GUIDE TO CAMPUS TREES

Forestry Graduate
Students Association
For Deborah Paes

Without your support and hard work over the course of your career, none of us would be where we find ourselves today.
The initial idea for the guide came to me as an MFC student in the fall of 2018. As someone completely new to the field of forestry, I was mildly horrified to discover that I would have to be able to identify more than fifty trees at a glance. For example, I certainly did not feel able to contribute anything useful to the debate Julian had gotten into about whether a tree we had seen on one of our field trips was an eastern cottonwood or a large-toothed aspen (as it turns out eastern cottonwood and large-toothed aspen are not that difficult to tell apart). Many of my classmates were in the same boat. We felt that such a guide should exist, and that feeling led me to plant the initial seed (in the form of a study guide) that later grew into this book.

Mapping and photography for the first version of this book was completed in the summer of 2019. At the time, the FGSA had intended for it to be a gift for the incoming MFC class. Given the high costs associated with printing, however, we decided to release the first version as a digital document. When Erez stopped by my office with a printed copy in hand in early 2020, however, we felt that with a little extra push, we could get the project over the finish line. A second conversation with Erez in early 2021 led to the addition of winter and spring photos to the guide, bigger maps, an updated layout, and most importantly, sending the book off to the printer. The result is what you see in front of you.

The preparation of this guide was truly a team effort and it would not have been possible without the help of everyone involved. The tree ID skills of Erez and Julian in particular were essential to making this happen. While this is an FGSA guide and all of the 2019 executive have since moved on, credit is still due to that group for its creation. As such, the names listed on the credits pages are theirs. Thank you also to the 2021 FGSA for volunteering the person-hours that we needed to get this printed.
Currently, this guide contains 100 trees and shrubs, but there are many more to be found on campus. While we were collecting the winter/spring images we made every effort to photograph the same tree but construction on campus made that impossible in a few cases. As such, if you visit a tree and the bark, leaf or form looks slightly different than it does in the guide, some of the images may be of a different tree of the same species. Furthermore, the trees on campus come and go and by the time readers are able to go out and visit them all some may have been cut down. Future editions of the guide and future FGSA executives could update the images and maps, expand the list of species, add a dichotomous key, and add information about which tree species are suited to which landscape environment. The world, as they say, is your oyster. I hope that this book will continue to evolve with time, and that you learn as much from reading it as I did from the process of creating it.

– Emmett Snyder

2021-05-20
Contents

About 3
Acknowledgements 5
How to Use This Guide 7
Conifers 9
Broadleaf Trees 29
Glossary 111
References 113
Index of Scientific Names 116
Index of Common Names 118
This guide was prepared by the 2019 Forestry Graduate Students’ Association to help University of Toronto community members learn to identify tree species on campus. It is intended to be a fun and informative beginner’s guide for personal use. It does not include an exhaustive inventory of all the trees on campus, nor is it an official university resource. Please be responsible when using this guide and don’t go around eating things you aren’t sure are edible!

This guide focuses on the variety of tree species across the U of T St. George campus. While there are many trees across campus, we recommend taking a stroll through Philosopher’s walk, Hart House circle, and the two Earth Sciences courtyards. If you would like a more authoritative resource or field guide, we recommend Trees in Canada by John Laird Farrar.

While we have made every effort to ensure that the information here is both up-to-date and correct, it is always possible that we have made a mistake somewhere along the way. If this is the case, please feel free to let us know by email: fgsa@utoronto.ca. We hope that you find this guide useful.

– The FGSA

2019-06-16
The 2019 FGSA is:

Chair:
Nicole Tratnik

Vice-Chair:
Juliana Vantellingen

Treasurer:
Julian Alvarez-Barkham

Athletic Rep:
Amélie Lapointe

Research Stream Rep/Alumni Liaison:
Md. Halim

MFC Rep/Undergrad Liaison:
Emmett Snyder

To cite this book:

First and foremost, the FGSA would like to thank Erez Sussman for the immense amount of work he put into this project, including contributing to the data collection and photography, editing, tree identification, and reviving the project after the first version. Thank you also to Vanessa and Harris for their help with collecting the data and to Josh, Shan, and Vanessa for taking the time to sort through and organize all of the images associated with this project. Thank you also to Sanjana Patel for designing the cover.

Thank you also to the MFC class of 2020 (with a special shout-out to Emmett S, Taha S, Julian AB, Mariaelena G, and Matthew S) for providing the initial inspiration for this book. Finally, thanks are also due to Dr. Danijela Puric-Mladenovic for access to her tree inventory.

Maps were drawn using the tilemapbase python library. Under the hood, tilemapbase uses OpenStreetMap data (© OpenStreetMap contributors). This content is licensed under ODbL and CC-BY-SA2.0 and remains the copyright of OpenStreetMap contributors (2015). For more info, see the OSM copyright page.
Each page of this guide features a different tree species that can be found on campus. The species’ scientific name is listed at the top of the page, followed by its common name, with its family name written in italics on the right. The scientific name includes the genus and species name in italics, followed by the scientific authority (the person first credited with the use of the name). Some species contain a name in brackets: this means the species was originally described under a different scientific name, typically because it was first considered under the wrong genus, and contains synonyms. For example, the Shagbark Hickory was originally placed in the *Juglans* genus by Philip Miller and later moved to the genus *Carya* by Karl Koch. Therefore, its current accepted scientific name is now *Carya ovata* (Mill.) K. Koch. Some species have multiple accepted scientific names. If you think a tree may have a different scientific name or authority, see if it has a synonym in a database such as The Plant List (see references for more information).

