

## The Tree of Life for the Winter Garden!

Evergreens are a group of plants that naturally garner a gardener's attention during these bleak days of winter. The green foliage provides those much-needed signs of life that are often missing throughout this season. There are many types of evergreens from which to choose, including those with painfully sharp needles to those with more user-friendly scale-like and soft foliage. Of course, the emphasis may not be totally on foliage, since some evergreens offer wonderful bark or perhaps an invigorating fragrance from the foliage. There are a number of evergreens that meet these criteria, but one genus that readily comes to mind is *Thuja*, commonly called Arborvitae!

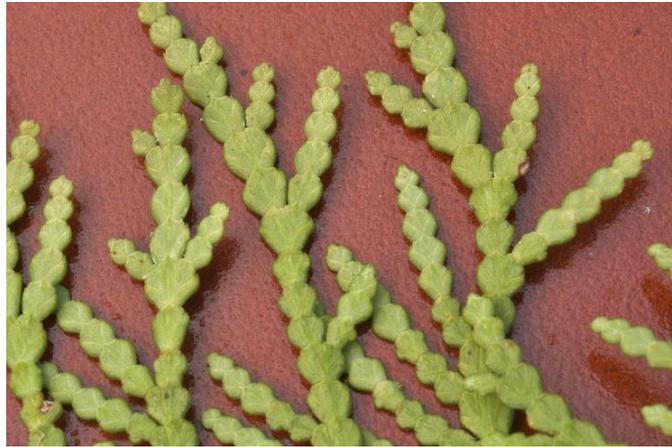
Almost all gardeners are familiar with Arborvitae plants. They are members of the Cupressaceae or Cypress Family and the genus includes 5 species. Two of these species are native to North America with the remaining 3 native to Asia. Most frequently seen in NJ gardens is the narrower, Eastern North American native of *Thuja occidentalis*. More rarely seen is the larger growing Western North American native, *Thuja plicata*. *Thuja occidentalis* is native to the southern reaches of Eastern Canada and the adjoining northern portions of the United States while the Western form grows from the lower reaches of Alaska south into Northern California and east to Montana.

The common name of Arborvitae was originally scripted by the Flemish physician and botanist Charles de l'Ecluse (1526-1609), who is better known under his Latinized name of Carolus Clusius. Although he is best remembered for introducing the Tulip to the Netherlands, he also coined this plant's common name in his book *Rariorum Plantarum Historia*, first published in 1579. He combined the Latin words of *Arbor* for tree and *Vitae* for life, which literally translates to 'Tree of Life'! The name was crafted following an expedition by the French explorer Jacques Cartier (1491-1557) to the Hudson Bay. During the winter of 1535-1536 the bay had frozen several feet thick and Cartier's ships were immobilized. He and his crew were trapped and with rations becoming sparse, his crew was falling ill from scurvy – a disease resulting from an absence of Vitamin C. Coming to their aid, the local Native Americans revealed how a tea made from the Vitamin C rich leaves of Arborvitae would ease their ailments. Miraculously, the crew recovered leading Clusius to subsequently script the common name.

The origin of the name of *Thuja* is a bit more tangled! Its roots are derived from the Greek *Thuo*, meaning to sacrifice. During many ancient European rituals, plants with fragrant bark were burned and Theophrastus (371-286 BC) originally coined the term *Thuja* to describe these plants, which in all likelihood were Junipers! The French botanist Joseph Tournefort (1656-1708) adopted the term *Thuja* as a



name for Arborvitae, which in turn was accepted by the Swedish botanist Carl Linnaeus (1707-1778) when he 'officially' described *Thuja occidentalis* in 1753. The species epithet of *occidentalis* means western and to the continent of Europe, the east coast of the U.S. was indeed Western!



