Plant Identification

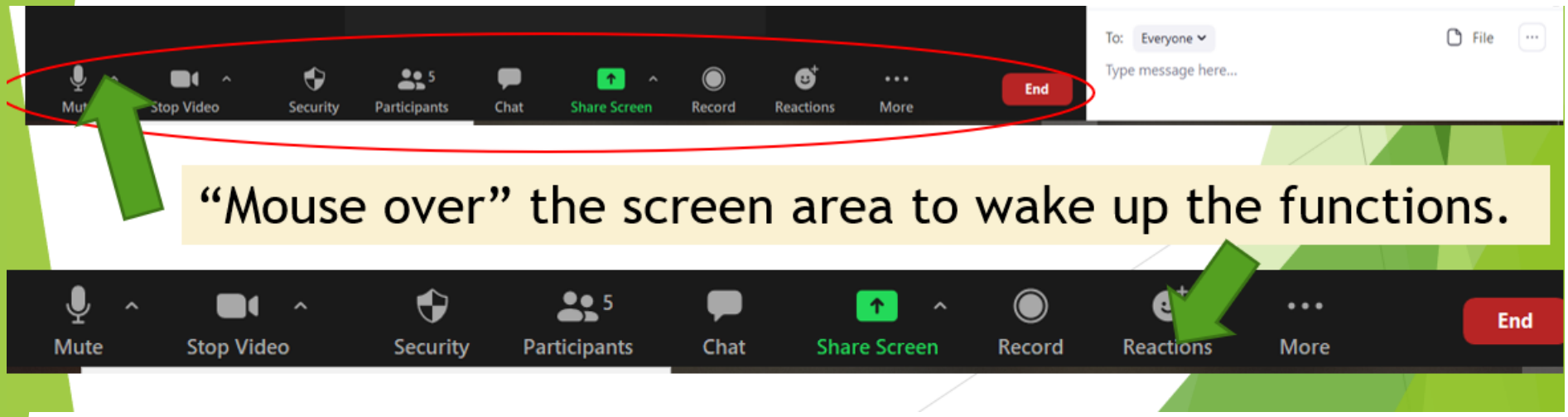
Prepared by:
Etobicoke Master Gardeners

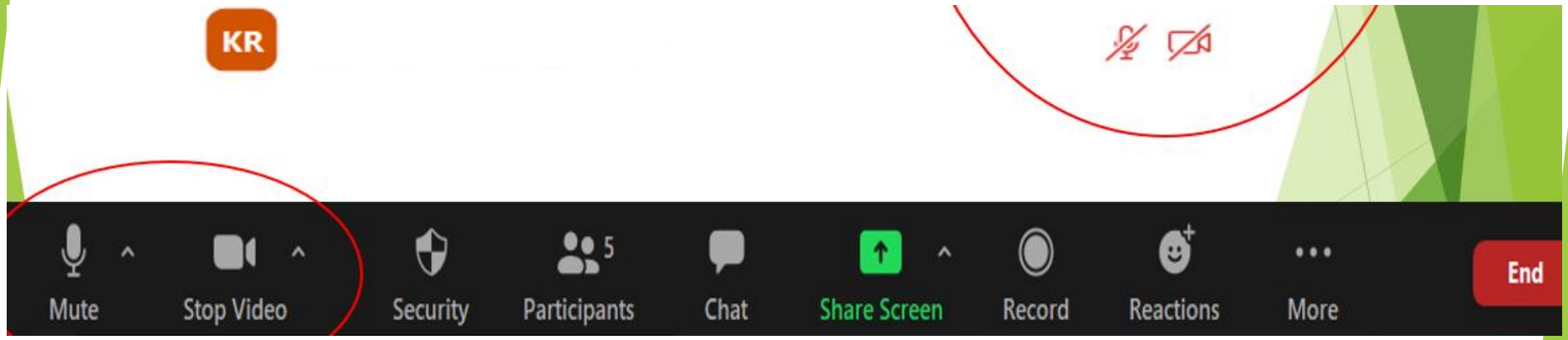
Presented with:
Humber Arboretum

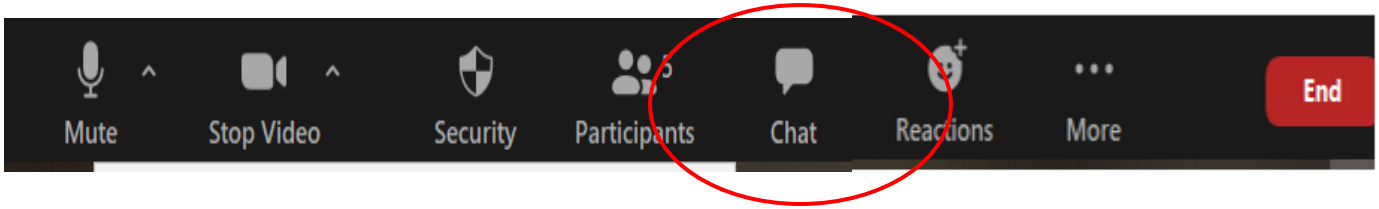
Etobicoke Master Gardeners
www.etobicokemastergardeners.ca

Humber Arboretum
www.humberarboretum.on.ca

Welcome to Virtual Tips & Tricks



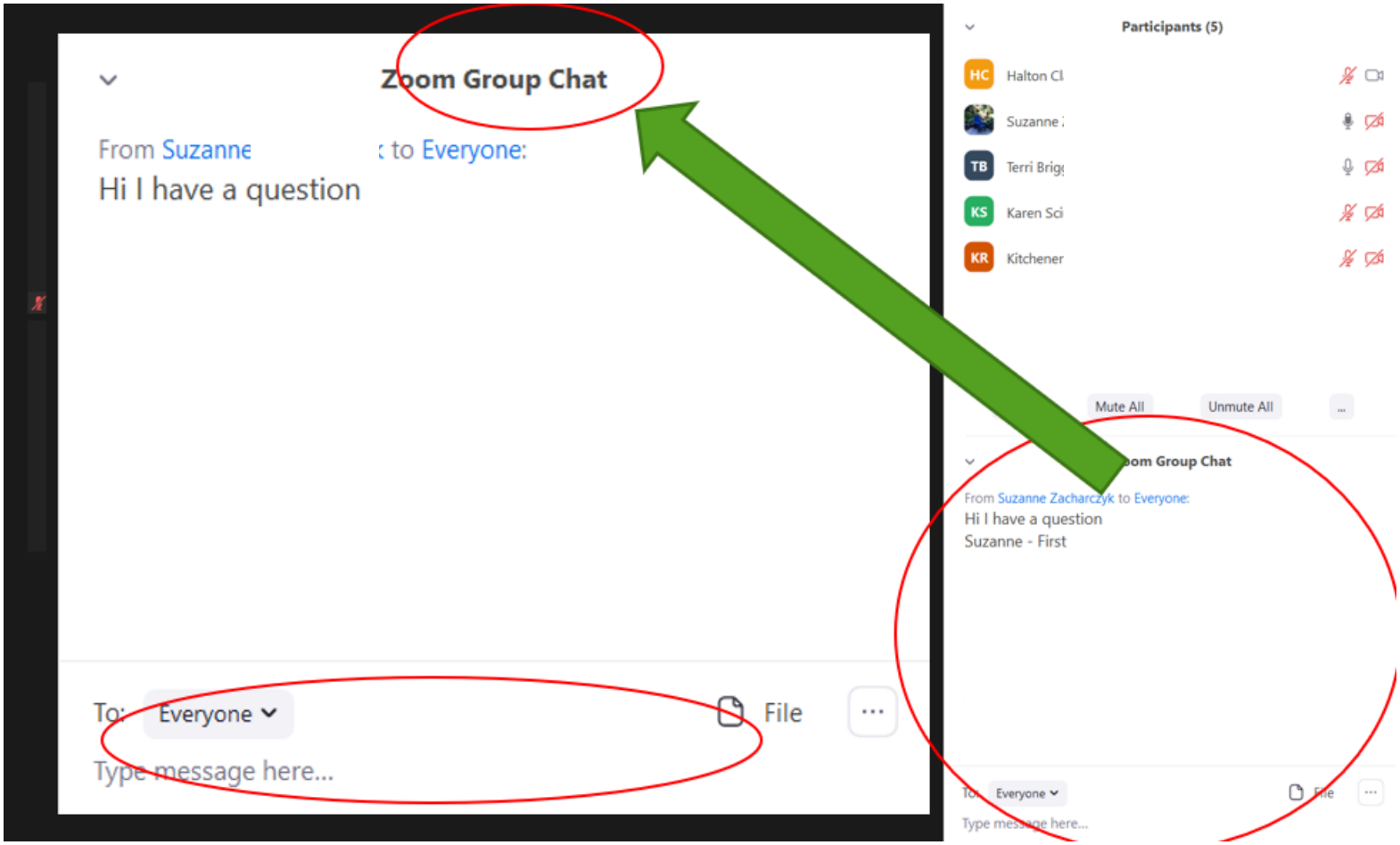




How to ask a question:

✓ Click on “Chat” in the functions

✓ Type in your question. A moderator will read it.



Master Gardeners of Ontario

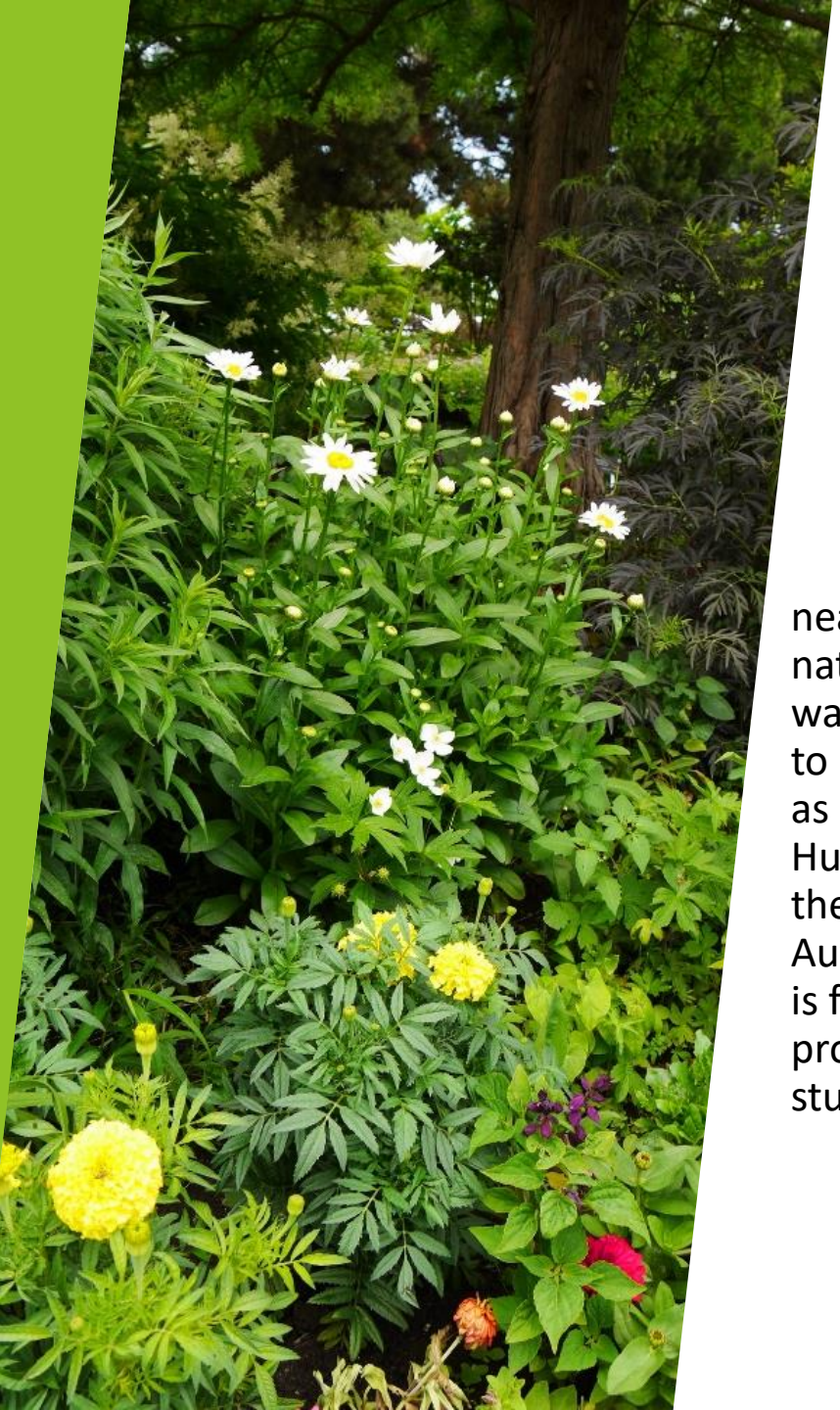
Etobicoke Master Gardeners

ABOUT US CONTACT US CALENDAR OF EVENTS COMMUNITY ACTIVITIES

Etobicoke Master Gardeners (EMG) was formed in January 2005 and is meant to cover the west side of Toronto and take in those people who want to study for the Master Gardener (MG) designation.