Entries are sorted by leaf type (scale and needle-like, then Ginkgo, then broad), and then alphabetically by family name, then scientific name. Note that *Caesalpinaceae* is a subfamily of *Fabaceae* and has been placed with *Fabaceae* to avoid confusion.

Each species identification page also includes a map of where you can find an example of the species. Location information was pulled from image Exif data, which was obtained from the device taking the image. As a result, these locations are only accurate to within a few meters. If you don’t see the tree you are looking for, or it looks like a tree is located inside a building, try looking around nearby or on the other side of the street.

For more information, a glossary of some common botanical terms, as well as a list of references and supporting information, may be found at the end of the guide. A sample guide page has been provided on the following page.
**Scientific name** Scientific authority

**common name**

**Family**

---

**Notable features**

This text helps by providing distinctive or identifying features. The map on the right provides a location (accurate to within a few meters) for the photographed specimen.

---

**Where to find one:**
Conifers
Callitropsis nootkatensis Oerst. ex D.P. Little
Yellow Cedar  
*Cupressaceae*

**Notable features**
Yellow cedar is native to coastal BC, Washington and Oregon states but is often planted elsewhere (e.g. southern Ontario). Yellow cedar can be rapidly identified by its scale-like (evergreen) needles that smell when they are damaged and its drooping habit.

Where to find one:
**Juniperus virginiana** L.  
Eastern Redcedar  
*Cupressaceae*

**Notable features**  
The eastern redcedar is a small tree (can also have a shrublike habit, left) and can grow up to 10 meters tall. Leaves are scaly and are pleasantly scented. Cones look like blue/whiteish berries. Similar in appearance to the eastern white cedar, the redcedar, also known as a Juniper Tree, can have blueish-tinged foliage and some leaves may be needle-like (center). Bark on mature trees forms vertical strips (right, image taken off campus).

---

Where to find one:
**Metasequoia glyptostroboides** Hu & Cheng

**Dawn Redwood**

**Cupressaceae**

**Notable features**

The dawn redwood is a deciduous conifer that sheds its needles in the fall. Needles are soft. Note the cones (pictured here) grow individually on small twigs. The bark is similar to the thin, peeling bark of cedar trees.

Where to find one:
**Thuja occidentalis** L.
Eastern White Cedar  
*Cupressaceae*

**Notable features**
Eastern white cedar leaves are scale-like and flat. Few plants in the region look like an eastern white cedar, making them easy to spot. It is aromatic, with brown bark that peels off in vertical strips.

**Where to find one:**
**Abies balsamea** (L.) Mill.
Balsam Fir

**Pinaceae**

---

**Notable features**

Balsam fir needles are flat and arranged in a plane (rather than all the way around the twig like a spruce). The bark is covered with resin blisters, which release a pleasant smelling sap when punctured. Note that the photo of the resin blisters was taken of a mature tree off campus.
**Larix decidua** Mill.
European Larch

**Pinaceae**

**Notable features**
The European larch is a deciduous conifer that sheds its needles in the fall. European larch cones are much longer (up to about 4 cm in length) than tamarack cones.

**Where to find one:**
Larix laricina (Du Roi) K. Koch
Tamarack

Notable features
The tamarack is a native deciduous conifer that sheds its needles in the fall. It is easily distinguished by its needles and small cone size (up to approximately 1 cm in length) which are smaller than European larch cones.

Where to find one:
**Picea abies (L.) Karst.**
Norway Spruce  
*Pinaceae*

**Notable features**
Norway spruce often have drooping branches, as well as much larger cones than other spruce species.

Where to find one:
Picea glauca (Moench) Voss
White Spruce
Pinaceae

Notable features
White spruce needles are arranged around the twig and are longer than the needles of black spruce. White spruce can be identified from black spruce by its needle length (white spruce needles grow up to approximately 22 cm in length while black spruce needles only reach approximately 16 cm) and the twigs (white spruce twigs are hairless while black spruce twigs are covered in small hairs).
**Picea pungens** Engelm.
Colorado Spruce

**Pinaceae**

**Notable features**
Also known as blue spruce, the needles are often bluish in color and are very prickly to the touch.

**Where to find one:**
*Pinus banksiana* Lamb.
Jack Pine

**Pinaceae**

**Notable features**
Jack pine is a common component of the boreal forest and an economically important tree species in Canada. Needles are bundled in twos but are much shorter than the other pines in this guide. Note that the image of the cone and needles was taken in Durham.

Where to find one:
**Pinus nigra Arnold**  
Austrian Pine  

---

**Pinaceae**

---

**Notable features**

Austrian pine is a commonly planted landscape tree in the city. It can be identified by its needles, which are bundled in twos, but are longer than Scots pine, and do not snap in half as easily when bent like red pine needles do.

---

**Where to find one:**

---
*Pinus resinosa* Ait.
Red Pine

**Notable features**
Red pine needles are bundled in twos, are longer than Scots pine needles, and snap cleanly when bent, unlike Austrian pine needles.

Where to find one:
Pinus strobus L.
Eastern White Pine

Notable features
Needles are bundled in 5’s and cones are curved. White pine is Ontario’s provincial tree, and is a common native tree in Canada. The bark is also distinctively thin, light gray, and often bleeds sap.

Where to find one:
**Pinus sylvestris** L.
Scots Pine

---

**Notable features**
Scots pine is an introduced species in Canada. Needles are bundled in 2’s like red and Austrian pine, but are shorter and distinctively twisted. Sections of bark will often have an orange tinge.

---

Where to find one:
**Pseudotsuga menziesii** (Mirb) Franco
Douglas-Fir

**Pinaceae**

**Notable features**
Douglas fir is an economically important timber species. It grows on the west coast and can be identified by its distinctive cones, which are covered in bracts.

