

Trout in the Classroom: Stream Habitat Hike Worksheet

Name(s):

Date/Time:

Stream Name/Location:

Weather Conditions:

Stream Appearance:

Stream Zone Habitat Elements As you hike along the stream, look at each of these elements of the habitat. Use your best judgment, and circle most appropriate response for each. When you add up points, you will have Score (or "Index") of the stream's health.

	<u>0 Points (Thumbs down)</u>	<u>1 Point (So~so)</u>	<u>2 Points (Thumbs up!)</u>
Stream Bed:	Mud or Concrete	Bedrock/some stones	Varied, Roots
Stream Depth:	All Shallow	Uniform Depth/Flow	Pools & Riffles
Stream Water:	Murky	A Little Clear	Crystal Clear
Forest Cover/Shade	None/grass	Less than 50%	>50% Shade
Ground Cover	Bare Soil	Lawn, grass	Leaf Litter
Plant/Tree Variety	1 or 2 Species	Just a Few Species	Many Species
Animal Life	None	Rare	Abundant
Insect Life	None	Rare	Abundant
Pollution Sources	Many	Few	None
Eroding Banks/Slopes	Many	Few	None

Add up your Stream Score and share with your class:

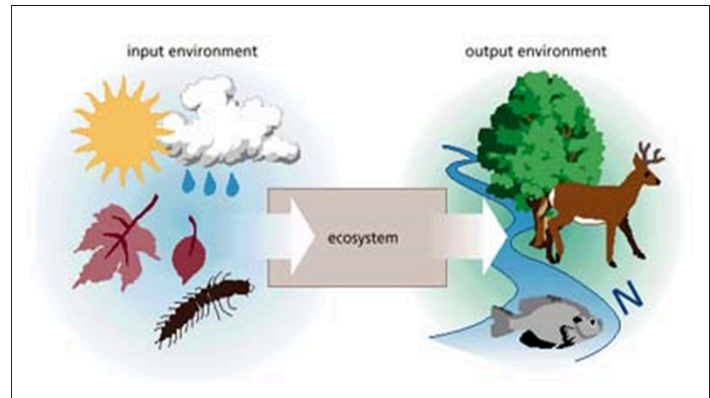
Interpretation Questions:

Based on your observations and your score, do you think the stream habitat will help your trout survive? Why or why not?

On a separate paper, write a paragraph interpreting your observations and supporting your opinion about the stream habitat.

Stream Zone Habitat Elements Study Guide - Descriptions

As you hike along the stream, remember that the "Stream Zone" or "Riparian Zone" around the stream protects and supports life in the stream, itself. Here are some helpful hints to help you know what to look for.



Stream Bed: Look into the stream. Is the bottom all mud, or solid rock? Would young trout have opportunities to hide or seek shelter? Will their camouflage work?

Stream Depth: Are there cool deep pools to provide resting spots, and also fast moving water that might provide food and fresh, moving water?

Stream Water: Does the water appear to be clean and clear? If not, what is causing it to be cloudy? Is this a temporary problem?

Forest Cover: Shade keeps the water cool, and leaves provide food for stream insects that trout love to eat. Tree roots also hold soil in place. What do you think?

Ground Cover: When a raindrop hits the ground, will it hit dead leaves ("duff") or moss? Or, is it likely to land in bare soil and loosen up mud to wash into the stream?

Plant/Tree Variety: A variety of plants provides offers more cover and food for more different animals. Different types of leaves and fruits ensure food for animals and insects all year long.

Animal Life: Abundant signs of animal life indicate a healthy habitat. Use your eyes and your ears to observe life both in and around the stream.

Insect Life: Insects are the most abundant animal life in the stream zone and provide food for many animals, including fish. Don't forget to look under rocks in and along the stream.

Pollution Sources: You can't always see pollution, but you find possible sources. Are there roads nearby that might be sources of salt or oil or litter? Are the drain pipes or junk piles?

Eroding Banks/Slopes: Look for evidence of mud or rocks washing into the stream. Can you see landslides? Exposed tree roots? Are the deposits of mud or sand in the stream?

Let's practice observing the Stream Zone ("Riparian Zone")

The picture below is from the West Branch of Cayuga Inlet, near Newfield Central School. This is where students in Newfield Middle School release their trout each year. Here is their assessment from 2019. **They got a total of 16 out of 20 points.** That's pretty good. Do you agree? Try this with a picture of your trout release site, [\(link tbd...\)](#)

Stream Bed (1): There are rocks of all different sizes and shapes. 2 points/Thumbs up!

