

ACTIVITY

#1

Agriculture Works in Mysterious Ways!

Take this challenge.

Count how many times
agriculture mysteriously
makes a difference
in your day.

Go through the lists and check all the items you use regularly...

Where do you live?

- in a home with wall paper – corn, cattle
- in a home with paint – soybeans, flax, corn
- in a home with linoleum floors – flax, cattle
- in a home with a cement foundation – corn sugar
(helps cement dry slowly)



Did you sleep today?

- with a blanket – sheepskin, wool
- with a pillow – buckwheat, goose or turkey feathers
- with a duvet – goose or turkey feathers

What did you eat today?

- eggs
- milk
- yogurt
- cheese
- meat
- fruit or juice
- vegetables
- cereal – oats, wheat, barley
- toast or muffin – wheat, oats
- other _____



Did you ride in a vehicle or take a bus today?

- ethanol fuel – canola, wheat
- biodiesel fuel – canola, soybeans
- brake fluid – flax
- polished vehicle – cattle, flax
- power steering – cornstarch, vegetable oils
- airbags – cornstarch
- spark plugs – cornstarch
- door panels – flax



What did you use today?

- soap – flax, corn, cattle, sheep, hemp, soybeans
- toothpaste – corn, eggs
- shampoo – oats
- clothes washed in detergent – canola
- creams or lotion – bees, wheat, safflower, canola
- sunscreen – oats
- makeup brush – hogs
- foundation makeup – canola, cattle
- mascara – wheat protein
- lipstick – bees, cattle
- shaving cream – sheep, cattle
- perfume – cattle
- other _____



What did you wear today?

- slippers – cattle, sheep
- wool sweater, suit, scarf – sheep
- down jacket – turkey or goose feathers
- belt – cattle
- shoes – flax, cattle
- boots – ostrich, cattle
- shoe polish – corn
- leather jacket, pants, skirt – cattle, pigs
- linen shirt, jacket – flax
- purse – cattle
- other _____



What did you do for a pet today?

- feed it – cattle, canola, lamb
- feed it fish food – plants, canola
- change the litter box – corn, wheat
- other _____



Did you use medicine today?

- antibiotics – corn
- throat lozenges – eggs
- diabetic test strips – horseradish



Did you play any sports today?

- football – hogs
- football helmet – cattle (hard plastic)
- curling broom – pigs, horses
- volleyball – pigs
- basketball – pigs
- baseball glove – pigs, cattle
- tennis ball – sheep
- tennis racket – sheep intestines
- soccer ball – pigs
- fishing rod hook – rooster feathers
- golf grass – turf seed
- golf tees (biodegradeable) – cornstarch
- other _____

Did you use a computer today?

- printer ink – soybeans, canola
- keyboard duster – ostrich feathers



Did you walk or use your bike today?

- grass – grass seed
- bicycle – cattle (fatty acids in tires)

Now count the number of times agriculture mysteriously appears in your day!

Insert the number of boxes you checked

Find out more about agriculture

For more information, contact your nearest Manitoba Agriculture GO Office:
call 204-945-4521 in Winnipeg; or visit manitoba.ca/agriculture.

ACTIVITY

#2



LESSON SUMMARY

Students will learn about the diversity of native Ontario tree species as well as of their specific habitat requirements. Students will apply their reading and deduction skills to determine which habitat is most suitable for each tree species.



TD Friends of the
Environment
Foundation



Activity Information

Grade Level:	Grades 4-8
Estimated duration:	72 minutes (one class)
Materials:	<ul style="list-style-type: none">• Putting Down Roots activity sheet and Landscape printout – one per student• Tree Characteristics Cards – one set for class• Glue• Scissors
Setting:	Indoors
Key Vocabulary:	Habitat, Nutrients, pH

Learning Goals

By the end of the lesson, students will be able to:

- identify native Ontario tree species;
- understand growing conditions required for tree survival;
- understand the diversity and unique characteristics of different tree species;
- understand the diversity of soils and the environment.