Where to find one:
**Tsuga canadensis (L.) Carrière**  
Eastern Hemlock  

**Pinaceae**

---

### Notable features

The eastern hemlock has flat needles arranged in a single plane along the twigs. The branch arrangement is distinctive with many smaller branchlets splitting off from longer central branches. The cones are small and the bark is distinctive when trees are mature. The one pictured here is only a sapling, but these trees can get quite large.

---

**Where to find one:**

---

---
**Notable features**
Japanese yew can be identified by its needles, which are curved and have two green-yellow stripes on the underside.

Where to find one:
**Ginkgo biloba L.**

Ginkgo

**Ginkgoaceae**

**Notable features**

Ginkgo is extremely easy to identify by its fan-shaped leaves. Each leaf is attached to the branch via a distinctive short woody shoot, which is visible during the winter when the leaves have fallen. For somewhat obscure taxonomic reasons, ginkgo is actually considered to be a close relative of the conifers (and if you hold up a ginkgo leaf to the light, you will see parts of the leaf that look like needles fused together). Fruits on the female trees smell unpleasant when they fall. The Ginkgo species is one of the oldest tree species on the planet.
BROADLEAF TREES
Notable features
The Amur maple is a small tree or shrub. Its leaves are comparatively small for a maple. Note the two shorter lobes near the base of the leaf and the teeth across the leaf margins.

Where to find one:
**Acer griseum** (Franch.) Pax
Paperbark Maple

**Aceraceae**

**Notable features**
Paperbark maple has red bark that peels back like the bark of white birch trees. Leaves are compound, unlike most other maples (except for Manitoba maple).

**Where to find one:**
**Acer negundo** L.
Manitoba Maple

**Aceraceae**

**Notable features**
The Manitoba maple has opposite leaves (like other maples), but unlike most maples, these leaves are compound instead of simple. Each leaf has up to nine leaflets. Leaves can come in a variety of related shapes, even on the same tree.

Where to find one:
**Acer palmatum** Thunb.
Japanese Maple  \( \text{Aceraceae} \)

**Notable features**
Japanese maple is easily identified by its showy foliage and distinctive leaf shape. It is small and shrublike. It is a commonly cultivated species, so it is possible to find trees that come in different colours, shapes, and sizes.

Where to find one:
**Acer pennsylvanicum** L.
Striped Maple

**Aceraceae**

**Notable features**
Striped maple is another small tree. Leaves are comparatively large and have 3 lobes. They are also finely toothed. The bark is usually green and covered with white stripes.

Where to find one:
Acer platanoides L.
Norway Maple

Aceraceae

**Notable features**
Norway maple is commonly planted in the city. It can be distinguished from sugar maple by the white sap that is released from cut petioles (sugar maple does not release the sap) and by the bark texture (which develops ridges somewhat like an ash tree as the tree ages, right image). The young 'crimson king' cultivar (pictured here) has crimson leaves and immature bark. The photo of the bark on the right is a photo of a mature tree.

Where to find one:
**Acer pseudoplatanus** L.
Sycamore Maple

**Aceraceae**

**Notable features**
Sycamore maple leaves have 5 lobes and are heavily toothed. The bark is pale and mottled, similar to trees in the sycamore genus (*Platanus*). Unlike true sycamores, the sycamore maple has winged seeds and an opposite branching habit.

Where to find one:
Notable features
Silver maples are fast growing and can often be found around the city. They are large, spreading trees that frequently have multiple stems. The bark is grey and smooth on young trees but gets rougher as the tree matures. The leaves on silver maple are quite distinctive: their lobes are very deep and are silver colored on one side.
**Notable features**
Sugar maple looks like Norway maple, but with distinctly different bark that tends to be more plated with fewer narrow vertical ridges. The leaves on the sugar maple do not release a milky sap from the petiole. Unlike red maple, sugar maple leaves lack fine teeth.

*Where to find one:*

---

Acer saccharum Marsh.
Sugar Maple

*Aceraceae*
**Acer spicatum** Lamb.

**Mountain Maple**

**Aceraceae**

**Notable features**
Mountain maple is a multi-stemmed shrub or a small tree. It can be distinguished from striped maple by its smaller leaf size and its fruits (mountain maple fruits have clear dent marks in the seedcase).

Where to find one:
**Acer x freemanii** A. E. Murray
Freeman Maple

**Aceraceae**

**Notable features**
The Freeman maple is a hybrid of red and silver maple and can be difficult to distinguish from either, especially in the winter. Leaf lobes are shallower than in silver maple but deeper than red maple. The bark is relatively smooth and gray.

Where to find one:
Notable features
Staghorn sumac has pinnately compound leaves with up to 31 leaflets on each leaf. Leaflets are toothed. Petioles and twigs have hairs and are quite soft to the touch. Fruits are red and grow in spike-shaped clusters. Not to be confused with poison sumac (poisonous!), which has 7-13 toothless leaflets per stalk and has hairless mature twigs. Staghorn sumac tends to grow in large clumps, reaching heights of 4-6 m.

Where to find one:

[Map showing location of Rhus typhina]
**Ariala elata** (Miq.) Seem.
Japanese Angelica-Tree

---

**Araliaceae**

---

**Notable features**
Japanese Angelica tree has bipinnately compound leaves like Kentucky coffeetree. Angelica tree is smaller, has very different fruits, and twigs have prickles on them. The buds are also distinctive.

Where to find one:
Notable features
River birch is a common name for multiple birch species. *B. nigra* can be identified by its peeling, red-brown bark and triangular, toothed leaves.
Betula papyrifera Marsh.
White Birch (Paper Birch)

Betulaceae

Notable features
The bark of white birch is very distinctive and peels off horizontally, but to a lesser extent than Betula nigra. Leaves are toothed and may be triangular or oval shaped.

