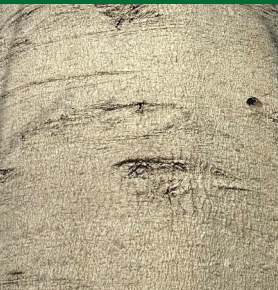


INTRODUCTION

Every forest has a history. Maybe it was once cleared for agriculture and still holds the memory in its nutrient-rich soil. Maybe it has always been forested and is littered with large pits and mounds that show it. Whatever the case, hundreds of years of history can be gathered by understanding a forest in its current state, and Cylburn Arboretum's woodlands are no exception. This guide aims to serve as an introduction to woodland interpretation, both within and beyond Cylburn, and to provide a glimpse of the hidden world of trees.



American Beech (*Fagus grandifolia*)

Presence: Cylburn's beech forests are older, characteristically shady, and tend to have low weed presence.

Leaves: pointed oval leaves with finely toothed edges

Bark: smooth and silvery-gray, shallow horizontal ridges



White Oak (*Quercus alba*)

Presence: White oaks make up the oldest sections of Cylburn's forests. When white oaks and beeches appear together at Cylburn, that area is likely an old growth forest and was never cleared.

Leaves: lobed with smooth edges

Bark: shingled and gray, turns blockier toward bottom of tree with age



Northern Red Oak (*Quercus rubra*)

Presence: Northern red oaks often appear in Cylburn's old growth forests. Their wood is desirable for logging, and they may regrow with multiple trunks after being felled.

Leaves: lobed with pointed tips

Bark: reddish-brown to dark gray with deep fissures



Tulip Poplar (*Liriodendron tulipifera*)

Presence: Tulip poplars are a pioneer species that thrives in full sun and grows quickly. Their presence indicates disturbed, potentially cleared land.

Leaves: four lobes with smooth margins, resemble tulips

Bark: slightly reddish with braid-like fissures

TIP: If a tree's leaves have fallen, you can use the contents of the surrounding leaf litter, as well as the bark's appearance and other ecological indicators, to aid in identification. Note that some species' bark varies in appearance depending on the tree's age.

INVASIVE SPECIES

Invasive species presence in a forest is related to the level of disturbance it has experienced. An undisturbed, mature forest will have few invasive plants and will be more resistant to their colonization. However, when a forest's soil and seed bank is disturbed, the seeds within are more likely to germinate, including those of invasive species. Additionally, when existing trees are harmed or killed, resource availability increases and *canopy gaps* form, providing invasive species with the nutrients and sunlight they need to grow.

Common invasive species at Cylburn include:

- 1 Japanese stiltgrass (*Microstegium vimineum*)
- 2 English ivy (*Hedera helix*)
- 3 Wineberry (*Rubus phoenicolasius*)
- 4 Norway maple (*Acer platanoides*)
- 5 Porcelain berry (*Ampelopsis glandulosa*)



SOURCES

Want to dig deeper? Scan this code to explore the sources behind the guide. You'll find helpful links and a look at how we pieced together Cylburn's forest history—a place to continue your journey into the hidden world of trees.



Learn more or donate: CYLBURN.ORG

This publication is funded by:



EDUCATIONAL PROGRAMS

THE FOREST



CYLBURN
ARBORETUM
FRIENDS



INTERPRETING A FOREST

Multi-Trunk or Resprout Trees

Multi-trunk or resprout trees occur when a disturbance like fire, wind, or logging kills a tree's trunk but leaves its root system intact. In response, the tree quickly sends up a number of stump-sprouts, some of which eventually become new trunks with a shared root system. Most of the resprout trees at Cylburn are red oaks, as well as some white oaks and tulip poplars.

Example A: A multi-trunk Northern red oak

Basal Scars

Basal scars occur when an area of bark at a tree's base is removed, typically due to fire or collision. In the case of fire, these scars often appear on the uphill side of the tree. They are usually triangular in shape and may contain residual charcoal, especially if the tree has burned multiple times. At Cylburn, basal scars are most evident on American beech trees due to their thin bark.

Example B: A basal scar in an American beech.

Fallen Trees

Fallen canopy trees are a common feature of mature forests. Often, trees are already dead or dying before they fall, due to old age, damage, disease, catastrophic events, or other environmental factors. Then, they might decay standing and eventually fall because of rotted roots, or snap near the bottom of the trunk due to accelerated decay from higher moisture levels in that portion of the tree.

See example C

Healthy trees may also fall, snapping mid-trunk or uprooting due to severe winds and storms. During a storm, heavy rains soak the soil and decrease root anchorage, making trees more susceptible to overturning in response to high-speed winds or snow- and ice-loading. When the living roots rip from the ground, they take a large amount of earth with them, creating a pit and an adjacent mound as they decompose.

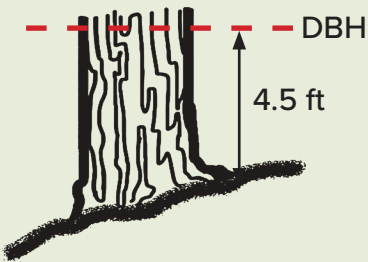
See example D

MEASURING TREES

Diameter at Breast Height (DBH)

DBH is one standard type of measurement of a tree's trunk, where "breast height" is standardized (in the U.S.) as being 4.5 feet from the ground. A tree's DBH can be used to track growth, find biomass, predict yield, and estimate age.

However a tree's diameter is not a sure way to determine its age. Different species have different growth factors, or rates at which they grow in diameter, so a slow-growing American beech tree might be twice as old as a fast-growing tulip poplar of the same DBH.



