

DISCOVER CONIFERS

What is a conifer? Conifer means “cone bearing.” They usually have evergreen leaves that can be needle-like, awl-shaped, or scale-like.

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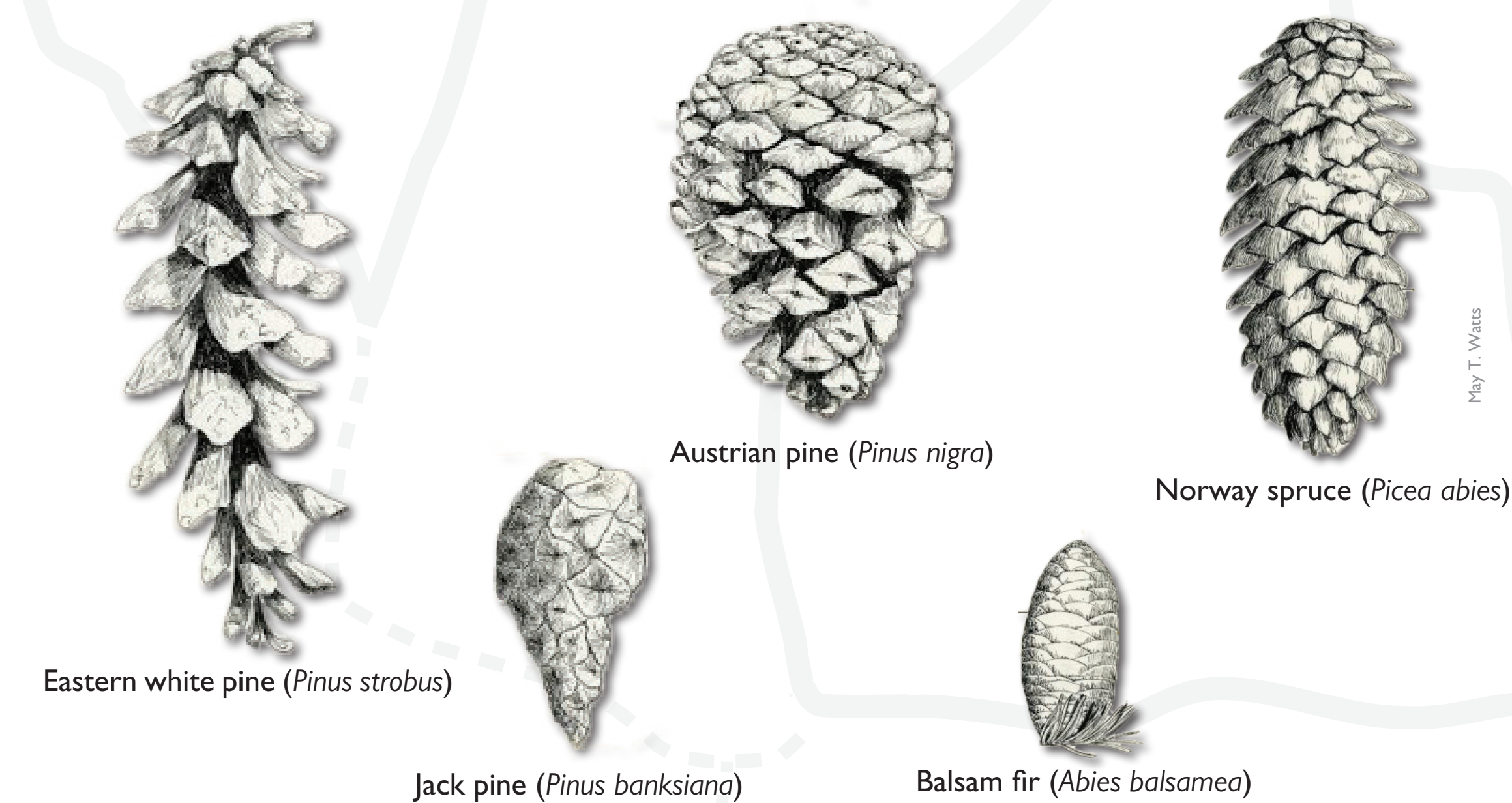
Conifers add beauty and interest to the landscape in all four seasons.