Meetings are held at the Montgomery Inn on the fourth Wednesday of most months from 7 to 10 p.m.

EMG comprises 36 active members: 26 Master Gardeners (MG) and 10 Master Gardeners in Training (MGIT) who are in the process of studying for Master Gardener Certification. We welcome inquiries from enthusiastic and interested individuals wishing to learn more about joining our



HUMBER
ARBORETUM
+ CENTRE FOR URBAN ECOLOGY

The Humber Arboretum consists of nearly 250 acres of public gardens and natural areas located in the Humber River watershed in North Etobicoke. Connected to Humber College North Campus, it exists as a unique tri-partnership between Humber College, the City of Toronto, and the Toronto and Region Conservation Authority (TRCA). The Humber Arboretum is free to visit and offers a variety of programming to both Humber College students and the public.

LAND ACKNOWLEDGEMENT

Humber Arboretum and Humber College are located within the traditional and treaty lands of the Mississaugas of the Credit.

Known as Adoobiigok [A-doe-bee-goke], the "Place of the Alders" in Michi Saagiig [Mi-Chee Saw-Geeg] language, the region is uniquely situated along the Humber River Watershed, which historically provided an integral connection for Anishinaabe [Ah-nish-nah-bay], Haudenosaunee [Hoeden-no-shownee], and Wendat [Wine-Dot] peoples between the Ontario Lakeshore and the Lake Simcoe/Georgian Bay regions.

Now home to people of numerous nations, Adoobiigok continues to provide a vital source of interconnection for all.

HUMBER ARBORETUM

Agenda

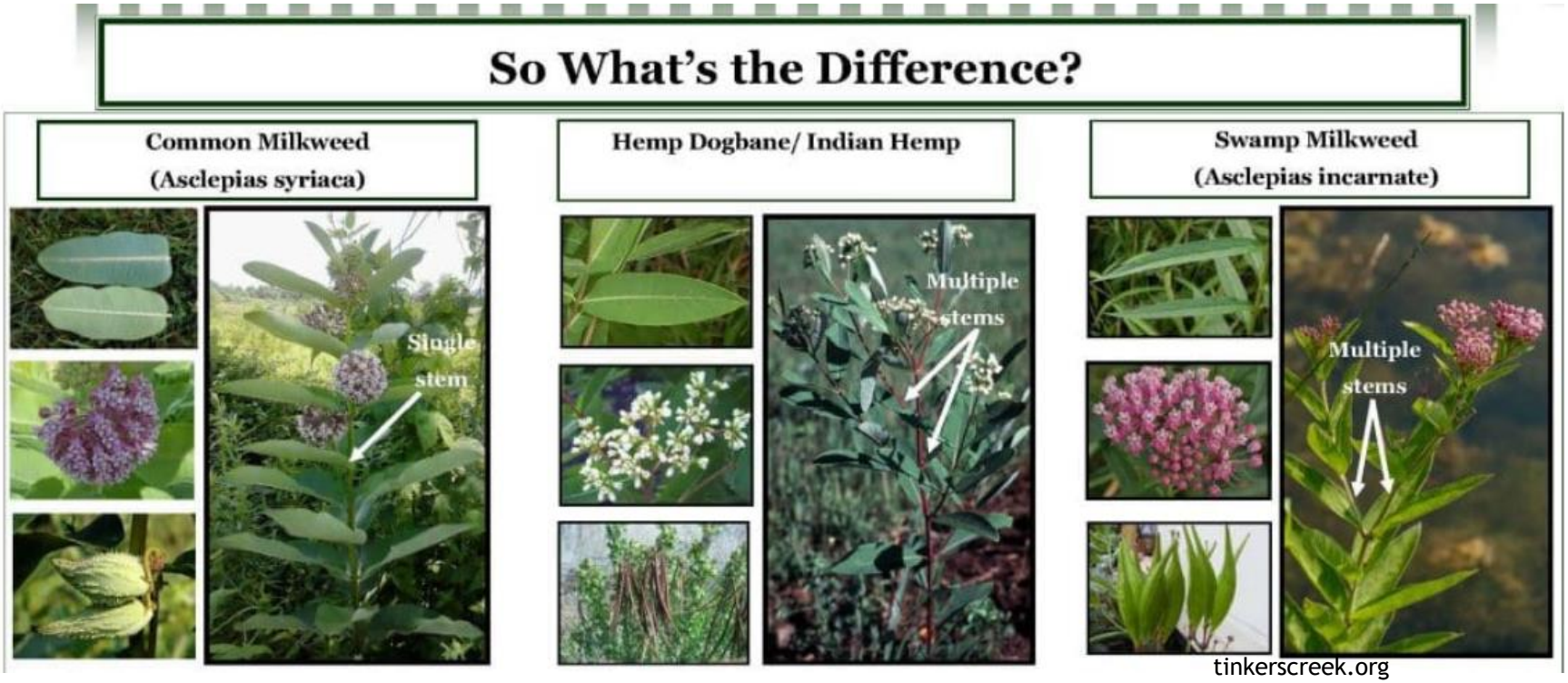
- ✓ Introduction
- ✓ Why it is important to identify plants?
- ✓ Plant Names and Classification
- ✓ Varieties, Cultivars & Hybrids
- ✓ Plant Hardiness Zones
- ✓ Plant Structure: Stems, Roots, Leaves, Reproductive Tissue, and Flowers
- ✓ Botanical Keys, identification manuals, and online tools
- ✓ Identification: Annuals, Perennials, Shrubs, Vines, Trees, Evergreens
- ✓ Wrap Up

Poll Question:

Have you ever taken any courses / workshops on plant identification?

Why it is important to identify plants?

Why it is important to identify plants?



"All these plants look the same to me"

"There's too many to tell the difference"

Why it is important to identify plants?

- ✓ Get the plant you want
  - ✓ Botanical vs Common Name
- ✓ Get the right plant for the right spot
- ✓ Safety & harm prevention at home and the wild
- ✓ Education, and knowledge transfer
- ✓ Personal satisfaction and for the ‘fun of it’

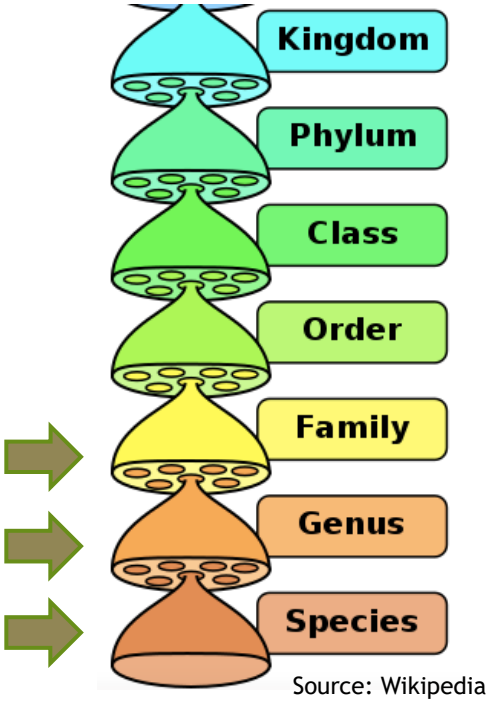
Which is Poison Ivy?

Photos by EMG

Plant Names and Classification

Classification System of the Kingdom Plantae

Simplified Illustration of classification structure



Source: Wikipedia

- ✓ Classify using observation of plant morphology
  - ✓ progressively similar characteristics
- ✓ System creates specific species scientific name – Binomial Name
  - ✓ Example: Red Oak tree – *Quercus rubra*
  - ✓ Plants within a species
    - ✓ Very similar in appearance
    - ✓ Thrive in same habitat
- ✓ Taxonomy (plant Taxa) –
  - ✓ Follows the classification sequence
  - ✓ Evolutionary relationships

Six different species

French Marigold

English Lavender

New England Aster

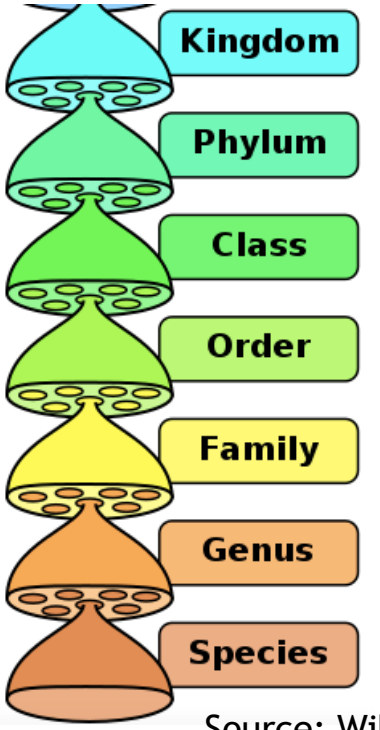
Gray's Sedge

Scotch Marigold

Bougainvillea

Classification System

Sample: Family – Asteraceae



Source: Wiki

Twelve species of Asteraceae from the subfamilies Asteroideae, Carduoideae, and Cichorioideae

French Marigold

New England Aster

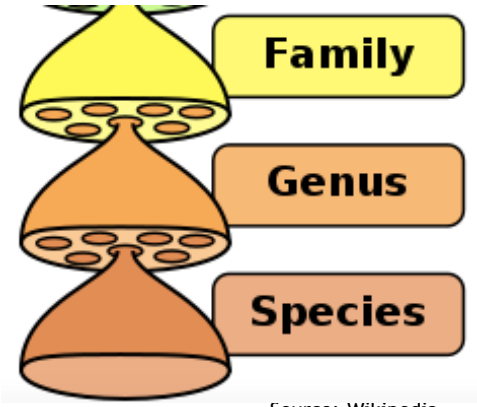
ban Park, Ontario

Scotch Marigold

Classification – Scientific Botanical Name

Tagetes patula

- ✓ Classification to a **Genus** then a **Species**
  - ✓ gives the 2-word binomial name
- ✓ For common name French Marigold
  - ✓ Genus =*Tagetes*
  - ✓ Specific epithet = *patula*
    - ✓ Description- Spreading habit



Source: Wikipedia

- ✓ Binomial or scientific name
  - ✓ **Tagetes patula**

Binomial Name - Formats

- Standard format
  - 2 Latin words – Genus is first and capitalized
  - Species epithet descriptor is second and not capitalized
  - Both are written in italics
  - Sometimes the initial of the person who scientifically named the plant may be added

e.g. *Tagetes patula*

Echinacea purpurea

Binomial Name - Formats

- ✓ Shortened formats:
  - ✓ For a list of plants

    e.g. *T. patula*, *T. erecta*

  - ✓ Refer to multiple species in a genus

    Tagetes sp., *Tagetes spp*

Varieties, Cultivars & Hybrids

B. palmata
Species

B. palmata 'Dark form'
Variety

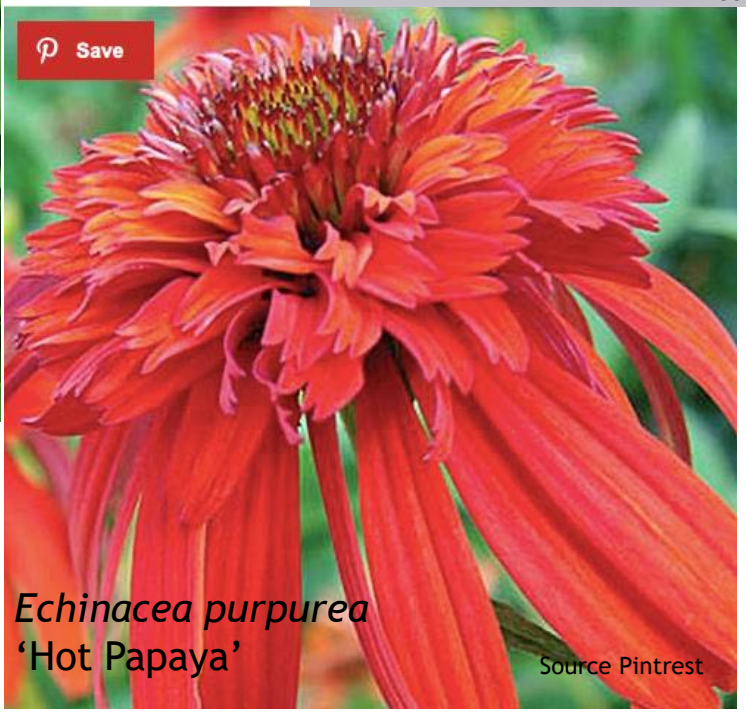
Nativars & Cultivars

Coneflowers *Echinacea sp.*

Echinacea purpurea and
Echinachea purpurea 'Alba'

Echinacea purpurea
'Pink Double Delight''

Source Can Food Insp.



