

ACTIVITY 5: TESTING FACTORS THAT AFFECT WATER QUALITY

The purpose of this activity is for students to assess water quality parameters that affect whitefish spawning and growth in different aquatic environments.

Materials:

- Water samples from various sources (rivers, lakes)
- Water testing kits or probes/sensors (for temperature, pH, dissolved oxygen, turbidity, and other relevant parameters)
- Notebooks and pencils to record data

Note: if obtaining actual lake/river water samples is not possible, students can obtain water samples from any available source to test the various parameters and then look up water quality information from a monitoring organization online to learn about the water quality measures in the Great Lakes.

First, inform students that they'll be studying water quality and its affect on fish populations like whitefish. To first understand the water quality markers that are important to the Great Lakes ecosystems, have them review and research the Environmental Protection Agency's [Great Lakes Water Quality Monitoring Program](#). Based on your available water testing tools, select several parameters from the EPA's list to test. Next, have them research the water quality standards needed for whitefish to spawn and thrive.

Next, have students partner up and obtain the supplies needed to perform the water quality testing experiment. Give each pair several water samples to test and have them take measurements of the various water quality parameters that you have selected as important for Great Lakes water health.



Then, allow students time to capture their quantitative measurements and record some qualitative observations about the water (e.g., smell, look, etc.) and record them in their log.

Last, have a way to compile class data from each of the lab groups that took measurements. This will help account for any variance in measurements taken among similar samples. Make the class data available for the entire group to analyze. Give groups time to identify which samples meet the optimal conditions for supporting healthy whitefish spawning and growth.

Facilitate a class discussion on the significance of each water quality parameter in relation to whitefish biology and ecology, e.g. temperature ranges to support spawning, pH levels that are harmful to fish eggs and larvae, available oxygen needed for fish, and turbidity levels that could reduce visibility to fish.

**Teaching Tip: You can obtain real-time data in lieu of doing water testing, or to compare the findings from their experiment, using the [Great Lakes Environmental Research Laboratory's database](https://glerl.noaa.gov/data) at: glerl.noaa.gov/data*