

THE SHADE TREE

A BI-MONTHLY BULLETIN DEVOTED TO NEW JERSEY'S SHADE TREES

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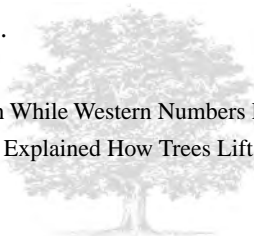
This Issue Presents...

Director's Discourse

Eastern Monarchs Flourish While Western Numbers Plunge

19th Century Experiments Explained How Trees Lift Water

Storm Damage



DIRECTOR'S DISCOURSE

By Donna Massa

With the health and wellbeing of our membership, speakers, and staff in mind, plans continue to be underway to deliver a “LIVE” conference presented by renowned speakers who are extremely knowledgeable about the industry, experienced with speaking engagements and able to engage their audiences. Additionally, we have interested exhibitors old and new who are eager to talk with you. This year, make sure you drop by and see EVERY exhibitor who has joined us. Participating exhibitors will individually offer a raffle each day of the conference. Stop by and see them, enter your name for their raffle prize and perhaps you will be a lucky winner. There will be many opportunities to win. You have to be in it to win it.

The 96th Annual Conference this year will be held at the **Crowne Plaza in Cherry Hill, New Jersey on THURSDAY AND FRIDAY, October 21-22, 2021.**

We will continue to have our General Session in the mornings only and split the afternoon sessions into two concurrent sessions. More talented speakers and more topics to choose from!

Earn educational credits from NJ Community Forestry. Also earn LTE and LTCO credits awarded by the NJ Board of Licensed Tree Experts as well as from the State of Maryland. Earn other certification credits from the DEP Pesticide Control Programs in New Jersey as well as New York and Pennsylvania. Lastly, don't forget credits earned from the NJISA, the Public Works Association, and the Society of American Foresters. Make sure your municipality remains in good standing with the State of New Jersey and keep your licenses current all at one conference. If you've joined us in the past, please join us again to experience the fresh and exhilarating changes we have planned for this year. If you've never been to the NJ Shade Tree Federation

BULLETIN OF THE NEW JERSEY SHADE TREE FEDERATION

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DIRECTOR'S DISCOURSE

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Conference, **THIS IS THE YEAR TO ATTEND!** If your municipality or your business hasn't been represented at the conference in the past or if you need professional license credits, the NJ Shade Tree Federation Conference is the place to be. We encourage ALL municipalities and tree care professionals to attend. It is time well spent.

CORE will not be offered at the NJ Shade Tree Conference this year. Instead, CORE training is now online. To attend the last session of 2021, you must register by September 7, 2021. Register for Core training at <https://urbanforestry.rutgers.edu/njucfce/core-training-documents.html> . We hope all newly certified CORE individuals will also join us at the NJ Shade Tree Federation Conference!

Introducing "The Branch Office" sponsored by the folks from the NJ DEP Urban and Community Forestry Program. After you tour the exhibitors, make sure you head over to The NJUCF Branch Office. Meet people that share your passion. Brainstorm about projects, ideas, challenges, and successes. Learn about what other local shade tree programs are doing around the state. Ask the questions you've always wanted to ask. NJ Urban and Community Forestry Staff will be available to help.

The welcome and opening program will begin on Thursday morning at 8:30 AM. Following the opening program, we welcome Dr. Linda Chalker-Scott, PhD who will open our conference each day. Dr. Chalker-Scott will present a two-part series titled "Landscape Zombies! Tree and Shrub Myths That Will not Die." We all want the latest plant and soil scientific information to pass on to our clients or practice in our municipalities but how do you tell what's science and what's pseudoscience? Landscape professionals, in particular, can quickly lose their credibility (and business) when they end up promoting products and practices that aren't based on reputable science. This two-part series will focus on landscape tree care and provide us with some guidelines for evaluating articles, books, and electronic resources objectively. For each myth busted, Dr. Chalker-Scott will discuss alternatives that are both practical and scientifically grounded.