Echinacea purpurea
'Hot Papaya'

Source Pintrest

Hybrids

Meyer Lemon
Citrus x meyeri

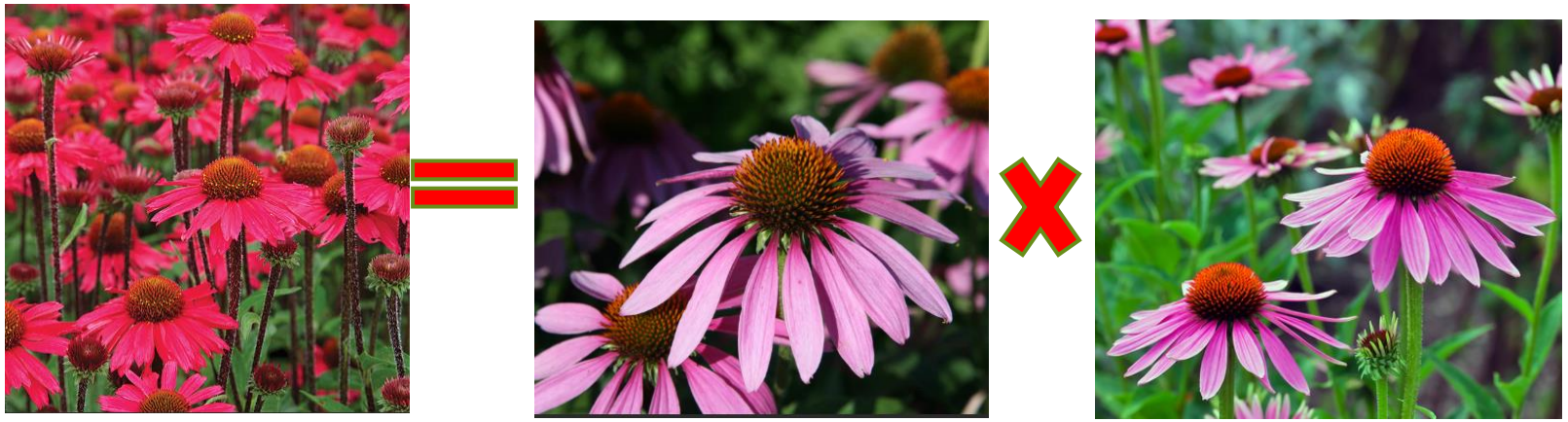
Stargazer Lily
Lilium Orientalis 'Stargazer"

Source: Wisconsin U. Hort.

Hybrids

- ✓ Hybrid plants are created by breeding 2 plants with different taxa.

- ✓ *Echinacea* x hybrid ‘Amazing Dream’ from cross *E. purpurea* & *E. tennesseensis*



- ✓ *Echinacea* hybrid ‘Sensation Pink’ from cross of *E. purpurea* & *E. angustifolia*

Common Cultivars - Hydrangea

Hydrangea paniculata

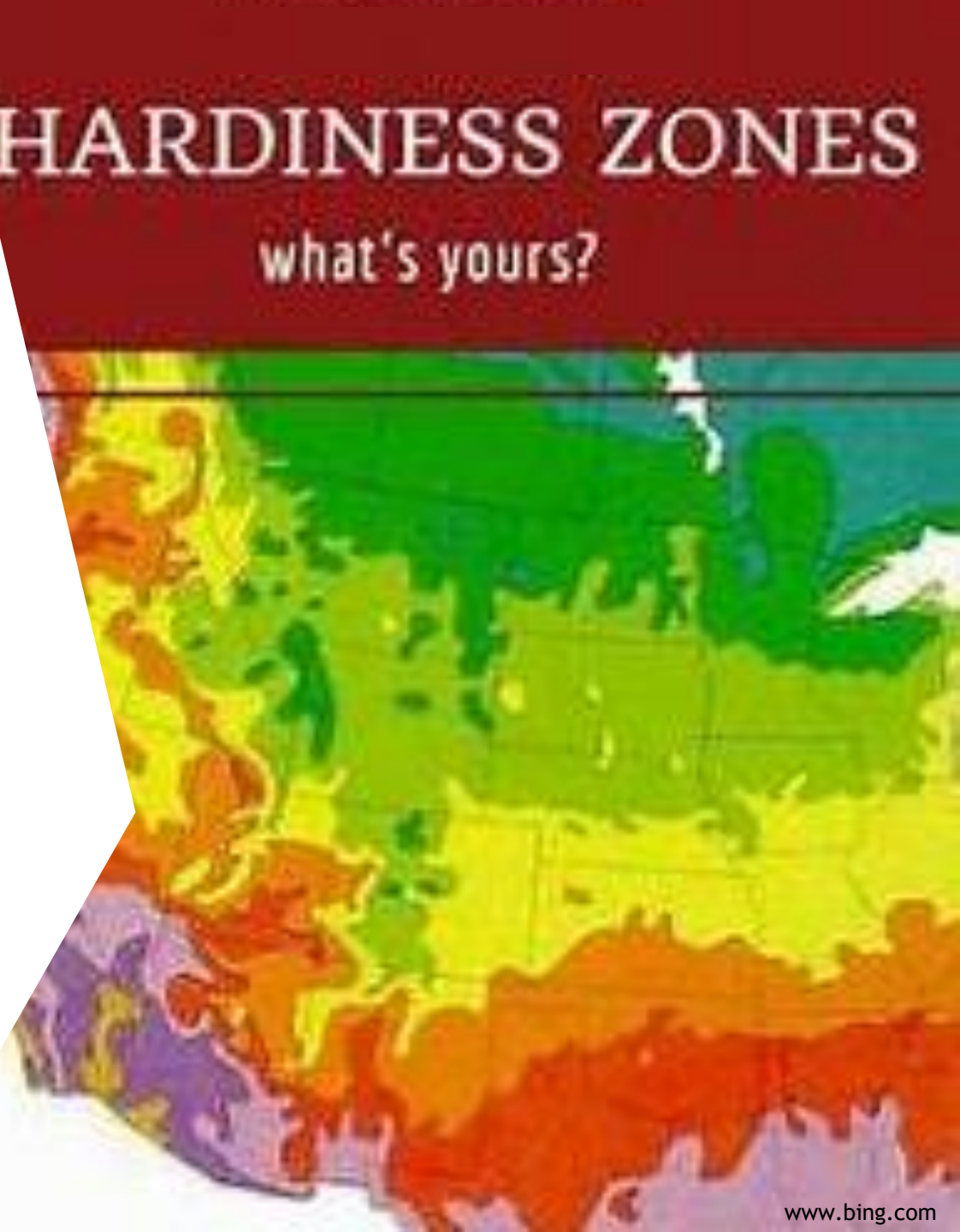
'Limelight'

Hydrangea macrophylla

'Endless Summer'

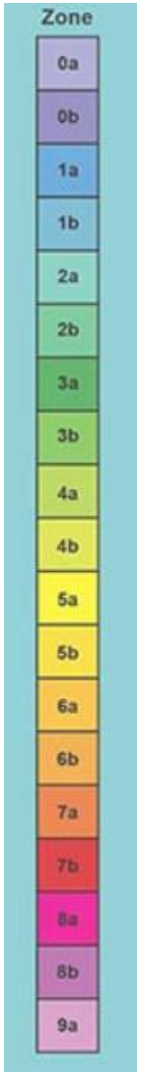
Hydrangea arborescens 'Annabelle'

Plant Hardiness Zones



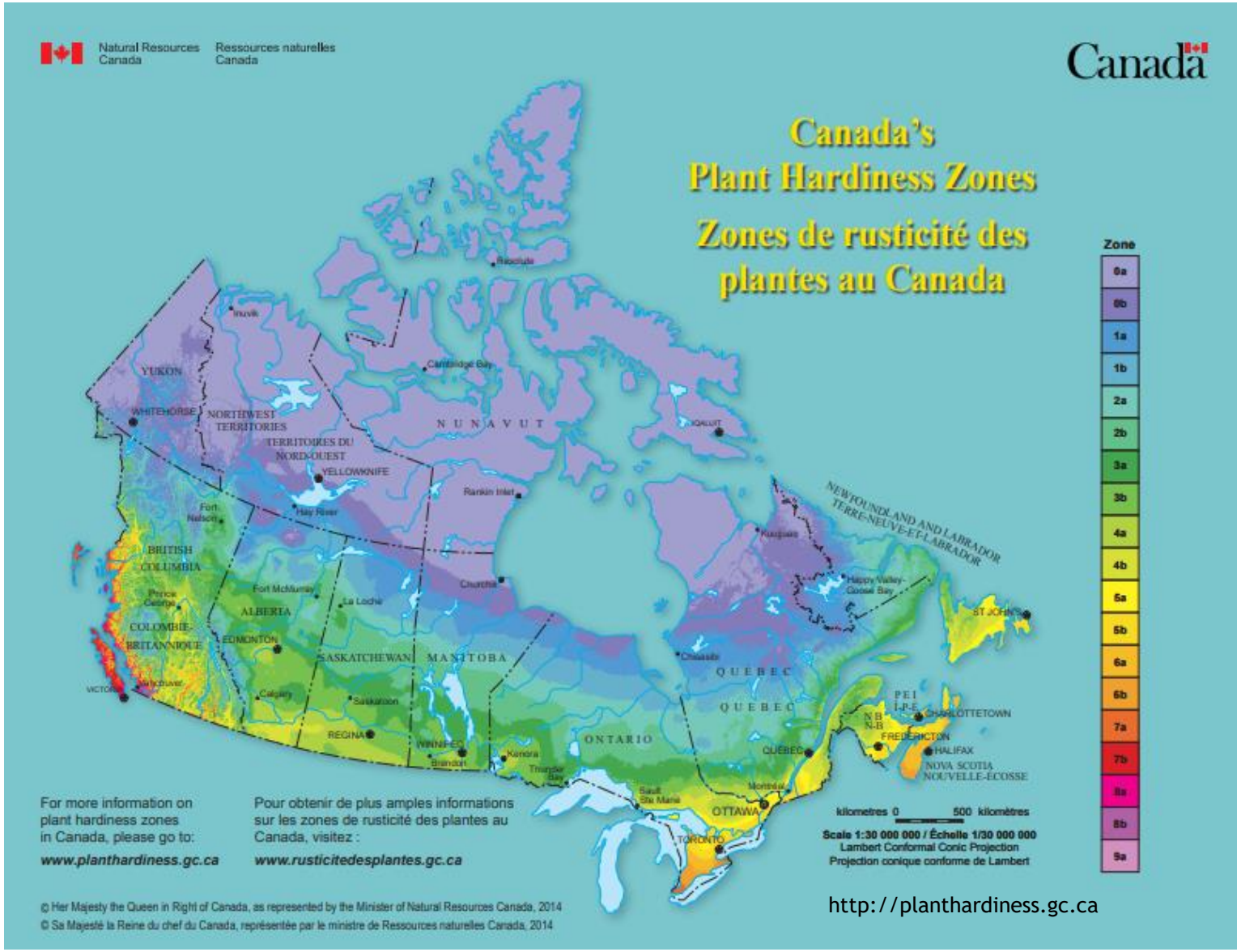
www.bing.com

Plant Hardiness Zones - Poll Question



What is your growing area's hardiness zone?

