

## Activity: Seining

**Grade Level:** Grade 5

**Major Emphasis:** Salt Water Habitat

**Major Curriculum Area:** Science



### Related Curriculum Objectives:

Refer to Outdoor Education Curriculum Matrix 3-5:

Career Education

Mathematics

Language Arts

Social Studies

### Program Indicator:

The students will compare/contrast habitats and adaptations of plant and animals in salt water (brackish) habitat.

### Student Outcomes:

The student will be able to:

- Collect fish using a seine net.
- Identify the physical adaptations of fish.

### Readiness:

1. Complete the fifth grade Unified Science Unit - Aquatic Biomes.

2. Introduce vocabulary:

habitat

depth

pH

zooplankton

clarity

variables

salinity

nekton

micro-organisms

wetland

estuary

sediments

phytoplankton

macro-organisms

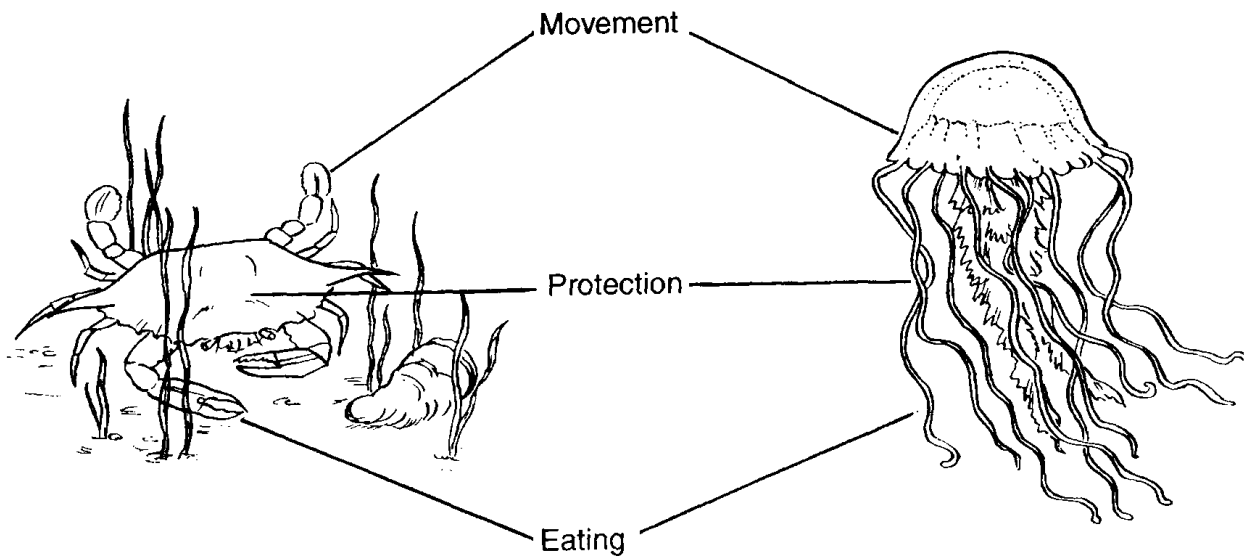
brackish

3. Discuss basic ingredients for life: food, light, air and water.

4. Discuss variables that affect the plants and animals living in various environments.

**Activity Instructions:**

1. Have kids put on waders and make collections using a seine net (see Procedures for Seine Hauls – Supplement A on the next page) and dip nets.
2. Repeat seine procedure as time allows.
3. Identify the organisms collected by using the fish key cards. Record and sketch on chart (refer to Supplement C).
4. Observe and discuss the adaptive features which enable the macro-organisms to move, eat and protect themselves (refer to Supplement B1, B2, B3 and Figure 4).



**Figure 4: Examples of Adaptive Features**

## Procedure for Seine Hauls

### Student Outcome:

The students will be able to:

- collect fish with a seine net
- identify the physical adaptations of fish

### Materials:

6 pairs of waders	fish cards	fish anatomy poster
PFDs for all students and adults	aerator	bag of markers and cloth
1 seine net	outcome poster	hand sanitizer
2 dip nets	tally poster	clipboards and pencils
3 plastic aquariums	fish adaptation poster	(optional)

### Preparation:

1. Gather materials from the boathouse and take them in the cart to your waterfront location.

### Procedures:

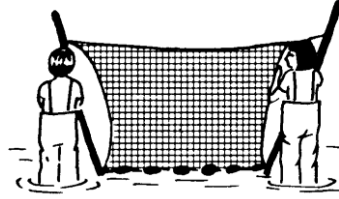
1. Seat students on the wall and welcome them to the seining activity. Have a student read the outcome poster. Have them define adaptation: a structure or behavior that helps a living thing survive in its environment.
2. Review safety rules for waterfront activities (i.e., No unsupervised students allowed at the waterfront. All students and adults must wear PFDs on pier and in the water. To avoid the drop off, seine only in front of or to the right of the pier.)
3. Briefly discuss the anatomy and adaptation posters.
4. Go over the proper method for hauling the seine net, including the need for cooperation between the two people using the net and the students on shore. Demonstrate and practice seining on land.
5. Have six students remove shoes and put on waders and PFDs. Two students will begin with seining, two will begin with dip nets, two will be ready to seine. Rotate duties among students. Have students use dip nets among grasses.
6. Put specimens in aquariums with river water (and aerator if you want to save something to show to the other groups.)
7. Identify and tally specimens and adaptive features.
8. Discuss Chesapeake Steward question on the back of the outcome poster.