Where to find one:
**Notable features**
Gray birch is a shrubby tree with stems often growing in clusters. Leaves are triangular and double toothed. The bark does not peel as readily as other birch species.

**Where to find one:**

![Map of potential locations for Betula populifolia](image)
**Carpinus caroliniana** Walt.
Blue-Beech

**Notable features**
Also known as musclewood and American hornbeam, the blue-beech is a small tree. Leaves are toothed, prominently veined, and alternately arranged. Fruits are small nuts. The bark is distinctive, similar to the much larger beech trees.

Where to find one:
**Corylus colurna** L.
Turkish Hazelnut

**Betulaceae**

**Notable features**
Turkish hazelnut can be identified by its roundish leaf shape, distinctive bark and the spiky nuts. Also note the numerous large catkins on the tree in the winter. Note that the image of the fruits was taken off-campus.

**Where to find one:**

![Map of campus showing location of Corylus colurna](image-url)
**Ostrya virginiana** (Mill.) K. Koch
Ironwood  
**Betulaceae**

**Notable features**
Ironwood also goes by the common name hop-hornbeam, referring to the fruit’s resemblance to hops. The bark of ironwood is also distinctive with peeling strips of gray-brown bark. It is a popular choice for shady areas and grows slowly.

Where to find one:
**Catalpa speciosa** Warder
Northern Catalpa  
*Bignoniaceae*

**Notable features**
The northern catalpa is easy to identify from its massive, heart shaped leaves and long bean-like fruits.

Where to find one:
**Notable features**

Winged euonymus, also known as burning bush, is a small tree or shrub. Leaves are toothed and mostly oppositely arranged. Twigs are squarish and have corklike protrusions on each side (see image).
**Notable features**
The katsura tree can be recognized by its round-oval leaves and clusters of greenish pods. The species is dioecious, meaning that there are both male and female trees. Flowers are found on the females, while pollen is released from stamens on the males. In the winter, the male tree retains the petals grown around the stamens while the female drops them.

**Where to find one:**

![Map of John's College with Cercidiphyllum japonicum marker]
*Cornus alternifolia* L. f.
Alternate-Leaf Dogwood

*Cornaceae*

**Notable features**
Leaves are simple, toothless, and veins run parallel to leaf edge. Alternate leaf dogwood can be identified from other dogwoods by its alternate leaves (most dogwoods have opposite leaves), although some of the leaves look like they are opposite.

**Where to find one:**

---

(52)
**Notable features**
Kousa dogwood, like most dogwoods, has opposite leaves with entire margins and veins that curve towards the leaf tip. The fruit is particularly distinctive.
**Notable features**
Along with the other common identifying features in dogwoods (opposite branching and leaf veination), Cornelian-cherry has distinctive fruits and yellowish buds.
**Elaeagnus angustifolia** L.
Russian Olive

**Elaeagnaceae**

**Notable features**
Russian olive looks a little bit like some species of willow, but with a blue-ish tinge in the leaves. Fruits resemble olives, but are paler. Leaf undersides are a pale silver colour. Bark peels in vertical strips.

**Where to find one:**

![Map showing location of Elaeagnus angustifolia](image)
**Cercis canadensis** L.
Redbud

**Caesalpinaceae**

**Notable features**
Redbud is a small tree with showy pink flowers which appear before the leaves in the spring. Leaves are heart-shaped and toothless. Fruits are pea pod-like and red. There is also a cultivar of the tree with white instead of red flowers.

Where to find one:
*Gleditsia triacanthos* L.  
Honey Locust  
Caesalpinaceae

**Notable features**
The honey locust is a common street tree in the city. It is easily recognized by its pinnately compound (sometimes bipinnately compound) leaves and its bark. The variety in the city is a thornless cultivar, the 'wild type' trees are covered in thorns. The bark tends to be pleated, similar to that of sugar maple.

Where to find one:
Gymnocladus dioicus (L.) K. Koch
Kentucky Coffeetree

**Notable features**
The Kentucky coffeetree can be easily identified by its massive, bipinnately compound leaves, and distinctive pod-shaped fruits, found on female trees. In the winter, the tree has a skeletal appearance, with few, bare, and spaced out branches.
**Cladrastis lutea** (Michx.) K. Koch
Yellow-Wood  
**Fabaceae**

**Notable features**  
*C. lutea* is also known as *C. kentukea*. It can be identified by its pinnately compound leaves with alternate leaflets. It gets its name from its yellow heartwood.

*Where to find one:*
**Notable features**

Black locust looks somewhat like thornless honey locust, but with larger leaves and discrete but painful spines. Leaves are pinnately compound with up to 19 leaflets per leaf, including a leaflet at the tip. Paired spines may be found near the buds. Fruit looks like pea pods. The bark can have very pronounced ridges.
**Notable features**

American beech leaves are tough, alternately arranged and may remain on the tree during the winter. Veins are straight and parallel and end in a distinctive tooth. Bark is grey and smooth. Beech buds are distinctively slender, reddish brown, and come to a fine point.

Where to find one:
**Fagus sylvatica L.**
European Beech  

**Fagaceae**

**Notable features**
European beech bark looks very similar to the bark of its American counterpart. Leaves are either toothless or have very small teeth (American beech leaves are clearly toothed).

Where to find one:
Quercus alba L.  
White Oak  
Fagaceae

**Notable features**
White oak leaves have rounded lobes and can come in a variety of shapes and sizes. Acorns are up to about 2 cm in length. White oaks can grow up to approximately 35 m tall, the one pictured here is a sapling.