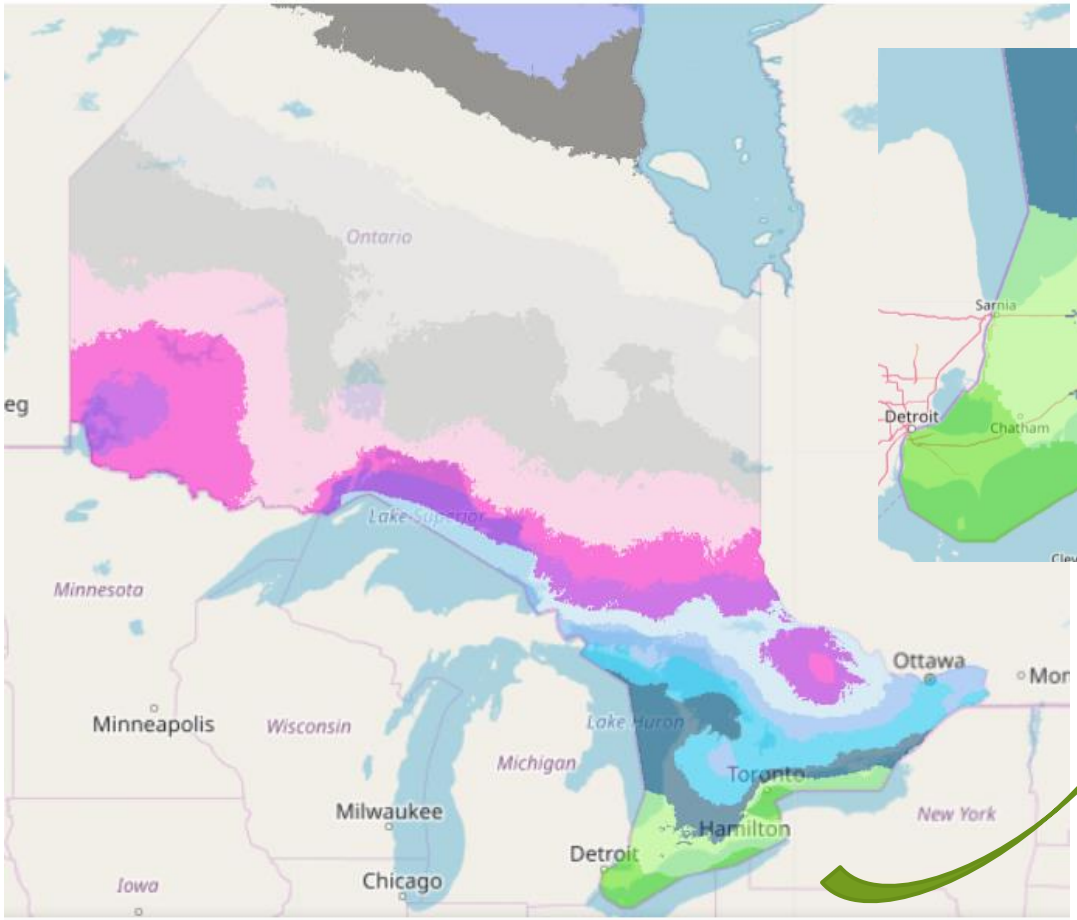
Plant Hardiness Zones

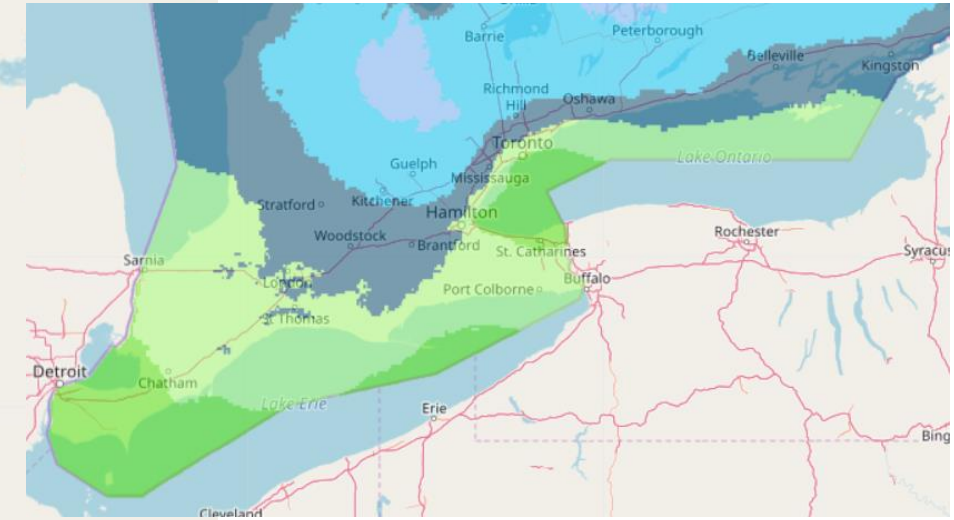


http://planthardiness.gc.ca

Plant Hardiness Zones - Ontario

Zone 0b -53.9°C to -51.1°C	Zone 1a -51.1°C to -48.3°C	Zone 1b -48.3°C to -45.6°C	Zone 2a -45.6°C to -42.8°C	Zone 2b -42.8°C to -40°C
Zone 3a -40°C to -37.2°C	Zone 3b -37.2°C to -34.4°C	Zone 4a -34.4°C to -31.7°C	Zone 4b -31.7°C to -28.9°C	Zone 5a -28.9°C to -26.1°C
Zone 5b -26.1°C to -23.3°C	Zone 6a -23.3°C to -20.6°C	Zone 6b -20.6°C to -17.8°C	Zone 7a -17.8°C to -15°C	

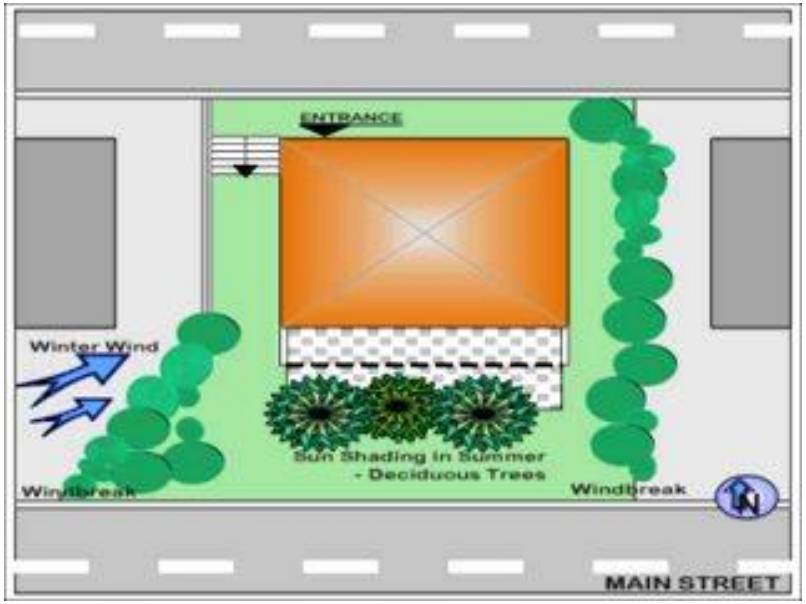




www.plantmaps.com/interactive-ontario-plant-zone-hardiness-map.php

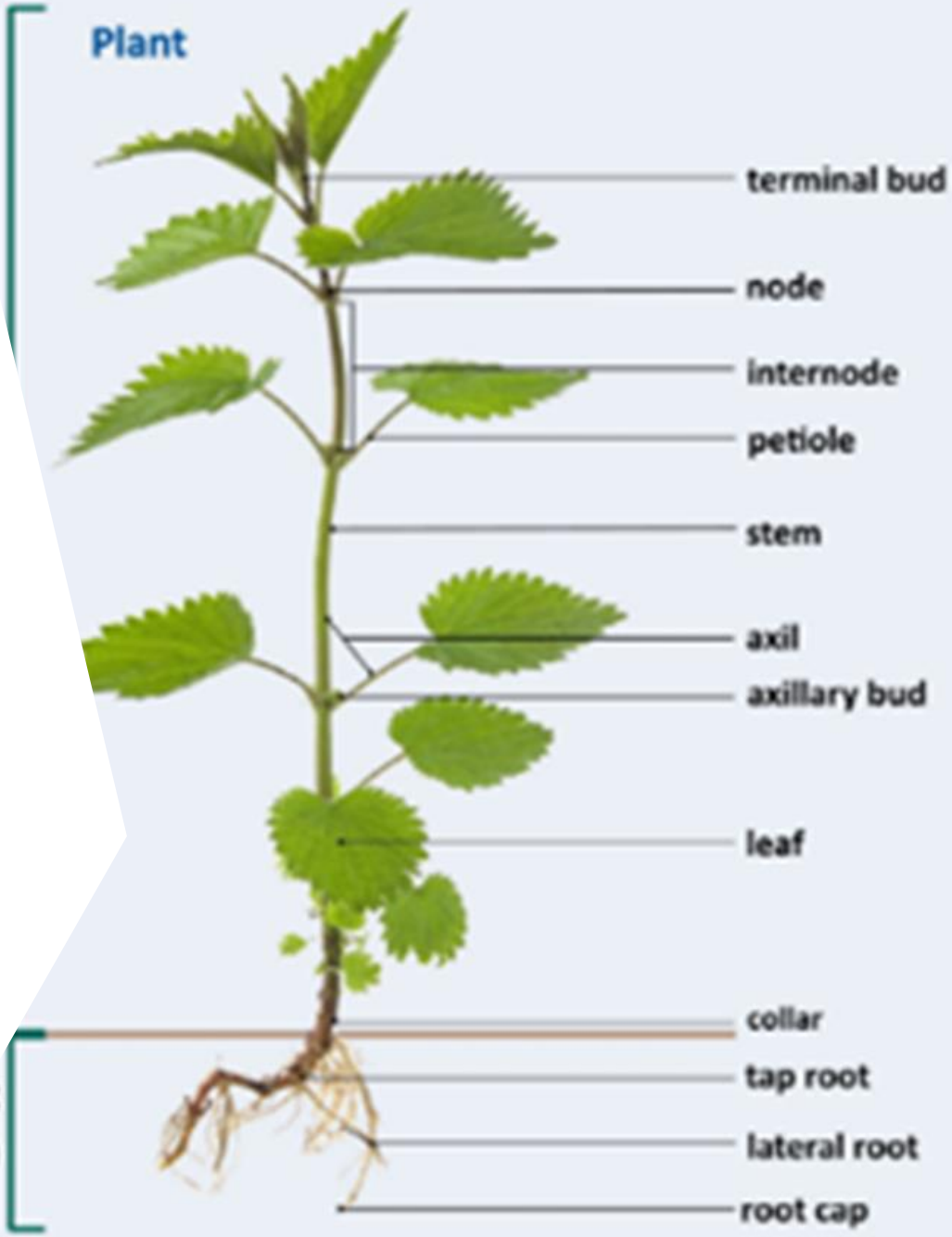
Plant Hardiness Zones & Planning a Garden

Microclimate



Microclimate (new-learn.info)

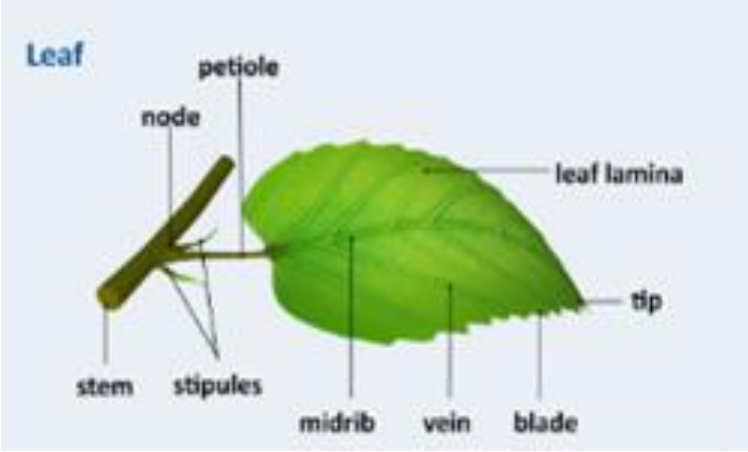
Plant Structure

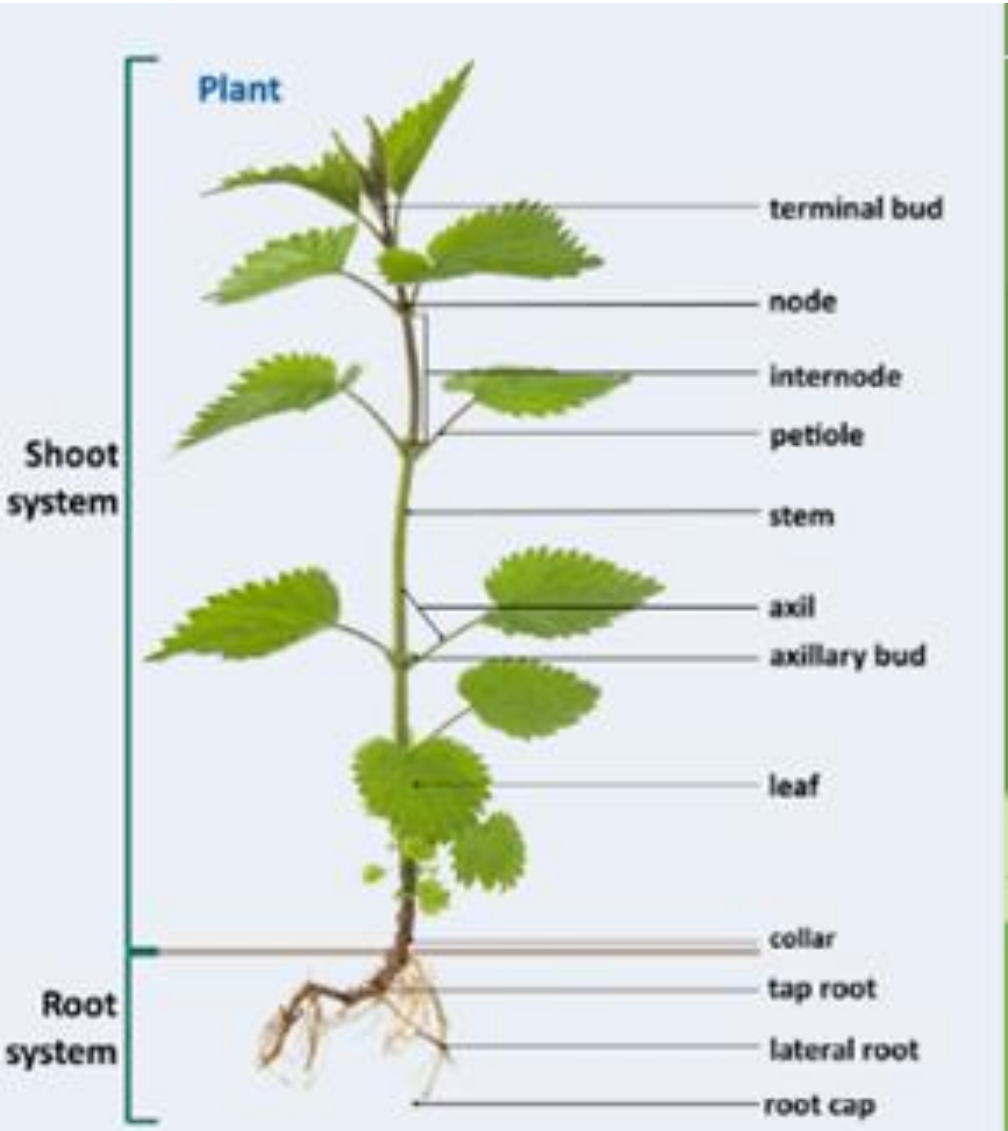


https://www.pinterest.se/pin/792985446875011417/

Plant Structure

- The major parts of a plant:
  - Roots
  - Stems
  - Leaves
  - Flowers
  - Fruit (and seeds)





