FISH HABITAT & BIODIVERSITY

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Curriculum Connections

Science (5) B2.2 demonstrate an understanding of biodiversity as the diversity of life on Earth, including the diversity of organisms within species, among species in a community, and among communities and the habitats that support them

Science (5) B2.1 describe the distinguishing characteristics of different groups of organisms, and use these characteristics to further classify these organisms using a classification system

Science (5) B2.4 describe ways in which biodiversity within and among communities is essential for maintaining the resilience of these communities

Learning Goals

Students will be able to analyze the impact of fish on the biodiversity of aquatic ecosystems and demonstrate an understanding of the interrelationships between fish populations and other species in the ecosystem.
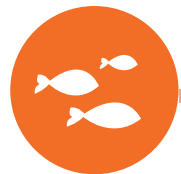
Materials

Rulers, paper, pencil
Markers or pencil crayons

Fish Identification Chart
Resource to be printed and distributed
https://files.ontario.ca/environment-and-energy/fishing/198234.pdf

Assessment / Evaluation

Activity sheets
1 - Illustrate and label a fish species
2 - Fish distinguishing characteristics of Ontario fish

Accommodations / Modifications

Use visual aids, such as pictures or diagrams, to support understanding of biodiversity concepts.

Allow students extra time to complete activities or observations, considering individual needs and abilities.

Teaching/Learning Strategies

Introduction
(minds on/activate prior knowledge)

Currently the Canadian Government and various First Nations groups use a system of agreements known as Treaty's to manage their relationships. The Ojibway people of Treaty 9 still have a strong connection to the land and water. Biodiversity is fundamental to this connection.

Fishing continues to be an important source of food, diet, and proteins for some First Nations communities. Protection of fish, fish habitat and fish biodiversity are key elements to create sustainable fish populations in the future.

In the Windigo communities of northern Ontario, the celebrations around spring/fall hunt are celebrated as community wide events. The timing of this event is tied to the change of the seasons, migration of birds, mammals, and fish. The events are important for harvesting meat, fish, and birds. The tradition remains an important time where knowledge and teachings are past down. At the end of the week there is a community feast where food and stories are shared. The harvesting activities are always done with respect to the biodiversity and giving thanks to the Creator.

Teaching/Learning Strategies

"Biodiversity is all the different kinds of life you'll find in one area — the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life. Biodiversity supports everything in nature that we need to survive: food, clean water, medicine, and shelter." (Hancock, n.d.)

New Learning (30 minutes)
(give/demonstrate new information)

Class discussion

Fish play an important role in the biodiversity of a watershed, take notes on the smartboard/whiteboard reviewing these as a class.

Keystone Species: Fish can serve as keystone species within their ecosystems, meaning they have a disproportionately large impact on the structure and function of the community compared to their abundance. They can control the populations of their prey and predators, helping to maintain balance within the ecosystem.

Food Web Dynamics: Fish occupy various trophic levels within the food web, consuming both plants and smaller animals while serving as prey for larger predators. By occupying different niches and feeding on different resources, fish help regulate the abundance and distribution of other species, influencing the overall biodiversity within the watershed.

Nutrient Cycling: Fish play a crucial role in nutrient cycling within aquatic ecosystems. They feed on organic matter, algae, and effectively recycling nutrients and contributing to the health of the ecosystem. Fish excrete waste, which includes nutrients such as nitrogen and phosphorus, which can be utilized by aquatic plants and microorganisms.

Overall, fish are integral components of aquatic ecosystems and play a central role in maintaining the biodiversity and functioning of a watershed. Their interactions with other organisms and their influence on nutrient cycling contribute to the overall ecological balance within the watershed.

Teaching/Learning Strategies

Guided Practice (30 minutes)
(give/demonstrate new information)

Activity 1 Fish Drawing (30 minutes)
Using the Fish Identification Chart
Look at fish species
Students to sign up for a fish that they would like to learn more about
Create a drawing (and label) that represents the fish they selected.
The sizes should be realistic based on the identification charts

Activity 2 Fish Characteristics Worksheet (10 minutes)
Students will then be given a worksheet and answer a series of questions

Application
(activity to reinforce/demonstrate learning)

Activity 3 (20 minutes)
Students to present their fish drawing to another student in the class.
When pairing up make sure

Students can take turns sharing their drawing with the class and elaborating on the specific species characteristics

They should make sure to include key factors from the indemnification sheet such as species, habitat, size, food etc....

Reflection
(what did/didn't work)

Next Steps
(what to teach/re-teach)

Activity 1
Fish illustration study of Ontario Species

Use the Ministry of Natural Resources Fish Identification chart.
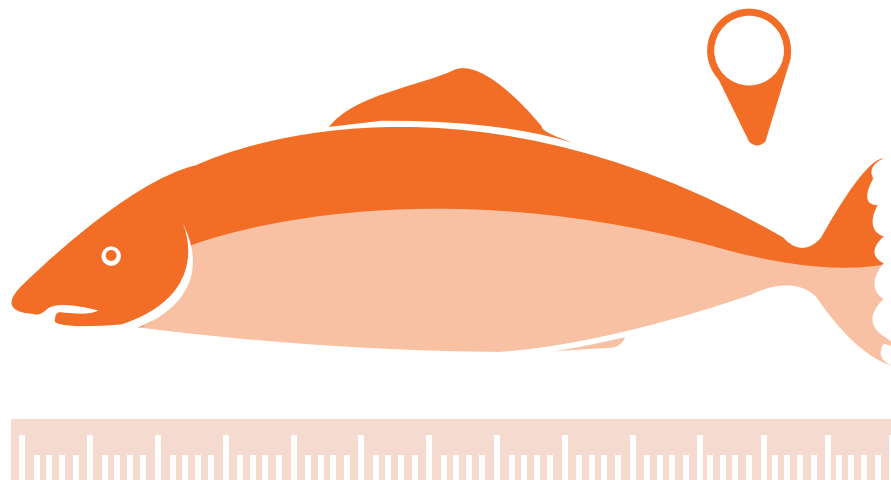Choose a fish to illustrate. (the MNR guide may be useful).

The sizes should be realistic (and may require taping together multiple sheets of paper.
Colour and/or shade to illustrate any distinguishing characteristics.

Draw and label the parts of a fish including:

Species Name
Fins
Gils
Eye
Mouth

Note the fish

Length   Habitat   Key identifying features

Activity 3
Fish distinguishing Characteristics of Ontario Fish

Use the Ontario Ministry of Natural Resources (MNR) Fish Identification Chart

Fish Identification chart.

What is the longest fish?

Name two fish with two dorsal fins

Name three types of salmon found in the Great Lakes

Which type of Bass prefers a habitat of clear and rocky waters?

Pick a fish, and find three other fish that like similar habitat and might be found in the same locations

Name two fish that prefer cool temperatures cold water (<19C) and two types of fish that prefer warm water (>25C)

Describe where you might catch fish in your region?