

# THE SHADE TREE

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

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**Volume 95 — July - August 2022 – Issue 7 & 8**

*This Issue Presents...*

Director's Discourse

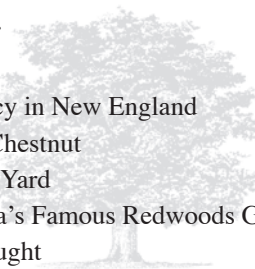
Improving Oak Resiliency in New England

Hope for the American Chestnut

Why Limbs Fall in Your Yard

Scientists Find California's Famous Redwoods Growing Special Leaves

To Combat Historic Drought



## DIRECTOR'S DISCOURSE

By Richard Wolowicz

The conference is just around the corner and the registration booklet will be arriving in the mail next month! We have so many great speakers and topics lined up for this year. Some them are Nina Bassuk from Cornell University presenting on Soil Remediation, Paul Johnson from the Sustainable Forestry Initiative with a two-part presentation on the new, international Urban & Community Forestry Sustainability Standard, Jason Grabosky will speak on Water Literate Planting, Walter Wariner will present on Transitioning from Arborist to Urban Forester. There are many more speakers and interesting topics. Please save the date and start making plans to join us at the conference! This year's conference will be held on October 13 & 14, 2022. The location will be the Double Tree by Hilton (formerly known as the Crowne Plaza) in Cherry Hill, NJ.

Attendees at the conference are representatives from municipalities and government agencies, shade tree commissions, tree companies representatives, nursery representatives, consultants, educational associates and from the commercial field. It is a great opportunity to network with your peers. Exhibitors are planning to attend and there will be ample opportunities to meet and greet the vendors to learn about what products/technology are available to assist in making your programs more viable.

Plans include having an expanded general session and two track programs in the afternoons. The split sessions are organized into a Municipal Track and a Tree Expert/Tree Operator Field Track. You will be able to attend any of the sessions desired.

We are pleased to announce is that CORE Training will return for this year with a full day session on Thursday, October 13th. The Federation is excited to

## **BULLETIN OF THE NEW JERSEY SHADE TREE FEDERATION**

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### **DIRECTOR'S DISCOURSE**

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bring this training back to the conference after hearing the feedback from our membership.

Did you know that each year at the conference the NJ Shade Tree Federation hosts an awards program, where we recognize the achievements of our fellow Federation members, shade tree program volunteers, and tree care professionals? This year the awards reception will take place after the program on Thursday evening. This is a celebration for all of us, and we hope you will stay to attend! We are planning on a stream-lined event to honor your peers and relax in some good comraderie.

The final details are still being put together. Please consider joining us this year and mark your calendars for this year's event which will be our 97th Annual Conference. More details will be coming out shortly and posted on our Website, [www.njstf.org](http://www.njstf.org).

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## **IMPROVING OAK RESILIENCY IN NEW ENGLAND**

By Linda Brownson

National Woodlands Vol 45, Number 2, Second Quarter 2022

All of us would like to see our Woodlands healthy and thriving, though today many of them-especially oak-dominated forests-are being impacted by climate change, heavy deer browsing, and defoliation from pests. Walking through our forests in New England can be both an enlightening and disturbing experience when we have an eye out for pests and pathogens that are killing our trees. Assessing our timberland in terms of forest health is unemployment part of responsible forest management, but how do we do it?

Working and collaborating with foresters is the optimal choice. Even a landowner who is interested in actually doing the work involved should have a forester to help them in management planning, site and damage assessment, forest inventory and a number of other critical services. Without considerable study, it would be challenging for a non-forester to acquire the planning and assessment skills needed to manage forest land of more than ten acres.

## **OAK RESILIENCY IN NEW ENGLAND** *Continued from page 50*

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For woodland owners who want a more hands-on experience and want to collaborate more effectively with their forester, learning tree identification is primary, as well as becoming familiar with the pests and pathogens that threaten the health of our trees. Knowing the signs of infestation and damage helps us assess the problem and for this I have always relied on our Forester, and sometimes our county Extension forester for providing the necessary education and confirmation of the problem.

