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Letter From the (New) Editor

By: Bella Kirkpatrick, Arboretum Horticulturist

Welcome to the first volume of Under the Oaks with me as the editor! Our former Arborist Dr. Bo Kelley (who is a much better writer than me) is now working as a Forester for the Tennessee Department of Forestry. Following his departure, I was promoted to editor of this tree-mendous newsletter. I am the horticulturist for the Garden's Arboretum meadows and am currently training to become a certified arborist along with Woodland Horticulturist Anna Vo. We are working closely with MBG's volunteer Tree Team, who I am so glad I got to meet with recently and talk all things trees. I would also like to welcome the Garden's new Executive Director MaryLynn Mack. Everyone is so excited to work with her and make the Garden even better! Stay tuned for new updates.



For this edition of Under the Oaks, Tree Team Volunteer Linnea West talks about the three true Cedar species all of which can be found on the MBG grounds, our Greenhouse Manager Wyatt Peterson explains air layering on trees (be on the lookout for a video demonstration on the Garden's social media page), and Anna Vo goes through her case study of the Woodland Garden restoration that she used as part of the Forests in the City Network proposal.



Cedars - Ancient Tree of Mystery

By Linnea West, MBG Tree Team



There are three true Cedar species in the world, all from the Mediterranean region. True Cedars, genus Cedrus, are evergreen trees with a potential to reach over 200 feet tall with a diameter at breast height of 20 feet. (In their native land, Cedars have been recorded as growing to 400' and living over 2,000 years.)

True Cedars have needles in radiating clusters from short spurs, small upright 1-2" male pollen cones in red or yellow, and higher in the tree, 2-4" upright barrel-shaped female cones. In their native homeland in the Mediterranean, Cedars growing in dense forests have straight single trunks. Planted as individual specimens in parks and arboreta in the rest of the world, they are most often seen with lower branches spreading wide.

Several other tree species are commonly referred to as cedars because of their tall trunks, fragrant, long-lasting heartwood, and evergreen foliage. However, these are not true Cedars, but Junipers, Yews, Cypress, or Sequoias. With examination, one can see that the cones of these are very different from those of true Cedars, as are the foliage, bark, and manner of growth.

At Memphis Botanic Garden, we are extremely fortunate to have all three species of the true Cedrus genus. To locate these unique trees, access the new online MBG map created by Bo Kelley on your digital device by <u>clicking here</u>.

In the northwest corner of the MBG grounds, find the grove of 60' tall Cedrus atlantica, Blue Atlas Cedars (#175). Walk among their enormous gray trunks, wide-spreading branches with 1" blue-green to silver-blue needles clustered on short stalks. Upright, 3', barrel-shaped female cones grow



mostly in the higher branches, their scales purple and green horizontal swirls. Small finger-tip red pollen cones ripen on lower branches.

Nearby, also in the northwest corner just along the fence to My Big Backyard, examine a young Deodar, Cedrus deodara (#913). Note how the needles of this cedar are of two lengths within the same cluster: 1 "- 2". The tree's drooping central leader and branchlet tips are characteristic of Deodar, giving it a haunting presence in maturity. Deodara, after 10 years, will develop oblong female cones 4" high by 3" wide, blue with a whitish bloom, standing erect in its upper branches. The smaller 2" slender male pollen cones are found on lower branches, ready for gusting spring winds to carry their pollen afar to other trees. 'Deodar' means Tree of the Gods, perhaps a reference to the sky-high reach of its magnificent trunks, as well as the lumber that can last for centuries and was traditionally used for holy temples.



Walk south from the Conifer Collection garden past the Great Lawn to the Japanese Garden. On a hilly rise to the northwest of Lake Biwa, view Cedrus libani 'Pendula', Weeping Cedar of Lebanon (#873). The silvery-blue foliage on wide-spreading branches evokes ethereal, heavenly realms. Growing 120 feet tall or more, with a spread of 80-100', this magnificent tree may well live for 200 years and beyond. In future years, look for the small, 1" yellow male pollen cones upright at the end of branches and the larger, 4" x 2.5" purple-and-brown ringed female barrel cones, high in the tree.

Through centuries, these mystical Cedar trees have inspired poets, philosophers, dreamers, and explorers. Bring your sense of wonder as you look up into the branches of these great Cedars of the world: Atlantica, Deodara, Libani.

View our digital Arboretum map by clicking here.

