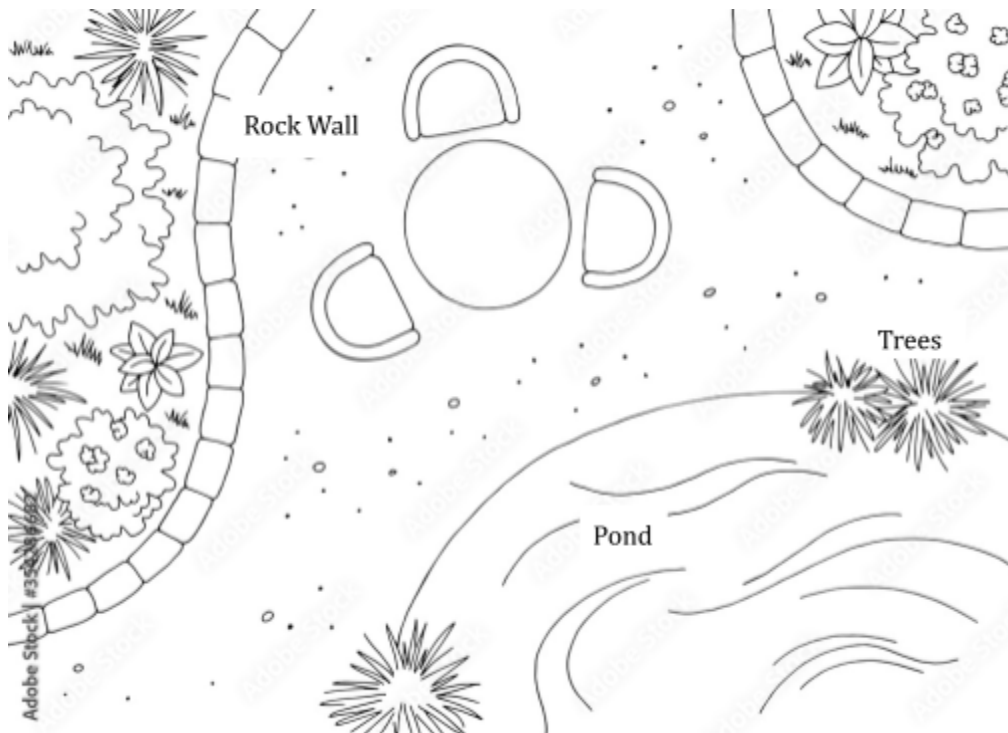
Gardens of the Land and Sea

Compare a clam garden to a home garden.

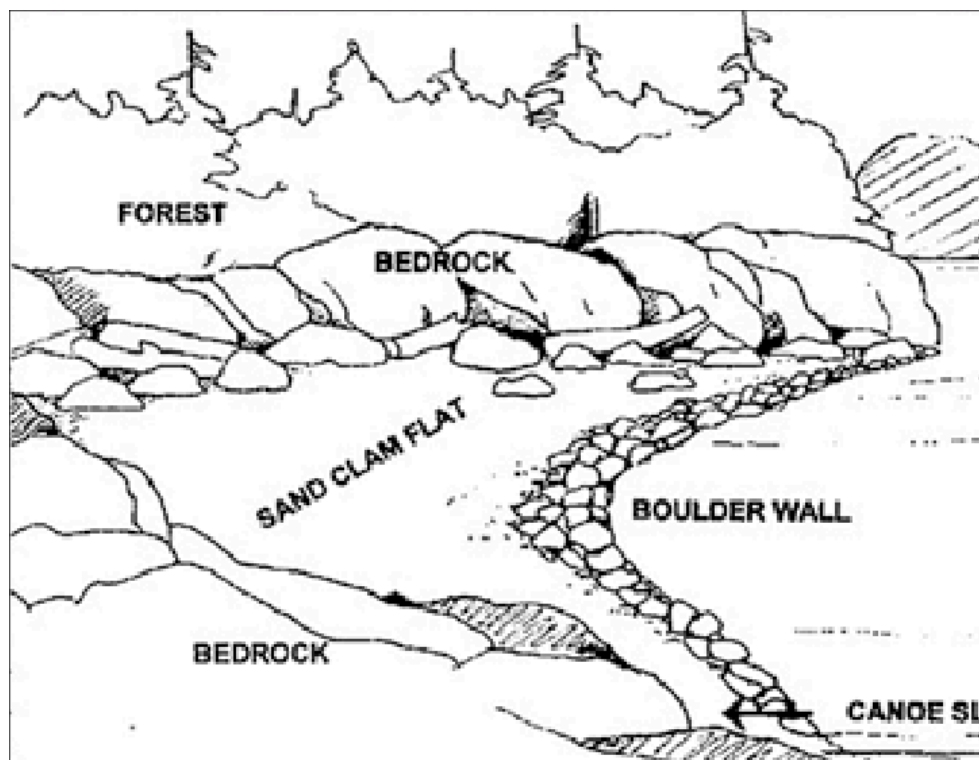
Make a circle around things that are different.