In recent years, I wanted to dive deeper into forest stewardship, based on the simple, basic premise: the more we know about our land, the better! Truly knowledgeable forest stewards consider soils, water, wildlife habitat, wetlands, timber, rare or threatened plants, and historical features in learning how to protect their land.

A forest stewardship project in Southern New England attracted my attention recently, as it is focused on Oak Forest, a dominant tree in my area and 70% of the forest of Southern New England. ‘Increasing Resiliency in Southern New England Oak Forests’ is aimed at increasing resiliency in Southern New England oak forest which have suffered from pressures that endanger its long-term health and compromise its ability to regenerate. The project offers an Oak Resiliency Tool Kit for foresters and natural resource professionals along with outreach materials to landowners in the state of Connecticut, Massachusetts and Rhode Island. Primarily, it is intended to engage foresters and natural resource professionals with landowners who want to “get under the hood” and work together. To learn more about forest protection collaboratively is likely to improve outcomes and future resiliency with a more informed assessment including steps that we as landowners can take.

The project is funded through a USDA Forest Service Landscape Restoration grant and is a partnership between the nonprofit Forest Stewards Guild, state forestry agencies in Connecticut, Massachusetts and Rhode Island, the Forest Ecosystem Monitoring Cooperative (FEMC), the Northern Institute of Applied Climate Science (NIACS) and numerous other organizations.

Conservation district outreach programs are playing a supportive role by hosting oak workshops to assist landowners suffering from the loss of oak due to moth infestation and providing resources relevant to this project. In addition, supervisors of the Northern Rhode Island Conservation District are members of the Rhode Island Woodland Partnership (RIWP), which is a partner in this project. Coalitions like this one are emerging more and more, demonstrating that partnerships are the way forward and getting more conservation on the ground.

Why concentrate on oak? Oaks play a central role in ecosystems across the country. In New England, Northern red oak (*Quercus rubra*) is one of the highest-valued species both for timber production and the wildlife habitat and food. The



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## **OAK RESILIENCY IN NEW ENGLAND** *Continued from page 51*

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oak-dominated forests of this region, and elsewhere, are in trouble along with the ‘communities’ and ecosystems they support; the ecosystems we live in! As reported by Hanberry and Nowacki in *Quaternary Science Review* (2016), the percentage of Oaks and eastern forest has dropped from 55% pre-European settlement to 25% today.

While recognizing all the various pressures on Oaks in New England, ‘Increasing Resiliency in Southern New England Oak Forests’ was spurred primarily by the *Lymantria dispar* massive defoliation in the region in recent years. Recent outbreaks, especially 2016-2018 of *Lymantria dispar*, formally called the Gypsy Moth, now renamed the Spongy moth, have been devastating to oak trees, resulting in an estimated defoliation of more than 2 million acres of oak dominated forest in Southern New England alone. Two years of drought in this region paved the way for this massive outbreak. Normally, rain activates a fungus called *Entomophaga maimaiga*, one of the most successful fungal biological control agents, that kills the Spongy moth caterpillars.

The Spongy moth is a native of Europe and Asia and was introduced into North America in an attempt to cross the species with the commercial silk moth as part of an ill-conceived plan of making a more productive silk moth. The specimens were accidentally released in Medford, Massachusetts in 1969 and continue to expand their range, killing oaks as they go-the current ‘invasion front’ stretching from North Carolina to Minnesota. The larva can cause severe damage in years of hard mass reproduction and the species is listed as among the world’s 100 most invasive alien species. Oaks are the preferred host species for the feeding caterpillars. Efforts have been underway to help reduce the public safety risk presented by dead trees and regenerate the oak lost from the last infestation. This project and its assessment Tool Kit can play an integral part in making our oak forest more resilient for future outbreaks.