Where to find one:
**Quercus bicolor** Willd.
Swamp White Oak

**Fagaceae**

**Notable features**
Swamp white oak leaves have shallow, rounded lobes. Leaves get wider towards the tip. Acorns grow up to 3 cm in length, but are very scaly when immature (pictured here).

Where to find one:
*Quercus macrocarpa* Michx.
Bur Oak  
*Fagaceae*

**Notable features**
Bur oak leaves often have 2 very deep lobes near the base. Acorns are rounder than those of white oak. Most of the acorn is covered by the cup.

Where to find one:
**Quercus palustris** Muenchh.
Pin Oak

**Fagaceae**

**Notable features**
Pin oak leaves have pointy tips like red oak, but the lobes are much deeper, and the leaves are smaller overall.

Where to find one:
**Quercus robur** L.
English Oak

**Fagaceae**

**Notable features**
English oak leaves resemble those of white oak (rounded and lobed), but are smaller. English oak acorns can be twice the length of white oak acorns. Keep an eye out for the distinctive lobes near the bottom of the leaf. A columnar, ‘fastigate’ cultivar of English oak is also commonly planted.

**Where to find one:**
**Quercus rubra** L.
Red Oak  
*Fagaceae*

**Notable features**
Red oak leaves are lobed and lobes end in pointy teeth. It is a common tree in the city.

Where to find one:

![Map showing location of Quercus rubra](image-url)
**Quercus velutina** Lam.
Black Oak

**Fagaceae**

**Notable features**
Black oak leaves look similar to red oak leaves, but have fewer lobes (up to 7 for black, up to 9 for red). Red oak leaf lobes will often have uniform depth, which is not the case for black oak and black oak acorns are slightly smaller. Bark on mature black oak trees forms broken ridges, while red oak bark ridges tend to be longer.

Where to find one:
**Hamamelis virginiana L.**
Witch-Hazel

---

**Notable features**
The witch-hazel is a small tree or shrub. Stems usually grow in clusters. Leaf veins are straight. Fruits are small yellowish-green capsules.

---

**Where to find one:**

---

---
Liquidambar styraciflua L.
Sweetgum

Hamamelidaceae

Notable features
Sweetgum is most easily identified by its leaf shape and fruits which may be green or grayish and remain on the tree even during the winter.

Where to find one:
**Aesculus glabra** Willd.
Ohio Buckeye

*Hippocastanaceae*

**Notable features**
The Ohio buckeye has palmately compound leaves (like the common horsechestnut), but with 5-7 leaflets instead of 5-9. Leaflets are toothed. Terminal buds are large, but not sticky like common horsechestnut. Fruits have short spines all over them.

Where to find one:
**Aesculus hippocastanum** L.  
Common Horsechestnut  
*Hippocastanaceae*

**Notable features**
Common horsechestnut is quite common in the city. Leaves are palmately compound (leaflets are arranged in a hand-shape). Fruits are large and spiky. Terminal buds are sticky to the touch.

Where to find one:
**Notable features**
Shagbark hickory leaves are alternate, pinnately compound, and usually have 5 leaflets per petiole. The terminal leaflet can be noticeably larger than the others. The bark has a ‘shaggy’ look and often peels in vertical strips. Fruits are ball-shaped with vertical indents in them.
Notable features
Also known as white walnut, butternut looks similar to black walnut, but the terminal leaflet is the same size as the surrounding ones, unlike in black walnut where the terminal leaflet is smaller or absent. Butternut fruits are elongated, unlike those of black walnut which are round. Butternut is endangered and the canker pictured here is a common disease in the remaining trees in Ontario.
**Notable features**
The black walnut has pinnately compound leaves. Fruits are green, grow in clusters of up to 3, are a little smaller than a tennis ball, and have a distinctive and pleasant smell. Juglans bud scars are large and contain 3 clearly visible vascular bundles.
**Sassafras albidum** (Nutt.) Nees
Sassafras

**Lauraceae**

---

**Notable features**
Sassafras leaves may be lobed or unlobed and have a distinctive smell of species. Sassafras is uncommon in Ontario.

---

Where to find one:
**Liriodendron tulipifera L.**
Tulip Tree

**Magnoliaceae**

**Notable features**
The easiest way to identify a tulip tree is the highly distinctive four lobed leaves. In bloom, they have beautiful tulip-like flowers.

Where to find one:
**Magnolia acuminata** L.
Cucumber-Tree

**Magnoliaceae**

**Notable features**
Cucumber tree looks similar to other magnolias (with fuzzy buds). Fruits are distinctive and turn red when mature.

Where to find one:
Magnolia stellata (Siebold & Zucc.) Maxim.  
Star Magnolia  
Magnoliaceae

**Notable features**
The fruits of star magnolias are distinctive aggregated orange seeds encapsulated in a bright pink coating. Leaves are smaller than saucer magnolia. This tree gets its name from the star shaped blossoms.

Where to find one:
**Magnolia x soulangeana** Soul.-Boud.
Saucer Magnolia

**Notable features**
The saucer magnolia looks much like other magnolias, but with larger leaves. Flowers are large and can be pink to whiteish in color. Buds are quite sizable and are fuzzy to the touch.

Where to find one:
**Morus alba** L.
White Mulberry

**Moraceae**

**Notable features**
White mulberry often grows in disturbed areas. Leaves may have irregular lobes or may be unlobed (pictured here). Fruits look a bit like blackberries, but can be white, red, or black. Due to their weed-like ability to grow in marginal areas, they frequently have contorted or twisting branches.

**Where to find one:**

---

---
Fraxinus americana L.  
White Ash  
Oleaceae

**Notable features**
Ashes can be tricky to tell apart. White ash has compound leaves, and leaflets either lack teeth towards the tips or have rounded teeth. Leaflets are borne on very short stalks. Twigs are hairless. Leaf scars are "C" shaped, unlike green ash, which has "D" shaped leaf scars. White ash tend to have a broader, pyramidal growth habit.