Curriculum Links

Science

Grade 4 – Understanding Life Systems, Habitats and Communities

OE1. Analyse the effects of human activities on habitats and communities;

OE2. Investigate the interdependence of plants and animals within specific habitats and communities;

OE3. Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them.

Grade 6 – Understanding Life Systems, Biodiversity

OE1. Assess human impacts on biodiversity, and identify ways of preserving biodiversity;

Grade 7 – Understanding Life Systems, Interactions in the Environment

OE2. Investigate interactions within the environment, and identify factors that affect the balance between different components of an ecosystem;

OE3. Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment.

OE3. Demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans.

Extension

- Learn to identify more trees with Tree Bee www.treebee.ca

Teacher Instructions

Set Up

1. Print out copies of all the handouts and one class set of the Tree Characteristic Cards.
2. Within the classroom set up a station for each Tree Characteristic Card. Have the matching Tree Cut outs at each station.
3. Teacher can choose to pre-cut all the cut outs or have students cut them themselves.

Activity

1. Individually or as a class, read through the background information sheet, "Putting Down Roots"
2. Explain how the activity will work:
 - a. Students will circulate around the classroom and visit each station.
 - b. Students will need to read all eight of the Tree Characteristic Cards
 - c. They will have to determine where each tree species belongs on their landscape handout.
 - d. Students will tape or glue their cut outs of the trees onto their landscape handout.
3. After completion, teacher can decide whether to have a quiet answering period and subsequently a discussion.

Name _____

Date _____

PUTTING DOWN ROOTS

Trees play a significant role in the environment by provide oxygen and storing carbon in their tissues as well as creating habitat for many species of plants and animals. Trees are very adaptable and can survive in a number of habitats. However, each type of tree has a preferred habitat where it grows best and thrives.

Factors that Affect Growth

A primary factor that determines a trees' growth is sunlight. Trees undergo a process which uses light energy from the sun and carbon dioxide, a gas humans breathe out, to make oxygen and sugars. These sugars are stored energy used for the tree's growth, reproduction, and other life processes. Each type of tree has different needs; some will need more sunlight while some will need more shade.

The make-up of soil is also important for tree growth and survival. Soils are made of a mixture of sand, silt, and clay. Based on the amounts of sand, silt, and clay, the properties of the soil will change. Sandy soils allow water and nutrients to drain very quickly and are washed away before trees can use them. Clay soils keep water well and tend to be very hard for tree roots to penetrate. Soils mostly made up of silt allow water to drain and have enough water and nutrients for most trees to grow in. Trees have different characteristics and some will have fast growing and wide-reaching roots that absorb water quickly and are better in dry soils. On the other hand some trees have shorter shallower roots that will grow better in hard soils which contain a lot of water.

Another factor that affects tree growth is soil pH. pH is a measure used by scientists to determine how acidic the soil is. Most soils have a pH of around 7.0, which is neutral. A common acid that you probably know of is vinegar, which has a pH of 2.4! pH is important as it controls the nutrients that can be used by the trees.

There are many other factors that can affect the environment and habitat a tree lives in. Some factors include temperatures, climate zones, and wildlife. When a tree is planted in the correct conditions and habitat, the tree will likely survive and grow!

Forests Ontario & Ontario Government Initiative

In 2007, the Ontario government undertook the ambitious goal of planting 50 million trees in Ontario by 2025. Forests Ontario administers the 50 Million Tree Program in hopes to make the environment better! Planting native trees will help keep carbon out of the atmosphere, diversity local forests, and combat climate change.

Name _____

Date _____

PUTTING DOWN ROOTS ACTIVITY

Now that you have learned about trees and the factors that affect their growth you have a task! Working alone or in a group and travel around the classroom to identify where each species will grow best!