https://www.pinterest.se/pin/792985446875011417/

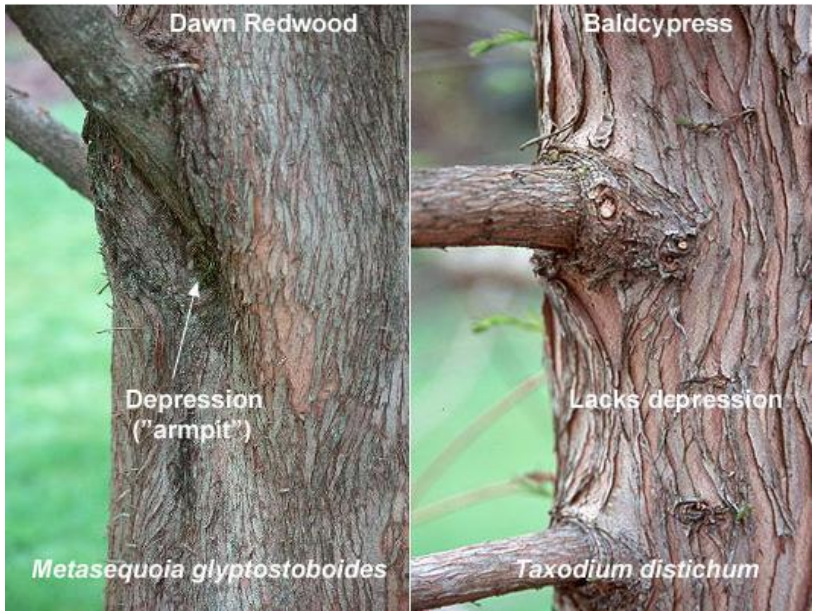
Plant Structure - Stems

- ✓ Stems can be used for plant ID in some cases
- ✓ Bark can be distinctive (woody plants)
- ✓ Twigs and buds can be distinctive

Honey Locust (*Gleditsia triacanthos*)

Plant Structure - Stems

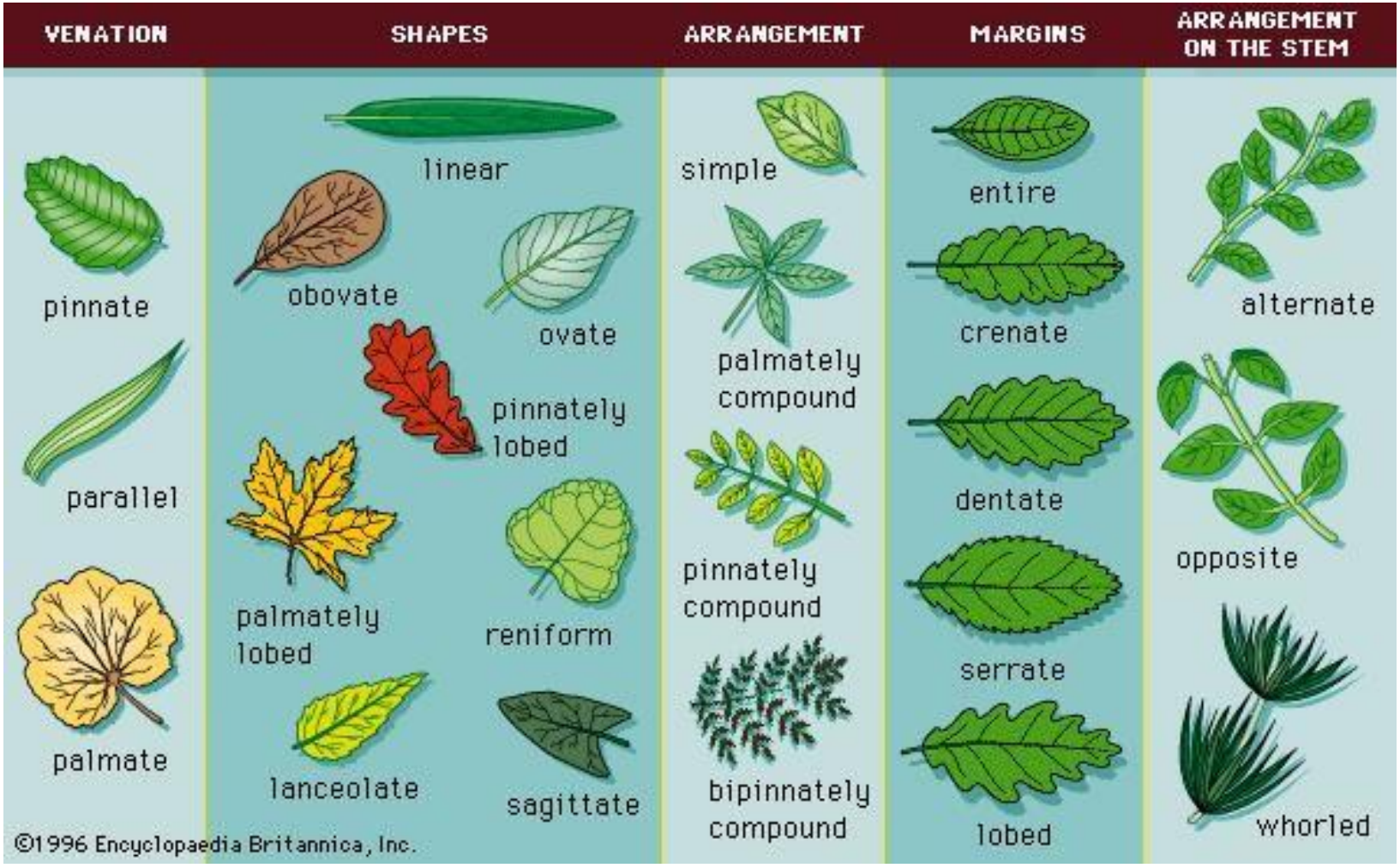
- E.g. – Twigs, buds, and trunk of Dawn Redwood (top right) compared to those of Baldcypress



https://landscapeplants.oregonstate.edu/plants

Plant Structure – Leaves

Leaf morphology: a set of characteristics that can be used to identify a plant



Plant Structure: Leaves

- Leaves have a distinctive shape e.g., Basswood
  - Off-centre heart shaped
  - Finely toothed edges
  - Dark green, with pale green underside
- Arranged on branches in a particular way (e.g., opposite or alternate)
- Leaves can also be hairy or have a waxy coating

https://www.artofmanliness.com/skills/outdoor-survival/6-trees-every-survivalist-should-know/

Plant Structure: Leaves

- Leaves may also be divided, like this Honey Locust
  - Leaves are alternate
  - Leaves are pinnately compound
- Easy to identify by the long leguminous pods, but this only applies to female trees
- So, use bark and leaves to ID this tree

https://www.artofmanliness.com/skills/outdoor-survival/6-trees-every-survivalist-should-know/

Plant Structure: Flowers

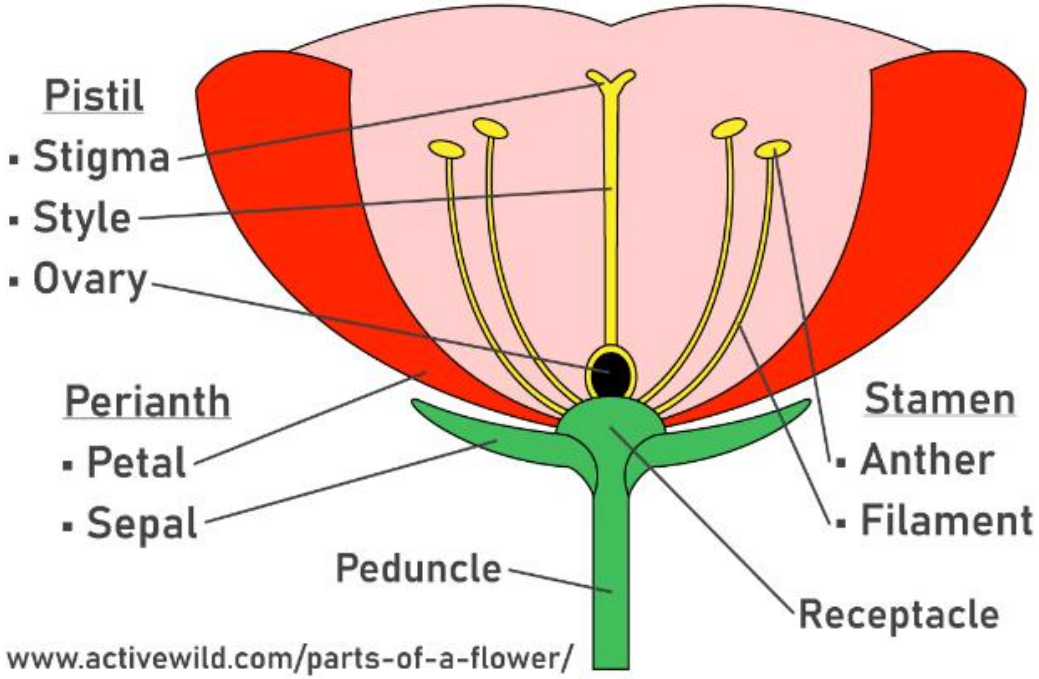
- Plants that need pollinators for fertilization need to attract them:
  - Size
  - Colour of petals or bracts
  - Scent
  - Rewards like pollen and nectar
- All of these elements are useful in plant ID

Plant Structure - Flowers

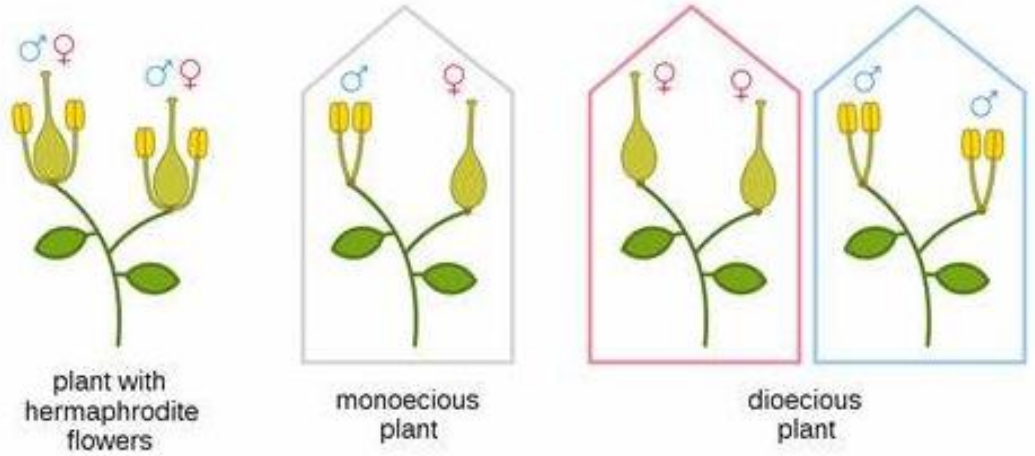
- ✓ Many plants are pollinated by wind…so flowers tend to be small

- ✓ Notice the different types of flowers on these plants
- ✓ These are all characteristics that may be used to identify the plant