Following Dr. Chalker-Scott on Thursday, Dr. Peter Del Tredici will address "Street Trees: The Struggle for Survival." This lecture provides a broad view of street trees, utilizing historical, ecological, aesthetic and horticultural perspectives to assess the role that trees play in making cities more livable for all their inhabitants. Using this integrated approach, Dr. Del Tredici will look at the myriad of issues that influence the survival of trees in the urban

environment, including soil compaction and pollution, planting specifications, appropriate tree selection, and climate change issues related to temperature, rainfall and pests and pathogens.

The afternoon session this year will be split into two concurrent sessions. You choose which track you would like to attend – The Municipal Track is geared toward the municipal commissions and DPW personnel and the LTE/LTCO Track is geared toward the licensed professional and tree companies in the industry.

On the Municipal Track, Carole Stanko will present “Deer Management in NJ – Restoring Balance in Nature.” White-tailed deer have reached problematic numbers in numerous communities in New Jersey. Overabundant deer and other large herbivores can degrade ecosystems and hamper restoration efforts. Carole will share with us steps the Division of Fish and Wildlife has taken to manage deer populations.

Following Carole Stanko’s discussion, Emelie Swackhamer, will update us on “The Spotted Lanternfly: What You Need to Know and Where Do We Go From Here?” The invasive insect, *Lycorma delicatula*, commonly known as the spotted lanternfly, threatens grapes, feeds on many trees and is a nuisance in residential landscapes. It has spread to at least 9 states in the eastern US and regulations are in place to try to contain it. Emelie will focus on Spotted Lanternfly biology, behavior, things to consider when choosing a management strategy and research findings.

To end the Municipal Track, Carrie Sargeant will present new Community Forestry Management Plan Guidelines. A management plan is an essential guide to successfully achieving a healthy and safe community forest. By developing and implementing a management plan for your community forest, your tree program can become more proactive and efficient. A management plan can also lead to decreased tree maintenance and removal costs, shorter response time to citizen requests for work and a decrease in hazardous tree situations. The NJUCF provides minimum guidelines needed to create a Community Forestry Management Plan as required under the New Jersey Shade Tree and Community Forestry Assistance Act. Carrie will share those guidelines with us.

At the same time on the LTE/LTCO Track, Phillip Kelley will address the LTE/LTCO professional with a presentation addressing safety on the job.

Following Phil Kelley, Dr. Richard Hallett will discuss how “Trees Can Do The Dirty Work of Waste Cleanup.” When it comes to ridding the earth of pollution leaking from dumps, closed landfills, and other waste sites, specific types of trees are quietly and efficiently absorbing the toxins. Through a process known as phytoremediation, green plants are used to remove, degrade, or stabilize pollutants and contaminants, such as toxic metals, from soil or groundwater. Trees are even playing a role in blighted urban areas to address



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empty lots and “brown fields” that look unattractive and often serve as a dumping ground for trash. Dr. Hallett will share with us the research that is being done to develop hardy, pioneer species of trees planted to mature in phases, so when the fast-growing trees such as poplars or willows begin to die off, slower-growing trees such as oaks and maples will begin maturing.

To end the LTO/LTCO Track, Dr. Greg Dahl will present “Codominant Unions: One Reason to Prune Trees Early” and review the growth and development of branches and branch unions and discuss how the control of the lateral buds by the terminal buds drives crown shape and prepares a tree for potential storm damage (or aargh topping). He will present research on whether there are differences in loading patterns between codominant branches and lateral branch unions.

Join us Thursday evening of the two-day conference at our Conference Dinner with cocktail hour at beginning 6 PM. Don't have dinner on your own. Here are your registration options that include our conference dinner:

- Purchase a Complete registration and join us for both days of the conference AS WELL AS the Conference Dinner on Thursday evening.
- Purchase a Single Day registration for Thursday and add \$ 55 and stay and join us for the dinner that evening OR
- Purchase a Single Day registration for Friday, arrive the night before, add \$ 55 to your registration and kick off your conference experience by joining us for the conference dinner on Thursday evening.