Where to find one:
**Fraxinus excelsior** L.
European Ash

**Oleaceae**

**Notable features**
European ash leaves are pinnately compound and may have up to 15 leaflets per petiole. Leaflets are toothed, attached directly to the central stalk (no petiolules are present). Buds are black in color and covered in hairs.

Where to find one:
Fraxinus pennsylvanica Marsh.  
Green Ash  
Oleaceae

**Notable features**
Green ash leaves are pinnately compound and have teeth that reach from the bottom to above the middle of the leaflet. Twigs may or may not be covered in hairs. Very common in the city.
Syringa reticulata (Blume) H.Hara
Japanese Tree Lilac

Oleaceae

**Notable features**
As the name implies, Japanese tree lilac looks like a tree-shaped lilac. Flowers are white and bloom later than most other lilacs.

Where to find one:
**Syringa vulgaris** L.
Common Lilac

**Oleaceae**

**Notable features**
Common lilac is a shrublike tree. Stems grow in clusters. Leaves are toothless, and are roughly heart-shaped with a pointy tip. Flowers grow in elongated clusters, are aromatic, and may be white or pinkish. Remnants of their inflorescence can help identify lilacs when not in bloom. Branches have an opposite, or near opposite growth habit.

Where to find one:

![Map showing location of Syringa vulgaris](image)
Platanus x acerifolia (Ait.) Willd.
London Plane-Tree
Platanaceae

**Notable features**
The London plane is a common city tree. It can be identified by the camouflage-like patterns caused by peeling bark, its maple-like foliage, and paired fruits (American sycamore, which looks similar, has fruits that grow singly on stalks).

Where to find one:
Amelanchier arborea (Michx. f.) Fern.
Downy Serviceberry  

Notable features
A. arborea is also known by the latin name A. canadensis and the common name 'serviceberry'. Trees are small, multi-stemmed, and shrubby. Leaves are toothed and oval. They produce a dark-red to purple fruit that resembles a blueberry. New leaves will have downy (hairy) undersides.

Where to find one:
**Amelanchier laevis** Wieg.
Smooth Serviceberry  
*Rosaceae*

**Notable features**
Smooth serviceberry is a small tree or large shrub. Leaves are a coppery-purple color in springtime. They are toothed, simple, and hairless. Berries look like large blueberries.

Where to find one:
**Malus baccata** (L.) Borkh.
Siberian Crab Apple

**Rosaceae**

**Notable features**
Fruits are very small for an apple. Leaves are toothed with parallel veins and a pointed tip.

Where to find one:
Prunus serrulata Lindl.
Japanese Flowering Cherry
Rosaceae

Notable features
Japanese flowering cherry can be recognized by its stunning flowers. Look out for the cherry blossoms in the spring.

Where to find one:
**Prunus virginiana L.**  
Choke Cherry  

**Rosaceae**

**Notable features**
Choke cherry is a small tree or shrub. Its leaves are finely toothed. Leaves also have 2 glands at the base. Fruits resemble small (up to 1 cm) cherries.

Where to find one:
Notable features
Callery pear has showy spring flowers and makes a good street tree. The fruits are small and hard.

Where to find one:

![Map showing the location of Pyrus calleryana](image)
**Sorbus decora** Marsh.
American Mountain Ash  
*Rosaceae*

**Notable features**
American mountain ash has pinnately compound leaves that are alternately arranged on twigs. Leaves may have up to 17 leaflets per leaf. Fruits are orange berries that grow in clusters. American mountain ash can be difficult to identify from showy mountain ash.

Where to find one:
Phellodendron amurense Rupr.
Amur Corktree

Rutaceae

Notable features
The amur corktree has distinctively corky bark. Leaves are compound with 5-13 leaflets per leaf. Fruits are berries that grow in large clusters. They are dark blue to black when ripe or grayish green when immature. They are easy to identify due to their opposite branching habit in combination with corky bark and compound leaves.

Where to find one:
Populus balsamifera L.
Balsam Poplar

**Salicaceae**

**Notable features**
Balsam poplar leaves have longer petioles than some poplars. Leaves are toothed and egg-shaped. Glands may be found where the petiole meets the body of the leaf. Often grows in wet areas. Young bark is smooth, becoming rough and fissured with age.

Where to find one:
**Populus grandidentata** Michx.
Largetooth Aspen

**Salicaceae**

**Notable features**
Largetooth aspen also goes by the common name bigtooth aspen. The teeth on the leaves are distinctively large. Leaves are simple, and alternately arranged. Distinctive diamond indents on the bark are also common.

Where to find one:
*Populus tremuloides* Michx.  
Trembling Aspen  
*Salicaceae*

**Notable features**
Trembling aspen sprouts aggressively, so look for root suckers around a large tree. The leaf shape and bark are also quite distinctive. Sometimes aspen bark can resemble birch, but it does not peel and tends to be more silver/gray.

Where to find one:
Notable features
Look out for the weeping leaves, the yellow twigs, and the curved buds. They prefer marshy or wet environments such as lowlands and have very rough bark with deep ridges.

Where to find one:
Ailanthus altissima (Mill.) Swingle
Tree-of-heaven

Notable features
Tree of heaven can be identified by the pinkish wavy patterns that are often found on the bark, or by its pinnately compound leaves. Leaflets and especially fruits can be pungent. The species is extremely hardy and often grows in tight areas such as along fences or between cracks in pavement.
**Notable features**
The basswood looks much like the little-leaf linden, but its leaves are significantly larger.

