Salmon Crossing

Lesson 4: Water Quality

Lesson 4 is all about testing water quality to ensure the healthiest habitat for PNW Salmon to live and lay eggs in.

There are 2 observations to choose from:

- Basic Water Quality Observation

  Or

- Testing pH Levels with Red Cabbage

The video at the top of this page is a basic level introduction and the one at the bottom of the page is a more intermediate level video that dives in a little bit deeper with information.

Basic Water Quality Observation Video:

https://www.youtube.com/watch?time_continue=2&v=I18K2upEHLc&feature=emb_logo

BASIC WATER QUALITY OBSERVATION

SUPPLIES:

1. Cups or other water holders
2. Tape and marker for labels
3. Journal/paper with clipboard
4. Writing utensils

Directions:

1. Collect 3 samples of water from 3 different water sources. (Only 1 can be from your home!)
   a. If collecting from natural streams, use the “Good Habitat” survey below to observe what could create a positive Salmon environment.
   b. If not collecting all from natural streams, use the “Water Observation with Senses” survey.
2. Take notes during each observation to help determine which water sample you think is the best for a salmon’s habitat
3. Write out a summary of your findings of which sample you choose as the best and how you came to that conclusion.

NAME:_____

A GOOD HABITAT

Find 2 habitats within your stream, check each box with a **true** statement for that habitat area. For a perfect habitat, your total should add up to 24 points.

DATA	HABITAT 1	HABITAT 2
WATER POLLUTION	❑ No Sewage ❑ No Mud slides ❑ No Animal waste ❑ No Garbage	❑ No Sewage ❑ No Mud slides ❑ No Animal waste ❑ No Garbage
PROTECTIVE COVER	❑ Logs ❑ Rocks ❑ Tree Canopy	❑ Logs ❑ Rocks ❑ Tree Canopy
WATER CLARITY	❑ Clear ❑ Colored ❑ Muddy	❑ Clear ❑ Colored ❑ Muddy
STREAM BOTTOMS	❑ Sand ❑ Gravel ❑ Big Stones	❑ Sand ❑ Gravel ❑ Big Stones
STREAM FLOW	❑ Pool (1) ❑ Riffle (1)	❑ Pool (1) ❑ Riffle (1)

TOTAL: _____ _____

BEST HABITAT: _____

NAME:_____

Water Observation with Senses

We have **5** senses: Sight, Sound, Smell, Sample (Taste), and Sensation (Touch).
If you have already collected the water samples, Sound and Sample are not necessary for this activity so use that to heighten your observation levels for the remaining 3 senses.

DATA	COLLECTION 1	COLLECTION 2	COLLECTION 3
SIGHT: WATER CLARITY	❏ Clear (2) ❏ Colored (1) ❏ Muddy (0)	❏ Clear (2) ❏ Colored (1) ❏ Muddy (0)	❏ Clear (2) ❏ Colored (1) ❏ Muddy (0)
SMELL:	❏ Good ❏ No Smell ❏ Bad	❏ Good ❏ No Smell ❏ Bad	❏ Good ❏ No Smell ❏ Bad
SENSATION: WATER TEXTURE	❏ Clear ❏ Slimy (algae) ❏ Gritty	❏ Clear ❏ Slimy (algae) ❏ Gritty	❏ Clear ❏ Slimy (algae) ❏ Gritty

TOTAL: _____ _____

BEST HABITAT: _____

SUMMARY OF FINDINGS

WATER QUALITY TESTING WITH RED CABBAGE

pH is a measure of how acidic/basic water is. The range goes from 0 to 14, with 7 being neutral. pHs of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base. The pH of water is a very important measurement concerning water quality and salmon habitat.

pH Level Water Quality Testing video:

https://www.youtube.com/watch?v=oG-pNRVHsc4&feature=emb_logo

Red Cabbage Indicator Colour Chart

pH	pH less than 7 = Acid			pH more than 7 = Base		
	2	4	6	8	10	12
Colour	Red	Purple	Violet	Blue	Blu-Grn	Grn-Yel

SUPPLIES:

1. Red cabbage
2. Water from 3 different sources
3. Measuring cups
4. Food processor/blender
5. Strainer
6. Bowl
7. Small cups

DIRECTIONS:

1. Cut up a head of red cabbage into small pieces. Measure about 2 cups of red cabbage pieces and dump it into the food processor.
2. Add 1 cup of water to the red cabbage in the food processor.
3. Cover the cabbage and turn on the food processor until the cabbage is fully blended.
4. Place a strainer over a bowl and dump the blended red cabbage into the strainer.
5. Remove the strainer and set aside. You should now have a bowl of red cabbage extract. This is your pH indicator!
6. Now that you have your indicator, you can test some household substances for their pH levels.
7. Label one small cup water sample one, two, and three (you can use numbers, alphabet, shapes, be creative!)
8. Make a chart to track your results. Use markers to color your chart and then estimate the pH level based on the pH scale below