Make a triangle around things that are similar.

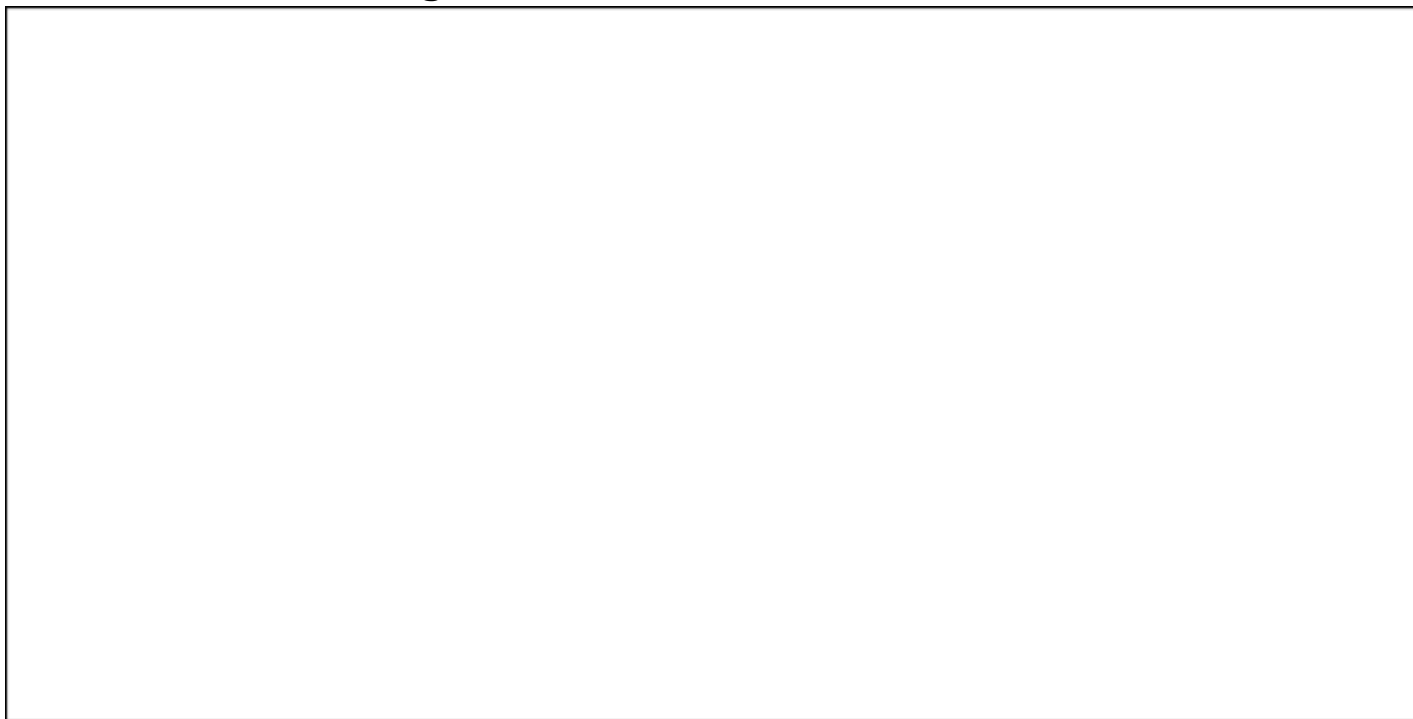
Home Garden

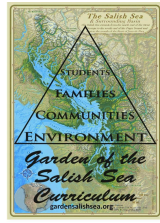


Clam Garden



Draw your own clam garden! Make sure to add clams and other marine animals in the drawing.





Activity 1



Eco-Plate

Seafood is yummy and good for us! However, sometimes how it is caught can hurt the planet. One example is ghost gear, which is any fishing gear that is not cleaned up by fishermen. Ghost gear can tangle up marine animals or be eaten, which harm them. Another example is harmful fishing practices, like bottom trawling, where fishermen drag a net along the bottom of the ocean. This can harm the seafloor and damage corals. Finally, when too many fish are caught, this is called overfishing. Fishermen can avoid overfishing by being sustainable. This means not catching too many fish (or other animals and plants in the ocean) so that there are fish left over to create baby fish!