Where to find one:
**Tilia cordata** Mill.
Little-Leaf Linden

**Tiliaceae**

**Notable features**
Little-leaf linden leaves have asymmetrical bases and are significantly smaller than basswood leaves. The presence of yellow bracts close to their leaves is an easy way to identify a linden.

Where to find one:
**Tilia x euchlora** K. Koch
Crimean Linden

**Tiliaceae**

**Notable features**
Lindens can be very difficult to tell apart. To make matters more complicated, Crimean linden is thought to be a hybrid offspring of little-leaf linden and another, similar linden species. Like little-leaf linden, it makes a good urban tree.

Where to find one:
**Celtis occidentalis** L.  
Hackberry  
**Ulmaceae**

**Notable features**  
The hackberry is easy to identify from its 'warty' bark. The berry-like fruits are also distinctive: they are dark red to purple in color, up to about 0.8 cm in length, and grow singly on stalks. They stay on the tree even during the winter months.

Where to find one:


*Ulmus americana* L.
White Elm

**Ulmaceae**

**Notable features**
Also known as American elm. Leaves have distinctly asymmetrical bases, and are often rough-textured (although they may also be smooth). Elms are best known for their vase-shaped growth habit.

Where to find one:
Ulmus glabra Huds.
Scotch Elm

**Notable features**
Scotch elm leaves are easy to recognize by their 'crown'-shaped tips. They are also very coarsely textured and feel a bit like sandpaper.

Where to find one:
Ulmus procera Salisb.
English Elm

**Notable features**
Like most other elms, English elm leaves have asymmetrical bases. Twigs may be covered in corky material. These corky twigs are probably the easiest way to identify this tree.

Where to find one:
**Ulmus pumila** L.
Siberian Elm

**Ulmaceae**

**Notable features**
The Siberian elm has comparatively small leaves that look much more symmetrical at the base than most other elms. Leaves are often finely toothed. Often found planted in rows, they have been used in the past as hedges but when left uncared-for will grow into fullsize trees.

Where to find one:
Zelkova serrata (Thunb.) Mak.
Japanese Zelkova

Ulmaceae

Notable features
The Japanese zelkova has simple, toothed leaves in the shape of a lance. It is in the elm family, but is not sensitive to dutch elm disease.

Where to find one:
Glossary

Alternate:
only one leaf is present on a twig node (vs. whorled or opposite)

Bipinnate:
compound leaf that is divided into leaflets twice (e.g., Japanese angelica, Kentucky coffee)

Bract:
modified leaf that seems to be part of a flower/inflorescence

Bud:
first stage of a leaf or a flower

Capsule:
dry fruit opening with more than one hole, releasing seeds

Catkin:
Group of flowers, often without or with small petals.

Compound leaf:
leaf that is divided into leaflets (e.g., black walnut)

Cultivar:
cultivated variety e.g., Acer platanoides ‘Crimson King’

Dendrology:
the study of woody plants

Entire leaf:
leaf that does not have teeth or lobes

Habit:
form/behavior

Leaflet:
what composes the compound leaves, first-division of the compound leaf

Lobe:
rounded part of the leaf that is projected

Margin:
the edge of a leaf
OPPOSITE:
leaves present in a pair on a node, across from each other on the twig (e.g., maples)

Palmate:
like fingers on a hand, with lobes projecting from a central point

Petiole:
thin and elongated part that attaches the leaf to the twig

Petiolule:
thin and elongated part that attaches the leaflets of a compound leaf

Pinnate:
leaflets located along the petiole, on both sides, like a fern

Pods:
dry fruit containing a hollow centre, releasing one or more seeds

Prickle:
more or less sharp wooden structure

Scar:
mark left on the twig after the leaf falls

Shrub:
woody plant with many stems that is smaller than 4.5m high

Stalk:
stem of the plant

Teeth:
round or pointy projection of the leaf margin

Twig:
newly formed or young branch

Understory:
plants growing below the canopy level

Whorled:
leaves present all around the twig (compared to opposed or alternate)


Daws M. 2021. tilemapbase version 0.4.7. https://pypi.org/project/tilemapbase/
INDEX OF SCIENTIFIC NAMES

