



**Fleming College
Arboretum**



**School of Environmental &
Natural Resource Sciences**
Frost Campus | Fleming College

Trees and Shrubs Identification 101

Fleming College Arboretum Workshop

Indigenous Acknowledgment

Fleming College respectfully acknowledges that we are situated on Michi Saagiig Anishinaabeg lands and territory. G'chi miigwech to the Michi Saagiig peoples for allowing us to continue our work in your territory.



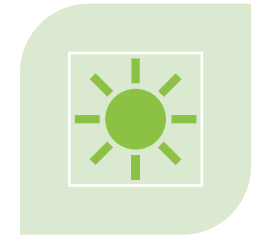
Agenda



IN-CLASS
SESSION



15-MINUTE
BREAK



OUTDOOR
TOUR



15-MINUTE
BREAK



ID OUTDOOR
CHALLENGE



WRAP UP

A photograph of a snowy landscape, likely an arboretum, with several young trees planted in rows. A white building is visible in the background on the left. The scene is dimly lit, suggesting dusk or dawn. A dark, rounded rectangular box is overlaid on the center of the image, containing the title text.

*The Fleming College
Arboretum*

The Arboretum Initiative

Pumpkin Ash

Scientific Name: Fraxinus profunda

Family: Oleaceae



Fleming College
Arboretum

2018-76B

- The Fleming College Arboretum was established on the Frost Campus in 2018
- Its mission is to create a living laboratory and showcase native and non-native trees and shrubs species
 - Emphasis is placed on providing applied research opportunities to staff and students
- To date, 260 new trees and shrubs representing 108 different species have been planted



Trees of interest

Species at Risk (SAR)

- The arboretum hosts both species commonly found in Ontario and Species At Risk (SAR)
 - American Chestnut
 - Butternut
 - Blue Ash

Research

- Currently exploring opportunities to engage in assisted migration of southern white pine (originating from seed zone 37)

Plant Hardiness Zones

What are Plant Hardiness Zones?

- Zones in Canada where various types of trees and shrubs will most likely survive
- Distributions are based on the average climatic conditions of each area

Why do They Matter?

- Provide an understanding of what type of trees grow best in specific regions
- Detail ideal times to plant, and how to make the most of specific growing conditions





Assisted Migration

What is it?

- The human-assisted movement of populations

Why is it necessary?

- Climate change is shifting plant hardiness zones North in Ontario
- Tree and shrub populations, which cannot adapt to the change in regional climates, are exposed to increased risks of extirpation

Climate Change in Ontario



In between 1948-2012, annual rainfall has increased by 9.7%, with predictions to increase by another 6.6% by 2050



Between 1948 and 2016, the average annual temperature in Ontario has increased by 1.3°C and is predicted to increase by 1°C by 2050



Since 2000, the frequency of 24-hour and 7-day extreme rainfall events have increased in Ontario

Ramifications for Trees and Shrubs



Prolonged exposure to elevated temperatures and increased rainfall could alter soil moisture.



Could impact seed persistence in soil (longevity, dormancy release, and germination period)

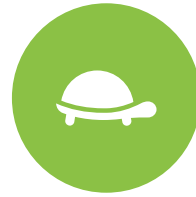


Could alter geographical distribution of native species while propagating invasive species.



Impact population dynamics in forest stands

Additional Benefits of the Arboretum



Preservation of critical
SAR species



Reconnecting
with nature and
forest bathing



Learning &
educational
opportunities



Locally sourced
trees




Collaboration with the Seed Bank

Self Sourced, Fleming Grown Trees

- Growing trees from the seeds stored and germinated within the Frost Seed Bank
- Once seeds are ready for planting, they can progress towards the Arboretum

