

Water Bodies in The Land Between

Grade 7 – History and Geography



Lesson Details

Grade Level:	7	Curriculum Links:	History and Geography, Science and Technology	Time Needed:	1.5 hours
Learning Goal	To understand how water bodies are formed and changed. To think about the impact humans have on water and to be introduced to The Land Between.				
Success Criteria	By the end of this activity, students will be able to define The Land Between, and the water bodies within it. They will understand how water bodies are created and changed and will be able to answer questions on the subject.				
Specific Expectations	<p><i>Geography - Physical Patterns in a Changing World</i></p> <ul style="list-style-type: none"> Evaluate evidence and draw conclusions about the impact of natural events and/or human activities that change the physical environment; Describe some key natural processes and human activities that create and change water bodies and systems. <p><i>Science and Technology – Understanding Life Systems: Interactions in the Environment</i></p> <ul style="list-style-type: none"> Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts. 				
Materials Needed	Worksheet (attached), Pencil, Notebook, Computer, Internet Access.				

Lesson Description

Overview	Complete the reading about water bodies in The Land Between and use the internet to further your reading. Students will answer the questions to ensure comprehension of the topic.
Activity	<ol style="list-style-type: none"> Begin by handing out the attached worksheet and giving students time to read through it – in this worksheet students will be introduced to The Land Between and the water bodies it contains. Provide separate time for the students to further their learning by using the internet to explore the provided links (in attached worksheet). Students will answer the prompted questions from the worksheet in their notebook.
Background Information	The Land Between is a region that extends from Georgian Bay to the Ottawa Valley. It has the only rock barrens in the province, and the highest percentage of shorelines to land area in Ontario. Therefore, The Land Between region, together with the Frontenac Arch, have over 1/3 of Ontario's turtles and are the last strongholds for most turtle species. The region also has a relative majority of the well-known Snapping Turtle population. This is why The Land Between charity aims to conserve turtles; The Land Between is turtle country!
Blacklist Masters	<ul style="list-style-type: none"> Worksheet (attached) Video Link(s): Wetlands and Turtles in Ontario For more information, please visit https://www.turtleguardians.com/the-land-between-ontarios-turtle-country/
Place-Based Learning	Students will gain an appreciation for the environment and learn new vocabulary about it. Students will be able to relate what they are learning to the water bodies in their local community.

Lesson Description

Inquiry-Based Learning	Using Structured Inquiry , students will read and conduct their own research about The Land Between and its water bodies. Ask the students: <ul style="list-style-type: none">• What is an ecotone?• What are some threats that wildlife face?• What are the different types of water bodies? How are they created?• How can we help to protect our water bodies?
Turtle Stories	When travelling through Ontario, especially The Land Between, you can see with your own eyes the vast amount of water bodies present. Tell us how you help to conserve and protect water in your community. Students are encouraged to share their experiences, pictures, and research on the Turtle Stories website, found here: https://www.turtlestories.ca/
Turtle Guardian Program Links	After completing Level 1 (Ontario Turtle Identification) of the Turtle Guardian Program , students can move onto Level 2 (Wetland Watchers). In this level the students learn how to monitor wetland habitats and contribute to knowledge of wildlife-biology in the region. For more information, please visit https://www.turtleguardians.com/what-is-a-turtle-guardian/

My Notes

Answer the Following Questions Based on the Above Readings

1. What is an ecotone?
 - a. An ecotone is an area of land that contains elements of the ecosystems that it borders, but also has features that are entirely unique. The Land Between is an ecotone.

2. What are some threats to The Land Between?
 - a. Development for leisure and retirement residences are increasing at an alarming rate which is threatening The Land Between.
 - b. The Land Between is also pretty easy to damage as the shallow soils, rapid drainage and interconnected aquatic resources allows for easy transport of pollutants and other contaminants to travel across the land.

3. What is the difference between a wetland and a lake?
 - a. A wetland has water that is present for more than 45 consecutive days of the year. As well, wetlands have organic spongy soils, and plants that love water.
 - b. A lake is a large body that contains water that is deeper than 1 metre. Lakes are often connected to other water bodies, such as rivers and wetlands.

4. What are the different types of wetlands? Why are wetlands important for wildlife?
 - a. Swamps, Bogs, Fens, Ponds, and Marshes.
 - b. Wetlands control water levels, reduce flooding, and are able to remove pollutants from water and the environment.