Instructions

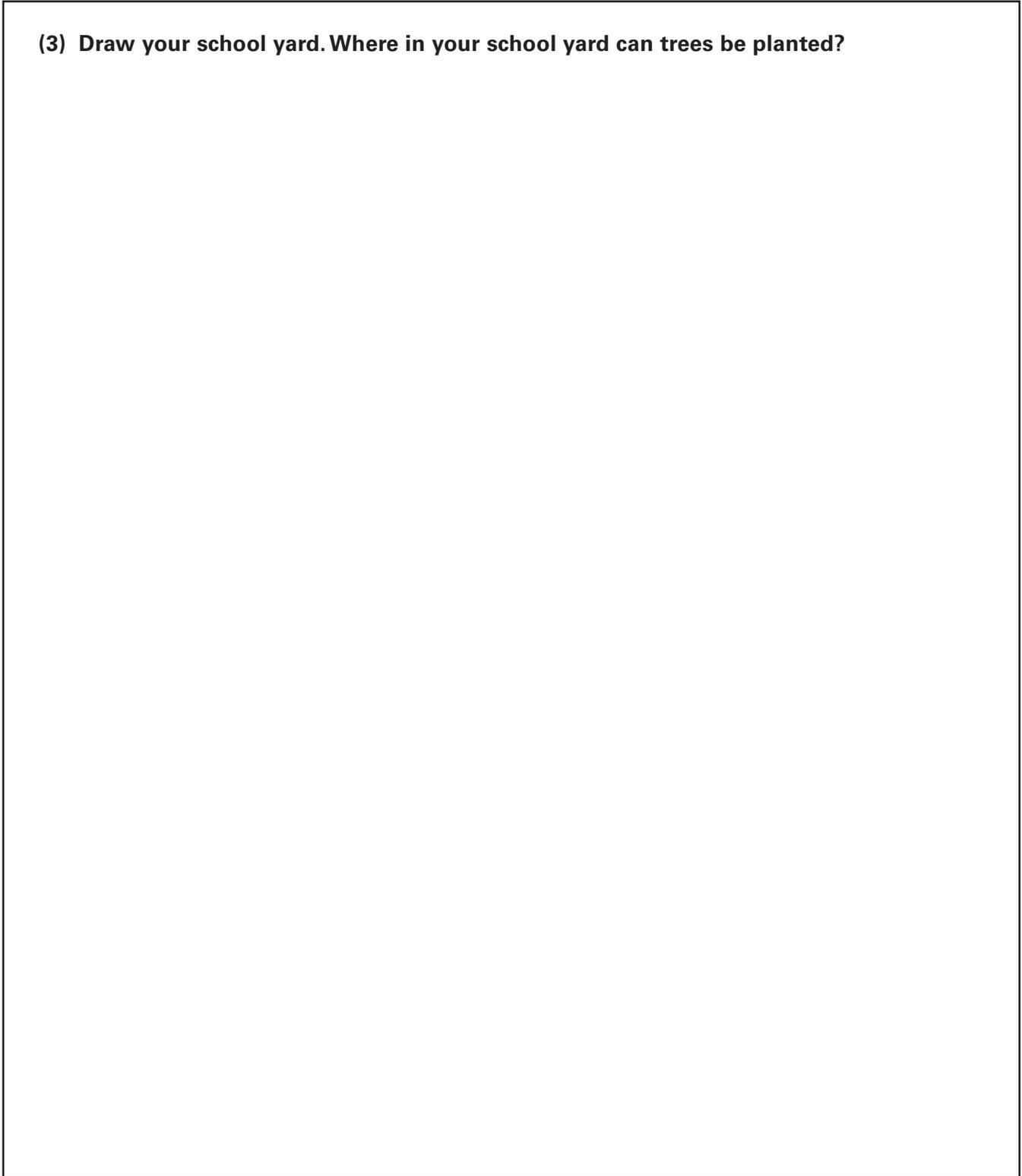
1. Retrieve a landscape sheet and tape or glue.
2. Travel around the classroom, stop at each of the stations and read the tree description.
3. Determine where the tree species belongs on the landscape sheet based on the description. Take a tree cut-out from the station and place it onto its correct location on the landscape sheet.
4. Once you have completed all the station return to your seat.

Discussion Questions

(1) What factors, other than those discussed, could affect the growth of a tree?

(2) How can you help trees and forests to thrive?