Trees pictured above: #175 Blue Atlas Cedar #913 Deodar Cedar #873 Cedar of Lebanon

(Sometimes listed as a 4th cedar species, 'brevifolia' is most likely a variety of Cedrus libani, sharing libani's characteristic features, just on a smaller scale. Often called Cypress Cedar, brevifolia's smaller size, 40', can make it an



Tree Propagation: Air Layering



By: Wyatt Peterson, Greenhouse Manager



At Memphis Botanic Garden, we propagate and expand our existing collection through various methods. For trees or woody plants that are difficult to root from cuttings, air layering is a reliable technique. Air layering involves encouraging a healthy branch to produce roots while it remains attached to the parent tree. Once the root system has developed, the branch is removed and planted in a pot for further root development. This method is advantageous because the developing propagule continues to receive water and nutrients from the parent plant, promoting robust root

formation. Additionally, air layering allows us to create sapling-sized cuttings from mature branches in just a few weeks.

To air layer, use sharp pruning shears or a knife to remove the bark and cambium layer from the branch—a process known as girdling. Once this is done, apply a moist medium, such as sphagnum moss or peat, to the wound. Optionally, a rooting hormone can be applied to the site. Wrap the moss or chosen medium in plastic and foil to help retain moisture over an extended period. After 6-8 weeks, roots are likely to have developed at the cut site, allowing the cutting to absorb water and nutrients independently from the parent plant. Many different materials can be used in air layering, but the basic principles remain unchanged.

The Woodland Garden: A Case Study



By: Anna Vo, Woodland Horticulturist



The Woodland Garden consists of four acres located within the Garden, which was established in 1953. In 1961, The Memphis Area Wildflower Society improved the southeast area of Audubon Park by planting a four acre area of native plants. This area is now known as The Woodland. Historically there was never a dedicated horticulturist in the Woodland Garden, other than volunteer groups known as the "weed wranglers" who would come once a month in the spring and fall to pull invasive weeds. The wooded area was mostly unmanaged until recently. It was

overrun with invasive species: burning bush and privet reaching up to 12 feet tall. The wood was so overgrown there were little to no oak saplings that could be found within those acres. The primary reason for oak restoration failure is presumed to be low light, therefore the main task was controlling the exotic invasive species and thinning out the thickets of native species to open up the canopy for oak restoration. We are currently working on opening the canopy throughout the Woodland but as we clear certain areas we are also adding additional plantings.

The biggest goal is to plant native plants for biological diversity with a focus on oak restoration. Many short-term goals are to be completed before planting oak saplings to ensure their survival, with exotic invasive removal being one of the main focuses. These invasive plants are in fierce competition with our native flora, vying for essential resources like water, sunlight, nutrients, and space. Taking a survey of the tree species and determining which species hold the most ecological value was the key to knowing which trees to keep and which to remove to let more light in. After surveying the woodland it was decided that other than the exotic invasives that needed to be removed, we had an alarming amount of pawpaws, box elder, and cherry laurel– more than any other species so another short term goal is thinning native plants that are very aggressive and sometimes harmful to the existing ecology. Pawpaws grow clonally and form huge monoculture stands choking out other desirable species. Another dominant tree is the box elders. As they are a pioneer species and the Woodland is a relatively young forest, there are so many of them. Therefore it was determined that those hold less value in our Woodland.

Using volunteer labor through monthly weed removal, we focused our energy on removing the invasive species first. We do compost at the Memphis Botanic Garden however all invasives that were pulled went straight to the dumpster to decrease the risk of spread. Plants like Chinese privet (Ligustrum sinense), Mahonia (Mahonia bealei), Italian arum (Arum italicum), Japanese honeysuckle (Lonicera japonica), winter creeper vine (Euonymus fortunei), and English ivy (Hedera helix) are among the most prolific. The next step was to mark and remove the native "invasive." To remove them, we cut them down at the base, paint the stump with Roundup (otherwise they root shoot like crazy), and leave the whole trunk of the tree intact and in place imitating how they would fall naturally. Leaving the trunks as nurse logs provides copious benefits and saves a lot of time and labor. With aesthetics in mind, we removed the foliage portions of the cut trees leaving just the



trunks. We have successfully thinned out the pawpaws, and completely removed all cherry laurels and are currently working on thinning out the box elders. The final steps will be selecting the species of oak and planting new saplings. It is better to plant saplings as larger trees have a harder time with transplanting. The urban forest will also need to be continuously managed.



Special Thanks to University of Memphis and University High

Over the Summer we hosted Biology Graduate Students from the University of Memphis and students at University High for a lesson in genetic diversity, conservation, and trees!

The grad students developed the activity and used our wide variety of trees at the Garden as a vehicle for hands-on learning.



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