5. How are water bodies created?

- a. Dams – these are barriers that prevents water from flowing which often create reservoirs.
 - b. Development – this can lead to the creation of person-made ponds and artificial wetlands.
 - c. Glaciers – as they melted, glaciers left depressions in the land and their meltwater filled the depression leaving water bodies.
 - d. Beavers – as nature’s engineers, beavers can change an area from a small river to a wetland.
6. Use the following link to name 2 other ways that humans change water bodies → <https://www.thelandbetween.ca/water-and-shores/>
- a. By changing the shoreline
 - b. By removing the water body entirely
7. What are some reasons why water bodies are important to you?
8. What is the Blue Lakes Project? → <https://www.bluelakes.ca/>
- a. The Blue Lakes Project is an eco-label program that provides a template for action and education.
 - b. It also provides a recognition to a person’s commitment to stewardship and education.
9. Name 2 ways that you can protect our water bodies.
- a. Educate yourself
 - b. Get involved



Water Bodies in The Land Between



What is The Land Between?

The Land Between is an **ecotone**. It is an area that contains elements of the ecosystems that it borders, but it also has features that are entirely unique. In this case, The Land Between borders two distinct ecosystems; the Canadian Shield and the St. Lawrence Lowlands. It extends across central Ontario from the Frontenac Arch in the east to Georgian Bay and Southern Parry Sound in the west. It is a regional belt of more than 240 km in length and over 50 km in width that skirts the Algonquin Dome spanning 9 counties and running parallel to and just north of Highway 7. This area has a high biodiversity of life, including about 90% of Ontario's Skink population (which is its own unique subspecies of Ontario's only lizard), and 1/3 of Ontario's turtles!



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What Types of Water Bodies Are Found Here?

First, we must understand the two different types of bedrock found in The Land Between. **Limestone** is found in the St. Lawrence Lowlands, and **granite** is found in the Canadian Shield.

The Land Between has a large abundance of **lakes**, which are large water bodies deeper than 1 metre. These lakes are often connected to other water bodies, such as rivers and wetlands.

A **wetland** has water for more than 45 consecutive days of the year. They have organic spongy soil, and plants that love water. They are important habitat for wildlife such as turtles. They also control water levels, reduce flooding, and are able to remove pollutants from water and the environment. There are many types of wetlands in Ontario; they consist of Swamps, Bogs, Fens, Ponds, and Marshes.

With all these water bodies comes a large area of shorelines. Shorelines are important habitats for many species as they provide easy access to and from the water.

How Are Water Bodies Formed and Changed?

Humans

Dams are barriers that prevent water from flowing. They often create reservoirs, which are artificial lakes or ponds. Dams control the flow of a river and prevent flooding.

People like to develop the areas around water bodies. **Development** near water can be houses and cottages, towns and even cities like Toronto. Important shoreline habitat is lost. Entire wetlands are lost to development.

Agriculture uses a lot of water to feed livestock and water crops. Water is changed by increased nutrient input, causing algae blooms. Water bodies are moved, changed or lost to make space for farmland.

Naturally

Thousands of years ago, Canada was covered in thick ice. These ice formations were called **glaciers**. As the glaciers began to melt 10, 000 years ago, they moved across the land, depositing sediment from large boulders and small particles. They left depressions in the land, that the meltwater could fill to create a lake or wetland. Some natural depressions many have already been there, in the form of faults (a fracture between 2 rocks), that were easily carved by the moving ice.

Beavers are nature's engineers. They transform areas with small streams surrounded by forests into wetlands by building dams. This creates entire new habitats for wildlife, and completely changes the landscape.

Why Are Water Bodies Important?

Water bodies clean water from pollution and protect the land from droughts and flooding. They replenish groundwater and provide us with water to drink.

Lakes and wetlands are important habitat for wildlife, from turtles to birds, frogs, mammals and fish!



What Can We Do?

We can protect waterbodies by educating ourselves and getting involved!

100+ Ways to Conserve Water:
<https://wateruseitwisely.com/100-ways-to-conserve/>

Learn about the Blue Lakes project here:
<https://www.bluelakes.ca/>

What Do You Mean, The Land Between?

What do you notice when driving from Haliburton to Toronto? Or when traveling to Barrie? Or Lindsay for that matter? Even more, when you travel west to east, from Georgian Bay to Kingston, what do you see?

