



SCIENTIST IN RESIDENCE PROGRAM

Science Unit: *Fossils and the Changing Earth*

Lesson #: *Stanley Park Intertidal Field Trip*

School Year: 2016/2017

Developed for: Sir Sandford Fleming, Vancouver School District

Developed by: Kathryn Gregory Wodzicki (scientist); Gale Nyden and Monica Treanor (teachers)

Grade level: Presented to grade 6-7; appropriate for grades 1 - 7 with age appropriate modifications

Duration of lesson: 2 hours (field trip), plus travel

Notes: Pick a day/time for the field trip with a [low tide](#). It is preferable to go when the tide is falling. This field trip was designed for a rocky shore area, such as Second Beach or Lumberman's Arch in Stanley Park, or Kitsilano Beach.





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Objectives for students:

1. Observe organisms that live in the local intertidal zone. Many of these organisms are related to fossil organisms that the students studied.
2. Understand how adaptations help animals survive
3. Practice measuring and recording data in the field
4. Practice calculating averages
5. Practice analyzing and interpreting data

Materials:

- Students should wear: sturdy, waterproof footwear, and weather appropriate clothing: hat + sunscreen or jacket. They should also bring a water bottle and hand sanitizer.
- Each group of 3-4 students will need a bucket, a pencil, and a small ruler or caliper.
- Each group also needs an adaptation [checklist](#) and crab [data table](#). These can be printed on cardstock and kept in a pocket or used on a clipboard
- Teachers and helpers should bring Intertidal ID guides (see Bibliography for suggestions) and a first aid kit

Before the field trip:

- Tell students the rocks are slippery and barnacles are sharp. They will need sturdy, preferably waterproof shoes (no flip flops).
- For older students, have them read an introduction to the intertidal zone and the animals that live there, such as [Life At the Edge](#)
- Go over the [Intertidal Rules](#), to familiarize students with intertidal animal welfare practices. Emphasize that students must be gentle and respectful with the animals.
- If using calipers for the second beach activity, train students how to use them.

Field Trip:

Introduction:

- Introduce the Intertidal Zone. Where is it? How do conditions in this zone change from high to low tide?
- What is an adaptation?
- What are some of the adaptations that seaweeds and animals use to survive low tide? (Other themes can be used for other age groups)
- Review the [Intertidal Rules](#)

Science Activity 1: Adaption Survey

- Split students into groups of 3-4
- Describe the activity. Each group tries to find as many of the animals on the [checklist](#) as they can, and note the adaptation they use to survive low tide.
- For the wrap-up discussion, each group will nominate an animal that they think had the most interesting way of surviving or taking advantage of low tide.



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Science Activity 2: Measuring Crab Size (Credit to the Vancouver Aquarium Ecology Field School for this idea!)

- Students stay in groups
- Describe the activity. Each group collects ten green shore crabs in their bucket.
- For each crab collected, students determine the gender, then measure the carapace width using a ruler or caliper. They record this data on the [data table](#). Then they release the crab at the intertidal level where they found it.

Wrap-up discussion at beach

- Did students find all of the animals?
- Which animals did they think had interesting adaptations?
- What are ways we can help the animals of the intertidal zone?

Back in Class:

- Using the data they recorded for the green shore crabs, students calculate the average size of the male and female crabs using [this table](#)
- Then the groups can pool their data as a class using [this table](#)
- Did the class find more female or male crabs? Were the males and females the same size? Or was one gender bigger?

Vocabulary:

Adaption	A feature or behaviour of an organism that helps it survive in its environment
Carapace	Hard covering of a crab or other crustacean
Habitat:	Natural home or environment of a plant or animal
Intertidal zone:	The zone between the highest high tide and the lowest low tide
Invertebrate:	An animal without a backbone; about 97% of animal species
Organism:	A living thing

Extensions

- Students could do a [biodiversity survey](#) at the beach.
- Students could compare species or adaptations found in different ecosystems, for example, rocky shore vs. sandy shore.
- Students could do a [Great Canadian Shoreline cleanup](#), and tally the garbage that they find.



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References

1. Byers, Sheila. 2009. Explore the Rocky Shore at Stanley Park. Vancouver Natural History Society. Online version: <<http://naturevancouver.ca/sites/naturevancouver.ca/VNHS%20files/4/>> Nature_Vancouver_Intertidal_Pamphlet.pdf [intertidal ID guide]
2. Clarkston, B., 2015, A Field Guide to Seaweeds of the Pacific Northwest. Harbour Publishing (Laminated pamphlet)
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4. Harbo, Rick, 2009, A Field guide to Seashells and Shellfish of the Pacific Northwest. Harbour Publishing (Laminated pamphlet).
5. McDaniel, M.G., 2011, A Field Guide to Sea Stars of the Pacific Northwest. Harbour Publishing (Laminated Pamphlet).
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