Research Collaboration

- Both organizations share a focus on Species at Risk



Introduction to Trees & Shrubs



Staghorn Sumac



Wood Anemone

Woody and Non-Woody Plants

Woody Plants

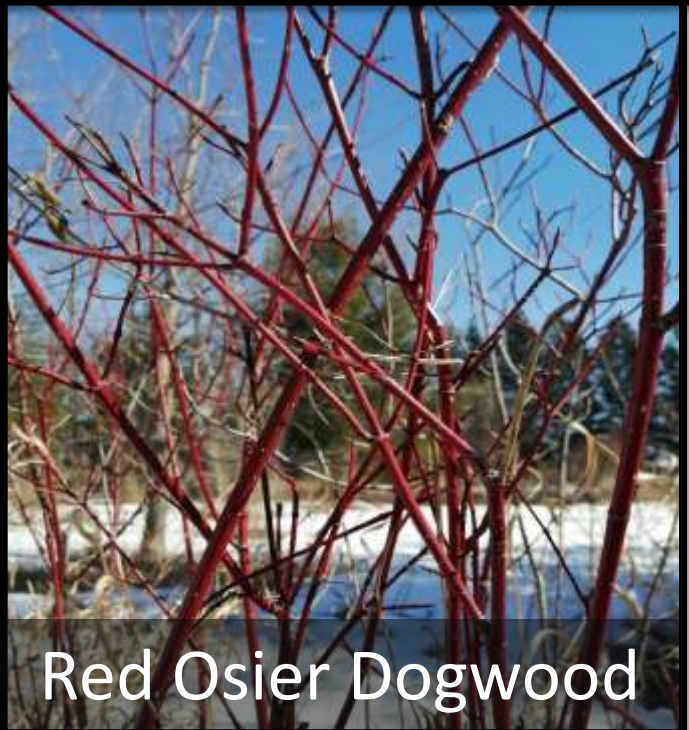
- Species of plant that produces wood as its structural tissue
- Stem is not easily bendable; it is firm and sturdy
- Typically perennial species

Non-Woody Plants (Herbaceous)

- Vascular plants that have no persistent woody stems above ground
- Bendable/flexible stems
- Includes both annual and perennial species



Eastern-white Cedar



Red Osier Dogwood

Tree or Shrub?

Trees

- Typically over 20 feet tall and have trunks more than 2 inches in diameter at 4.5 feet above the ground.
 - Example: Eastern-White Cedar

Shrubs

- Smaller in size with many small, woody, bark covered stems rising from soil
- Example: Red Osier Dogwood



White Pine



White Birch

Conifer or Deciduous tree?

Conifer

- Possess needles or scales and do not shed them
- Reproduces through cones
 - Example: White Pine

