

Trees In Winter

By Gretchen Spencer, Fairfax Master Gardener

The cold, short days of winter offer a wonderful time to observe the trees in our neighborhoods and parks. While the evergreen trees such as the Southern magnolias, hollies, Eastern redcedars, pines, spruces and arborvitae seem to take center stage, for me it is the deciduous trees that garner the most attention. Winter reveals their wonderful artistic structure, colorful bark and vestiges of the growing season such as seed pods and, most importantly, the buds that hold next year's leaves and flowers.

Winter poses its own challenges for deciduous trees, such as the cold and lack of water (although here in the Washington D.C. area, we've been inundated with rain!). However, trees have several marvelous and complex adaptations that allow them to survive in harsh conditions.



photo: by author

Winter tree architectural silhouette

First, as everyone knows, trees drop their leaves in the fall to prevent water loss and winter injury, spurred on by the photoperiod, or reduction of daylight. The gradual loss of daylight allows time for the trees to adapt to the coming cold. When the leaves fall, a special layer of cells called the abscission layer grows at the base of each leaf stem to protect it. However, some trees retain their dead brown or tan leaves well into winter or until new growth pushes them off in the spring. This condition, called marcescence, is not well understood. I have noticed this on young beech trees and some varieties of oaks. Some theories are that maintaining the leaves prevents animals from browsing on them, protects leaf buds from drying out or desiccation or provides a nutrient layer for the tree when they drop in the spring.



photo: by author

American sycamore

Second, trees have to prevent the formation of ice crystals in their cells. To do this, the water in the cells moves into the spaces between the cells where freezing will not harm the tree. The remaining content in the cells thickens to help prevent ice crystals from forming.

Third, trees convert starch to sugars which acts as a kind of antifreeze and lowers the freezing point of the water. Finally, the bark protects the tissues inside the tree.

It's amazing to realize that all these adaptations have taken place in the bare and stark trees that now fill the landscape. Close observation

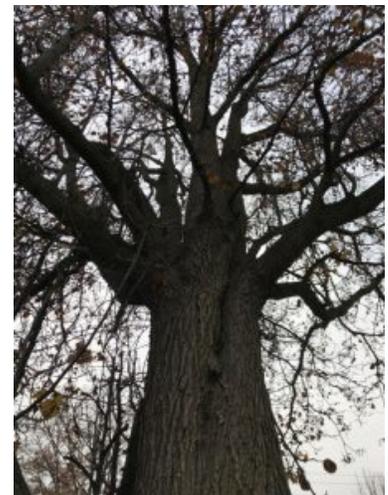


photo: by author

Bold trunk and spreading branches of a linden tree

of trees in winter not only reveals their beauty, variety, structure and symmetry, but provides important clues to their identification.

In the evening, just at dusk, is my favorite time to look up at the trees. Their silhouettes against a bluish-gray sky show off their individual shapes, many of which are symmetrical, and the boldness of their trunks and the delicate webbing of their branches and twigs. This linden or basswood tree (*Tilia Americana*) is a good example.

In my walks in our local neighborhoods and parks, I've noticed that several kinds of trees dominate the landscape. First there are the oaks! It's difficult to identify each kind, but their huge size in height and spread make them unmistakable. Of course, the oak leaves lying at the base of the tree help. I also saw many sweet gums (*Liquidambar styraciflua*) as evidenced by the spiky gumballs still clinging to the branches and the tall tulip trees (*Liriodendron tulipifera*) identifiable by the dried, upright fruit shaped like a "tulip" still on the branches. Beech trees (*Fagus grandifolia*) are readily recognized by their smooth gray bark and papery tan leaves still attached to the branches on younger trees.



photo: by author

Winter symmetry of dawn redwood

photo: Vanderbilt University



Catalpa pods

The wonderful symmetry of the dawn redwood (*Metasequoia gylptostrobooides*) is particularly obvious after dropping most of its leaves. A deciduous conifer, similar in appearance to the native Bald cypress (*Taxodium distichum*), the dawn redwood has opposite leaves and branches as is evident in this photo.

Striking in the winter landscape is the whitish bark on the tops of the American sycamore trees (*Platanus occidentalis*) with their patchy brownish-white trunks. The bark at the top has peeled off and glows softly in the winter sun. Seen from a distance, these trees stand out from all others. Also

known as the planetree, many of its dried round fruit, called buttonballs, still remain on the tree as another aid to its identification. Speaking of seed pods, you can see the long dried pods of the catalpa tree (*Catalpa bignonioides*).

In the winter is a good time to examine the twigs of trees as they give clear clues to their identity. Most important is determining whether a tree has opposite or alternate branch and bud arrangement. There are only a handful of trees that have opposite branching, and they can be remembered by the acronym M.A.D. Horse Bucks. They are the maples, ashes, dogwoods, horse chestnuts and buckeyes. Once you can tell whether a tree is opposite or alternate, narrows the process of identifying it.

The twig on the right has buds opposite each other. It is from a Japanese maple tree. The twig on the left has alternating buds.



Alternate (left) and opposite (right) bud structure

photo: by author

It is from a river birch tree, also identifiable by its peeling papery brown and beige bark.

I hope this article may have inspired you to look more closely at the winter trees in your neighborhood and to notice their wonderful symmetry and structure while marveling at their architectural presence in the winter landscape.

Resources

- *Survival Adaptations: How Trees Cope with Winter*, Michael Gambino, Curator, Friends of Read Wildlife Sanctuary
- *How do trees survive in the winter?*, Bill Cook, Michigan State University, Extension
- Biozine, Houghton Mifflin Harcourt
- *When Leaves Don't Leave*, Jon Hetman, the Blog of the Arnold Arboretum
- *Winter Tree Finder: A Manual for Identifying Deciduous Trees in Winter*, by May Theilgaard Watts and Tom Watts