

Family Field Trip: Beach

Exploration Guide

Subject

Intertidal Zone Field Studies and Stewardship

Objectives

Students will:

- Explore local intertidal zone
- Identify different organisms
- Identify adaptations and body parts that help organisms survive
- Relate organisms to the food web

Materials

- Marine ID Guides (can be printed or used digitally)
 - [NOAA Intertidal Zones Animals Field Guide](#)
 - [LiMPETS Field Guide](#)
 - [Seattle Aquarium Field Guide](#)
 - [GSSC's Clam ID Guide](#)
- A low tide (check the tides [here](#))
- Clipboards and pen
- Printed worksheets (multiple options included below)
- Optional: camera, notebook for drawings and notes.

Background

[CDC Guidelines](#)

When planning your family field trip please take into account any closures that are a part of the current [Stay Home, Stay Healthy order](#). The proclamation recognizes that spending time outside is essential to our physical and mental health, which gives us the opportunity piperolsenwork@gmail.com for beach walks, but please follow social distancing rules.

Beach etiquette

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

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When exploring your local intertidal zone there are some things to remember so that the ecosystem stays healthy:

- Check the tides - before you go look at the tides and choose to be at the beach during the lowest tide possible.
- Leave no trace - make sure to pick up after yourself and pick up any trash you may find while on the beach.
- Dress for the weather - we recommend that you wear layers, bring sunscreen, and have either boots or a change of shoes in case you get wet.
- Rocks are homes - only move rocks that are small enough to be moved with one hand. Carefully return rocks to the exact position you found them in.
- Take only pictures - do not remove anything natural from the beach. Seashells, rocks, and other materials on the beach are homes for critters.
- Walk carefully - there is life beneath your feet.
- Observe animals where they are and avoid picking them up. Touch animals gently with one wet finger.

For more information about what you may find on your trip you can watch [this video](#) by the Seattle Aquarium.

Procedure

- Give students an opportunity for free exploration of their intertidal zone. Use the ID guides provided to help identify organisms and keep track of how many you can find on the beach.
- Students can observe organisms closely and draw them. Pay attention to the different body parts of the organism and discuss how the different parts may be adapted to help it live in its environment.
- The intertidal ecosystem is interconnected in many ways. While on your beach walk, keep track of which organisms you find and how they may interact with each other in the food web.
- Take the [Salish Sea Challenge](#), which is a list of ideas for ways that you can have a positive impact on the health of your watershed, conserve energy and decrease the amount of CO2 emissions you are releasing. Read and make a commitment with your families to be stewards of the Salish Sea and practice watershed healthy habits. Use [this form](#) to report your Challenge actions.

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- Share with us! Send your pictures, drawings, or questions to us at garden.salishsea@gmail.com, on [our Facebook Page](#) or on <https://twitter.com/salishgarden>

Next Generation Science Standards

Performance Expectations		
<p>1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</p> <p>K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <p>5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment</p>		
Scientific and Engineering Practices	Disciplinary Core Ideas	Cross-cutting Concepts
Developing and using models Science models, laws, mechanisms, and theories explain natural phenomena Obtaining, Evaluating, and Communicating Information Constructing explanations and designing solutions	ESS3.C: Human Impacts on Earth Systems LS1.A: Structure and Function LS1.D: Information Processing LS2.A: Interdependent relationships in ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems ET S1.B: Developing possible solutions	Systems and System Models Scale, proportion, and quantity Patterns Structure and Function Influence of Engineering, Technology, and Science on Society and the Natural World

To download free field guides visit:

[NOAA Intertidal Zones Animals Field Guide](#)

[LiMPETS Field Guide](#)

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[Seattle Aquarium Field Guide](#)

[GSSC's Clam ID Guide](#)

Beachfront Scavenger Hunt

Try to find these five different kinds of clam shells and check them as you find them

- o Native Littleneck Clam
- o Manilla Clam
- o Varnish Clam
- o Butter Clam
- o Cockle Clam



Varnish clam
Nuttallia obscurata

Up to 3", with shiny brown coating on the outside, purple on the inside of shell.



Manila littleneck clam
Venerupis philippinarum

Average size is 1-2", up to 2 1/2". Oblong shell has concentric and radiating lines. May have colored, patterned shells. Siphon tips are split. Found to 4" below surface.



Native littleneck clam
Leukoma staminea

Average size is 1-2", up to 2 1/2". Rounded shell has concentric and radiating lines. Siphon tips are fused. Found 6-10" below surface.



Cockle clam
Clinocardium nuttallii

Prominent, evenly-spaced ridges which fan out from the hinge. Mottled, light brown. Can grow to 5". Found just below surface.



Butter clam
Saxidomus giganteus

Average size is 3-4", up to 6". Shells have no radiating ridges and are usually chalky-white. The siphon can be pulled into its shell. Usually found 12-18" below surface.

Did you find any other animals? If so, list them below.

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Field Notes

Choose an organism that you found and observe it up close, draw and label it too!

Researcher: _____ Time: _____ Date: _____

Location (be specific):

Common Name: _____

Scientific Name: _____

Observations: (size in cm, color, other adaptations and unique features):

What might this organism eat? _____

What might eat this organism? _____

What is one question you have about this organism?