(3) Draw your school yard. Where in your school yard can trees be planted?



Tree Characteristic Cards

Tamarack (*Larix laricina*)

- Is a deciduous conifer – the bluish green needles turn bright yellow in autumn before falling
- Prefers moist soils that are rich, well-drained organic and loamy (pH 5.5-7.6)
- Seedlings require lots of sunlight
- Seeds are a food source for red squirrels and crossbills, seedlings are eaten by snowshoe hares, and inner bark by porcupines. The tree is a nesting area for osprey and great grey owls.



Red Pine (*Pinus resinosa*)

- Called “red” pine because its bark is reddish to pink in colour
- Can live in poor and rocky soil
- Prefers dry sites, well to moderately-well drained sandy soils
- Prefers full sun



Silver Maple (*Acer saccharinum*)

- Bark on the trunk is gray when the tree is young, then becomes dark reddish brown; leaves turn yellow in the fall
- Requires very fertile soils
- Requires moist sites, can tolerate temporary flooding
- Prefers full sun
- Buds are eaten by squirrels, trunks provide dens for squirrels, raccoons, wood ducks, and woodpeckers while the bark is a food source for beavers



Balsam Fir (*Abies balsamea*)

- Balsam firs are often used as Christmas trees because they have a wonderful scent, and the needles stay on the tree for a long time after it's been cut down.
- Grows in a variety of soils
- Can survive with different water levels
- Can survive in the shade



Blue Ash (*Fraxinus quadrangulata*)

- Its name comes from a sticky substance found under the bark that turns blue when exposed to air
- Able to grow in floodplains but can adapt to dry soils
- Prefers full sun
- It is threatened by Emerald Ash Borer and is protected under the Endangered Species Act, 2007



Black Spruce (*Picea mariana*)

- Requires fire or bog formation for regeneration
- Prefers rich soils with plenty of woody debris (pH 4-6)
- Can live with different moisture levels
- Can live in partial shade



Bur Oak (*Quercus macrocarpa*)

- Greatest tolerance of all oaks to urban pollution and can grow well in cities
- Does well on a range of conditions but prefers moist sites
- Best planted in partial shade
- Acorns are food source for red squirrels, blue jays, wood ducks, wild turkey, deer and rodents



Sycamore (*Platanus occidentalis*)

- The bark has a distinctive patchwork look as it flakes off to reveal white, green and cream-coloured inner bark
- Prefers rich soils, tolerates heavy clay
- Prefers moist soils, tolerates seasonal flooding
- Can grow in part shade or full sun



Cut Outs!