Conifers come in a variety of sizes, shapes, and colors. Pines are some of the most familiar conifers, yet even these come in unusual forms such as the Tanyosho pines (*Pinus densiflora* ‘Umbraculifera’) from Japan.



Tanyosho pine (*Pinus densiflora* ‘Umbraculifera’)

Sometimes you’ll hear conifers referred to as gymnosperms, which means “naked seed.” These seeds may develop on the scale portion of a cone.



Conifers bear their seeds in cones of different shapes and sizes.



Wilson's Japanese yew (*Taxus cuspidata* ‘Wilsonii’)



Japanese garden juniper (*Juniperus procumbens*)

Discover the similarities and differences of a few of the world’s over 600 conifer species as you explore this collection.

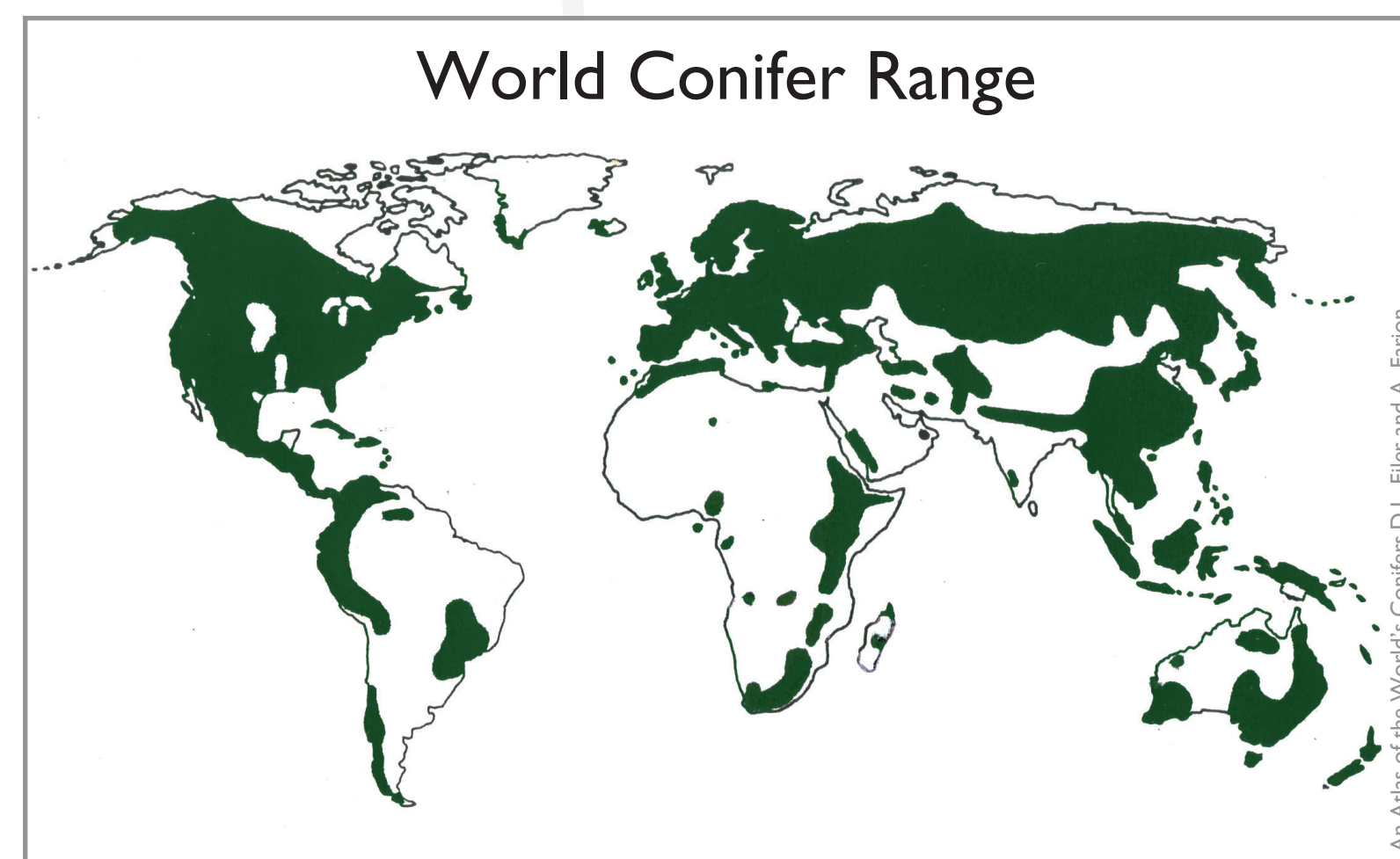
CONIFER CONSERVATION

Conifers are found in many regions of the world, but are also one of the most threatened groups of plants on Earth.

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Background Photo: Earl Richardson



Over a third of the world's approximately 600 species are globally threatened in the wild due to climate change, habitat destruction, overharvesting, pests, and diseases. Arboreta help conserve conifers by keeping threatened species in ex situ or literally, "off-site" collections like this one. Researchers can then study the growth and performance of these trees to make informed conservation decisions about conifers in the wild.



Ancient bristlecone pines (*Pinus longaeva*), many thousands of years old, are found in Nevada's Great Basin National Park.

One of the longest-lived conifers is a **Great Basin bristlecone pine** (*Pinus longaeva*), verified as more than 5,000 years old.



An endangered Japanese cedar (*Cryptomeria japonica*) one of 13 endangered conifers at The Morton Arboretum.

CONIFER LEAVES

Conifers are often called evergreens. Most conifers have needles or scales which stay green and don't fall off the tree in autumn. The exceptions to this rule include larches, dawn-redwood, and bald-cypress, which are deciduous conifers.

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How do you identify a specific conifer?

First, look for clues. These may include shape, size, color, and arrangement of leaves, needles, or scales.