Plant Structure: Flowers

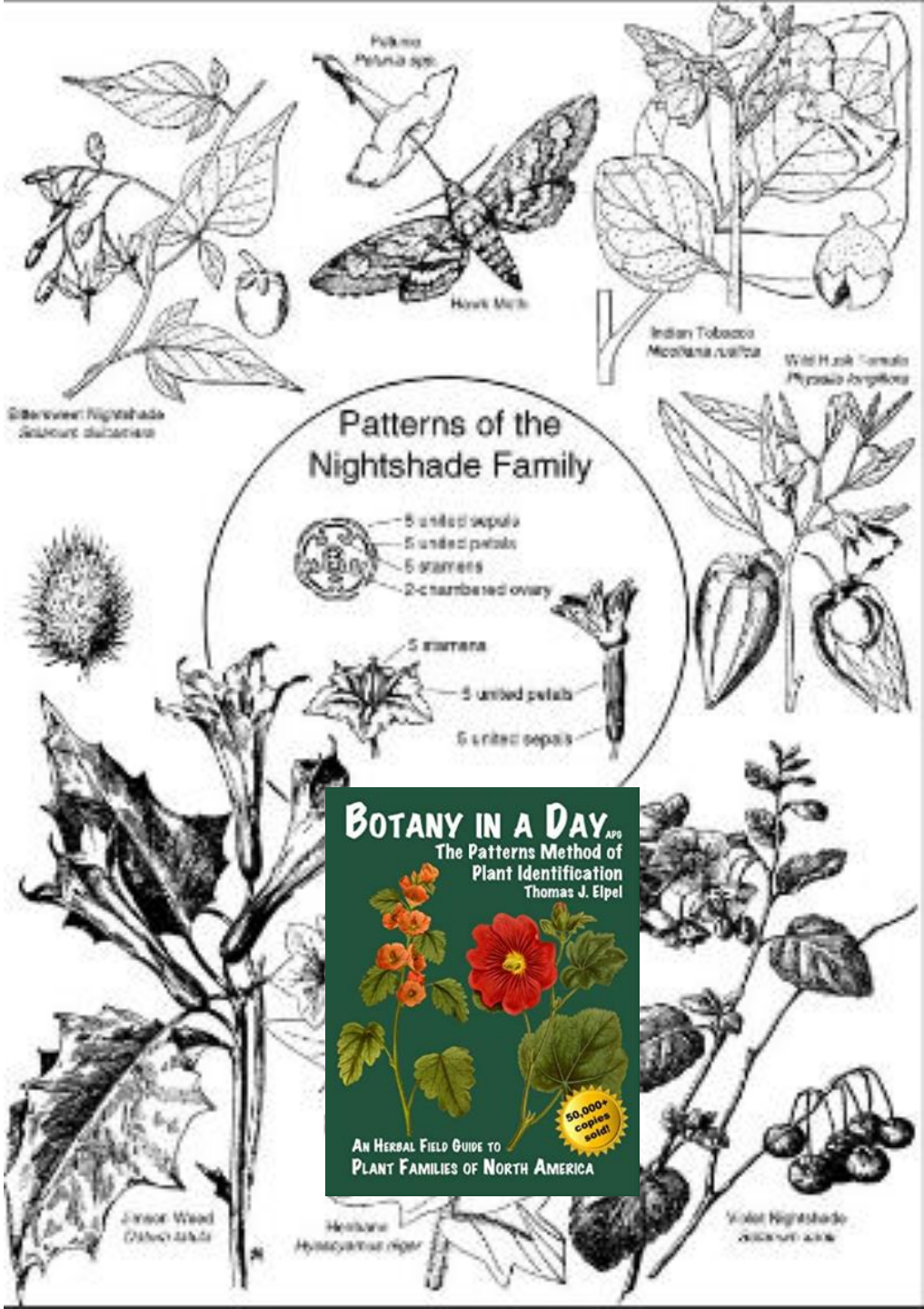


Being able to identify the components of the flower is a good way of identifying the plant



Identify Plant Patterns

- ✓ Look for plants with similar characteristics – especially flower parts
- ✓ E.g. nightshades
  - ✓ 5 united petals
  - ✓ 5 united sepals
  - ✓ 5 stamens
  - ✓ 2-chanbered ovary



Identify Plant Patterns

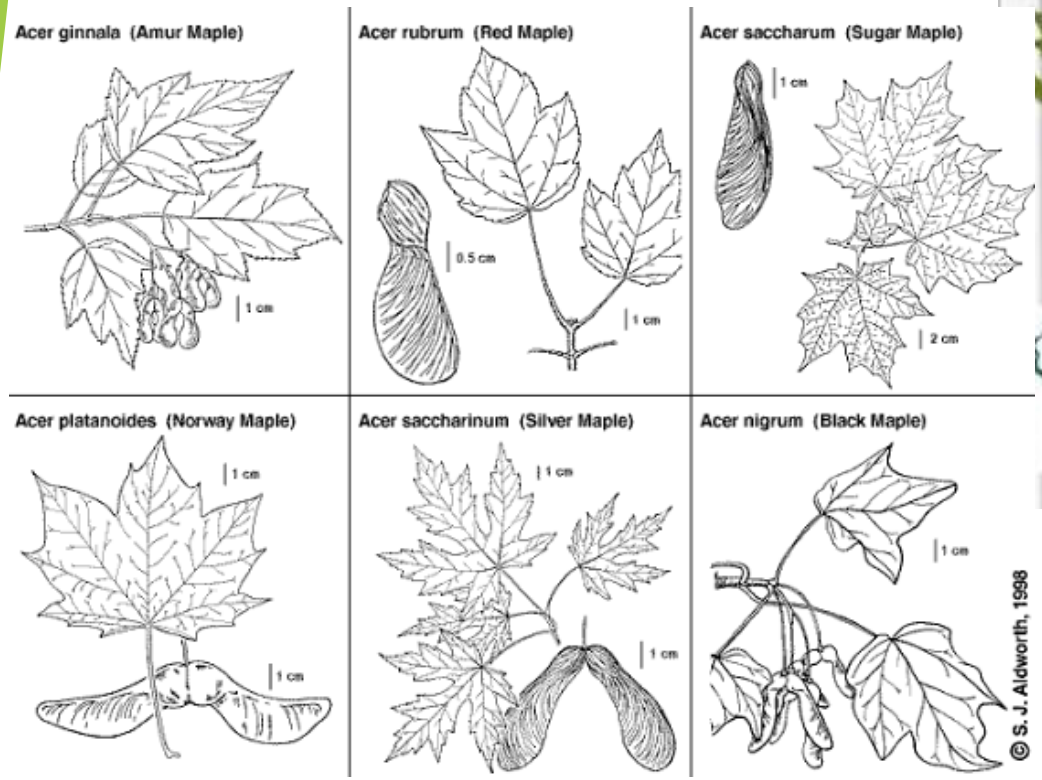
- ✓ Eastern Nightshade
- ✓ Tomato
- ✓ Potato
- ✓ Pepper
- ✓ Eggplant
- ✓ Tobacco

Plant Structure: Fruit & Seeds

- ✓ This involves learning some of the basic terminology

Plant Structure: Combine them!

- ✓ You can combine different characteristics to identify plants



e.g. leaf and acorn can be used to identify an oak

Botanical Keys, identification manuals, and online tools

Pinterest

https://www.bhg.com/gardening/houseplants

Botanical Keys

- ✓ Dichotomous botanical keys
- ✓ Old paper-based keys are cumbersome
- ✓ Newer online keys have the advantage of added plant images.

DECIDUOUS TREE DICHOTOMOUS KEY

1. Opposite branching (2)
1. Alternate branching (4)
2. Compound leaves (3)
2. Simple leaves: Maple species (see a-c below)
a. Leaf margins smooth, 5 lobes ..... **Sugar Maple** (*Acer saccharum*)
b. Leaf margins double-toothed, 3 to 5 lobes..... **Red Maple** (*Acer rubrum*)
c. Leaf margins single-toothed, 3 to 5 lobes, lobes separated by deep, angular openings.....**Silver Maple** (*Acer saccharinum*)
3. Three (rarely 5) leaflets..... **Box Elder** (*Acer negundo*)
3. Five to 11 leaflets: Ash species (see a-c below)
a. 9 to 11 leaflets, leaflets do not have petiole..... **Black Ash** (*Fraxinus nigra*)
b. 5 to 9 leaflets, leaflets have petiole, smile-shaped leaf scar extending up sides of new bud……..**White Ash** (*Fraxinus americana*)
c. 7 to 9 leaflets, leaflets have petiole, leaf scar ends at base of new bud..... **Green Ash** (*Fraxinus pennsylvanica*)
4. Compound leaves (5)
4. Simple leaves (8)
5. 7 or fewer (usually 5) leaflets, egg-shaped nut..... **Shagbark Hickory** (*Carya ovata*)
5. 7 or more leaflets (6)
6. Leaflets rounded ..... **Black Locust** (*Robinia pseudonacacia*)
6. Leaflets pointed (7)
7. Leaf 6 to 8 inches long ..... **Mountain Ash** (*Sorbus americana*)
7. Leaf 8 to 24 inches long ..... **Butternut** (*Juglans cinerea*). or **Black Walnut** (*Juglans nigra*)
8. Leaves not lobed (9)
8. Leaves lobed: Oak species (see a-f below)
a. Rounded lobes, 5 to 9 deep even lobes and sinuses, leaves hairless..... **White Oak** (*Quercus alba*)
b. Rounded lobes, pair of deep sinuses near middle of leaf, hairy underside of leaves..... **Bur Oak** (*Quercus macrocarpa*)
c. Rounded lobes, leaf narrow at base and broad near middle, hairy underside of leaves.... **Swamp White Oak** (*Quercus bicolor*)
d. Pointed lobes, sinues extend halfway to mid-vein, leaves hairless, dull green..... **Red Oak** (*Quercus rubra*)
e. Pointed lobes, deep sinues extend 3/4 of the way to mid-vein, leaves hairless, bright green and shiny.... **Northern Pin Oak** (*Quercus ellipsoidalis*)
f. Pointed lobes, deep sinues, young leaves hairy underneath, dark green and shiny, leathery.....**Black Oak** (Quercus velutina)

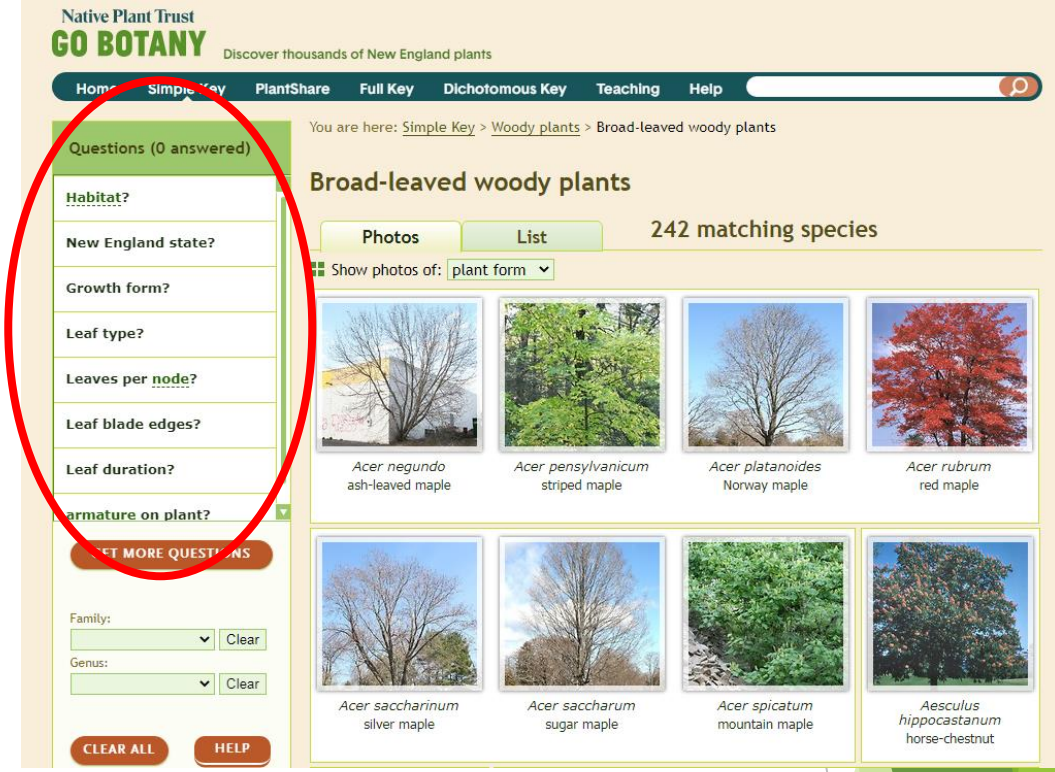
https://www.exploringnature.org/db/view/Deciduous-Tree-Identification-Using-a-Dichotomous-Key

Botanical Keys using Go Botany

- ✓*Go Botany has an easy-to-use key:*
- ✓First-level groups:
  - ✓Woody Plants (trees & shrubs)
  - ✓Grasses
  - ✓Ferns
  - ✓Orchids
  - ✓Aquatic plants
  - ✓All other non-woodies