Some local companies that are sustainable are:

Taylor Shellfish Farms

Lummi Island Wild

Drayton Harbor Oyster Company

Try some seaweed!

Now look at all the different kinds of seafood. Read about them!

Seafood Nutrition

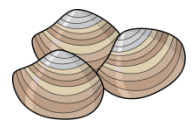
Fish



Fish are an important source of protein and omega-3 oils. Salmon are great for nutrition!



Shellfish

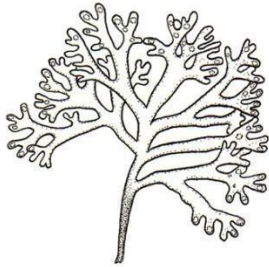


Shellfish are an important source of protein, vitamins, and minerals!

- Oysters
- Clams
- Mussels

- Scallops
- Crabs
- Shrimp
- Lobster

A STUDY OF RED ALGAE



Chondrus (Irish Moss)

Sea Vegetables

Sea vegetables are also known as seaweeds.

They are high in vitamins and minerals!

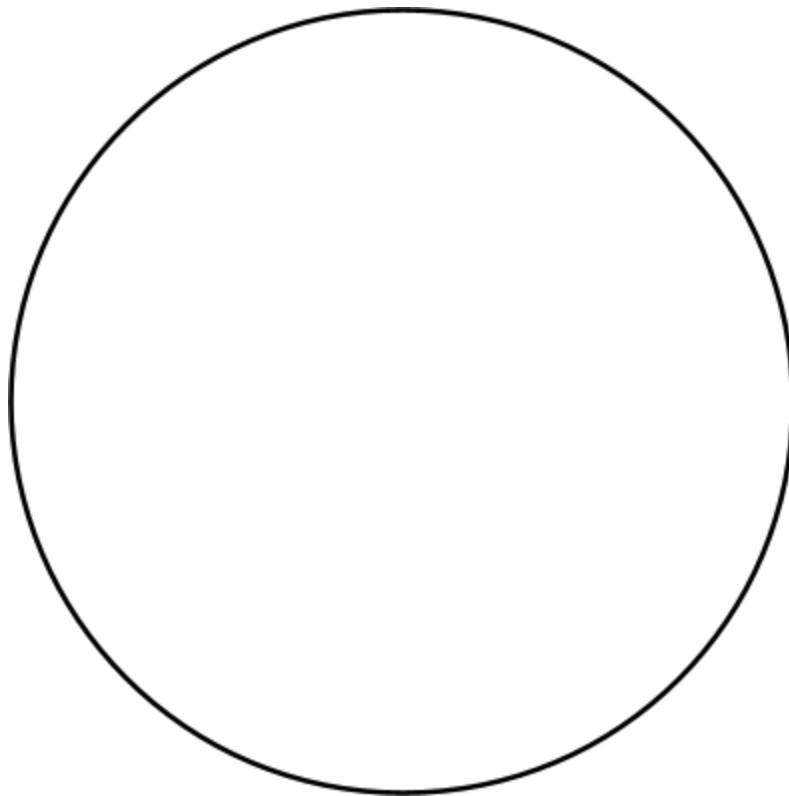
Seaweeds come in colors: brown, red and green



Choose as many ingredients as you want and draw a meal for yourself.

My Plate

Draw the food you chose for your seafood meal.



Healthy Seafood Choices:

Some seafood have contaminants that are unhealthy to eat depending on type and where they are harvested. Find your healthiest choices:

<http://www.kidsafeseafood.org/>

<http://www.kidsafeseafood.org/overview-search-by-species/>

Sustainable Seafood Choices:

Seafood Watch - <http://www.seafoodwatch.org/>

Your Choices Matter! The Monterey Bay Aquarium's Seafood Watch helps people make choices for healthy oceans. (*Look at your pocket guide to make the your best choice!*)

Sustainable seafood is fished or farmed in ways that have minimal impact on ocean health and ensure the availability of seafood for future generations.

Green means "Best Choice"

Buy first, they're well managed and caught or farmed in ways that cause little harm to habitats or other wildlife.

Yellow means "Good Alternative"

Buy, but be aware there are concerns with how they're caught or farmed.

Red means "Avoid"

Don't buy, they're overfished or caught or farmed in ways that harm other marine life or the environment.

