



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



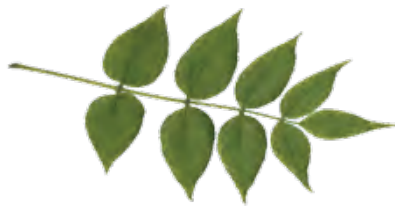
Balsam Fir (*Abies balsamea*)

- 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



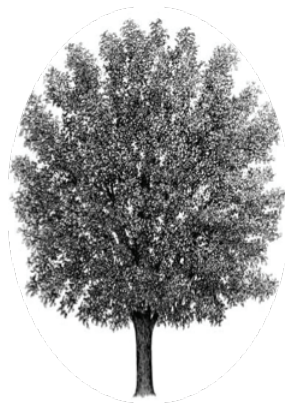
Balsam Fir



Blue Ash



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