

Conifers at the Arnold Arboretum

The trees featured on this tour are a small sampling of the many interesting conifers in the Arboretum's collection. Trees are marked with black trunk labels that list the plant's scientific and common name. Some specimens are a short distance off the path.

Just like flowering plants, conifers form seeds. However, instead of being enclosed in fleshy fruits, the seeds of conifers are protected in cones. These seed cones are the female reproductive structures of conifers. Conifers also have pollen-bearing cones which are the male reproductive structures. The cones of pine, spruce, and hemlock are pendulous. In contrast, fir and cedar cones are always held erect on the branches and shatter when ripe.

Most conifers are evergreen; however a few species such as dawn redwood and larch are deciduous, which means that they lose their needles each fall and develop a new set each spring. True cedars and larches have short needles arranged in clusters or whorls. Pines have needles arranged in fascicles: small bundles of two, three, or five needles bound together at the base by a sheath. The rest of the needle-leaved conifers have single needles set individually along the twig or branchlet. Spruce needles are sharp, set on stout twigs singly in spiral lines, and each needle sits on a sharp, woody peg that protrudes from the twig. Fir needles are similar in arrangement to those of spruce but without woody pegs. Hemlock needles are soft, blunt, and flat, growing from a tiny stem.

1. Japanese Red Pine

Pinus densiflora

The Japanese red pine has beautiful bark that peels in thin strips to reveal stunning oranges and grays. It is often a multistemmed tree with upright spreading branches, an uncommon feature for the genus *Pinus*. Needles are arranged in bundles of two, and the tan-colored cones are oval in shape. Cones persist on the tree for two or three years and open to release their seeds in the second year.



2. Lawson Falsecypress

Chamaecyparis lawsoniana

Native to the Pacific coast areas of California and Oregon, the Lawson falsecypress prefers cool, wet winters and warm, dry summers. Its needles are flattened and scale-like. Cones are rounded and blue-green in color. This specimen is located 25 feet off the path.

3. Eastern Hemlock

Tsuga canadensis

In the wild, *Tsuga canadensis* thrives on the shady, cool, north slopes of hills. The Arboretum's Hemlock Hill is home to a native stand of hemlocks. Needles are flat, with two distinctive white bands of stomata on the undersides. Brown cones are ½-to 1-inch long and hang from slender stalks. Many stands of eastern hemlock are currently infested with a tiny insect called the hemlock woolly adelgid. It feeds with lethal effect by sucking the sap from the needles. The trees on Hemlock Hill are part of the Arboretum's effort to preserve native hemlocks.

4. Eastern White Pine

Pinus strobus

In pre-colonial New England the eastern white pine easily reached heights over 150 feet, making it very desirable to the British who harvested eastern white pine for ship masts. Its soft, pliable needles are arranged in bundles of five. Producing cones at a very early age, the eastern white pine's seeds quickly germinate in open areas.



5. Scotch Pine

Pinus sylvestris

This pine is easily recognized by its scaly, bright orange-red bark. The needles of the Scotch pine are gray to blue-green, and occur in bundles of two. The Scotch pine's range extends across northern Europe and Asia, giving it the widest distribution of any pine in the world.



6. Pitch Pine

Pinus rigida

Pitch pine also has distinctive bark, arranged in red-brown or yellow-brown plates with deep furrows. It is a member of the "fire pine" group; its cones only open when exposed to high heat, such as a forest fire. The tree's principal use is for lumber and pulpwood, but it was once a source of resin (or "pitch"), thus the common name. These native trees grow on the sandy soils of Cape Cod and dominate the unique and endangered New Jersey Pine Barren. Needles occur in bundles of three.



7. Dawn Redwood

Metasequoia glyptostroboides

The dawn redwood is one of the Arboretum's most famous trees. This specimen is unusual for its multistemmed nature. It had been known only from fossil records until a small group of trees was found in China's Szechuan Province in 1946. The next year, the Arboretum sponsored an expedition to collect seed and subsequently introduced this conifer into cultivation. A deciduous conifer, dawn redwood has lovely amber-colored fall foliage.