Canada yew (*Taxus canadensis*): Look for flat, lance-shaped, pointed needles, which are “two-ranked”—they appear to be in rows, even if arranged spirally on the stem.



Hoops Colorado spruce (*Picea pungens* ‘Hoopsii’): Spruce needles follow the “5 S” rules. They are single, stiff, square-shaped, arranged in spirals on the branch, and sharp on the tips. The needles sit on a woody peg attached to the twig.



Eastern arborvitae (*Thuja occidentalis*): The leaves are flat, scale-like, and tightly hug the branch.



Eastern white pine (*Pinus strobus*): Its leaves or needles are long, soft, and bundled in groups of five.

CONIFER CONES

Cones are the reproductive structures of conifers. They come in many shapes, sizes, and colors. Many cones have unique characteristics that will help you identify the species.

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Look for a variety of cones as you explore this collection.



The **common yew** (*Taxus baccata*) has a cone that looks like a red berry. The seed inside is toxic.



Pines, like this open **Jack pine** (*Pinus banksiana*) cone, have some of the most recognizable conifer cones.



The **dawn-redwood** (*Metasequoia glyptostroboides*) has a small, very hard cone.



Junipers, like this **creeping juniper** (*Juniperus horizontalis*), have “berries” which are really female cones.

A WORLD OF CONIFERS

There are more than 600 different conifer species worldwide, plus many cultivated varieties called cultivars.

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Some cultivars are hybrids deliberately developed by horticulturists or researchers. Others are selections made from spontaneously occurring plants with unique characteristics found in cultivation or in the wild.



Anglo-Japanese yew (*Taxus x media*)



Detail of yew needles

Anglo-Japanese yew (*Taxus x media*) is a cross between **English yew** (*Taxus baccata*) and **Japanese yew** (*Taxus cuspidata*).

Variations in conifer species occur naturally. Plant breeders and enthusiasts discover, propagate, name, and make them available to the public. **Dwarf white spruce** (*Picea glauca* 'Conica') is an example.