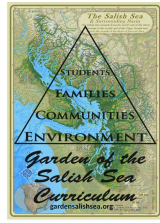
Food For Thought: Why Buy local?

<http://sustainableconnections.org/foodfarming>

Minimize CO2 emissions - local food requires less transportation and results in lower emissions - minimizes ocean acidification!

It's fresh!

Support local businesses - keeps \$\$ in your community!



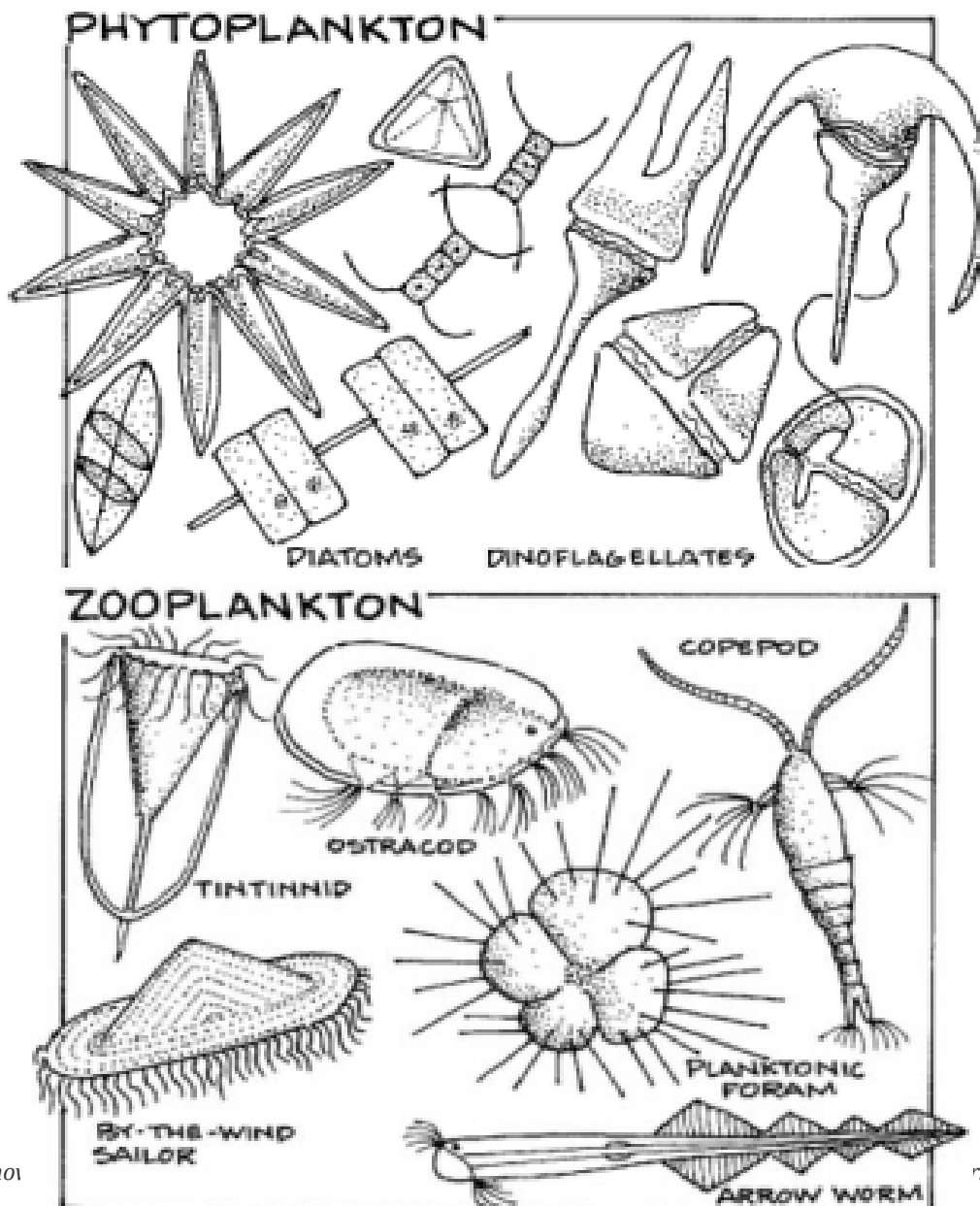
Lesson 4



Plankton

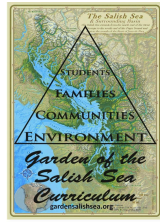
Plankton are microscopic living things that drift in the ocean. **Phytoplankton** get their energy from the sun like plants. **Zooplankton** are microscopic animals like baby crabs or jellyfish.

