





VOLUME 31

Learn about the Juglandaceae family. Take a walk. Listen to the song of the pines. Add native trees to your own yard.

Native Hickory and Walnut Trees at the Memphis Botanic Garden

Article and photos by Linnea West, MBG Tree Team



Hickory and walnut trees are deeply entwined in midsouth land and lore. Providing food and shelter for animals, insects, and birds, these magnificent trees grow nearly 100 feet high in the open with a branch spread of 70 -100[°], depending on species. In forest shade, Juglandaceae

grow more slowly but can eventually reach canopy level.

Humans, through thousands of years, have discovered many ways to harvest rich bounty from these important trees. Early Native Americans used the strong and resilient wood for bows, digging tools, and spears, and wove supple sprouts into baskets and drying frames. Hickory trees could be tapped for sweet sap to boil down to syrup and sugar. Protein and fat-rich nuts were collected to shell and eat raw, boil for broth, or grind into flour. Early European settlers used hickory wood for wagon wheels, tool handles, fence posts, the nuts for food, and boiled husks to make brown dye for clothing as well as a pest repellent. These desirable attributes made walnuts and hickory nuts a valuable trading commodity.



Today, hickory wood is still used for tool handles, ladder rungs, chairs, paneling, hockey sticks, skis, bows, and tennis rackets. Hickory chips flavor many a grill, and delicious walnut and pecan nutmeats fill pies, breads, and snack bowls.

North America is home to 20 species of hickory and walnut trees. Ten of the hickories and two walnuts are native to Tennessee. This Juglandaceae family is characterized by alternate, pinnately-compound leaves with serrated oval leaflets, and a thick green oblong or round fruit (inedible to us) encasing a shelled nut (*delicious* to us). Terminal end buds on some species are prominent with large scales that fall off; other species' buds are narrower with a yellow, suede-like texture, and still others are small and dark brown. Buds, along with twigs and the number of leaflets on compound leaves, are

helpful identification features.

Walnuts (*Juglans*) have alternately arranged, 12- 24" long, pinnately-compound leaves with 15-23 toothed leaflets (the single end leaflet on Black Walnut usually falling early), a 3" round or oblong, thick-husked fruit encasing the nut, and bark that becomes furrowed, ridged, and dark. Growing in the open, a mature walnut tree silhouette can be as wide as high.

Hickories (*Carya*) have alternate, pinnately-compound leaves with varying numbers of toothed leaflets depending on the species, a 1 $\frac{1}{2}$ "- 2" round or oblong, 4-parted, thick-husked fruit encasing the nut, and gray bark that is highly variable. Mature hickories have an upright oval silhouette.

Bark patterns of hickory and walnut trees change as the tree grows - and are endlessly fascinating! The green husks of unripe nuts are easily visible now at summer's end, the buds and bark showing their distinctive characteristics, and the compound leaves green to yellow gold. It is a wonderful time of year for a nut tree ID walk!

In the Memphis Botanic Garden, we are fortunate to have many native hickory and walnut trees of six or more different species growing throughout the grounds.

View the magnificent Black Walnut trees (*Juglans nigra*) on the south end of the Great Lawn, with a Pecan tree (*Carya illinoinensis*) nearby (note gray bark, sidecurving leaflets, and oblong husks of pecans). A young Butternut (*Juglans cinerea*), mid-lawn, is showing great promise to, one day, match neighboring woodland trees in height. Follow the curving sidewalk north over the koi



bridge up to the Blecken Pavilion with its many Hickories growing nearby, including Pignut (*Carya glabra*). Walk east down the hill to the Pollinator Garden, passing streamside Mockernut Hickory (*Carya tomentosa*) and others along the way. Throughout the Garden, note the young nut trees that have been recently planted to grow and thrill generations to come.

Learn More at Our Walnut/Hickory Tree ID Walk October 18 & 25, 9 am



Join Arborist Bo Kelley and Tree Team Volunteer Linnea West for a walk along the trails of Memphis Botanic Garden. Learn to identify our magnificent native Hickory and Walnut trees by leaf, bud, bark, and fruit. Dress for the weather and wear comfortable shoes (there will be a good deal of walking and standing). Canceled if raining.

The walk is free with Garden admission, but registration is required. Call 901-636-4128 to register, space is limited to 10.



The Song of the Eastern White Pine

Article By Bo Kelley, MBG Arborist Bottom Photo: U.S Government Agriculture Forest Service

The air is different among the pines. Wind takes a different tone, its music a different style. Gone is the rattle and rustle of a thousand broad instruments crashing in the bristling canopies of oak and ash. That intricate symphony, familiar as rain. The wind in the pines calls with a different timbre, ancient, soothing, and full. Crisp as cool water. Heavy as wildfire smoke. A sound emanating from the throat of the world, pine woods sing in a language we have forgotten many times. At the end of a 10,000-year reign, the music of the great forest of eastern North America was interrupted by the cacophony of a burgeoning civilization. Forests that had governed the land since the last ice age were swiftly usurped by Kings half a world away. Colonists tamed the wilderness of the New World with unprecedented efficiency. The song of the pines could not be heard over sawmills that did not sleep. One tree felt more severely the weight of Freedom, Liberty, and the unchained Pursuit. The eastern white pine (*Pinus strobus*) was at the epicenter of a developing nation. In its role with European settlers, it acted as an agricultural obstacle, an unrivaled building material, an economic and industrial catalyst, a source of revolutionary inspiration, and finally, a martyr, laying the foundation for environmental conservation. Perhaps no other tree best fills the mantle, "the tree that built America."