Dwarf white spruce (*Picea glauca* 'Conica')

Witches'-brooms are naturally occurring areas of dense foliage on a tree. When propagated, they may create new cultivars, such as **Hornibrook Austrian pine** (*Pinus nigra* 'Hornibrookiana').



Hornibrook Austrian pine (*Pinus nigra* 'Hornibrookiana')

CONIFERS IN YOUR HOME LANDSCAPE

A conifer is generally low maintenance and long-lived. Consider the mature height and breadth of a conifer before planting. What are its light requirements? What type of soil does it need?

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Conifers come in a **diversity of shapes and sizes**. They may serve as a backdrop for annual and perennial plantings or as a focal point for a yard.



Different **conifer hues**—from lime green to blue green—are a foil for other plants in the garden.



Anglo-Japanese yew (*Taxus x media*)



Ponderosa pine (*Pinus ponderosa*)

Bark texture may add interest. Consider foliage density. Will your conifer selection stay evergreen, like spruce and pine? Or is it deciduous, such as bald-cypress and dawn-redwood, and will lose its needles?



Visit mortonarb.org for help selecting and caring for your conifer.

COMMON USES FOR CONIFERS

Dyes. Building materials. Glue. You may use conifers in ways you aren't aware of.

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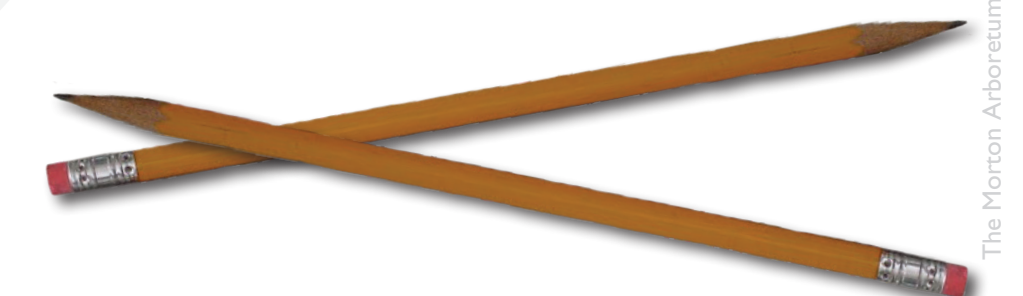
Conifers, including pine and spruce trees, are often made into wood pulp. This pulp may be used in the manufacture of:

- Newspapers and magazines
- Toilet paper
- Shipping containers
- Corrugated boxes
- Grocery bags



Ponderosa pine (*Pinus ponderosa*)

Turpentine, a solvent for thinning oil-based paints and producing varnishes, comes from **ponderosa pine** (*Pinus ponderosa*) and **loblolly pine** (*Pinus taeda*) plantations.



Pencils are made with California cedar. Wooden floors can be made with pine. Conifers are important components of some medicines. They may even be an ingredient in your favorite perfume!

CONIFERS IN AMERICAN HISTORY

From sailing ships and legendary lumberjacks to the National Park System and conservation, conifers have been essential to American history.

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Eastern white pine (*Pinus strobus*)



1652 pine tree shilling used in the Massachusetts Bay Colony

Virgin **Eastern white pine** (*Pinus strobus*) powered the economy of pre-revolution America. Straight as an arrow and 150 feet tall, it was with ship masts of American pine that the British navy gained mastery of the Atlantic. So foundational was this tree to the American lumber industry that it appeared on early coinage and later, revolutionary flags.

Red spruce (*Picea rubens*) has an equally rich history. Early American ship captains brewed spruce beer—high in vitamin C—to keep their sailors free of scurvy. Red spruce wood was used in the Wright Brothers' first successful plane.



Red spruce (*Picea rubens*)

But, by 1900, few sizable red spruce or white pine remained in the Northeast. When spruce wood was needed for manufacturing 10,000 airplanes in World War I, the mostly unharvested giant **Sitka spruce** (*Picea sitchensis*) from the Pacific Northwest was the preferred alternative. Fearing the loss of forested land would continue to spread westward, inspired Americans expanded protections of the newly created National Park and Forest Systems.



