

HOW HEALTHY IS YOUR STREAM FOR FISH?

- The best temperatures for **Coho Salmon** are between **8–16 Celsius**. Above 16 Celsius the fish are stressed, and **above 25 Celsius they will die**.
- The best temperatures for **Cutthroat Trout** are between **5–16 Celsius**. Above 16 Celsius they are stressed, and **above 20 Celsius they will die**.
- The best temperatures for **Bull Trout** are between **6–9 Celsius**. Above 12 Celsius they are stressed, and **above 16 Celsius they will die**.

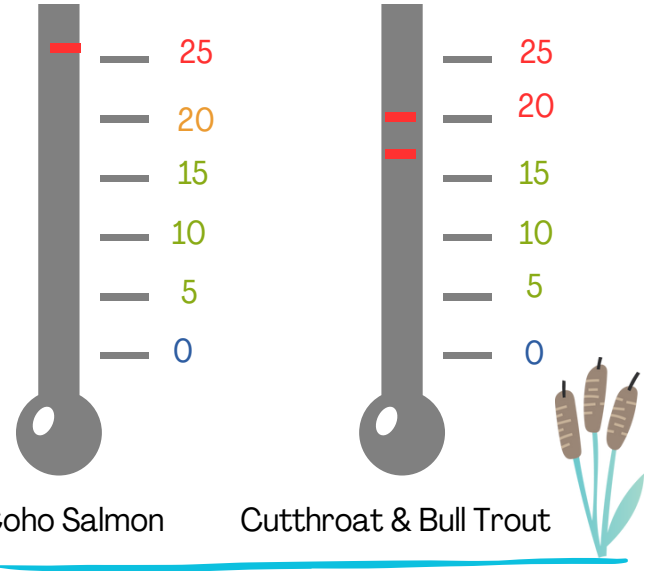
The temperature of our stream is:

_____ Celsius.



The water was _____ cm deep.

WATER TEMPERATURE:
HOW COOL IS THE WATER? ?



STREAM HEALTH CHECK PROCEDURE



Water Temperature: Measuring how warm or cool the water is

1. Fully submerge your thermometer in the water.
2. Use a ruler to measure how deep your water is at your sampling location.
3. After 2 minutes, remove your thermometer and read the temperature.
4. Results? Circle the temperature on each thermometer picture above and discuss results.

Items Needed:

1. Thermometer
2. Timing device

TURBIDITY: HOW CLEAR IS THE WATER?

Coho Salmon, Cutthroat Trout and Bull Trout need water that is clear. Cloudy or dirty water can hurt their gills and can make them sick. Eggs can be smothered. Clear water should be above 85 cm in the tube, below 35 cm in the tube is considered unhealthy for fish.

The water level in the tube is: _____ cm

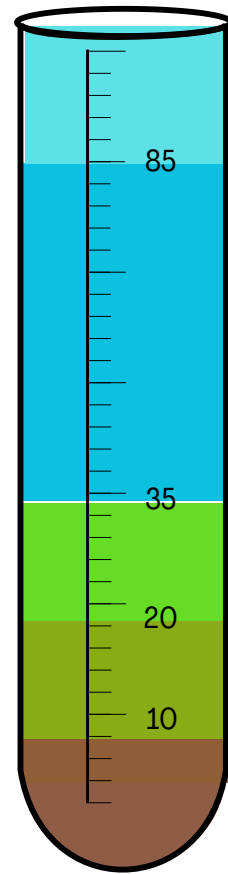


Amazing!

Okay

Oh No!

BAD!



DO YOU THINK THIS STREAM IS CLEAR ENOUGH FOR FISH TO BE HEALTHY?

YES

NO



Turbidity: How clear is the water?

1. Using a jug, collect water from the stream. Collect the water from the middle of the water column.
2. Pour this water into the turbidity tube to the top line.
3. Look through the water from the top of the tube down to the bottom. Can you see the black and white secchi disc? If you cannot see the secchi disc, have an adult slowly release water using the release valve while at the same time looking down the tube. When you can finally see the black and white disc stop releasing water from the tube.
4. Record the water depth in the tube.
5. You can repeat this multiple times and take an average of the depths from each sample.

Items Needed:

1. A jug or container to collect water in
2. Turbidity tube

FLOW: HOW FAST IS THE WATER MOVING?



Coho fry like **slow** moving water. They are bigger with soft fins and parr marks.



Cutthroat and Bull Trout like **fast** water. They are thinner with small stiff fins and spots

Time the “floaty” over 5m length.