Tamarack



Red Pine



Sycamore



Silver Maple



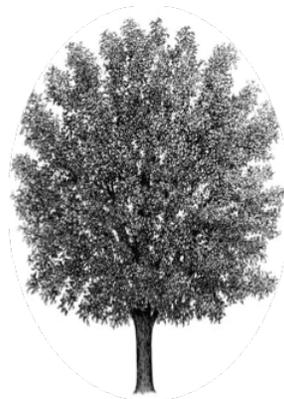
Balsam Fir



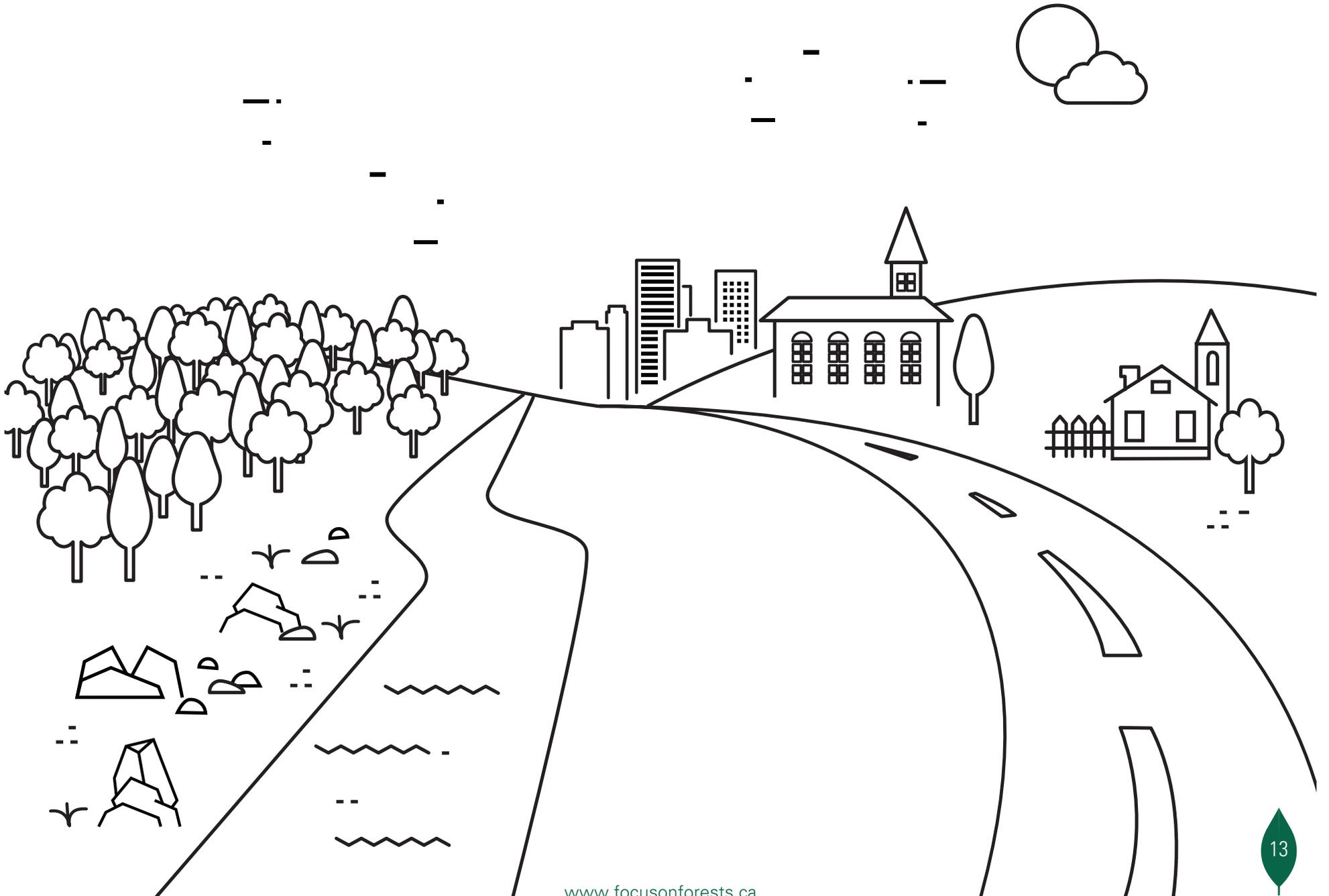
Blue Ash



Black Spruce



Bur Oak



ACTIVITY

#3



LESSON SUMMARY

Students will learn about Canada's forest regions and unique characteristics through guided research.

- TUNDRA
- GRASSLANDS

Activity Information

Grades:	Junior/Intermediate
Estimated duration:	2 class periods (1 for research and 1 for creating a map and discussion)
Materials:	<ul style="list-style-type: none">• Computer lab if resources allow• Encyclopaedias or other resource books• Map of Canada• Pencil crayons
Setting:	Indoor
Key Vocabulary:	Forest region, forest distribution, map, ecotones, geography, economy

Curriculum Links

Social Studies: Grade 4

B3.1 identify various physical regions in Canada (e.g., landform, vegetation, and climatic regions), and describe their location and some of the major ways in which they are distinct from and similar to each other (e.g., the location of the Western Cordillera and the Appalachian regions and the characteristics of the mountains in each region; characteristics of boreal forest and tundra regions; similarities and differences between agricultural areas in the Niagara region, the Annapolis Valley, and the western plains; climatic differences between the rainforest of Vancouver Island and arid areas such as the Canadian badlands)

Social Studies: Grade 4

3.3 identify factors (e.g., availability of water or food, amount of light, type of weather) that affect the ability of plants and animals to survive in a specific habitat.