In its native environments, *Thuja occidentalis* is hardy from zones 2-7 and grows as a single stemmed tree, as seen in the image above photographed in Maine. In the wild, plants reach heights of 60' tall

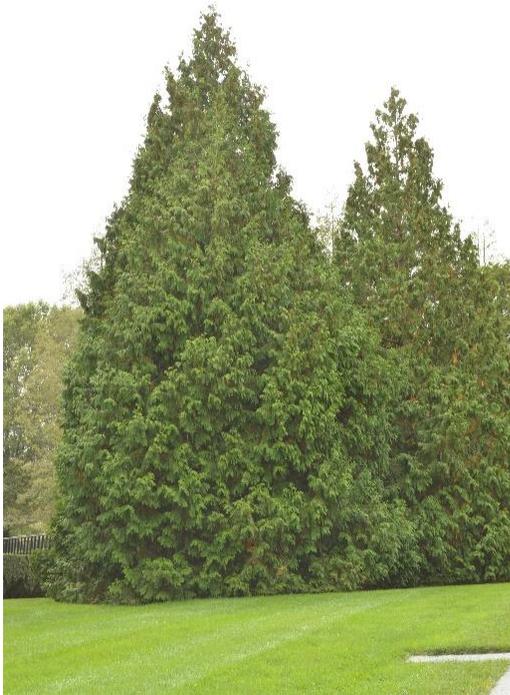
and 15-20' wide. In garden settings where it is often used for hedging or vertical accents, it matures to a more demure size of 30'+ tall and 10-15' wide. Although the plants are single stemmed in the wild, they are often grown as multi-stemmed plants in nurseries. Unfortunately, the multiple stems allow plants to readily splay open during heavy winter snows, often snapping the stems and disfiguring the plant. The vertically fissured bark is a moderately attractive dark brown, but lacks the attractive red overtones of the Western Arborvitae. The foliage is also beloved by deer, eliminating any potential for use as a screening plant in areas where even light deer pressure exists. The foliage of all species of *Thuja* appears in flat, almost scale-like



displays, with the flattened leaves arranged oppositely along the green stem. For *Thuja occidentalis*, not only do the fans of foliage have a very planar orientation, but the foliage itself is also very 2-dimensional, lacking any texture as seen above. The foliage is an attractive dark green in summer, but often turns to bronze-green come the chill of winter. There are seemingly countless cultivars of this species, featuring compact or dwarf selections such as the cultivar 'Mossy' pictured at left. There are also selections

with taller and more narrow habits, many sporting deep green foliage throughout winter. One semi-dwarf selection I have used is 'Smaragd', which is from the Latin *Smaragdus* meaning Emerald. Growing to 20', it makes a great hedge, is often single stemmed and retains emerald green foliage throughout the winter!

The Western North American native, *Thuja plicata* was not described until several hundred years after its cousin, although it too had an equally interesting history regarding its name. Although unnamed at the time, it was a topic of discussion during the Lewis and Clark expedition in 1806, whose records illustrated the numerous ways by which the Native Americans used the tree in the crafting of hunting bows, fire starters, baskets and even clothing. However, this was not the first American or European expedition to discover these towering trees, since over 10 years prior in the early 1790's the French botanist Luis Née (1734-1803) first laid eyes on the plant. He was a member of a five-year Spanish maritime expedition, lasting from 1789-1794. Their mission was



to map the Western Coast of both North and South America. Funded by the Spanish government, the trip involved numerous scientists, including Née. While in Vancouver, Née secured a branch from a tree with a scent similar to Cedar. This specimen ultimately found its way to the Natural History Museum at South Kensington, England where some 10 years later it was studied by the English botanist James Donn (1758–1813). In 1807, Donn named this specimen *Thuja plicata*. The species epithet of *plicata* means folded in braids or pleated, describing the more textured underside of the scale-like foliage. The pleated foliage is seen in the image below and is easy to recognize when compared to the far flatter foliage of *T. occidentalis* pictured above. Unfortunately, he did not properly describe the plant and in 1811 the Scottish Botanist, David Don (1799-1841) provided the proper description.