5 seconds is **fast**.

5–10 seconds is **medium**.

10–20 seconds is **slow**.

Toss # 1: FAST Medium SLOW

Toss # 2: FAST Medium SLOW

Toss # 3: FAST Medium SLOW



Which fish will prefer this habitat?

Trout

Coho

Both



STREAM HEALTH CHECK PROCEDURE



Flow: How fast is the water moving?

1. Find a 5 metre length of your stream that doesn't have any obstructions like big logs. Mark the start and end of your 5 metres.
2. Have one person stand in the middle of the stream at one end (upstream) holding your floating device. This can be a leaf, stick, tennis ball, orange, or rubber duck. It helps if your floaty is round, but a leaf or stick can work in a pinch.
3. Have another person stand at the edge or in the middle of the stream at the other end of your 5 metre length (downstream). That person will catch the floaty once it has gone 5 metres. Using an aquarium net can make this easier.
4. Have a third person ready with a stopwatch.
5. The stopwatch person says “Go!” and starts the stopwatch while the upstream person holding the floaty drops it in the middle of the stream (not at the edges of the stream).
6. When the downstream person catches the floaty they shout “Stop!” and the stopwatch person stops the watch.
7. Do this three times and record how long your floaty took to travel the 5 metres each time.

Items Needed:

1. Tape measure or 5 metre string
2. Floaty of some sort
3. Net to catch floaty
4. Timing device

COVER: ARE THERE PLACES TO HIDE?

Rocks

Logs

Plants

Banks

Adult Cover

How many places are there to hide?

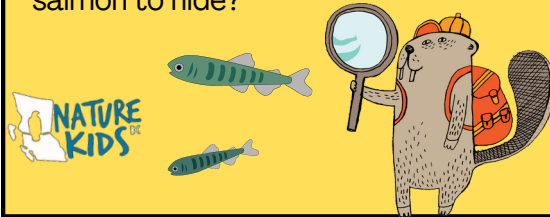
Fingers to measure? _____

How many places are there to hide?

Whole forearm!? _____



Coho fry, Cutthroat Trout and Bull Trout are about the same size as your fingers. Hide your fingers in the creek (or use our rulers if the water is too cold). What can fish hide under? Are there places for adult salmon to hide?



STREAM HEALTH (HECK) PROCEDURE



Cover: Hiding places

1. Spread your group out so that each child or child/adult pair (depending on the age of your participants) has about 1–2 metres in length of stream. Depending on conditions you will either stay on the banks or, if the water flow is low enough, you can enter the stream carefully.
2. Using your hands or rulers (if you have them) look for places in the stream where you can hide your fingers so that they are not visible (looking for 8 cm or so). This might be beneath a log, under an overhanging bank, behind a big boulder, or between plants. Count how many places each child can hide their fingers.
3. Count how many places that you can hide your whole forearm or arm (up to 35 cm). This is good habitat for adult fish.

Items Needed:

1. Just your hands and arms that will get wet!

SUBSTRATE: WHAT'S DOWN THERE

The material found at the bottom of a stream is called substrate, and it is really important for fish and other animals that live in the stream! The size of that material will tell you about who can live there, and whether it is a good spot for fish to lay their eggs.

What material is your stream bed made of?

| | How much? check a box for each type of material | | | |
|--|--|-----------------------|---------------------------|-----------------|
| | none | little bit (5–15%) | a fair amount (16–30%) | lots (31+ %) |
| silt/sand (this is very fine) | | | | |
| pebble/gravel: size of peas to walnuts | | | | |
| cobble: size of grapefruits | | | | |
| boulders (size of basketballs and bigger) | | | | |
| bedrock (big slabs of rock over 2 m in length) | | | | |



STREAM HEALTH (CHECK PROCEDURE)

Substrate: What's down there

1. Pick an area of the stream that is about 1m by 1m. In that area look at the bottom rock material of the stream. It can help to scoop some up in your hand.
2. What size is most of the material in your stream? Use the table above as a guide. Include all the different sizes of material, circle or note which size you see more than the others. (For adults and older children you can get more specific: a little bit is 5–15%; A fair amount is 15–30%; and lots is 35% or more than a third)
3. Record your information.

