

Wetlands		Grade 6 Biology
<p>Lesson Plan</p>		
<p>Safety Notes</p>		<p>Adult supervision and extra help is always appreciated.</p>
<p>Description</p> <p>During this lesson, students will learn about biodiversity and ecosystems by looking at the importance of wetlands and indicator animal species within them. Students will also learn how to build their own terrarium, make their own frog calls and will tackle questions on the importance of wetlands.</p>		
<p>Materials</p> <p><u>Terrarium materials:</u></p> <ul style="list-style-type: none"> ● Glass container, with or without top ● Small stones or pebbles ● Activated charcoal or moss ● Potting soil ● Plants (air plants, succulents and mini cacti are great options) ● Sticks moss, and other decorative items <p><u>DIY frog call materials:</u></p> <ul style="list-style-type: none"> ● Plastic cup ● 2 paper clips ● An elastic ● Scissors ● Glue or sticky tape <p>* Please follow your city’s rules and avoid searching for materials at public parks or nature areas that are off limits. Please try and find materials at home. If you cannot find materials at home, you can draw and colour a terrarium with all of the correct labels of layers on the handout*</p>		

Science Background

Biodiversity refers to the variety of living things on Earth or in a specific area like a habitat. This includes multiple species of animals, plants, bacteria and fungi.

An **ecosystem** is a biological community of interacting organisms and their physical environment. One of the most diverse ecosystems is wetlands which play an important role in our environment.

Wetlands are found throughout the world except in Antarctica. They cover approximately 9 million square kilometres of the world which is almost the same size as Canada. Wetlands are extremely important as they absorb pollutants, protect from coastal erosion, filter water and help reduce floods. There are four different kinds of wetlands in Ontario:

- **Bog:** Bogs consist of soft, spongy ground made of peat. Peat is a decayed organic matter, which is mostly plants that are decomposed and is high in nutrients. Bog water comes from rain and snowmelt which make the soil acidic. In bogs, you'll find plant species that are tolerant to acidic soil like blueberries, cranberries, and sphagnum moss.
- **Fen:** Fens are similar to a bog as they also contain peat. The difference is that fens rely on groundwater. Groundwater is slow-moving water found underground between cracks and crevices of soil and rocks. Because of this, the water in a fen is less acidic which is favourable to plant growth. Vegetation that you'll find there are mostly sedges which are a type of tall grass, cedar trees and small birch trees.
- **Marsh:** Marshes are usually found on the edge of a lake or pond. Most of the water from marshes comes from rainwater and is stagnant or slow-moving. This type of wetland is dominated by tall grasses, cattails, water lilies, bulrushes and pickerelweed.
- **Swamp:** The soil within swamps is very waterlogged and has poor drainage due to the water originating from groundwater. Swamps are dominated by woody plants like tamarack, poplar and black spruce.

One of the animals that are commonly found in wetlands are **frogs**. Frogs are an indicator species that let us know if an ecosystem is healthy or not. If their population drops, it may be a sign that there are issues within the wetland such as high levels of pollution.

Below are 4 common species of frogs:

- **Green frog:** Don't let their name deceive you, these frogs can be green, bronze, brown or even blue. They can be identified by their large eardrums situated behind their eyes. Green frogs can be found near permanent shallow water bodies and they are located all over Ontario. They call later in the year, from May to August. If you were to stretch an elastic and pluck it, it sounds similar to the call of a green frog.

- **Boreal Chorus Frog:** They have 3 distinct dark stripes down their back and have a dark stripe going across their eye. The boreal chorus frog is located mostly in northwestern Ontario, near Lake Superior through southern James Bay. They prefer forest openings with ponds located nearby. They call early in the spring, March and they call day or night. Their call sounds similar to running your finger over the teeth of a comb.
- **Northern Leopard Frog:** The leopard frog is covered in dark rounded spots that contrast the green or brown of their skin. They have a white or yellowish belly and the folds of skin on their back are called dorsolateral folds. They have a wide range of habitats including tundra, woodland, and prairies. Their call sounds similar to rubbing a blown up balloon.

Activity Procedure

Terrarium

1. Fill the bottom of your glass container with small stones or pebbles for drainage.
2. Add a thin layer of activated charcoal or moss. This will hold onto moisture, keep water fresh and act as a barrier between the soil and stones.
3. Add potted soil - it needs to be thick enough for the plant to root in (we recommend at least 5cm). Soil will anchor the plant and give it nutrients.
4. Add your plant! Make a hole in the soil large enough to root your plant. Press the sides of the plant so it is firmly anchored.
5. Add decorations! These could be twigs, moss, or small figurines - this will give your terrarium a personal touch.
6. Congratulations, you've finished your terrarium! Now pour in some water...but not too much!

Terrarium materials:

1. Start by putting the elastic on one of the paper clips.
2. Very carefully, make a small hole in the bottom of the cup with the scissors. Ask for help from a family member if you are having trouble.
3. Insert the elastic band into the hole through the bottom of the cup so that the paper clips remain on the outside of the cup. This paper clip prevents the rubber band from slipping through the cup.
4. Placed the second paper clips on the other end of the elastic which is in the cup. This will allow you to hold the elastic tight within the cup (as seen below).
5. It's time for your artistic talent, using the craft materials, draw a frog on your cup.
6. Now, you have your frog! To produce the call, pull the elastic tightly, wet your fingers then rub the elastic as you pull down tightly. Great job!



A completed DIY frog caller!

Complete questions 1- 4 on the handout.

Debrief

Wetlands and biodiversity are very important. This is something to keep in mind as many of these wonderful ecosystems have disappeared due to human-activities like urbanization, agriculture and climate change. Wetlands are essential to keep our waters clean for our rivers, lakes and beaches for our enjoyment and for the survival of many species like fish, amphibians, plants and birds. Preserving species and their home is one way to ensure an increase in biodiversity.

Lesson Handout

1. Beside the pictures below, match the water source to the correct type of wetland.
- a) Rain and snowfall (acidic) b) Groundwater
 c) Rainwater (stagnant or slow-moving) d) Groundwater (poor drainage)

BOG



SWAMP



MARSH



FEN



2. What are four important functions of a wetland?

3. Fill in the table:

	Identifying Features	Habitat	Household object that can sound like their call
Green Frog:			
Boreal Chorus Frog:			
Northern Leopard Frog:			

4. Draw the terrarium you created (if you do not have the materials, draw what your terrarium would look like). Colour and label the layers within the terrarium and explain their function.

Handout (Answer Key)

- Beside the pictures below, match the water source to the correct type of wetland.
 - Rain and snowfall (acidic)
 - Groundwater
 - Rainwater (stagnant or slow-moving)
 - Groundwater (poor drainage)

BOG (a)



SWAMP (d)






MARSH (c)



FEN (b)



- What are four important functions of a wetland?
 -Absorb pollutants -Protect from coastal erosion -Filter water -Help reduce floods
- Fill in the table:

	Identifying Features	Habitat	Household object that can sound like their call
Green Frog: 	-Green, bronze, brown or even blue. -Large ear drums behind eyes.	-Near permanent shallow water bodies	-Box with elastic
Boreal Chorus Frog: 	-3 distinct dark stripes down their back -dark stripe across eye	-Forest openings with ponds located nearby	-Hair comb
Northern Leopard Frog: 	-Covered in dark rounded spots -White or yellowish belly -Dorsolateral folds	-Tundra -Woodlands -Prairies	-Balloon

4. Draw the terrarium you created (if you do not have the materials, draw what your terrarium would look like). Colour and label the layers within the terrarium and explain their function.