Abies balsamea, 14
Acer ginnala, 30
Acer griseum, 31
Acer negundo, 32
Acer palmatum, 33
Acer pennsylvanicum, 34
Acer platanoides, 35
Acer pseudoplatanus, 36
Acer saccharinum, 37
Acer saccharum, 38
Acer spicatum, 39
Acer x freemanii, 40
Aesculus glabra, 72
Aesculus hippocastanum, 73
Ailanthus altissima, 101
Amelanchier arborea, 89
Amelanchier laevis, 90
Ariala elata, 42
Betula nigra, 43
Betula papyrifera, 44
Betula populifolia, 45
Callitropsis nootkatensis, 10
Carpinus caroliniana, 46
Carya ovata, 74
Catalpa speciosa, 49
Celtis occidentalis, 105
Cercidiphyllum japonicum, 51
Cercis canadensis, 56
Cladrastis lutea, 59
Cornus alternifolia, 52
Cornus kousa, 53
Cornus mas, 54
Corylus colurna, 47
Elaeagnus angustifolia, 55
Euonymus alatus, 50
Fagus grandifolia, 61
Fagus sylvatica, 62
Fraxinus americana, 83
Fraxinus excelsior, 84
Fraxinus pennsylvanica, 85
Ginkgo biloba, 28
Gleditsia triacanthos, 57
Gymnocladus dioicus, 58
Hamamelis virginiana, 70
Juglans cinerea, 75
Juglans nigra, 76
Juniperus virginiana, 11
Larix decidua, 15
Larix laricina, 16
Liquidambar styraciflua, 71
Alternate-Leaf Dogwood, 52
American Beech, 61
American Mountain Ash, 95
Amur Corktree, 96
Amur Maple, 30
Austrian Pine, 21
Balsam Fir, 14
Balsam Poplar, 97
Basswood, 102
Black Locust, 60
Black Oak, 69
Black Walnut, 76
Blue-Beech, 46
Bur Oak, 65
Butternut, 75
Callery Pear, 94
Choke Cherry, 93
Colorado Spruce, 19
Common Horsechestnut, 73
Common Lilac, 87
Cornelian-Cherry, 54
Crimean Linden, 104
Cucumber-Tree, 79
Dawn Redwood, 12
Douglas-Fir, 25
Downy Serviceberry, 89
Eastern Hemlock, 26
Eastern Redcedar, 11
Eastern White Cedar, 13
Eastern White Pine, 23
English Elm, 108
English Oak, 67
European Ash, 84
European Beech, 62
European Larch, 15
Freeman Maple, 40
Ginkgo, 28
Gray Birch, 45
Green Ash, 85
Hackberry, 105
Honey Locust, 57
Ironwood, 48
Jack Pine, 20
Japanese Angelica-Tree, 42
Japanese Flowering Cherry, 92
<table>
<thead>
<tr>
<th>Tree Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese Maple</td>
<td>33</td>
</tr>
<tr>
<td>Japanese Tree Lilac</td>
<td>86</td>
</tr>
<tr>
<td>Japanese Yew</td>
<td>27</td>
</tr>
<tr>
<td>Japanese Zelkova</td>
<td>110</td>
</tr>
<tr>
<td>Katsura Tree</td>
<td>51</td>
</tr>
<tr>
<td>Kentucky Coffeetree</td>
<td>58</td>
</tr>
<tr>
<td>Kousa Dogwood</td>
<td>53</td>
</tr>
<tr>
<td>Large-tooth Aspen</td>
<td>98</td>
</tr>
<tr>
<td>Little-Leaf Linden</td>
<td>103</td>
</tr>
<tr>
<td>London Plane-Tree</td>
<td>88</td>
</tr>
<tr>
<td>Manitoba Maple</td>
<td>32</td>
</tr>
<tr>
<td>Mountain Maple</td>
<td>39</td>
</tr>
<tr>
<td>Northern Catalpa</td>
<td>49</td>
</tr>
<tr>
<td>Norway Maple</td>
<td>35</td>
</tr>
<tr>
<td>Norway Spruce</td>
<td>17</td>
</tr>
<tr>
<td>Ohio Buckeye</td>
<td>72</td>
</tr>
<tr>
<td>Paperbark Maple</td>
<td>31</td>
</tr>
<tr>
<td>Pin Oak</td>
<td>66</td>
</tr>
<tr>
<td>Red Oak</td>
<td>68</td>
</tr>
<tr>
<td>Red Pine</td>
<td>22</td>
</tr>
<tr>
<td>Redbud</td>
<td>56</td>
</tr>
<tr>
<td>River Birch</td>
<td>43</td>
</tr>
<tr>
<td>Russian Olive</td>
<td>55</td>
</tr>
<tr>
<td>Sassafras</td>
<td>77</td>
</tr>
<tr>
<td>Saucer Magnolia</td>
<td>81</td>
</tr>
<tr>
<td>Scotch Elm</td>
<td>107</td>
</tr>
<tr>
<td>Scots Pine</td>
<td>24</td>
</tr>
<tr>
<td>Shagbark Hickory</td>
<td>74</td>
</tr>
<tr>
<td>Siberian Crab Apple</td>
<td>91</td>
</tr>
<tr>
<td>Siberian Elm</td>
<td>109</td>
</tr>
<tr>
<td>Silver Maple</td>
<td>37</td>
</tr>
<tr>
<td>Smooth Serviceberry</td>
<td>90</td>
</tr>
<tr>
<td>Staghorn Sumac</td>
<td>41</td>
</tr>
<tr>
<td>Star Magnolia</td>
<td>80</td>
</tr>
<tr>
<td>Striped Maple</td>
<td>34</td>
</tr>
<tr>
<td>Sugar Maple</td>
<td>38</td>
</tr>
<tr>
<td>Swamp White Oak</td>
<td>64</td>
</tr>
<tr>
<td>Sweetgum</td>
<td>71</td>
</tr>
<tr>
<td>Sycamore Maple</td>
<td>36</td>
</tr>
<tr>
<td>Tamarack</td>
<td>16</td>
</tr>
<tr>
<td>Tree-of-heaven</td>
<td>101</td>
</tr>
<tr>
<td>Trembling Aspen</td>
<td>99</td>
</tr>
<tr>
<td>Tulip Tree</td>
<td>78</td>
</tr>
<tr>
<td>Turkish Hazelnut</td>
<td>47</td>
</tr>
<tr>
<td>White Ash</td>
<td>83</td>
</tr>
<tr>
<td>White Birch (Paper Birch)</td>
<td>44</td>
</tr>
<tr>
<td>White Elm</td>
<td>106</td>
</tr>
<tr>
<td>White Mulberry</td>
<td>82</td>
</tr>
<tr>
<td>White Oak</td>
<td>63</td>
</tr>
<tr>
<td>White Spruce</td>
<td>18</td>
</tr>
<tr>
<td>White Willow</td>
<td>100</td>
</tr>
<tr>
<td>Winged Euonymus</td>
<td>50</td>
</tr>
<tr>
<td>Witch-Hazel</td>
<td>70</td>
</tr>
<tr>
<td>Yellow Cedar</td>
<td>10</td>
</tr>
<tr>
<td>Yellow-Wood</td>
<td>59</td>
</tr>
</tbody>
</table>