Items Needed:

1. Something to measure or estimate 1 metre
2. Your eyeballs and powers of perception



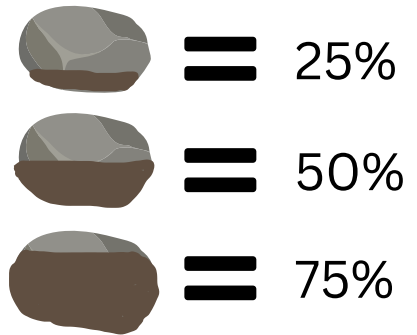
MEASURING THE GUNK: EMBEDDEDNESS

The layering of gravel, cobble, and boulders on a stream bottom creates space for water to flow between and around. These spaces and rock surfaces are where the aquatic bugs live. Some, like Mayflies and Beetles, need space to crawl around in search of food. When these spaces between rocks become full of mud—or embedded—that habitat is lost.



| Rocks | How much of each rock is covered by fine silt or sand? | | | | |
|-------|--|-----|-----|-----|------|
| | 0% | 25% | 50% | 75% | 100% |
| #1 | | | | | |
| #2 | | | | | |
| #3 | | | | | |

What is the main material of your substrate? Choose 3 of that material to look at closely. How much are they covered up by fine silt or sand?



STREAM HEALTH (HECK) PROCEDURE



Measuring the Gunk: Embeddedness

1. Decide what the main rock material size is for your stream (see “substrate” activity).
2. Choose 3 of those rocks and pick them out of the stream. How deeply were they covered by sand or silt in the stream?
3. Use the diagrams as a guide for your percentages, and record your results.

* Note: if your main material is silt or mud, look to see if you have any larger rocks. If you don't see any larger rocks mark down all three samples as 100%. If you do see larger rocks in an area that is mainly silty and muddy, choose from those larger rocks and mark the percentage covered.

Items Needed:

1. Your eyeballs and powers of perception



HOW HEALTHY IS YOUR STREAM FOR FISH?

Date: _____

Name of Stream: _____

Location: _____



LET'S TALK ABOUT IT!

DO YOU THINK THIS STREAM IS CLEAR ENOUGH FOR FISH TO BE HEALTHY?



Water Temperature: How cool is the water?

Will Coho salmon fry, Cutthroat and Bull trout like this water temperature right now?



Turbidity: Is this stream clear enough for fish to be healthy?



Flow: How fast is the water moving?

Which fish prefer this habitat?



Cover: Are there places to hide?

Places for Coho fry, Cutthroat trout, Bull trout? Adult Salmon?



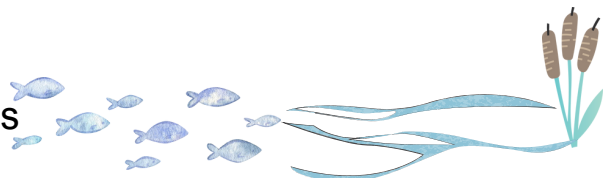
Substrate: What's down there?

What material did you see the most of? Research what types of critters like what kind of substrate!



Measuring the Gunk: Embeddedness

Are there spaces for aquatic bugs to live?





IMPORTANT SAFETY TIPS



It is always important to make sure that you have safe access to your freshwater source, whether it is a stream, river, lake or wetland.

Here are a few things to keep in mind:

- Water access points may have undercut or eroding banks. Make sure to check your entry points for your safety and to avoid damaging the stream edges.
- Depending on how quickly water is flowing, even ankle deep water might knock you off your feet. We do not recommend doing this activity near rivers that have significant depth and flow to cause anyone who might fall in to be carried by the current.
- Always work with a partner or group. Do not work in or near water alone.
- Even in clear water, rocks might have an algal layer that can make them slippery!
- Where does your stream originate? If your stream is fed by mountains/ snow melt be careful during spring melt, as water levels might change very suddenly.
- Wetlands and some lake shores often have soft bottoms. You need to find out how soft the bottom is before you wade in. Use a large stick and check how deeply you can press it into the mud.

FOR NATURE AND FOR US

- Where does your stream go? Check online resources and reach out to local mentors, stewards, stream keepers and parks offices for up to date and seasonal information in your area.

Local resources can also help you decide if there is a place or time you should NOT go into a certain stream because you would be disturbing local wildlife during a critical time.



Example: if your stream is salmon bearing, you should not go into the water or disturb the banks during spawning season.

WHAT ELSE WOULD YOU INCLUDE IN YOUR PRE-EVENT SAFETY CHECK?

- WEATHER, AND POTENTIAL CHANGES IN WEATHER
- SEASON
- TRANSPORT
- INDIVIDUAL NEEDS: MEDICATION, FEAR OF WATER, GETTING WET...
- BACK UP: DO YOU HAVE IT? NATURE MENTORS?
- ?
- ?