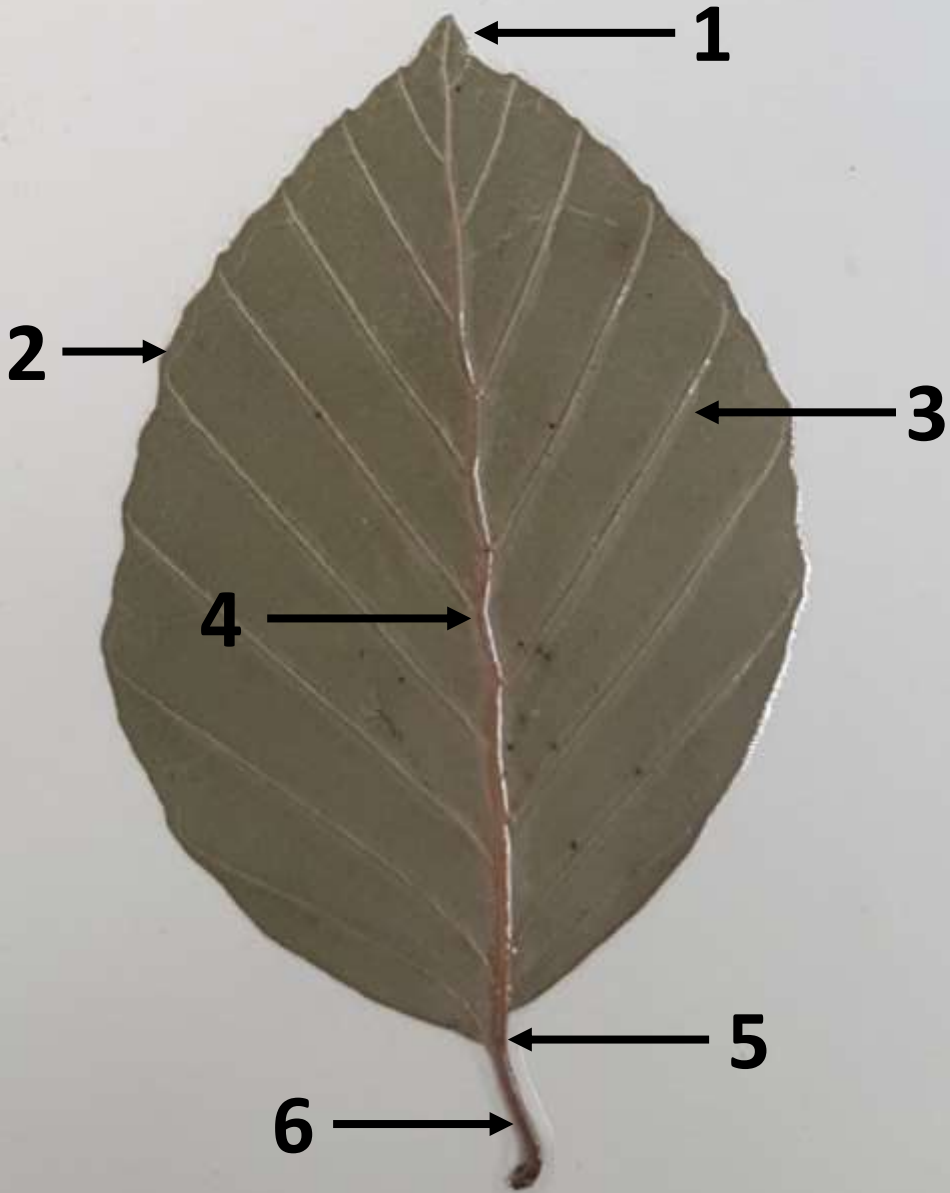
Deciduous

- Shed leaves during Fall and enters dormancy for the duration of winter months (December - March)
 - Example: White Birch



Deciduous Trees

Leaf Anatomy



1. Apex

2. Margin

3. Vein

4. Midrib

5. Base

6. Petiole

Deciduous: Is it Alternate or Opposite?

Alternate

- One bud growing per node, nodes grow in an alternating pattern on the stem.
- Example: Staghorn Sumac

Opposite

- One buds grows from each node, with nodes on either side of stem
- Example: Red Maple



Staghorn Sumac



Red Maple



Staghorn Sumac



American beech

Deciduous: Compound leaves vs. Simple leaves

Compound

- Leaves are divided into separate leaflets
- Example: Staghorn Sumac

Simple

- Single leaf branching from twig
- Example: American Beech

71.



Staghorn Sumac

Compound Leaves Structures

Pinnately Compound

- Feather-like shape
- Leaflets occur in rows
- Leaflets arranged on an elongated axis on stem
 - Example: Staghorn Sumac

Palmately Compound

- Resembles palm of hand
- Leaflets all attach at a central point
 - Example: Ohio Buckeye




Ohio Buckeye

Compound Leaves Structures

Bipinnately Compound

- Leaflet is divided twice
- The leaflets appear on the rachis then are further
- Subdivided along secondary rachises.
 - Example: Kentucky Coffee Tree



Kentucky Coffee Tree

Simple Leaf Structures

Lobed leaves

- Leaves with distinct protrusions, either rounded or pointed.
- Example: White Oak

Entire leaves

- Margins without teeth or serrations. Rounded or smooth margins
- Example: Kentucky Coffee Tree



White Oak



Kentucky Coffee
Tree

Simple Leaf Structures

Serrated Leaves

- Margins – more or less toothed describe different types of relatively fine, continuous tothing, as well as situations where the teeth are widely spaced, large and lobe-like, or occur at different scales (doubly toothed).
- Finely Serrated
 - Example: Pin Cherry
- Coarsely Serrated
- Double Serrated
 - Example: White Elm



Pin Cherry



White Elm



Coniferous Trees



Question #1

Are the needles scale-like in appearance?