### Clean-up (at the end of the day):

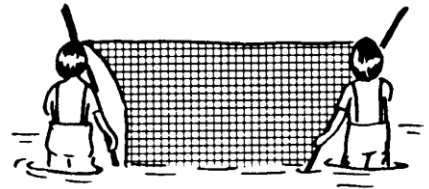
1. Take the net out into the water and stretch it across the surface to remove sand and debris.
2. Roll up the seine net. Bring it and all materials back to the boathouse. Hang the seine net on the outside of the boathouse. Return waders to wader racks. Leave all other materials in the cart.

## Using the Seine Net

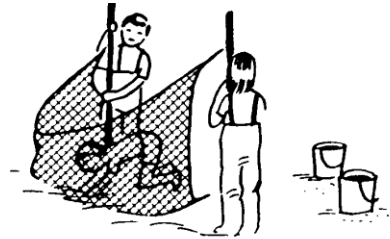
**Step 1.** Two students carefully unroll the seine net so the weighted side is in contact with the river bottom.



**Step 2.** Students walk out to hip-deep water, bumping poles along the bottom and tilting poles about 30 degrees toward themselves.



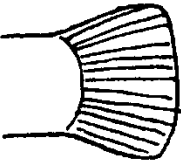
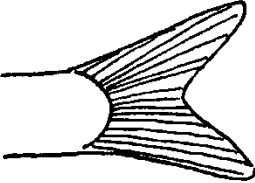
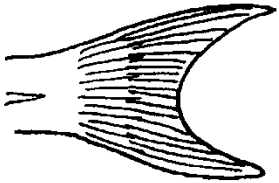



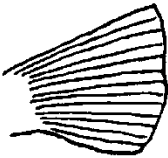





**Step 3.** While student A stands still, student B will walk in an arc around student A, still bumping the pole on the bottom until both are facing the shore.



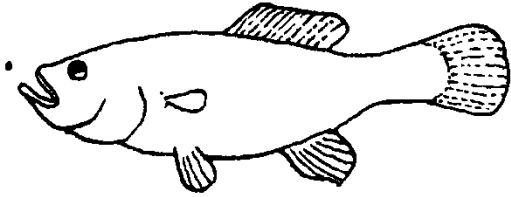
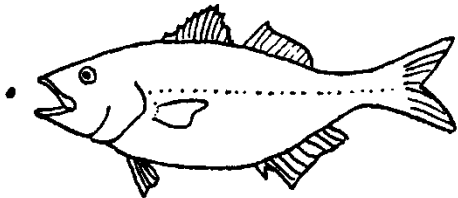
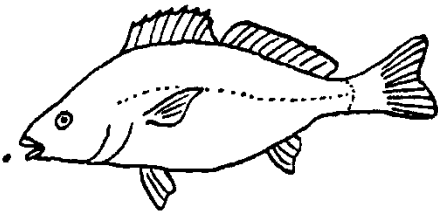
**Step 4.** The students walk slowly to shore, keeping the weights on the river bottom. As the students reach the shore, a third student grabs the net bottom so collected animals will not be lost.



### Fish Adaptations: Fins

Speed	Slow	Medium	Fast
<b>Caudal Fin (Tail)</b> Main thrusters			
<b>Dorsal Fin</b> Keeps fish upright			
<b>Pectoral Fin</b> Turns and stops			
<b>Body Shape</b>			

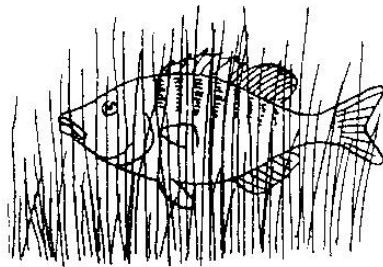
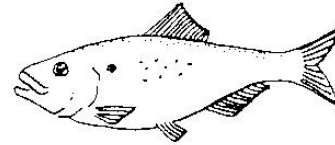
## Fish Adaptations: Mouth

<b>Position of Fish Relative to Its Food</b>	
	<b>Food is above.</b>
	<b>Food is head on.</b>
	<b>Food is below</b>

## Fish Adaptations: Defense

*Fish may rely on:*

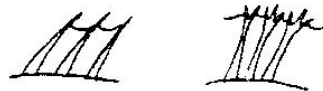
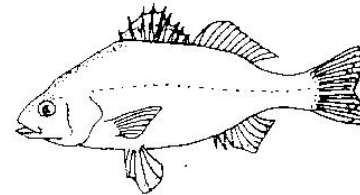
1. out-running enemies.
2. out-maneuvering enemies.
3. hiding in crevices or sediments.



*Camouflage:* Markings, colors and shapes help fish blend with their surroundings.

*Lateral Line:*

Some fish have this line, between the gill covers and the tail, which senses vibrations (movements) in the water.



*Spines:*

When locked in place, increase the size of a fish. Hard, clear *spines* can be in combination with softer flexible *rays* in any of the fins on your fish.

# Macro-Organisms

Supplement C

## Salt Water Adaptation



Name of Organism	Sketch of Organism	Adaptive features which enable the animals to move, eat and protect themselves