1. Color the different plankton.



We acknow

rs of the Salish Sea and we



Activity 2



Bivalve Identification Activity

Procedure

1. Sort the shells however you want! Do not use the guide yet.
2. Learn about the different kinds of bivalves.
3. Re-sort the shells using what you just learned.
4. Pick two shells to draw using the worksheet.

Bivalve Guide

Horse Clam



Eastern Softshell Clam



Blue Mussel



Oyster



Varnish Clam



Macoma Clam



Cockle Clam



Littleneck Clam



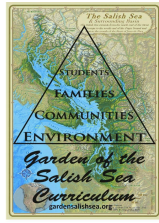
Butter Clam



Classroom Clam Shell Sort

Sort out the shells given to your group. Divide them up by common characteristics. In the space below, for each clam, record the attributes, and write a brief description with a diagram of the clam. Be sure to label any identifying features.

Description:	Drawing of Shell
Color: _____ Shape: _____ Type of Clam: _____ 	
Color: _____ Shape: _____ Type of Clam: _____ 	



Activity 3 1st Grade



Whale Jenga

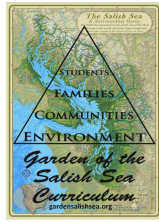
Playing the Game:

1. One person starts by picking a card and reading what it says.
2. Then, they have to do what the card says, but they can only touch the block they're working with, not the whole stack.
3. After they finish, the used cards go in a pile, and the blocks they used go in another pile on the side. Everyone takes turns doing this until the tower of blocks falls down or all the cards are used.
4. If you want to play again, just start over with new cards and follow the same directions. Have fun!

Review Questions:

1. What made you go "Wow!" while playing the game?

2. What did you find out about how people can change nature?



Lesson 5

1st Grade



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Hermit Crabs

1. Circle the correct word and write it on the line then color in the hermit crab.

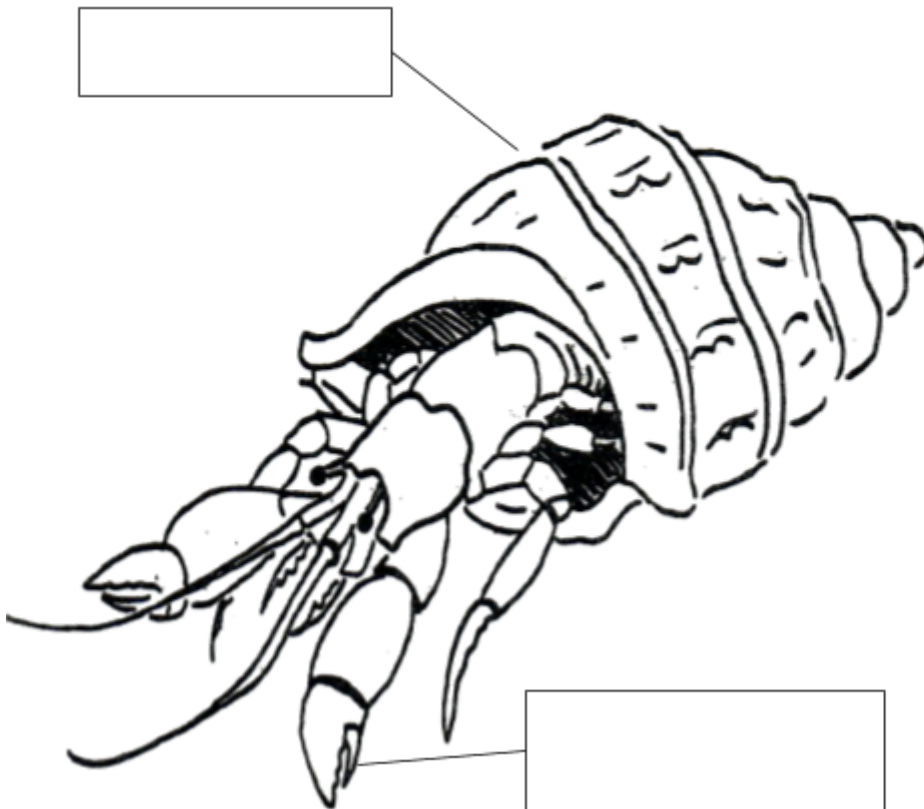
A. Hermit crabs are _____.