Science: Grade 6

3.6 identify everyday products that come from a diversity of organisms (e.g., traditional pain relievers are derived from the bark of the white willow tree; tofu is made from soybeans; silk is made from silkworm cocoons; nutritional supplements, shampoos, toothpastes, and deodorants contain pollen collected by bees)

Learning Goals

1. Students will become familiar with the names and characteristics of Canada's forest regions.
2. Students will be able to indicate their location on a map and identify the forest region.
3. Students will learn about some of the many items produced from wood and wood by-products.

Teacher Background

It seems hard to believe that 10 000 years ago most of Canada was covered with ice. As the ice receded, the land that emerged was quickly colonized by plants and trees. The exceptional ability of trees to migrate and adapt to new soils and climatic conditions accounts for the transformation of the land.

Today, there are eight recognized forest regions in Canada: the **Boreal, Deciduous, Great Lakes-St. Lawrence, Acadian, Subalpine, Montane, Columbia,** and **Coast** forest regions. Each region has its own characteristic mix of tree species that thrive under certain growing conditions. The distribution and growth of tree species is heavily influenced by such factors as topography, climate, and soil conditions. Soil conditions include composition, type, depth and moisture regime. Different trees require different soil conditions. Jack pine, for example, usually grow well in dry, sandy soils, whereas tamarack prefer moist, to wet, peaty soil. Forest managers need to know this information when managing their forests as it is important in determining the right harvesting practice, and regenerating the forest afterwards.

The different forest regions have within them a variety of tree species that are harvested for different purposes. Tree species such as pine and spruce are used in the pulp industry, making paper and paper products – and even sometimes to create food flavouring! Hardwoods like maple, ash or oak provide high quality wood materials often used in flooring or cabinetry. Different woods possess different qualities which make them ideal for specific purposes.

While Canada has plenty of forest resources within its borders, access is limited in some cases due to geography. Costs to access a resource may often outweigh any benefits.

Did you know? 80% of Canada's forest land is found in the Boreal.

Teacher Preparation

Before beginning this activity, if resources allow, you will need to arrange a class period in either the computer lab or library for students to complete their individual study. If you will be working in a library it is recommended that the most relevant resources be pulled in advance.

For the second class period, provide each student with a copy of a map of Canada (see the end of this lesson plan) and pencil crayons to complete the forest region labelling task.

Activity

Day One

1. Indicate to the students that they are to find the locations of the different forest regions of Canada. Students should make note of the characteristics of each forest region as well as determine what products or materials can be made using trees from each region. Students should be made aware that they will be required to create a forest region map the next day in class.
2. Students should be given one full guided study period to collect the information needed to complete day 2 tasks.

Day Two

1. Start by getting students to discuss the different forest regions that they learned about during the guided study period. What are the names of each forest region? What characteristics or trees define them? This can be done as a class or in small groups.
2. Provide each student with a copy of Canada's Forest Distribution Map.
3. The map requires students to include a legend to denote the various forest regions. Brainstorm with the class what is contained in a legend and how they can effectively display the required information. Encourage students to create borders for each forest region.
4. Consider discussing forest "ecotones" with the class. Ecotones are the transition areas found between two types of ecosystems. Explain how forest regions are not clearly defined on the land and that there is a gradual shift of species from one region to another. However regions are used to describe the general area of a forest type.
5. After students have completed their maps review as a group. The teacher should lead the students through a discussion of the characteristics of each region as well as products that are made using common tree species. For more information about wood products you can download a copy of the Weird Wood lesson plan or Weird Wood Flashcards from www.forestsontario.ca
6. Once you have discussed wood products shift the discussion towards the economy and forests centering on the impact of human use on forests. How does the geography of Canada benefit its economy? What economic disadvantages are there with Canada's geography? Discuss the distribution of natural resources to the location of populations.
7. Students should then hand in their maps so they can be displayed in the classroom.