*Thuja plicata* develops a very straight and stout leader, reducing its susceptibility to bending under snow load.

It also develops a broad and dense pyramidal outline as seen on the left at Longwood Gardens. It grows a bit faster than its Eastern cousin, reaching 50 to 80' tall with a width of 30 to 40' in garden settings. It is the largest species in the Cypress Family, where plants in the Pacific Northwest can reach heights far exceeding 100'. It is also capable of reaching a DBH (Diameter at Breast Height) exceeding 19' as seen in the image at the article's end! To reach these impressive dimensions, it is a very long-lived species, with specimens surviving for over 1000 years. Its size makes it an opportune substitute for more sizeable conifers like Norway Spruce (*Picea abies*) and White Pine (*Pinus strobus*) in larger gardens located in zones 5-8. The topside of the foliage is green, often turning to a dark, olive green during exceptionally cold periods. The undersides of the leaves are marked with small white stomatal bands as seen at right, which are curious on close inspection but not overly ornamental. Unlike its Eastern cousin, the plant is also fairly deer resistant. I have seen plants in several parts of NJ that I know to be under moderate deer pressure and the plants remain untouched!



For those locations where the lower branches can be removed and the central trunk revealed, the bark of Western Arborvitae becomes the icing on the cake! The beautiful deep reddish-brown bark with its long vertical fissures is wonderfully ornamental as once again seen in the image at the end. Obviously, this highlights how these trees could be used near points of more intimate

viewing, such as near a walkway or within view of a window. They are amazingly wind and cold tolerant, despite their northwestern ‘upbringing’ so do not hesitate to use them in more exposed locations. Although tolerant of short periods of inundation, well-drained soils are necessary for long term success. For the woodworker, lumber from old growth trees is extremely decay resistant and is the source of what is sold as ‘cedar’ in lumber yards.



Among the several chemicals found in Western Arborvitae are compounds called *thujaplicins* that are stored only in the center of old growth trees. They have strong antifungal and bacterial properties, preventing the wood from decaying.

This explains why lumber obtained from young growth forests will decay more quickly and woodworkers often exclaim that cedar is no longer ‘what it used to be!’



Of the 3 species native to Asia, *Thuja koraiensis* is a highly ornamental form that is rarely seen in commerce. Described in 1919 by the Japanese botanist Takenoshin Nakai (1882-1952), it is native to Korea, especially North Korea as well as northeastern China. In its native habitats, it appears at elevations up to nearly 6,000 feet. The habit will vary from a sprawling shrub reaching a demure 2-5’ tall, as is typically seen at higher elevation to a small conical tree to 30’ tall. During the summer, the foliage is dark green on the top with rather dramatic, white stomata bands on the undersides (as seen above). Often mistaken for scale-like insects, the stomata bands resemble a bow with the ribbon ends dangling below or the wings of a butterfly, depending upon your perspective. During the winter, the foliage can become more bronze colored, as seen on the left.

Although *Thuja occidentalis* and *Thuja plicata* are thought to require moist to wet soils by many gardeners and designers, all three of these species grow best in well-drained soils that are humus rich and do not dry out excessively in summer. Following the heat and drought of the summer of 2022, I noticed numerous plants of *Thuja occidentalis* either declining or dead. Plants prefer a pH near neutral, although they are highly adaptable and the soil pH is normally not an issue. Plants are tolerant of light shade, but full sun will result in the most vigorous and uniform

growth. Once again, it is important to study the plant prior to purchase to ensure that it has a single leader, ensuring the best growth.

Regardless of the species, Arborvitae are often subjected to garden areas too constricted for the plants to mature with grace, as often their habit is compromised by inappropriate pruning. However, when properly placed in the garden, all three species will provide those much needed 'evergreen bones' for the winter garden. In fact, one might say that Arborvitae provides some much appreciated 'Life' to the dormant winter garden, proving it is the 'Tree of Life' on many levels!



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