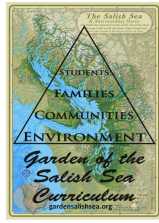
Plants Animals

B. Hermit crabs use _____ as their homes.

Shells Rocks

2. Use these words to label your picture: **shell**, **claw**. Color in your hermit crab!





Lesson 6 1st Grade



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Sea Stars

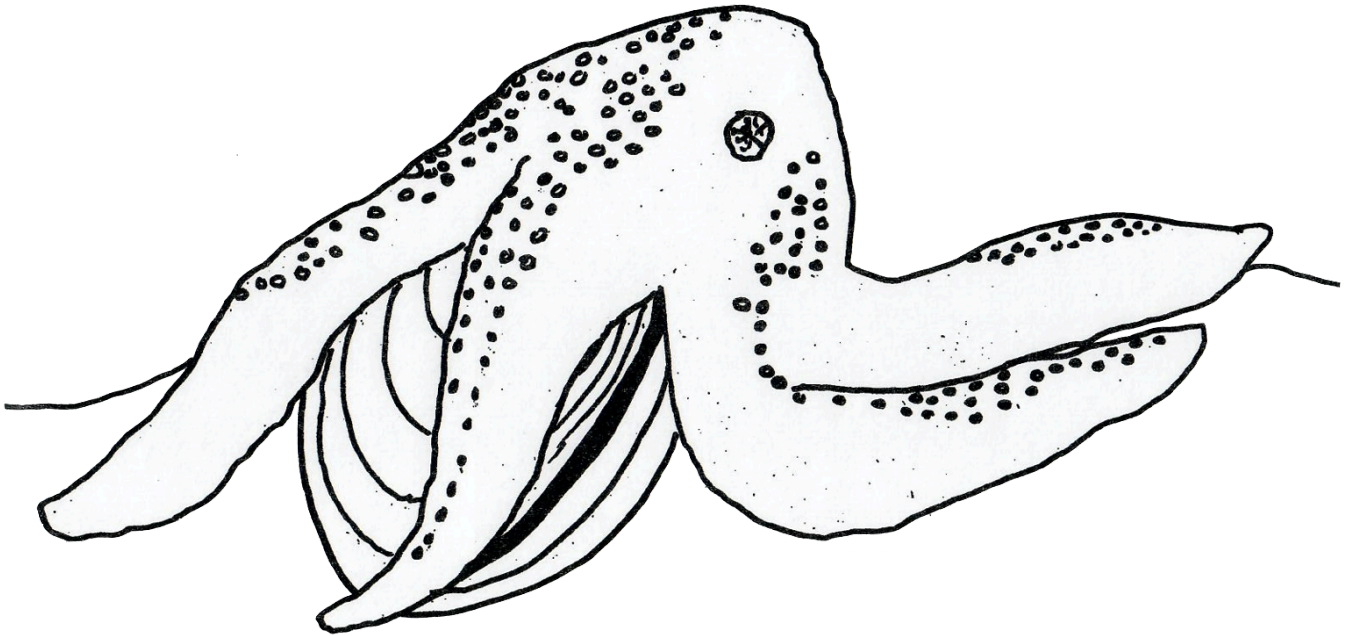
1. Circle the correct word and write it on the line, then color in the sea star and oyster!

A. Sea stars are _____.

Plants Animals

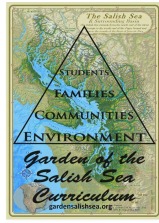
B. Sea stars use their _____ to move.

Tube Feet Arms



2. The sea star is _____ an oyster.

Hugging Eating



Activity 4

1st Grade



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Sea Life Poster

1. Go to this website:

<https://www.natgeokids.com/nz/category/discover/animals/sea-life/>

2. Pick an ocean animal that you like!

3. Fill out the poster on the next page with information about that animal.

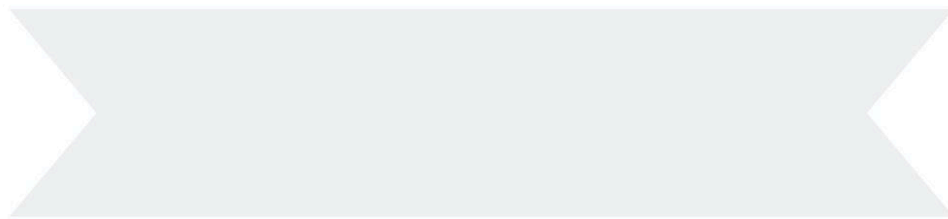
a. Find out what color this animal usually is!

b. See what this animal eats!

c. Draw the animal!

d. Write down any interesting facts that you found about this animal.