Enjoy the finest comfort foods of the season and unwind to the entertainment of Catmoondaddy. Mingle with other municipal commissioners as well as tree professionals in the industry. The atmosphere is casual. Door prizes donated by the NJ Shade Tree Federation as well as our exhibitors make the evening fun.

Wake up on Friday morning and join us as we welcome once again Dr. Linda Chalker-Scott as she continues with her two-part series on “Landscape Zombies! Tree and Shrub Myths That Will Not Die.”

Following Dr. Linda Chalker-Scott, Dr. Suzanne Simard will teach us “How Trees Communicate.” Dr. Simard is an internationally renowned forest scientist and environmental activist who pioneered the theory that trees have a vast underground social life. She demonstrated that trees in a forest do not always compete with each other for food, but also cooperate through intelligent communication networks.

Once again, the afternoon session this year will be split into two concurrent sessions. You choose which track you would like to attend – The Municipal Track is geared toward the municipal commissions and DPW personnel and the LTE/LTCO Track is geared toward the licensed professional

and licensed tree companies in the industry.

The Municipal Track opens with Rosa Yoo who will provide an update on the latest forest health pest issues – how to identify them, who to call if you spot any, and actions you can take to prevent or minimize spread. Although many forest health pest issues are non-native, some native forest health pests have expressed invasive tendencies under certain circumstances, adding to the list of threats. But it's not all doom and gloom! Scientists are finding innovative ways to overcome these challenges.

Following Rosa, Mike Galvin will present Wood Waste Utilization and the Urban Wood Workbook. Tree businesses and municipalities have to deal with wood waste as part of tree and waste management efforts. Is there a way to turn this cost of doing business into a source of materials and revenue? Mike will look at urban wood waste nationally, he will present models on recovery and reuse of materials and some key items to make urban wood utilization efforts successful.

To end the Municipal Track, we will hear from Municipalities throughout the State of New Jersey whose outstanding efforts have greatly contributed to the field of urban and community forestry in New Jersey.

Running concurrently and opening the LTE/LTCO Track, Dr. Peter Del Tredici will join us once again to address “Urban Nature: Human Nature.” Urban ecosystems are the ultimate manifestation of the dynamic conflict between humans and nature: the desire for neat, orderly landscapes on one hand and the fear of messy ecological chaos on the other. Dr. Del Tredici focuses on the ecological significance of the plants that grow without cultivation in cities because of their remarkable ability to flourish in spite of stressful environmental conditions. This spontaneous urban vegetation is as cosmopolitan as the city's human population and, quite frankly, better adapted to our changing environmental conditions than the native species that once grew there. Like it or not, these so-called novel ecosystems have become the new ecological normal and people need to recognize that they are helping not only to make our cities more livable for people and animals but also to clean up the mess we have made of the planet.

Following Dr. Del Tredici, Paul Cowie will present “CSI Tree Guy: Evaluating Tree Health + Reading the Landscape.” Accurate diagnosis of tree disorders requires a combination of arboricultural knowledge and experience, third party resources, wide open eyes and ears, gut instinct, and a thorough diagnostic process. Paul will review a systematic approach to the process on both an individual tree and a whole-landscape basis. Through the use of third-party aids, and evaluating the significance of the clues uncovered, Paul will demonstrate what to look for step-by-step and help us to see the big picture in the context of site pressures, site history and primary versus secondary problems. Specific case studies will be presented to illustrate each point.

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To end the LTE/LTCO Track, Rosa Yoo will address the professionals in the industry with a more technical discussion on the latest forest health pest issues – how to identify them, who to call if you spot any and actions you can take to prevent or minimize spread.

We have a plethora of talent ready, willing and able to share their expertise with you. Take advantage of all that the NJ Shade Tree Federation conference has to offer. Purchase a “complete” registration, enhance your conference experience and join us this year at the Conference Dinner on Thursday evening of the conference. It is all time well spent!

