



Aquatic Monitoring

Organization:

Title: Aquatic Monitoring

Summary: This activity takes place at the Elbow Lake Environmental Education Centre. After making inferences regarding the impact of climate change on local fish populations students engage in an aquatic monitoring project and compare results to required standards. As an extension students catch a fish and prepare it using local Indigenous preparation methods.

Inquiry Question: Inquiry Question Four (Gifts of the Lake): How does Indigenous knowledge help us to understand the impact of climate change?

Duration: Half day

Learning Environment: Outdoor

Season: Summer, Spring, Fall

Materials:

- Access to Elbow Lake Environmental Education Centre ELEEC (all materials will be provided)
- Teachers who wish to extend this learning into their classroom may wish to check out traditional recipes used to prepare fish and other seasonal foods found in Eating with the Seasons, Anishinaabeg, Great Lakes Region.pdf

Curriculum Links:

Grade 9 Destreamed: A1.1, A1.5, A2.3, A2.4, A2.5, B1.1, B2.1, B2.2, B2.4, B2.5, B2.6

Grade 10 Academic: A1.1, A1.2, A1.4, A1.6, A1.8, A1.10, A1.11, D1.1, D2.3, D2.9

Grade 10 Applied: A1.1, A1.2, A1.4, A1.6, A1.8, A1.10, A1.11, D1.1, D2.4, D2.6, D2.7

Meta Data:

Content Type: Activity

Bundle: Food

Theme: Global Climate Change

Subject Area: Biology, Environmental Education, Outdoor Education, Science

Curriculum Focus: 9, 10

This Activity will be Offered at the Elbow Lake Environmental Education Centre.

A local Indigenous community member will be present to help facilitate this lesson.

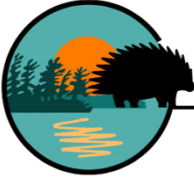
- Students visit the lake at the Elbow Lake Environmental Education Centre (ELEEC) and brainstorm ways in which they think it may be impacted by climate change. Students make predictions regarding how these changes may be impacting local fish species ie: in a warming lake will the fish swim deeper and/or be affected in other ways as a result of living in a warmer ecosystem?



- After making predictions, students collect water samples to conduct a fish habitat assessment. Students measure temperature, pH, nitrates, ammonia, dissolved oxygen, turbidity, invertebrate ID, and plant ID. Biotic and abiotic data will be collected over time and stored on the QUBS website. In this way students conduct a longitudinal study by comparing results from classes in previous years.
- After collecting data, students compare results to required standards ie: *Optimal water quality for aquatic ecosystem*. Based on results, students make predictions regarding how local fish will be impacted and brainstorm ways community members, governmental organizations, and corporations can act to protect the lake.
- Students review the Ohèn:ton Karihwatéhkwén introduced in the Indigenous Knowledge Bundle by Kanyen'kehá:ka (Akwesasne Mohawk Territory), Wolf Clan educator Liv Rondeau. Class discussion focused on how thanks are also extended to the fish. Teacher shares traditional Indigenous fishing practices with students that ensure that fish are not depleted.
- Anishinaabe Knowledge Keeper Autumn Watson from Curve Lake First Nation shared with QUILLS that when engaging in traditional forms of Anishinaabe spear fishing, the Anishinaabe knew to only take as many fish as they needed to sustain themselves. They did not take more. They would also use all of the fish. Additionally, in the springtime only male fish would be taken. Throwing back breeding fish would ensure that the population could continue to thrive.

Optional Extension Activity:

- Students catch a fish at Elbow Lake and learn how to fillet it. A local Knowledge Keeper should be present to facilitate this process and tobacco should be given in exchange for the life of the fish. After catching the fish, students prepare it using a traditional Indigenous method.
- Anishinaabe Knowledge Keeper Autumn Watson from Curve Lake First Nation shared with QUILLS that this can be done by simply having a shore lunch by frying the fish in butter or grease in frying pan. Fish cheeks are also believed to be delicious! You can also use the fish eyeball to catch other fish!
- Traditional recipes used to prepare fish and other seasonal foods can be found in *Eating with the Seasons, Anishinaabeg, Great Lakes Region* by Derek Nicholas found in the **Eating with the Seasons Anishinaabeg Great Lakes Region.pdf**.



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- The teacher may also wish to make fish leather with the fish skins. Autumn Watson shared with QUILLS that this can be done by:
 1. Removing the fish scales
 2. Steeping five tea bags in a mason jar and letting the water cool (no name tea works fine)
 3. Allowing fish skins to soak for 4-6 days.
 4. Removing skins from water and oiling with any available oil. Coconut oil works great, however, animal fat such as bear grease would have been used traditionally!

The leather can be used as a canvas to create beautiful works of art!