ALL ABOUT



Color

A large empty circle with a green outline, intended for a drawing related to the 'Color' label.

Eats

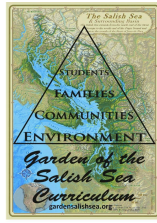
A large empty circle with a green outline, intended for a drawing related to the 'Eats' label.

Draw Me!

A large empty square with a green outline, intended for a drawing related to the 'Draw Me!' label.

Interesting Facts

A large empty rectangular box with a green outline, intended for writing interesting facts.



Field Investigations 1st Grade



Marine Field Notes

Researcher: _____ Weather: _____

Description: _____

Field Sketch:

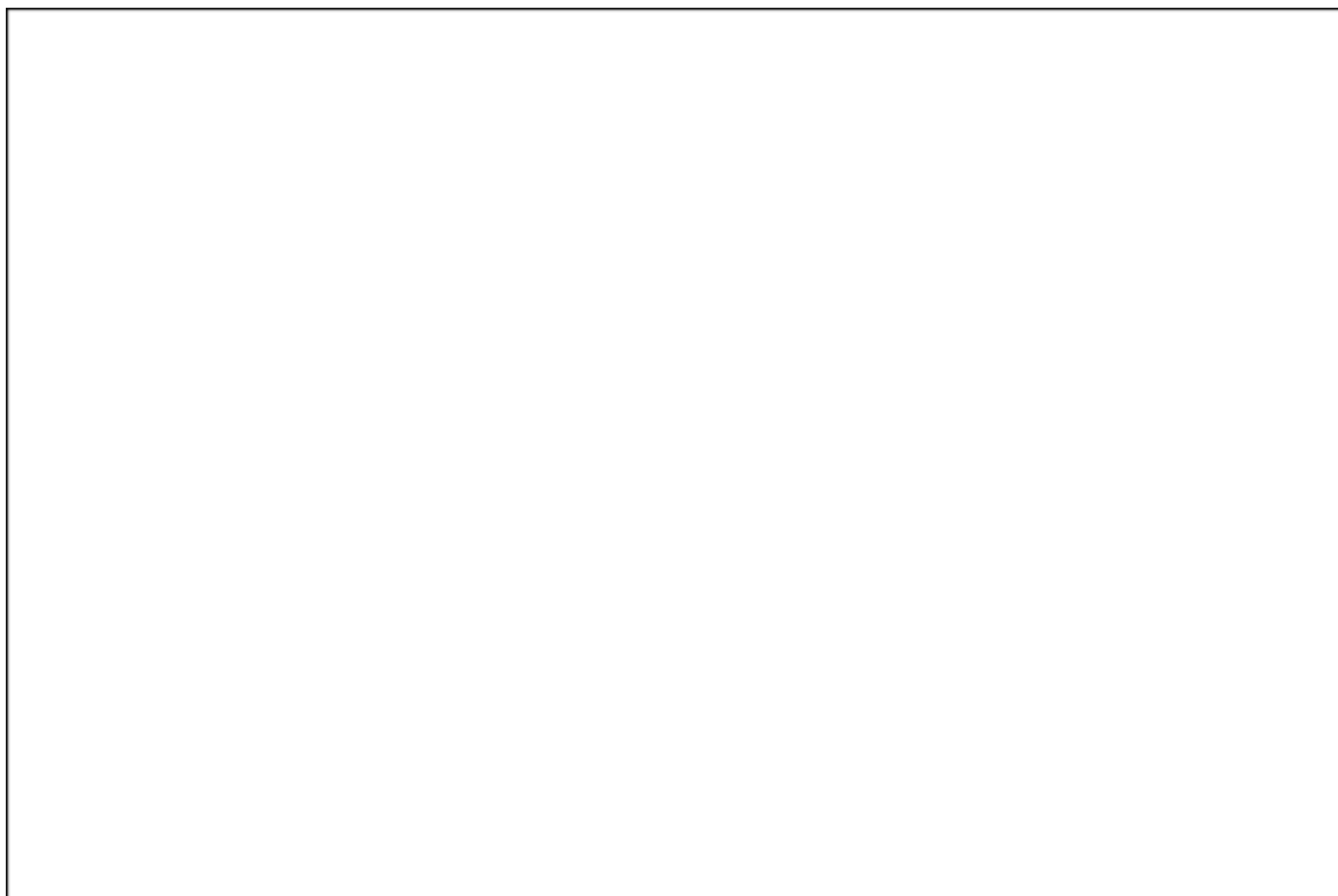
We acknowledge and respect the treaty rights of the Coast Salish Peoples to the unceded lands and waters of the Salish Sea and we recognize their stewardship since time immemorial.