- Yes? Cedar species
- No? Proceed to following question

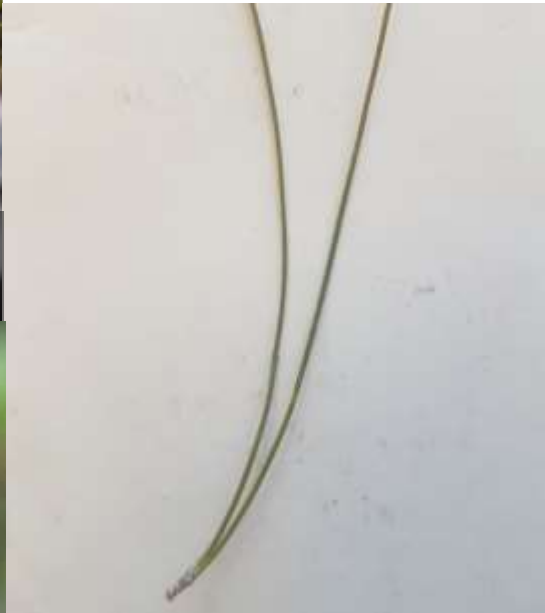
Question #2

Are needles in singles, bundles, or whorls?

- Bundles? Pine species
- Whorls? Tamarack species
- Singles? Fir, spruce or hemlock species
 - Proceed to following question



Balsam fir



Red pine



PLACEHOLDER

Tamarack

Question #3

Single needles: Are they round or flat?

- Round? Spruce species
- Flat? Fir or hemlock species
- Proceed to following question



Balsam fir



White spruce



PLACEHOLDER

Eastern hemlock



Balsam fir

Question #4

Flat needles: Are the needles short or long?

- Short? Hemlock species
- Long? Fir species



Sycamore



Butternut



Sugar Maple

Additional Identification Features

Leaf Veins

- How many veins are there? Are they evenly spaced?

Buds

- Are the buds canted? (is the terminal bud on an angle?)
- Are the buds appressed to the stems?
- Are fine hairs present on the buds?