P. strobus is, above all else, extremely adaptable.



Quickly invading burn sites and open areas, eastern white pine establishes pure stands of even-aged trees that persist for hundreds of years. The species is moderately shade tolerant as well, surviving the understory in mixed forests to eventually become a climax species. In other sites, the pines may be transitory, existing only as a chapter in a forest's story of succession. It thrives across moisture and soil gradients, from bogs to rocky ridges, and sandy outwash to poorly drained clay. Fit for diverse habitats, *P. strobus* quickly spread northward following glacial retreat, migrating from the Appalachian Mountains into New England and Canada and westward to the Great Lakes. Abundance and density varied across its range, but P. strobus established itself as a dominant member of the eastern forest. Only man could out-compete the pine.

Upon arrival, European settlers got to work and quickly discovered the utility of all the treasures of the New World, through indiscriminate logging. It was here that the eastern white pine set itself apart and fixated the eyes of

man. Eastern white pine is exceedingly tall, growing straight and reaching 150' and up to 200' in ideal sites, rivaling the Tulip-poplar as the tallest tree in eastern North America. Its lower trunk is clear of branches, yielding 80' sections of knot-free timber with straight grain, easy to work with saw and plane; a difficult tree for the lumberman to overlook. The wood is also remarkably light with strong, decay-resistant heartwood. These qualities yielded the ideal building material, in bulk. The perfect material for the early stages of a civilization flung far from home. Whole forests consisted of solely eastern white pine, and its range stretched the Eastern Seaboard. Supply seemed inexhaustible and the stock would last forever. With more than enough for domestic needs, the colonies began exporting *P. strobus* lumber for irresistible profit, contributing to a well-rounded economy built upon the export of natural resources. Increasing demand and higher profits called for innovation and the colonies began looking deeper into the woods.

In general, logging requires the transport of massive amounts of material. The most effective way to do this during the 17th century was to fell trees within river basins, using gravity to bring the logs to water and then float them downstream to the mill. Pioneering as they were, early settlers were limited to where they could effectively log, still relying on rivers to bring logs to port. *P. strobus* fortunately grew in wealth along riverbeds. Given the lightweight properties, logs proved exceptionally buoyant, leading to efficient transport. The standing supply in river valleys was primed for immediate harvest. In the northern range, where the pine is more abundant, little more work was required. Frozen winter ground allowed lumbermen to easily slide logs, allowing long-distance overland transport. The pine's geographic position, affording easy access and transport, coupled with its incredible economic and industrial value, led to extremely high rates of exploitation over the next 150 years. New England's waterways soon became choked with pine, its citizens with sawdust.

Of the many uses for eastern white pine lumber, perhaps the most controversial was in its role with shipbuilding. The long, straight, lightweight trunks made exceptional "single-stick" masts, invaluable during the age of exploration and naval warfare. Britain's Royal Navy had achieved naval supremacy and had no plans of relinguishing their hold. The Crown knew that the colonists were filled with a lust for gold. They might soon exhaust a resource that would allow Britain to remain King of the sea. In an act of twisted conservation. Britain declared that the best eastern white pines be reserved for Royal use, making



it illegal for the colonies to harvest them. White pines across North America were soon marred with "The King's Broad Arrow," three axe slashes in the shape of an arrow. No surprise, this did little to prevent logging, as the colonies relied heavily upon an uninterrupted supply of eastern white pine. With time, Britain's import of timber from other countries had dwindled, inflating the worth of the New World pines. The Broad Arrow found its mark with greater frequency. With stricter governance, rampant legislation, and boiling contempt, colonists tested the limits of British rule. In 1772, in an act known as the "Pine Tree Riot," a group of townspeople, led by a recently fined mill owner who refused to pay, attacked the enforcing Sherriff, beating him mercilessly. Their punishment was little more than the cost of the hearing. Broad arrows were found with regularity in mills across the colonies and flags began to fly, emblazoned with the eastern white pine as one of the first symbols of independence. Whether the Pine Tree Riot ultimately incited the American Revolution is unclear, but it certainly encapsulated the ethos of the time. Control of natural resources belonged to those who owned them, to those who worked the land. What management techniques were meant by "control," was another issue entirely.

Independence gained, the United States had full control of its resources and began harvesting them with extraordinary speed. By the mid-19th century, eastern white pine had been consumed throughout the east. Logging turned westward, a move leading to the most impressive and devastating display of deforestation to date. Within 50 years, Michigan's white pine supply was depleted. Without respite, logging continued west, feeding a growing nation while depleting our Nation's forests. In the midst of destruction, U.S. leaders, much like Britain 150 years prior, realized that the white pine supply, or *any* wood supply, was not everlasting. A series of congressional moves slowly increased awareness of forest conditions and improved forest management techniques, culminating in the creation of the US Forest Service in 1905 under Theodore Roosevelt. With this move, the United States took a major step to preserve one of its greatest resources, once exploited as rapidly as possible.

There is no doubt that America was built on innovation and its natural resources. The eastern white pine could be considered chief among them. Here was the ideal tree on which to build a nation, growing precisely where settlers needed, right where they could reach. The eastern white pine fed the fire of our civilization in its kindling stage, jumpstarting a nation poised to burn bright. With proper direction, a nation positioned to guide others with wisdom that can only come from failure. It is a perfect story, given to us at the perfect time. A story of opportunity. Rich, poignant, and full of wisdom. The story of the eastern white pine, coupled with foresight and an increasing pressure to conserve our planet's natural resources, may serve as one of the most critical stories ever told in environmental stewardship. Listen then, to the song of the pines.

TUFC Native Tree Seedling and Sapling Sale



Saturday, October 21 9 am-1 pm at the Memphis Botanic Garden.

Fundraiser for West Chapter Tennessee Urban Forestry Council.

> Cash or check only. All items will be \$10 or less.

Some native vines, shrubs, and grasses will also be available.

Rain Date: October 22, 1-4 pm



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