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 during this season. There are many types of evergreens from which to choose, including those with painfully sharp needles to those with more user friendly soft, scale-like foliage. Of course, the emphasis may not be totally on foliage, since some evergreens offer wonderful bark and perhaps an invigorating fragrance from the foliage. There are a number of evergreens that meet this 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 with 2 native to North America and 3 native to Asia. More frequently seen in gardens is the narrower Eastern North American species *Thuja occidentalis*, but rarely is the more majestic Western native, *Thuja plicata* encountered. *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 west to Montana. The common name of Arborvitae was originally scripted by the Flemish physician and botanist Charles de l'Eclus (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 Jacque 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 Native American Indians revealed how a tea made from the Vitamin C rich leaves of Arborvitae would ease their ailments. Miraculously, the crew recovered and led 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 the Swedish botanist Carl Linnaeus (1707-1778) in turn accepted 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 grows as a single stemmed tree, as seen above in Maine where it reaches 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 allows plants to readily splay open during heavy



winter snows, harming the form of the plant. The bark is a moderately attractive dark brown, but lacks the attractive red overtones of the Western Arborvitae. They are 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* appear 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 is also very flat, lacking any texture as seen above. The foliage is an attractive dark green in summer, but often turns to yellow-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 to larger forms with foliage that remains deep green throughout winter.

The Western North American native, *Thuja plicata* was not described until several hundred years later, although it too had an equally interesting history in regards to its name. Although unnamed, it was a topic of discussion during the Lewis and Clark expedition in 1806, who recorded the numerous ways by which the Native American Indians 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 long 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, he 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 easily seen when compared to the far flatter foliage of T. occidentalis

picture above. Unfortunately, he did not properly describe the plant and it was not until 1811 when the Scottish Botanist, David Don (1799-1841) provided the proper description.



Thuja plicata typically develops a very straight and stout leader, reducing its susceptibility to bending under snow load and yielding an attractive 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 a garden setting. 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. The topside of the leaves are green, often turning to a dark, olive green during exceptionally cold periods. The undersides of the leaf is marked with small white stomatal bands as seen below, which are curious on close inspection but not overly ornamental. Unlike its Eastern cousin, the plant is also fairly deer resistant as I have seen them planted 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

becomes the icing on the cake. The beautiful deep reddish brown bark with its long vertical fissures is wonderfully ornamental as again seen in the image at the end. Obviously, bark this attractive highlights how these trees could be used near points of viewing, such as near a walkway or in locations near 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 *Thuja plicata* 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 at a rapid rate. 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 Nakei (1882-1951), 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 2-5' tall, most typically seen in higher elevation sites to a small conical tree to 30' tall. The foliage is a dark green on the top with rather dramatic white stomata bands on the undersides. 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.



Although *Thuja occidentalis* and *Thuja plicata* are thought to require moist to wet soils by many gardeners and designers, all three of these species actually grow best in well-drained soils that do not dry out excessively with a pH near neutral. Plants are tolerant of light shade, but full sun will result in the most vigorous and uniform growth. Arborvitae are often placed in locations proving to be too small for the mature size of the plants, resulting in some very poor pruning attempts to make them 'fit' the site. However, when properly placed in the garden, all three species will provide those much needed 'garden bones' for the winter garden as well as very attractive foliar interest. In fact, one might say that Arborvitae provides some much appreciated 'Life' to the dormant winter garden. All hail the Tree of Life!



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