Sitka spruce (*Picea sitchensis*)

CONIFERS IN THE KITCHEN

Seasonings, food, and alcoholic beverages derived from conifers are the basis for multi-million dollar industries worldwide.

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Common juniper (*Juniperus communis*)

Conifers are staple components in different ethnic cuisines. **Common juniper** (*Juniperus communis*) “berries,” or seed cones, are a popular ingredient in many Northern European cultures. Wild game birds, venison, and sauerkraut are often flavored with common juniper berries.



Gin relies on the common juniper for its distinctive flavor.



Colorado pinyon (*Pinus edulis*)

Pine nuts are gathered from any of about 20 different species across the world, but popular choices in the United States are the **single-leaf pinyon pine** (*Pinus monophylla*) and **Colorado pinyon** (*Pinus edulis*). They are a classic ingredient in pesto. Pine nuts may contain as much protein as steak, and are rich in antioxidants.



The Morton Arboretum

CONIFERS FOR CURES

Many conifers have a long history of medicinal use for people. Today, researchers believe medications derived from conifers show great promise in treating many human diseases.

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Eastern white pine (*Pinus strobus*) and **Scots pine** (*Pinus sylvestris*) are sources for resveratrol, an antioxidant. This plant compound is also found in blueberries, chocolate, and red grapes. Resveratrol may limit the spread of cancer cells and prevent plaque buildup that leads to Alzheimer's disease. It may also help prevent insulin resistance, which is a precursor to diabetes.



Pacific yew (*Taxus brevifolia*)



Scots pine (*Pinus sylvestris*)

Taxol or Paclitaxel is a drug derived from the **Pacific yew** (*Taxus brevifolia*). It is used in chemotherapy to treat leukemia and lung, ovarian, and breast cancers. The Pacific yew is among the 15,000 plant species extracts collected and tested by the National Cancer Institute and the United States Department of Agriculture. They conducted a study of plants promising for cancer-fighting properties between 1960 and 1981. Pacific yew was the only one to prove effective.

Researchers at The Morton Arboretum continue to contribute to different studies seeking to find medicinal uses and potential cures from trees.

CONIFERS INSPIRE

Conifers evoke an emotional response. They ignite the human imagination.

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Background Photo: Earl Richardson