DBH (in.)	x	Tree Growth Factor	= Tree Age
10	x	6 (American beech)	= 60
10	x	5 (White oak)	= 50
10	x	4 (Norther red oak)	= 40
10	x	3 (Tulip poplar)	= 30

A SLICE OF CYLBURN'S WOODLAND HISTORY

CYLBURN HIKING TRAILS

- Border Trail
- Circle Trail
- Vista Trail
- Azalea Trail
- Ridge Trail
- Woodland Trail
- Spicebush Trail
- Ravine Trail
- Buckeye Trail
- Etta Stem Wedge Trail

INVASIVE PLANTS

- Light
- Moderate
- Heavy
- Clear

RAVINE

This mature beech woodland has a low level of exotic weeds except near the edges and canopy gaps. The owners of Springwood Farm may have used some of this land for grazing.

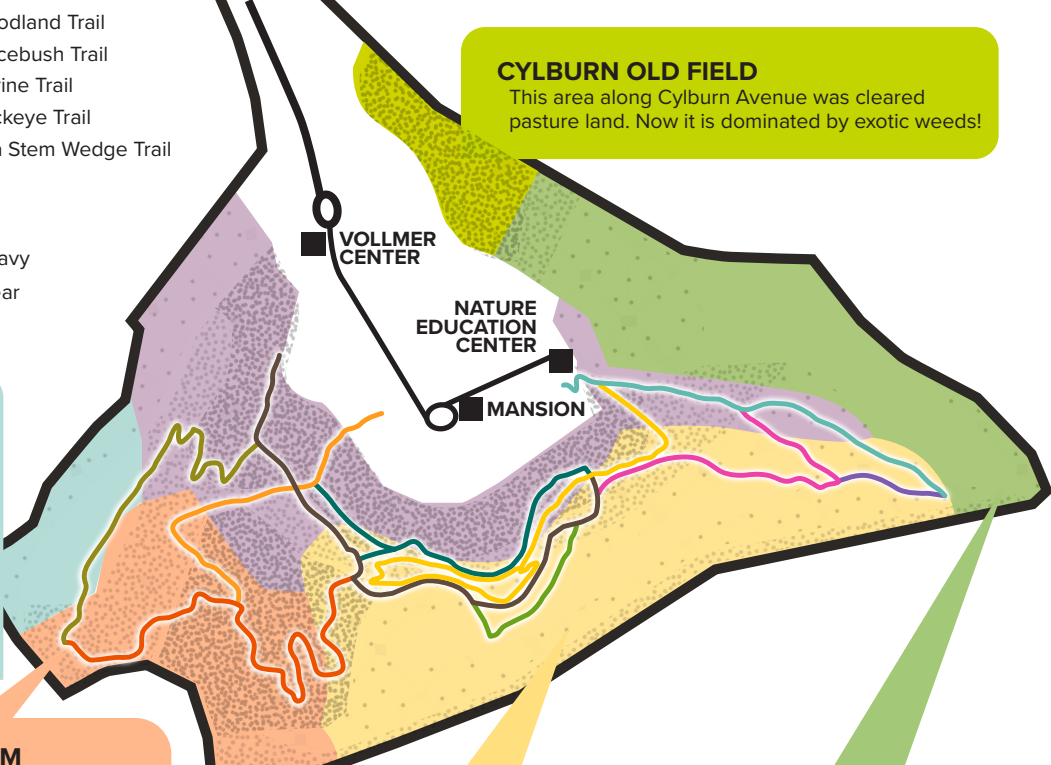
SPRINGWOOD FARM

History: This area was almost entirely cleared and then used for agriculture until as recently as 1927. The soil is heavily enriched due to a history of fertilizers and other soil treatments.

Composition: Contains species typically found in old fields and abandoned agricultural land, such as tulip poplar, ash, elm, black walnut, sycamore, box elder, redbud, the occasional dogwood, and some dense thickets of spicebush; heavily infested with invasives.

Characteristics: Evidence of agricultural history is apparent from the smooth ground (once plowed), lack of stones (all removed by hand), and the typical old field vegetation that has colonized the site. The unique composition (for Cylburn) is due in part to this area's enriched soil, which has allowed invasives to thrive there.

ENTRANCE



CYLBURN OLD FIELD

This area along Cylburn Avenue was cleared pasture land. Now it is dominated by exotic weeds!

TULIP POPLAR WOODS

History: This area was never cleared for agriculture, but it was logged of most of its oak and other valuable hardwoods in the 1800s or 1900s. The resulting canopy gaps allowed successional tulip poplars to sprout and thrive in their place.

Composition: Contains mostly tulip poplars with a beech understory, as well as thickets of pawpaw trees and spicebush; almost no old oaks in contrast to surrounding areas; low pressure from invasives.

Characteristics: Tulip poplars here are mature and average about 25 inches DBH, though some are twice that large. Many of the beech trees have basal scars from woodland fires in the mid-1900s, sparked by trains on the railroad tracks below.

OLD OAK WOODS

History: This area has experienced very little disturbance—some limited cutting in the 1800s and perhaps woodland grazing. There used to be a private railroad station nearby, and what was once an old carriage road is now the Woodland trail.

Composition: Mainly white oak, tulip poplar, and American beech, plus some red oak and chestnut oak; mostly clear of invasives.

Characteristics: Many of these trees are 200+ years old, especially the white oaks and beeches. Some multi-trunked red oaks are present, likely due to logging. At the end of the Woodland trail stands a beautiful grove of very old beeches. Small pieces of coal can be found along the trail from when the private railroad was in service.