Stream Depth: There are shallow runs and deeper pools under the tree roots. 2 points!

Stream Water (2): The pools look clear, 2 points!

Forest Cover (3): This stream is surrounded by trees. More than half of the site will be in shade during the summer. Can you see tree roots holding the stream back? 2 points!

Ground Cover (4): Soil is mostly covered by leaf litter and bushes/roots. 2 points!

Plant/Tree Variety: If you look closely, you will see ashes, sugar maples and birch along this stream, as well as many bushes and spring wildflowers. 2 points!

Animal Life: We could hear bird, but saw no animals/tracks. 1 point.

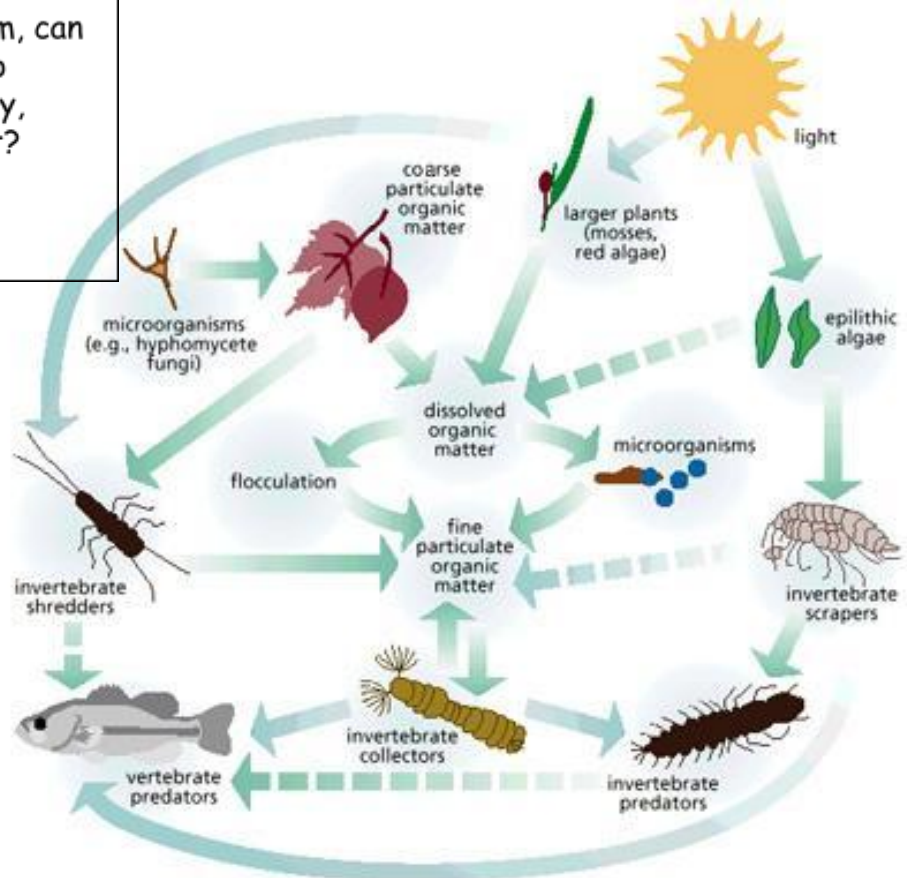
Insect Life: A visit to the stream would show us many insects in and near the stream. 2 points.

Pollution Sources (5): Can you see litter and junk below the barn in the background? There is also a parking lot and road up there that may be sources of pollution. 1 point.