Perhaps what stands out is that the land is less rugged than in the near north, but not as flat and not arable like that to the south. Or maybe you notice more open areas, exposed bedrock in various greys and pinks. Look further and you will notice a repeating and wavy pattern of low to high and wet to dry. What you are seeing is the Land Between.

The Land Between is a transition zone between the Canadian Shield and the St. Lawrence Lowlands and what ecologists call an ecotone: the edge of a homogeneous ecosystem. This is no small “fringe” area either. The whole of it extends west from Muskoka and southern Parry Sound all the way, at approximately 240 km., to Kingston. On average it is 40 km. wide. The Land Between is what we identify primarily as Cottage Country.

A mosaic or patchwork of habitats marked by Limestone “steppingstones” to the south and Granite barrens at the edge of the shield to the north characterizes the area. Shallow soils predominate as well as many interconnected small lakes and wetlands. In fact, The Land Between has more shoreline to area than anywhere else in Ontario. As is typical of ecotones The Land Between is a mix and not uniform and so it has some of the highest habitat diversity in Ontario. Globally rare ecosystems such as alvars and savannahs, fens and meadow marshes are also found here. Furthermore, its wild lands, at 90%, are relatively in-tact compared to anywhere to the south.

Furthermore, The Land Between has a very distinct culture and heritage in Ontario. Beginning with First Nation’s value and use of the area as key east to west travel corridor. Then with post-contact settlement, areas arose of fluctuating and dispersed agriculture and lumbering. And presently, the area is known for its serenity and beauty and is appreciated by residents as well as thousands of cottagers and visitors for thriving and dynamic land-based tourism and recreation.

Of course, the value of the place is not only in our appreciation, use and care of it, but this region may have many important functions as well and there is much research needed. Because of its placement and physical make-up, with transitions in elevation and plant hardiness, The Land Between is at the northern limit for some species such as White Oak and Yellow-throated Vireo, and the southern limit for other species such as Wolf, Moose, and Jack Pine to the east. So that The Land Between may provide a reservoir and refuge for key species during climate change. Other functions are the recharge and water provisions to southern Ontario. Interesting is that associated with Granite rock is acidic water, while the calcium of Limestone to the southern extent neutralizes waters making them more alkaline. It is a meeting point for these waters. What role then, does this play in water chemistry and functions further south?

When you think about it, it seems obvious that The Land Between is different. It stands out and we’ve known it all along! However, until recently the entire area was not at all recognized as an entity. It did

not even have a name. Most planning authorities and ministries have typically classified and managed ecosystems that are homogeneous: large areas of similar make-up, and so an ecotone being an area of variations, despite its size, was not detected.

Because it was elusive The Land Between is in the middle of larger defined ecoregions and is at the edge of OMNR jurisdictional boundaries. It is beyond most Conservation Authority interests, and as a whole the planning responsibilities for the area are fragmented. Lastly, because it was not recognized, we have limited information to characterize its value, understand its functions or monitor changes.

And The Land Between is under accelerating threats. Development for leisure and retirement residences is increasing at an alarming rate. It is pushed by an increase in total population, by boomers reaching the ages for buying leisure residences or for moving outside of cities for retirement living, and by increasing numbers of commuters. Restrictions in the new Greenbelt area will squeeze development northwards. The Land Between is also pretty easy to damage. Due to its shallow soils, rapid drainage and interconnected aquatic resources, it is very susceptible to contamination. Thin soil means low absorptive capacity, and so limited capacity to filter water. Combine this with a harsher climate and the area has reduced capacity to buffer against injury. It takes very little development, be it housing, septic systems, golf courses, roads or trails for motorized vehicles, to spoil the soils, vegetation and water quality. Rebounding from any man-made alterations or damage is also inhibited because of the climate and structure. Disturbance here is long lasting.

There is a real risk of losing the very reason that people migrate to and live in the area. If land use management continues as “business as usual”, the damage from these trends is certain. Forces of population change are unavoidable, but development can be guided.

Today the area is finally gaining recognition and The Land Between has been identified as the “next frontier” in conservation. This is because prevention and proper planning is still possible. So get involved! Consider watershed plans, working with local groups and land trusts; encourage recognition of The Land Between in planning documents; look into alternative policies and of course learn more to effectively keep well and steward your own land.

Leora Berman, The Land Between



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