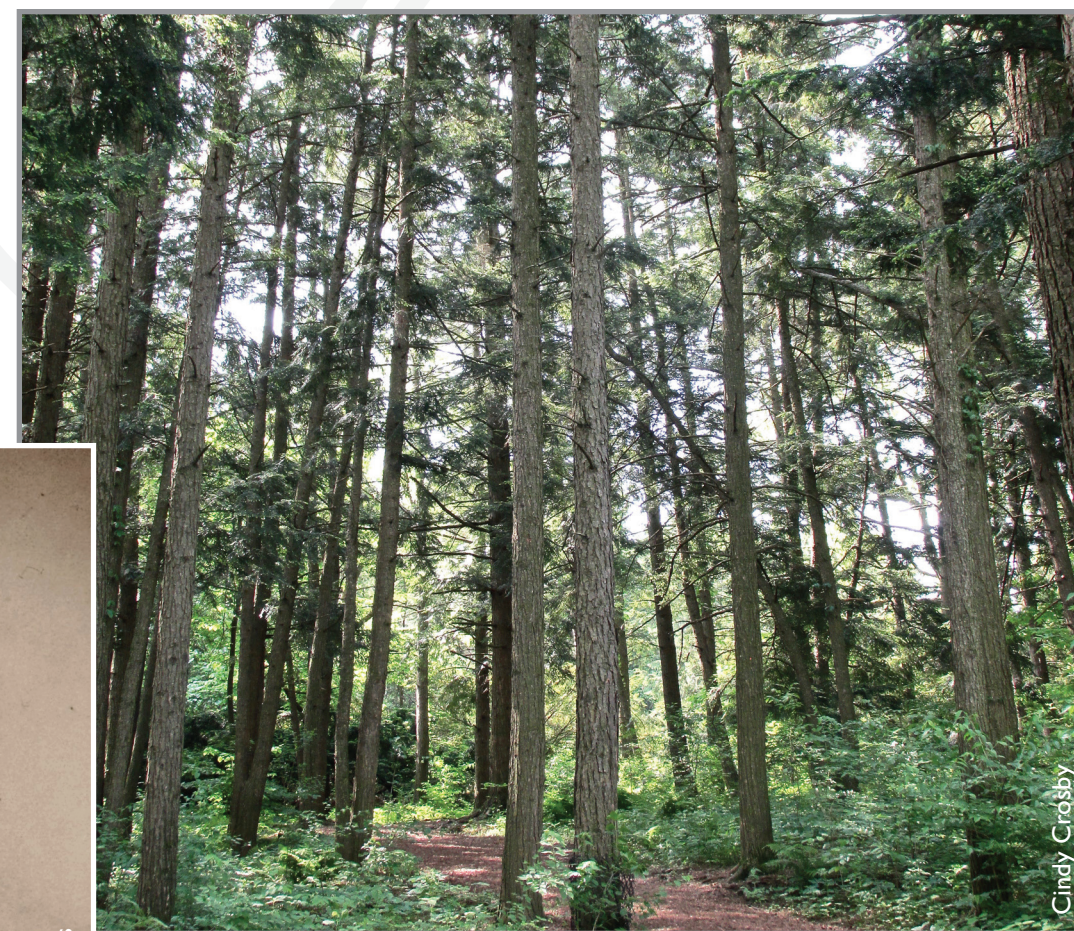
John Hagstrom

"Woodnotes II"
Ralph Waldo Emerson
(1803-1882)

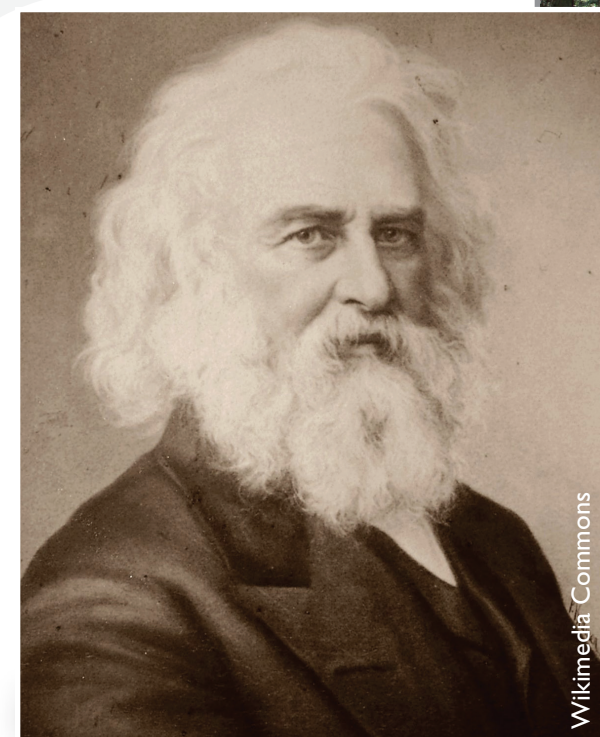


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*"Who leaves the pine-tree, leaves his friend,
unnerves his strength, invites his end."*



Cindy Crosby



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"Evangeline: A Tale of Acadie"
Henry Wadsworth Longfellow
(1807-1882)