EASTERN MONARCHS FLOURISH WHILE WESTERN NUMBERS PLUNGE

By Carolyn Wilke • The Scientist • February 8, 2019

In the past year, the eastern population of monarch butterflies that overwinters in Mexico boosted the area it occupies during hibernation by 144 percent, as revealed by an annual survey performed by the World Wildlife Fund-Mexico and partner organizations.

The survey measures the area monarchs occupy because of the difficulty in counting individual butterflies. This year monarchs took up almost 15 acres of forest, up from about six acres last year, making it the largest increase in 12 years, according to a statement.

Favorable weather contributed to the population's uptick with warm temperatures that helped migrations, according The San Francisco Chronicle. “This was a Cinderella year,” Tierra Curry, a senior scientist at the Center for Biological Diversity in Tucson, Arizona, tells the Chronicle.

Populations fluctuate from year to year and experts caution that these good numbers may not repeat in years to come. The butterflies are also still threatened by habitat loss, climate change, and use of pesticides and herbicides, according to The Associated Press.

The western population of monarchs that overwinters along the Pacific Coast has fared much worse. An annual count by the Xerces Society, a nonprofit conservation organization, found a record low number of roughly 28,000 butterflies in 2018—an 86 percent drop from the previous year, according to a statement. The numbers now represent a staggering 99.4% decline from the estimated 4.5 million that overwintered in areas of California and Baja, Mexico in the 1980s.

The two populations are genetically similar and the eastern butterflies' surge may benefit their western brethren. "It's possible that some of those monarchs could migrate into the western population," Curry tells *The Chronicle*.

In other monarch news, researchers in Mexico are working to bolster the eastern population against habitat loss due to a changing climate by moving hundreds of oyamel fir trees up higher on a mountain in the Monarch Butterfly Biosphere Reserve, *Scientific American* reports. The butterflies overwinter in the trees.

The researchers conducting the project estimate that rising temperatures will cut suitable habitat for the trees by about 70 percent between 2025 and 2035. The team calculated that it could move fir seedlings up the mountainside by roughly 350 meters to reach temperatures that would be more ideal under the changing climate. The researchers have shifted over 750 seedlings higher up on the mountain, according to *Scientific American*.

A journal article on the work is currently undergoing peer review. While there's some controversy over assisted migration to save species from climate change as opponents argue that introduced species can threaten those already in an area, some scientists are onboard. "This is an example of a good experiment," Sally Aitken, a forest ecologist at the University of British, tells *Scientific American*.

19TH CENTURY EXPERIMENTS EXPLAINED HOW TREES LIFT WATER

By Ben Andrew Henry • *The Scientist* • February 1, 2017

The uppermost branches of a tree might sway several hundred feet in the air, yet they will receive a constant supply of water sucked out of the soil below. In the late 19th century, the world's botanists were mired in fierce debate over this astonishing hydraulic feat, divided over whether and how trees expended energy to lift water against the force of gravity.

While theories and counter-theories flew, two Irish scientists, one of them a renowned physicist named John Joly and the other a young botanist named Henry Dixon, decided to test the strength of a tree's water-lifting capabilities.

Inside of a tree, water courses from root to leaf through tiny conduits collectively called xylem, and almost all water not consumed by cellular processes evaporates, or transpires, through pores on the undersides of leaves. In a paper published in 1895 (*Philos Trans R Soc B*, 186:563-76), Dixon and

Joly reported the results of an experiment to push back against that upward flow.

The pair encased a maple branch in a thick glass tube, sealed except for the end of the branch protruding down into a vial of water. With a pump, they raised the air pressure inside the tube to twice that of the atmosphere in an attempt to stop the water's ascent. Yet, liquid in the vial steadily dropped over the course of an hour, evidence that the plant kept on transpiring. More air was pumped in, and at triple the normal atmospheric pressure, the branch still pulled up water. The same proved true with branches of sycamore and lime. Before Dixon and Joly could drive the pressure any higher, the glass tube shattered—"fortunately doing no harm," they wrote, "but putting a stop to further experiments."