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Field Sketch

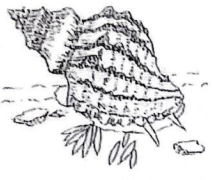




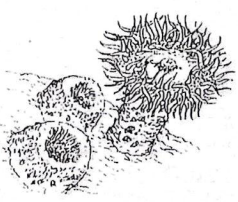

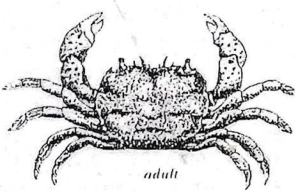
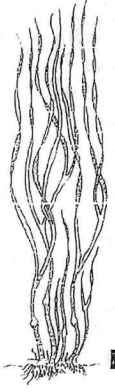

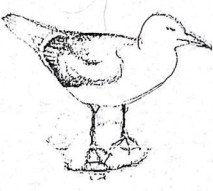
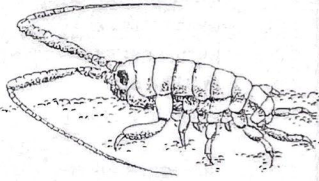
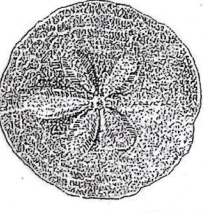
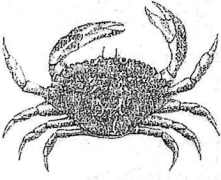
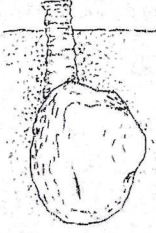
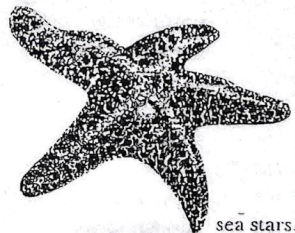
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Scavenger Hunt

			
Snail (whelk)	Heron	Barnacle	Sea Lettuce
			
Sandworm	Anemone	Plate Limpet	Shore Crab <small>adult</small>
			
Eelgrass	FISH Sculpin	Gull	Beach Hopper
			
Sand Dollar	Dungeness Crab	Horse Clam	sea stars.

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Scavenger
hunt

BEACH TREASURES
more on back

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Birch Bay Intertidal Species List

Birch Bay Intertidal Species List (most common)

*other very similar species may be found.

Page # in Sept guide	COMMON NAME	SPECIES NAME	Substrate
34	moonglow anemone, green burrowing anemone	<i>Anthopleura artemisia</i>	sand gravel
40	plumose anemone	<i>Metridium senile</i>	rock
46	sandworm	<i>Nephtys sp.* (many worm spp)</i>	sand gravel
86	pacific blue mussel, edible blue mussel	<i>Mytilus trossulus</i>	rock
96	Pacific littleneck, native littleneck clam (steamer)	<i>Protothaca staminea</i>	sand gravel
97	Japanese littleneck, Manila clam	<i>Venerupis philippinarum</i>	sand gravel
91	Nuttall's cockle; heart cockle	<i>Clinocardium nuttallii</i>	sand
96	butter clam	<i>Saxidomus gigantea</i>	sand gravel
92	Pacific gaper, horse clam	<i>Tresus capax*</i>	sand
95	bent-nose macoma, bent nosed clam	<i>Macoma nasuta*</i>	sand
88	Pacific oyster, Japanese oyster	<i>Crassostrea gigas</i>	rock
74	frilled dogwinkle, wrinkled whelk	<i>Nucella lamellosa</i>	rock
69	Sitka periwinkle, periwinkle	<i>Littorina sp.*</i>	rock
65	ribbed limpet, finger limpet	<i>Collisela digitalis*</i>	rock
66	mask limpet speckled limpet/masked limpet	<i>Tectura persona*</i>	rock
95	mahogany clam, varnish clam	<i>Nuttallia obscurata</i>	sand
56	mossy chiton	<i>Mopalia muscosa*</i>	rock
105	acorn barnacle	<i>Balanus glandula*</i>	rock
108	Volsnesensky's isopod, rockweed isopod	<i>Idotea wosnesenskii*</i>	rock
121	Dungeness crab	<i>Cancer magister</i>	sand, eelgrass
120	red rock crab	<i>Cancer productus</i>	rock, eelgrass
123	purple shore crab	<i>Hemigrapsus nudus</i>	rock
123	hairy shore crab	<i>Hemigrapsus oregonensis</i>	gravel rock
116	grainyhand hermit, granular hermit crab	<i>Pagurus granosimanus*</i>	sand
111	Sitka shrimp, transparent, broken-back shrimp	<i>Heptacarpus sitchensis*</i>	tide pool
109	beach hopper	<i>Traskorchestia traskiana*</i>	algae
135	purple sea star	<i>Pisaster ocraceus</i>	rock
133	mottled star	<i>Evasterias troschelii</i>	rock
139	eccentric sand dollar	<i>Dendraster excentricus</i>	sand
Fish			
152	tidepool sculpin	<i>Oligocottus maculosu</i>	tide pool
152	saddleback gunnel	<i>Pholis ornata*</i>	tide pool
	sand sole	<i>Psettichthys melanosticus*</i>	sand
Birds			
	glaucous-winged gull	<i>Larus glaucescenes</i>	
	northwestern crow	<i>Corvus caurinu*</i>	
	great blue heron	<i>Ardea herodias</i>	
Algae			
157	sea lettuce	<i>Ulva lactuca</i>	rock
161	sugar kelp	<i>Laminaria saccharina</i>	rock
168	sargassum	<i>Sargassum miticum</i>	rock
166	rockweed	<i>Fucus gardneri</i>	rock
173	Turkish towel	<i>Gigartina exasperata</i>	rock
169	red laver (nori)	<i>Porphyra sp.</i>	rock
Plant			
183	eelgrass	<i>Zoostera marina</i>	sand
	dwarf/Japanese eelgrass	<i>Zoostera japonica</i>	sand