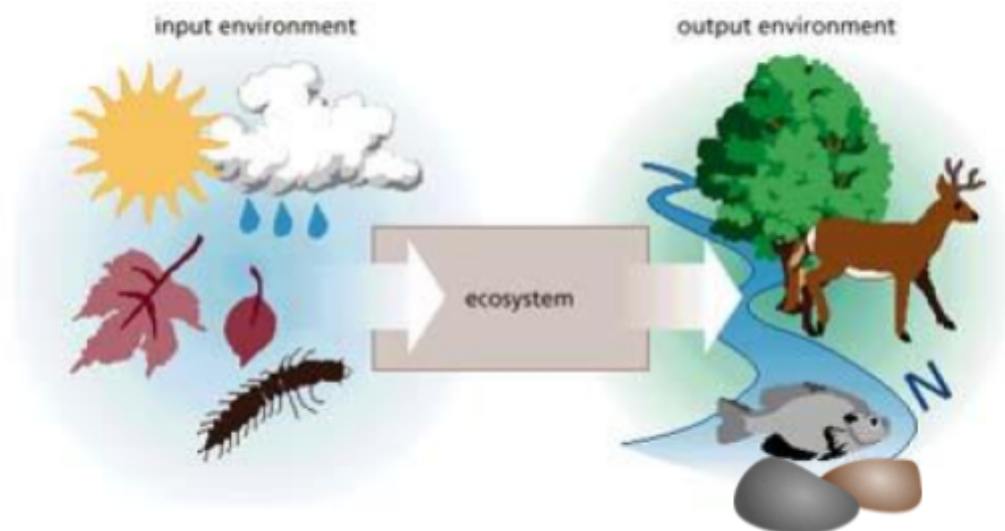
Erosion: Exposed tree roots are visible, and trees are falling. This stream is eroding its banks!. The steep, bare bank below the barn looks like a landslide! Thumbs down, no points!



In this food web diagram, can you find the relationship between the sun's energy, plants, insects and trout? Trace the connection!



Atmosphere, Geosphere,
 Hydrosphere, Biosphere
 is part of the



For Teachers/Group Leaders: LESSON PLAN (DRAFT Adaptation for remote learning)

Audience/Grade: Adaptable to 4-7th grade

Title/Topic: Stream Corridor Hike – Basic Habitat Assessment

Overview: Students will hike along the stream corridor, *or observe images shared by teacher (print or online links)* making targeted observations of elements of the stream habitat and earth systems. Qualitative observations will then be organized to create quantitative data and an index of stream health.

Skills/Understandings/Objective(s):

- Learn to see the stream area as a web of biotic and abiotic elements.
- Learn to identify sources of human activity impacting these elements.
- Use an “Index” scoring system to organize observations into data.

Standards:

- Life & Earth Science Std... gotta pull them in, still...
 - 5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- Writing/ELA standards for reporting element:
 - W.4.2a Introduce a topic clearly and group related information in paragraphs and sections...include ...illustrations to aid comprehension
 - W.4.2d use precise language and domain specific vocabulary to inform about or explain the topic
 - W.4.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose and audience.

Timeframe: (30 minutes...)

Group Size: Up to 20

Preferred Location(s): Stream site, with modest trail or room to hike.

Materials/Preparation:

- Laminated stream corridor assessment sheet & marker (in Cache box?), 1st aid kit in knapsack!
- Note safety concerns: Scout activity area ahead of time for dangerous situations, accessibility.
- Optional: Turbidity tube, thermometers, pH test kit, canopy densitometer, field guides.

Motivator/Warm-Up:

- How can we tell if a stream is likely to be healthy? There is so much to observe. “Indexing” is a way to make sense out of complex systems by consistently measuring certain things.
- We are going to look at the area around the stream (the “riparian zone”), where trout have been/will be released. Can we predict whether the stream will be healthy?
- Biosphere, geosphere, hydrosphere, atmosphere: examples of all are present to observe.

Procedure/Activity Summary:

1. Review safety rules for hike. (Teacher will provide these online, or in print instructions.)
2. Review stream corridor assessment study guide components- what do they mean? It is not necessary to use formal terms- it is more important that the group use common-sense ideas to form a common/consensus understanding of what might be good/bad.

3. (For Class Groups) Assign pairs/groups/single students the responsibility of observing each element each. Use as many of the elements as is practical for your group.
(For individual students/families, remote learning) Complete observations for all categories.
4. Use images provided or Hike! During the hike (as long as you like) remind the students to make observations regarding their assigned elements. They will be responsible for reporting at the end.
5. Optional: stop along the way to water quality tests.

Wrap Up:

1. Students should complete Stream Corridor assessment sheet. For class groups, have students/teams report their observations and decision on scoring their assigned element. For remote learning, students should send results to teacher.
2. Compare individual assessments with cumulative scores. How consistent are they?
3. Compare assessments with results of benthic macro-invertebrate testing from prior years, or to be conducted later in the spring.
4. How confident are we about our findings? What could change later in the spring?

Other Safety/Access Considerations:

Evaluation Rubric:

Learning Target	Not Obtained	Meets Expectation	Exceeds Expectation
I can....			