A second, more technical experiment provided a crucial piece of explanatory evidence in the form of a new property of water. In a series of manipulations, Dixon and Joly showed that water in a tube could be placed under tension—the way pulling on a rope places it under tension. The two researchers, drawing together pieces of a number of earlier theories, proposed in full what would be known to posterity as the cohesion-tension theory. Inside the vasculature of a tree, they argued, water forms slender threads that stretch from roots to leaves. Transpiration—a cooling process enabled by the warmth of the sun—tugs at the end of the thread and pulls water upward.

Dixon and Joly did not get the last word on the matter. According to a history of cohesion-tension theory by Harvey Brown of the University of Oxford, Francis Darwin, son of Charles and an accomplished botanist, dismissively wrote that believing in the ability of water to bear tension "is to some of us equivalent to believing in ropes of sand" (*Phys Perspect*, 15:320-58, 2013). Even today, despite sophisticated experiments proving this peculiar property, and an understanding of the polar bonds between water molecules that account for it, xylem researcher Melvin Tyree says the idea sticks in the craw of engineers and even some dedicated plant biologists. "Fluids, by definition, are not supposed to have tensile properties."

STORM DAMAGE

Tree Care Tips • TCIA Helping Homeowners • March 16, 2015

Storms can leave even the most pristine landscape in disarray; uprooted trees, broken branches, and stray debris are common post-storm eyesores. To prevent this, evaluate your landscape for potential hazards. Even innocuous tree limbs can prove dangerous in bad weather, so be thorough in your assessment.



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Warning Signs: If your trees exhibit the following warning signs, they may be at risk:

- Wires in contact with tree branches are dangerous. Trees may become energized when they are contacted by electric wires.
- Dead or partially attached limbs hung up in the higher branches can fall and cause damage or injury.
- Cracked stems and split branches can cause catastrophic tree failure.
- Hollow or decayed areas on the trunk or main limbs, or mushrooms growing from the bark indicate a decayed and weakened trunk.
- Peeling bark or gaping wounds in the trunk also indicate structural weakness.
- Fallen or uprooted trees exert pressure on other trees beneath them.
- Heaving soil at the tree base is a potential indicator of an unsound root system.

Reminder: A Tree is a living thing, and its integrity and stability change over time. Don't assume a tree that has survived ten severe storms will necessarily survive an eleventh! Regular maintenance is necessary to ensure the safety of your trees and property.

Clean-up Hazards: Sometimes, no matter how much you prepare your trees for a storm, you'll still find it necessary to clean up debris afterward. As a proud homeowner, you may be tempted to perform the clean-up work yourself – but this can be a dangerous undertaking. In many cases, homeowners should seek professional help, especially if the clean-up job requires the use of a chain saw or other dangerous tools.

But even this seemingly dull task comes with its own set of risks. Beware of common clean-up hazards, listed below:

- Overhead or nearby electrical wires create potential hazards and limit the options for tree cutting. Homeowners should never work near power lines.
- Most chain saw work on large limbs or trees requires the experience of a trained operator to prevent injuries. Wood under tension (one or both ends of the fallen tree or branch pinned under other branches or debris) can react unpredictably. Releasing that tension with chain saw cuts is extremely dangerous and can seriously, or fatally, harm the chain saw operator.
- Uprooted root plates or root balls are unstable. Cutting the trunk of a fallen

- Uprooted root plates or root balls are unstable. Cutting the trunk of a fallen tree from an uprooted plate releases the pressure holding the root plate. The roots are still anchored and may have enough tension to pull the stump and root ball back into the hole. It could suddenly sit back into the root hole, trapping anything nearby underneath it.
- Slopes and uneven footing surfaces are dangerous while operating a chain saw.
- Watch the end of your chain saw! Cutting branches on the ground can cause you to bury the saw bar in the dirt and hit hidden obstacles, causing chain saw kickback.
- Many homeowners injured doing their own tree work were working alone at the time, significantly lengthening emergency response time and hospital stays. If you insist on doing your own post-storm cleanup, always have at least one other person working with you to call for help in case of injury.

But remember: Homeowners should never attempt post-storm tree work if it appears dangerous! It is always safer to hire a professional arborist or tree care company to take care of the post-storm work for you.





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