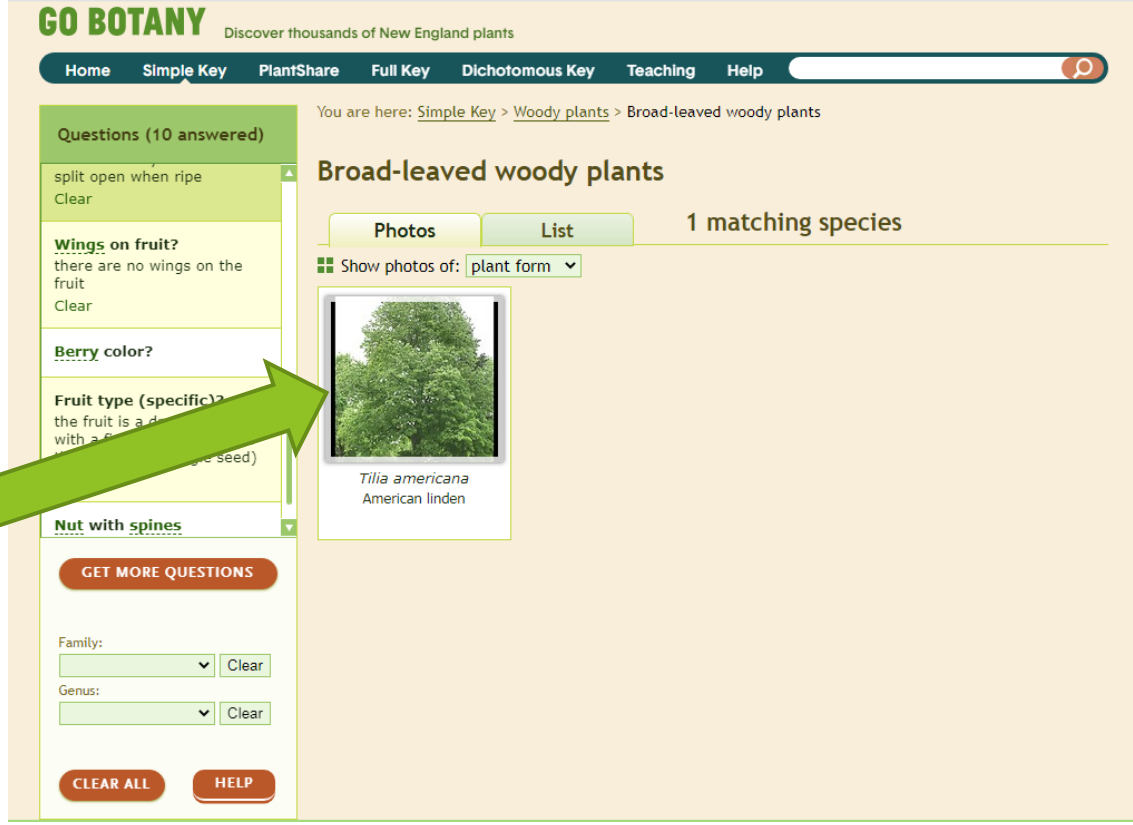
Botanical Keys

- ✓The next level presents several questions
- ✓Using the ID characteristics you have observed, answer as many as possible



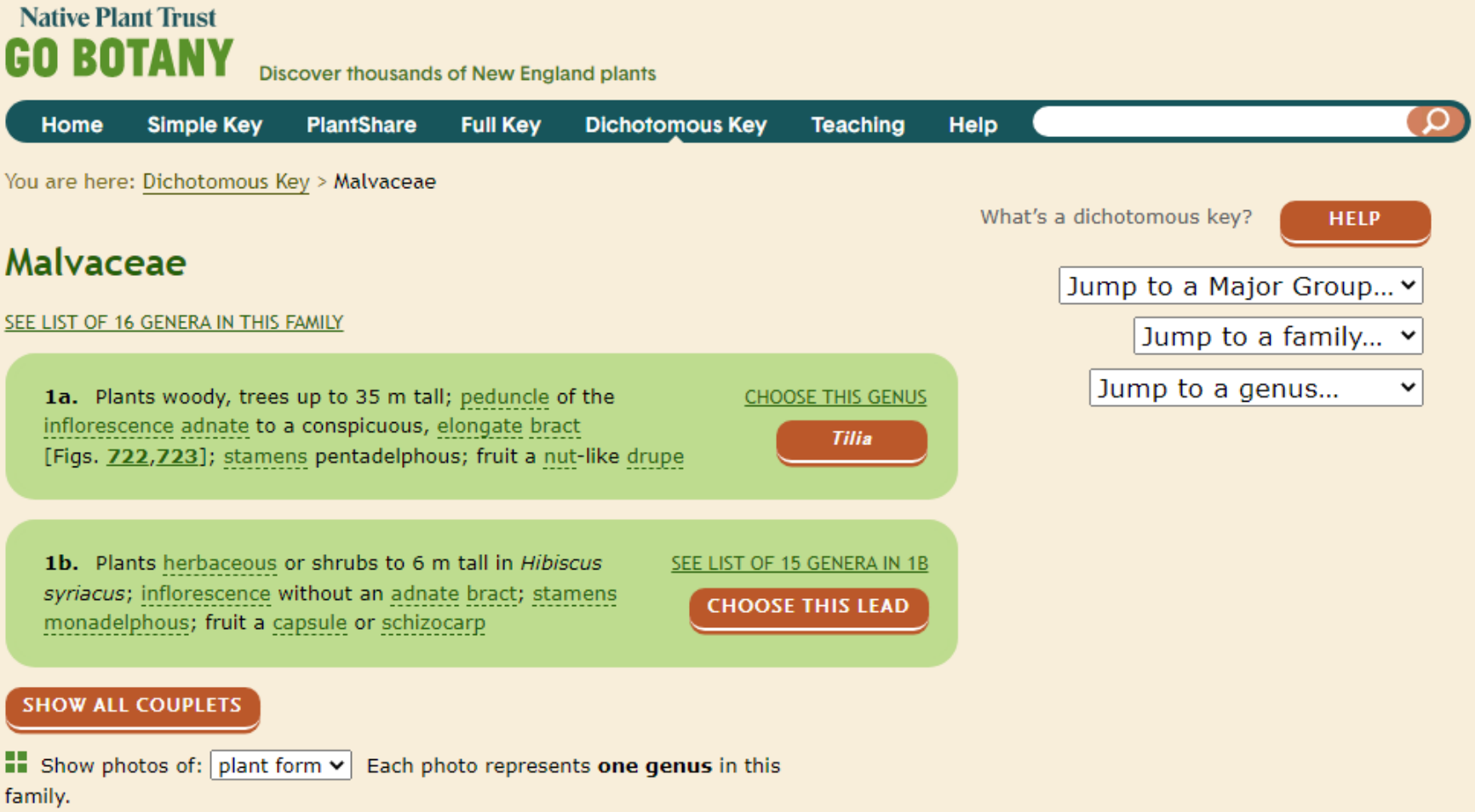
Botanical Keys

- ✓ Continue to answer questions until your plant is obvious
- ✓ Dichotomous key is also available



Botanical Keys

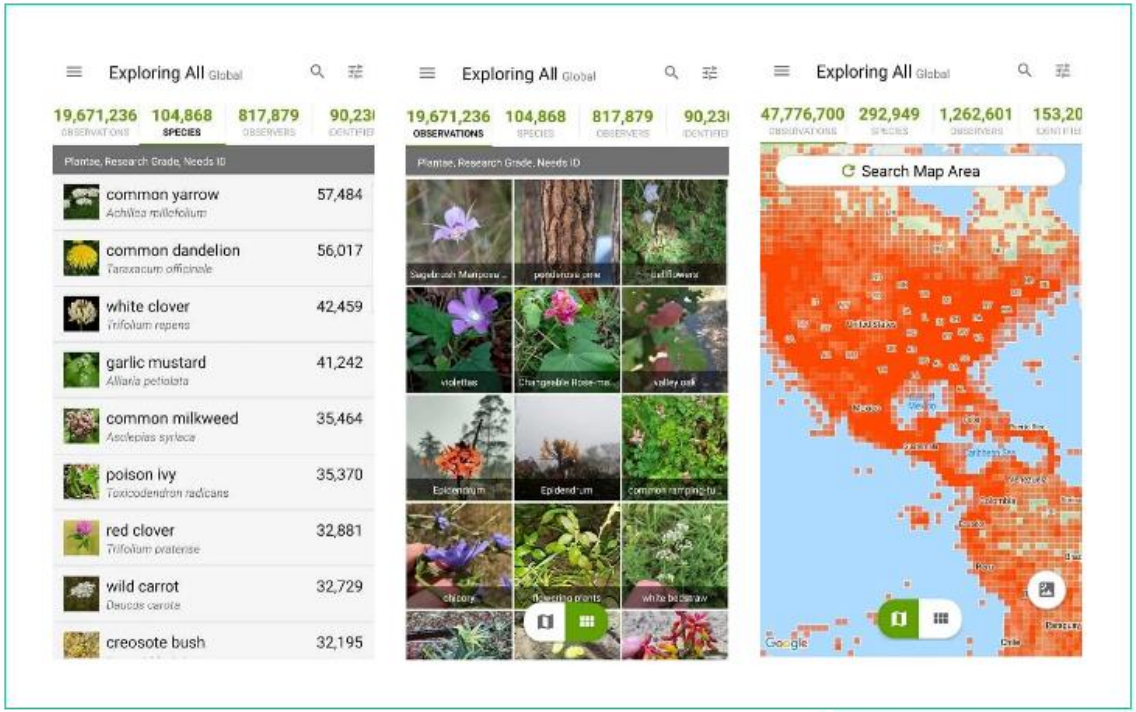
- ✓ This involves much more botanical terminology



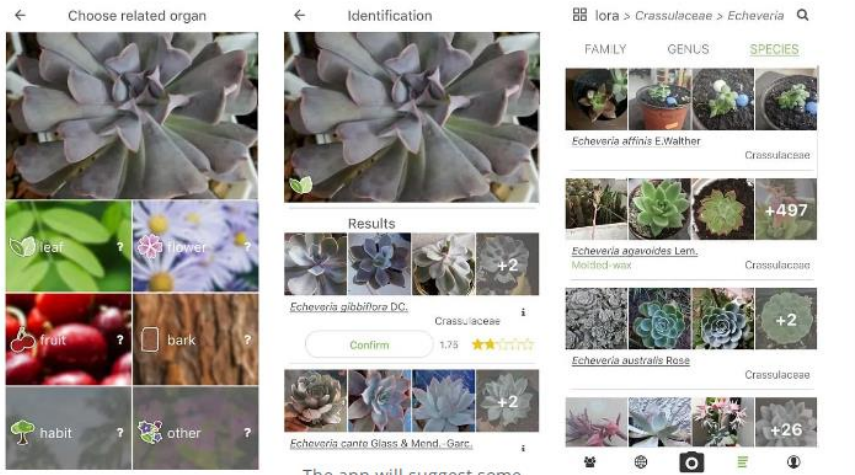
Phone Apps

There are many options:

- ✓ iNaturalist
- ✓ PlantSnap
- ✓ LeafSnap
- ✓ Pl@ntNet



iNaturalist

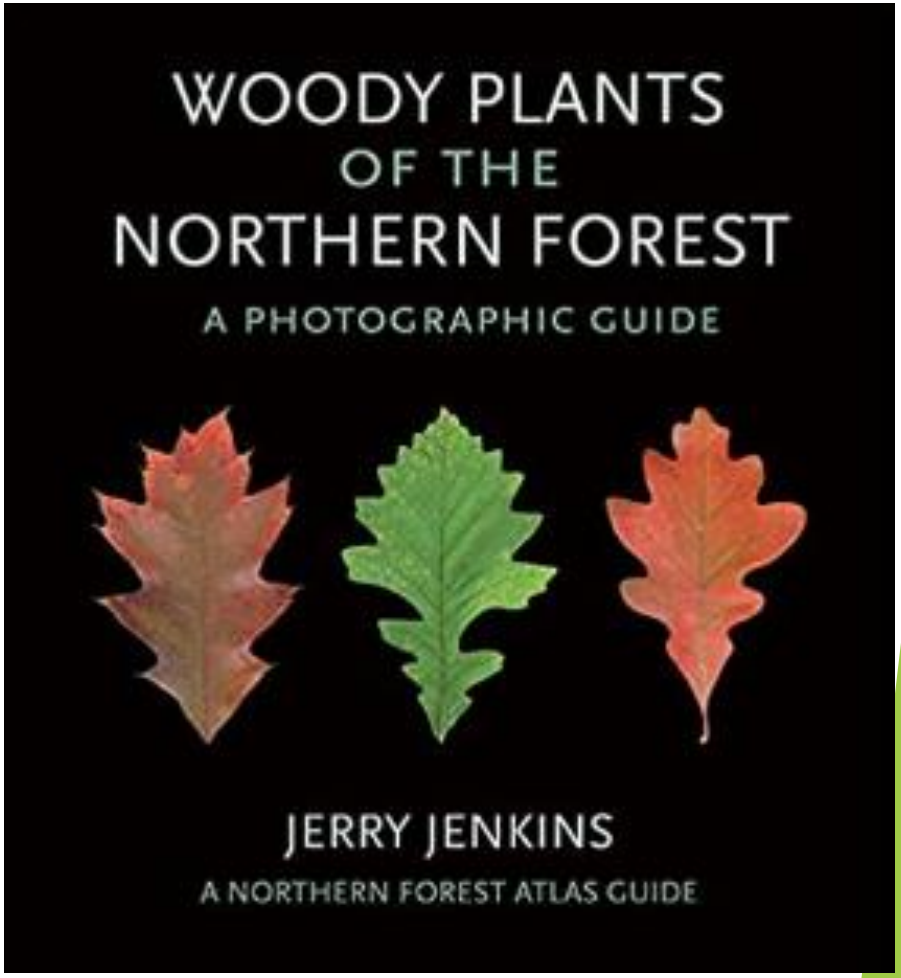


Pl@ntNet

Poll Question:

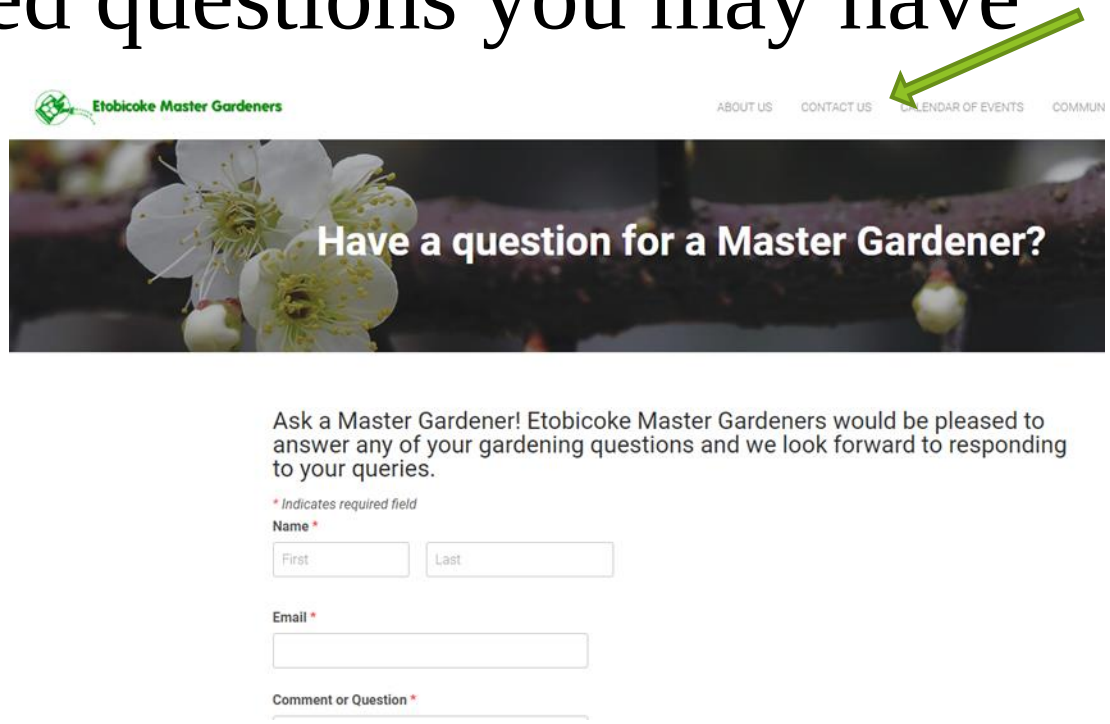
Have you used a phone app, and were you successful in identifying your plant?

Manuals and other sources

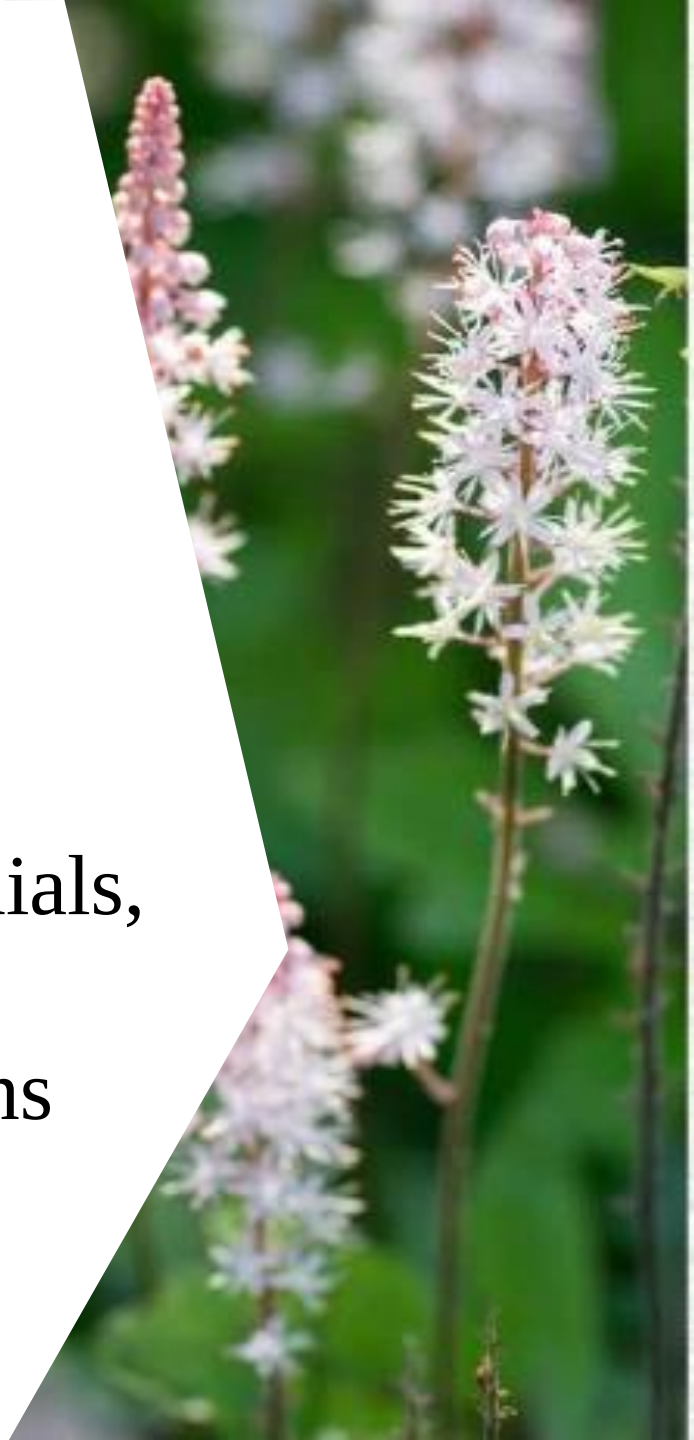


Etobicoke Master Gardeners - Ask Us!

Plant identification, or any gardening related questions you may have



Identification:
Annuals, Perennials,
Shrubs, Vines,
Trees, Evergreens



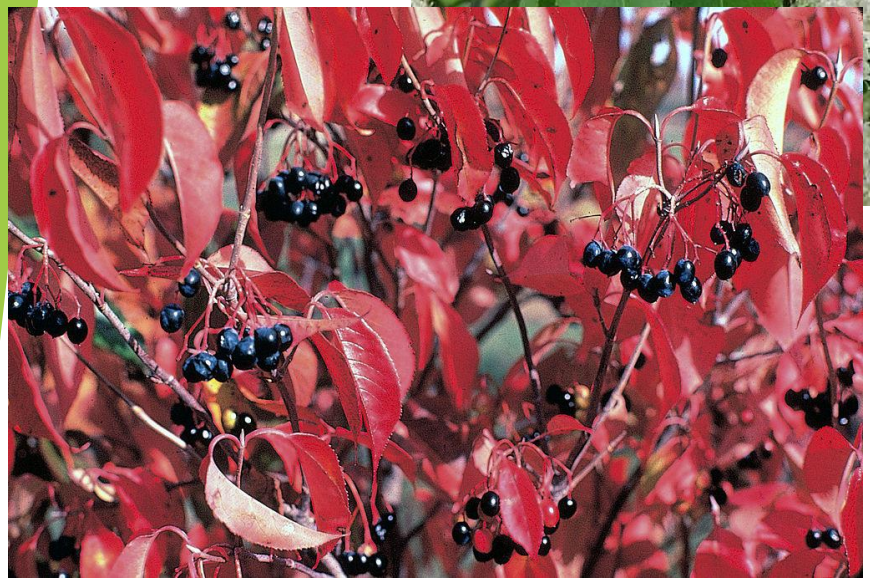
Identification: Annuals *Calibrachoa* (Million Bells) or *Browallia* (Bush Violet)?

Identification: Perennials
Solidago flexicaulis (Zigzag Goldenrod) or
Alliaria petiolata (Garlic mustard)?

Identification: Vines
Hedera helix (English Ivy) or
Parthenocissus quinquefolia (Virginia Creeper)?

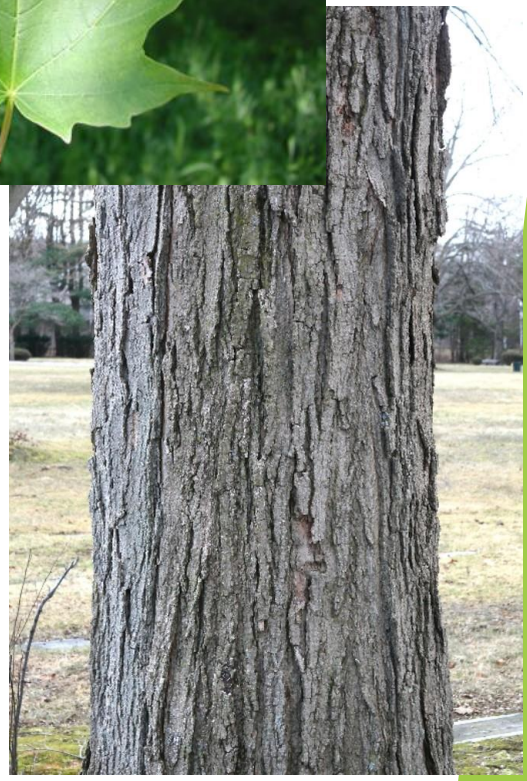
Identification: Shrubs

Viburnum lentago (Nannyberry Viburnum) or *Euonymous alatus* (Burning bush)?



Identification: Deciduous Trees

Acer platanoides (Norway Maple) or *Acer saccharum* (Sugar Maple)?



Identification: Evergreens
Abies (Fir) or *Picea* (Spruce)?

Wrap Up

Etobicoke Master Gardeners

HUMBER ARBORETUM

2023 Eco-Garden Community Workshop Series

Saturdays 10:00 AM to Noon

Virtual Sessions via Zoom

February 25: Plant Identification

March 4: Growing Your Own Food

April 15: Native Plants

April 29: Invasive Plants, Control, and Alternatives

June 10: Pollinator Friendly Gardening

October 14: Pruning

November 18: Indoor Plants

In-Person at the Humber Arboretum

February 4: Winterwood: Winter Tree Identification Tour

May 6: First-hand Look at Invasive Plants, Control, and Alternatives Tour

October 21: Pruning Workshop

Free, but space is limited & registration is required:

Humber.ca/arboretum/emg

Botanical keys, identification manuals & online tools

- Important to use trusted sources such as university sites and not just any site
- Manual of Woody Landscape Plants by Michael A. Dirr
- University of Guelph www.uoguelph.ca
- Penn state extensions www.extension.psu.edu
- Minnesotawildflowers.info
- NC extension plants.ces.ncsu.edu/plants
- iNaturalist www.inaturalist.org
- PlantSnap www.plantsnap.com
- LeafSnap www.leafsnap.app
- Go Botany www.gobotany.nativeplanttrust.org
- Pl@ntNet identify www.identify.plantnet.org

References

- Etobicoke Master Gardeners www.etobicokemastergardeners.ca
- Master Gardeners of Ontario www.mgoi.ca
- https://gobotany.nativeplanttrust.org/
- https://gobotany.nativeplanttrust.org/simple/
- https://gobotany.nativeplanttrust.org/dkey/
- http://www.ontariofieldnaturalists.ca/FieldGuides/Plants.html#Ont
- Botany in a day, Thomas J. Elpel, HOPS Press, 2010
- Woody Plants of the Northern Forests: A Photographic Guide, Jerry Jerkins, Cornell U Press, 2018

Where can you find presentation materials?

Visit the EMG website, under Community Activities,

Humber Arboretum, Workshop Materials

Etobicoke Master Gardeners

Thank you!

Questions

MASTER GARDENER™

HUMBER ARBORETUM
+ CENTRE FOR URBAN ECOLOGY