Bark

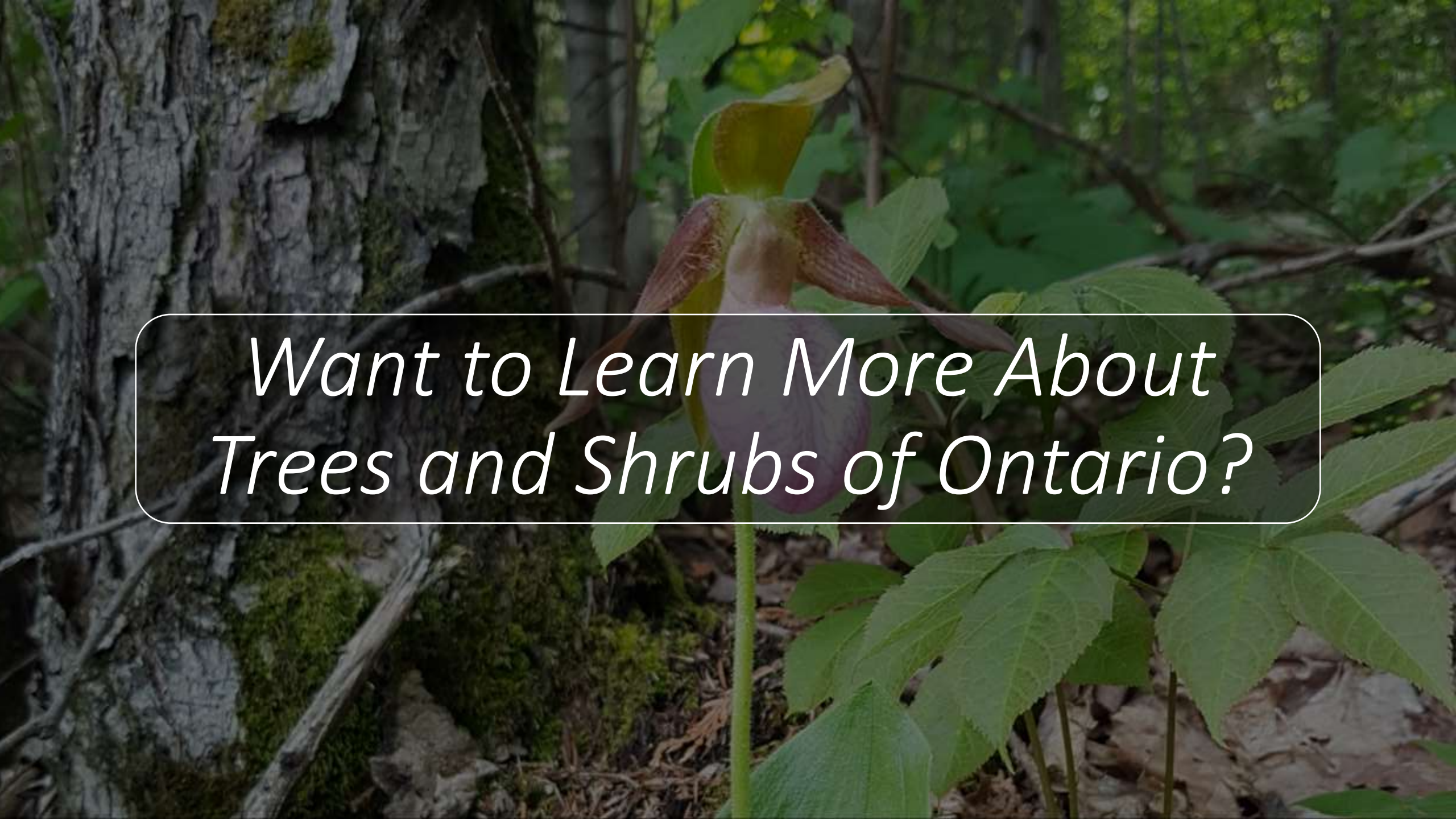
- Is bark scaly? Is it smooth? Does it strip off?

15-Minute Break

- Reconvene back in class

Outdoor Activity:

- We are going to tour the Arboretum and practice identifying trees and shrubs in the field

A photograph of a purple and green flower, likely a Spotted Squirrelflower, in a forest setting. The flower is the central focus, with its petals showing a mix of purple and green hues. The background is a dense forest with green foliage and a tree trunk on the left. A white text box with rounded corners is overlaid on the image, containing the text:

*Want to Learn More About
Trees and Shrubs of Ontario?*

Actions

- Attend future Arboretum workshops
 - Want to learn about the medicinal properties of trees and shrubs? Come to the traditional tree and shrub uses & Indigenous culture workshop
 - Want to learn how to germinate your own trees and shrubs? Come to the Saving Seeds for the Future workshop
- Enlist in the Trees and Shrubs of Ontario course offered at here at Fleming College



Workshop Debrief

- The Fleming College Arboretum is still in its fledgling stages but will continue to grow going forward!
- Tree identification skills involves continual learning and there are always opportunities to improve!

Want to learn more?

- Purchase field manuals to practice identification skills on your own
 - Forest Plants Central Ontario – Available at the Fleming College book store



*Thanks for Attending the
Workshop!*