8. Blue Atlas Cedar

Cedrus atlantica 'Glaucua'

A North African native, the blue Atlas cedar has blue-green needles arranged in whorls on short spurs. The male cones shed clouds of pollen in the fall. Female cones are located in the upper portion of the tree. This tree's open growth habit becomes more dense and pyramidal with maturity. Unlike many plants commonly called cedar, blue Atlas cedar is a true cedar, being a member of the genus *Cedrus*.

9. Giant Sequoia

Sequoiadendron giganteum

In its native habitat of the Sierra Nevada Mountains of California, the giant sequoia may reach a height of 300 feet; however, 60 feet at maturity is typical on the East Coast. Needles are short, overlapping, and scale-like with sharp points. The bark is a rich reddish-brown. Down the hill



look for a cultivar of *Sequoiadendron giganteum* 'Hazel Smith'. Its blue-green foliage makes it a standout in the landscape.

10. Oriental Spruce

Picea orientalis

Densely branched and pyramidal in shape, the oriental spruce can attain a height of over 120 feet in its native habitat, Asia Minor's Caucasus Mountain Range. However, in the northeast U.S., this species can take 60 or more years to reach 60 feet in height. Its needles are soft, dark green, four-sided, and short (¼-to-½ inch long). Cones are reddish purple when young, turning brown when mature. This specimen was brought to the Arboretum in 1873.



11. Japanese Cryptomeria

Cryptomeria japonica

Japanese cryptomeria's lovely, reddish-brown bark exfoliates in long strips. The awl-shaped needles are arranged spirally, and often the needles turn bronze in winter. The rot-resistant wood is used for buildings, bridges, ships, furniture, and in paper manufacturing.



12. Serbian Spruce

Picea omorika

This spruce has a particularly graceful look with a very slender trunk, drooping branches that ascend at the tips, and a narrow top. Its bark is thin, and coffee-brown scales peel off in platelets. The cones are purple when young and cinnamon-brown when ripe. Needles are flat and dark green with silver bands on the underside. Part of the plant's scientific name, *omorika*, translates to spruce in Serbian.



14. Holford Pine

Pinus x holfordiana

Holford Pine is easy to find thanks to the eye-catching 6-to-8-inch cones suspended from its branches. Needles are blue-green, 5-to-7-inches long and branches are usually pubescent (covered with down or hairs). In 1904, natural cross-pollination between *Pinus ayacahuite* (Mexican white pine) and *Pinus wallichiana* (Himalayan pine) resulted in a generation of seedlings. Thirty years later when the first cones were produced, it became clear that the young trees were distinctly different from both parents.

15. White Fir

Abies concolor

The Arboretum has beautiful specimens of white fir, which can reach heights of 150 feet and are native to the western United States. The bark of white fir has deep furrows and thick, irregular ridges. Its blue-green, pale blue, or silver-blue needles are particularly long for a fir.

16. European Larch

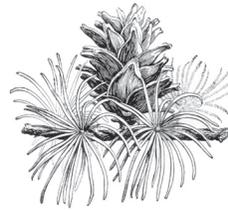
Larix decidua

This graceful tree has drooping branchlets that carry short, feathery, deciduous needles, which turn a stunning clear yellow in the fall. In youth, the European larch can grow 2½ feet per year, but growth slows over time. Separate male and female cone-like structures appear in spring along with the bright green, newly-emerging foliage. Although *Larix decidua* is grown mainly as an ornamental, in its native European forests its durable wood is harvested for a variety of wood products.

17. Golden Larch

Pseudolarix amabilis

This deciduous conifer is broadly pyramidal with wide-spreading, horizontal branches with whorls of soft needles. The 2-to-3-inch cones are quite attractive, maturing to a golden brown after summer's green or purplish color. As its common name suggests, the golden larch displays golden-yellow fall color. Native to eastern China, the specimens at the Arnold Arboretum are among the best in the country.



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