Gardensalishsea.org 2024

Marine Field Notes

Description: _____

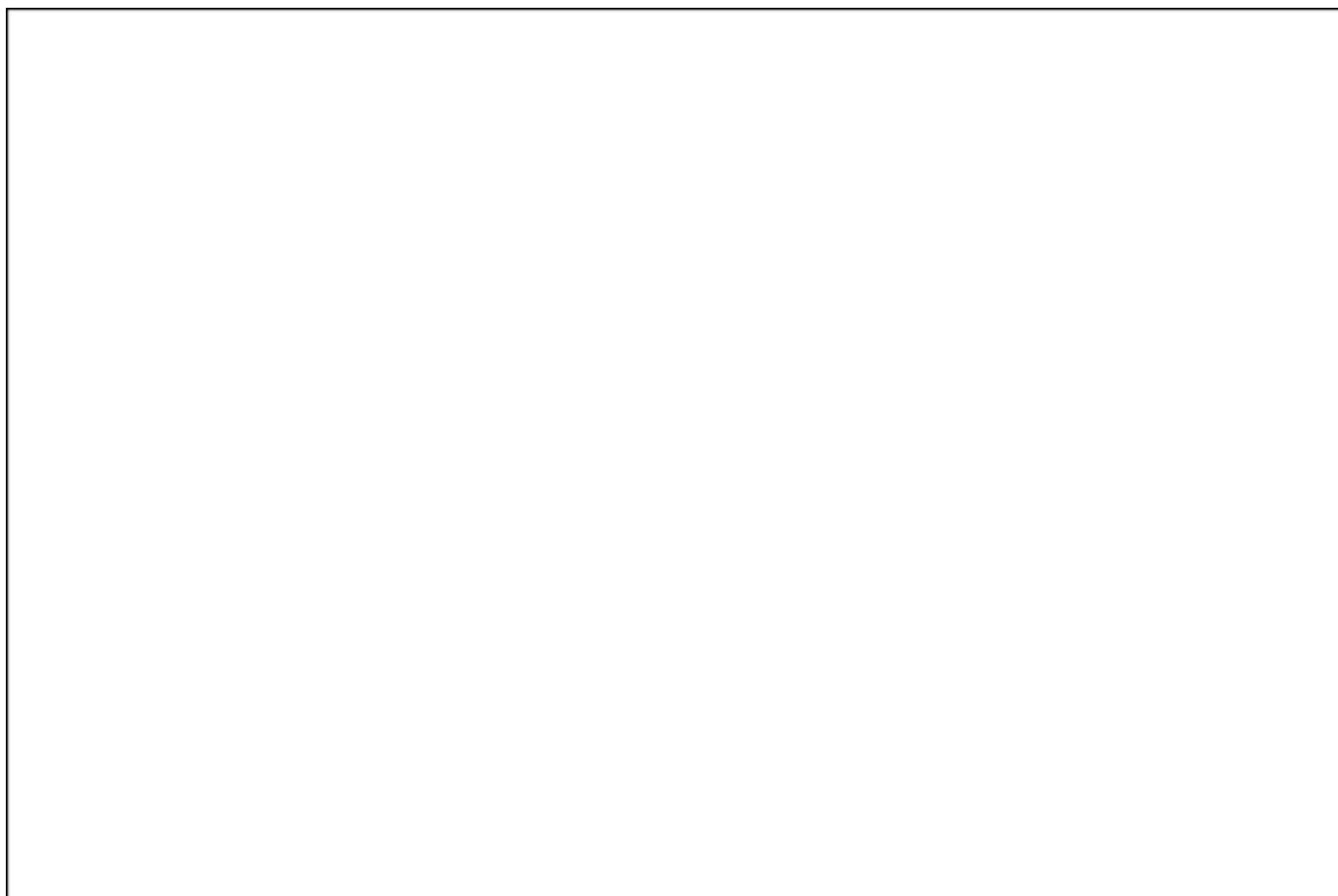
Field Sketch:

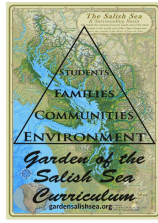


Marine Field Notes

Description: _____

Field Sketch:





Sharing and Reflection

1st Grade



Write down one thing you've done during this unit that makes you a Salish Sea Steward and draw a picture to share with your classmates. Use another piece of paper if you need more space. [Record your Salish Sea Challenge results!](#)

I am a Salish Sea Steward because....