

Lesson 2: Aquatic Microscopy

Subject

Microscopy

Objectives

The students will:

- Observe the relationship between water quality and organism populations

Materials

- Microscopes (students work in pairs)
- Slides and slipcovers (including well slides)
- Samples in large containers
 - Blaine Harbor
 - Plankton tow
 - Oysters
 - Skullman Pond
 - Water
 - sediment
 - Cain Creek
 - Water
 - Sediment
 - Others (depending on availability)
 - GSSC microscope and computer with phytoplankton sample
 - Geoduck velligers
 - Frog eggs
 - Prepared slides
- Sample collection
 - 3 large tubs
 - Nets
 - Acrylic tanks
 - Plankton tow



- o Buckets for sediment
- o Cooler (for oysters)

Size/setting/duration

Full class in lab groups/indoors/90 minutes

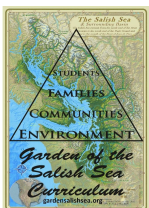
Background

In this lesson students begin to learn about the vast array of organisms that live in their watershed - even if they can't see them with just their eyes! By observing three different water bodies students can compare and contrast the different organisms found in them and interpret why these trends might exist.

Procedure

Before GSSC comes into the classroom teachers will have given students basics of microscopes and separate the students into lab groups.

- (20 min) Water Quality Powerpoint
 - o Start this lesson by taking the class through the introductory powerpoint
- (60 min) Microscope classwork
 - o The samples should be arranged around the room by site (Skallman Pond, Cain Creek, Blaine Harbor, other). The expectation is for students to diagram one organism from each of the water bodies. Diagrams should include labels such as waterbody, scale, magnification, and organism identification when possible.
- (10 min) Clean up/wrap up
 - o Wrap up: Sketch a map-diagram and label/describes differences between sites.
 - o Discussion of Indicator organisms. How did the organisms you see fit in with your watershed?
 - o What biotic and abiotic factors could define what can live in a pond vs a creek or a bay.
 - o Revisit Salish Sea Challenge
 - o Discuss opportunity for student engagement. (can include community clean-ups, restoration projects, etc.)

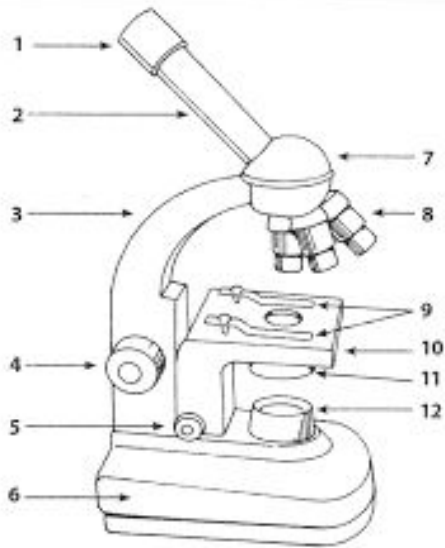


Next Generation Science Standards

Performance Expectations		
<p>MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]</p> <p>MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]</p>		
Scientific and Engineering Practices	Disciplinary Core Ideas	Cross-cutting Concepts
Obtaining, evaluating and communicating information	LS1.A: Structure and Function LS1.C: Organization for Matter and Energy Flow in Organisms LS2.A: Interdependent Relationships in Ecosystems	Patterns

Graphics





Worksheet (in student's science notebook)

- Page of organism drawings (one drawing per waterbody)
 - Draw Scale
 - Label magnification
 - Label water body
 - Label organism
- Include scientific name of one organism displayed
- Describe the differences they found between the three sites