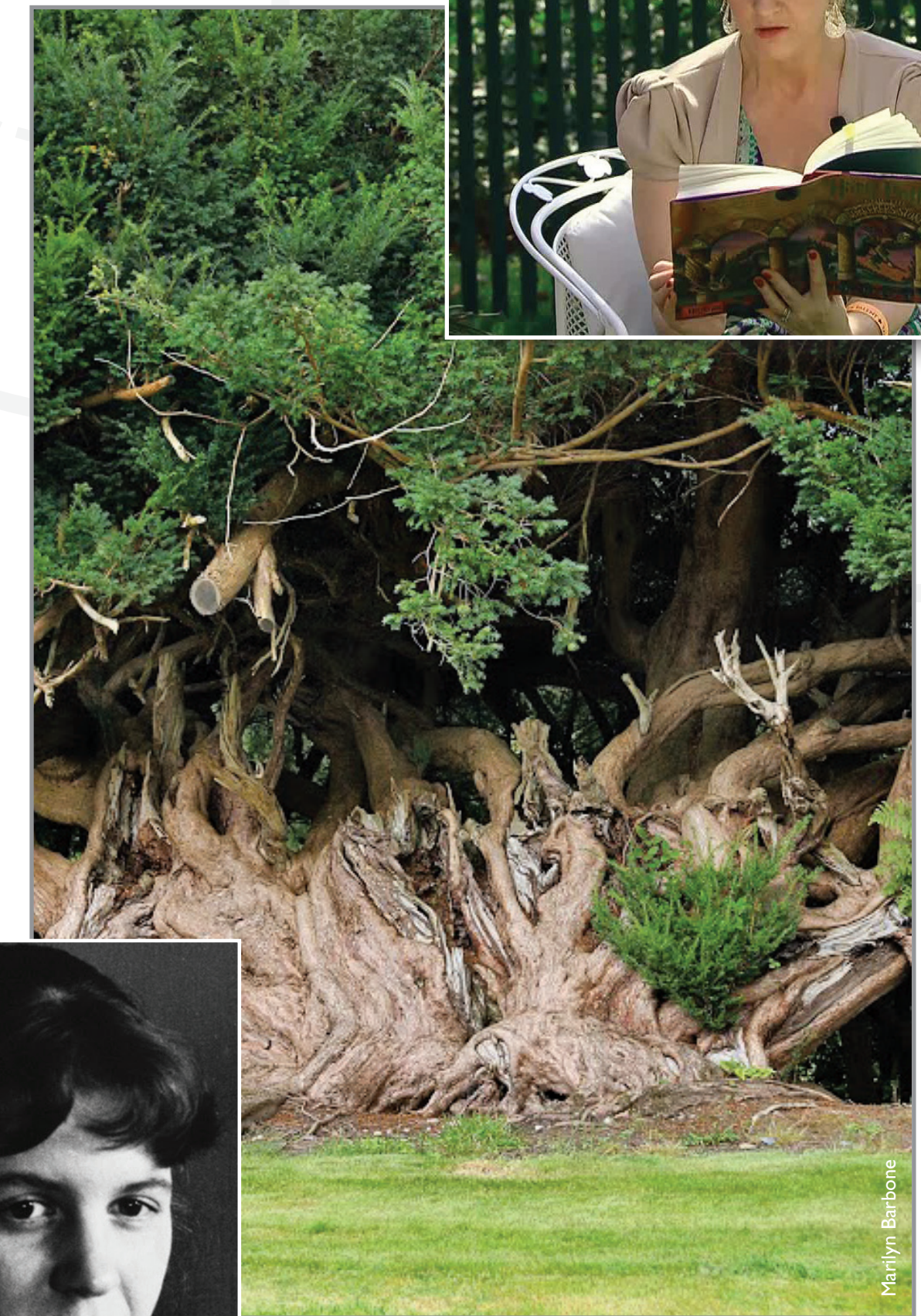
*"This is the forest primeval. The murmuring
pines and the hemlocks...stand like druids
of eld, with voices sad and prophetic."*

Lord Voldemort, the notorious villain in the Harry Potter series, carries a wand made out of yew, a tree noted for its longevity and toxicity. J.K. Rowling notes the properties of the yew match Voldemort's character.

Harry Potter Series
J.K. Rowling
(1965-)



Executive Office of the President



Marilyn Barbone



Wikipedia

"The Moon and the Yew Tree"
Sylvia Plath
(1932-1963)

*"The yew tree points up, It has a Gothic shape ...
And the message of the yew tree is blackness—
blackness and silence."*