With higher and growing deer populations, deer herbivory has also increased, posing a major obstacle to oak forest regeneration. Browsing by deer at high densities is also reducing diversity in the forest overstory, preventing regeneration of other desired species, and enabling invasive species to displace natives. Moreover, oaks are often selected by deer and higher proportions relative to their availability comes paired to Ash or Maple, for example. Without regeneration, oaks in deer-impacted forests face a bleak future without mitigation measures in place.

Climate change, with extreme, fluctuating temperatures, flooding, seasonal drought, and other factors add considerably to the stress. Summer drought has a negative effect on all species. In 2000, 2016, and 2020, New England experienced historic drought conditions not seen since the 1960s (Drought.gov). Projected increases in summer temperatures will result in loss of water through transpiration from leaves. Increasingly extreme precipitation events in the Northeast, especially

## **OAK RESILIENCY IN NEW ENGLAND** *Continued from page 53*

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coupled with strong wind gust, will also likely continue to factor into impacts on the health of our forest. As Professor Doug Tallamy relates in *The Nature of Oaks* (2021): “Add pressure from the collapse of the climate that favored oak health over the last 80,00 years, as well as the human introduction of diseases like sudden oak death, oak wilt, and oak leaf scorch, and invasive pests like the gypsy moth, and many oak species are now on the ropes.”

Fortunately, as Tallamy claims, “There is no reason why we should accept the loss of oaks as inevitable; there is no trick to restoring oak populations and no shortage of places in which to restore them.” This resiliency project offers hope in a new approach, a ‘new trick’, one could say.

Christopher Riley, of Sweet Birch consulting in Rhode Island, is a forester and one of the project participants. He described two of the project’s main parts: outreach to landowners in Southern New England, and working with professional foresters and other natural resource professions on oak resiliency topics.

### **Hope for the Future**

The Forest Stewards Guild, principal partner in the project, described some of the events to spark collaboration and share knowledge among landowners, foresters and natural resource professionals as including:

- Oak regeneration learning exchange to foster conversation for forester’s and biologist between states and agencies about oak regeneration management approaches, as well as public communication approaches.
- Oak forest resilience assessment workshop to provide hands-on training by Quaternary resource professionals with tools for assessing the condition of oak forests.
- Oak forest landowner stewardship summit that teaches landowners to recognize signs of unhealthy oak forests; teach forest stewards how to communicate with landowners about what is happening on their land and what they can do about it; and build excitement for increasing oak resiliency.

The project will also collect, analyze and interpret data from southern New England states following the workshop and summits, and then transfer this knowledge to different audiences with reports and materials including an Oak Resiliency Tool Kit for forest landowners.

Through these collaborative initiatives and valuable materials, the Forest Stewards Guild and its many non-profit partners in Rhode Island, Connecticut, and Massachusetts aim to:

- increase forest stewardship activities that support oak resilience,
- empower natural resource professionals with tools for assessing oak forest health

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## **OAK RESILIENCY IN NEW ENGLAND** *Continued from page 54*

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- build landowner awareness of regeneration challenges and solutions, and
- foster communication between states and agencies about strategies for addressing oak forest resilience and regeneration challenges.

The starting point is the assessment. Answering the questionnaire and mapping the location of the forest enables natural resource professionals and landowners to assess the resiliency of the oak forest in question and explore relevant adaptation actions. A report is provided that rates the site as High, Moderate, or Low vulnerability with a list of key considerations and potential management options that could increase oak resiliency.

Though other regions with oak-dominated forests are not in the ‘target zone’ for this grant-funded project, other areas can use the assessment tools as well for determining the condition of their oak forest. One can do the assessment by just taking a walk through your woodland with your smart phone and answering the questions. It’s easy to do and will in the end generate a report, giving a summary, as assessment of impacts, and assessment of adaptive capacity. The comprehensive quality of the report is impressive and features potential pathways to follow. Those who manage their woodlot for wildlife, for example, can find examples of adaptation actions that can help maintain oak forest to meet objectives for wildlife habitat based on your local site conditions.

Most of us reading this magazine recognize the necessity of sustainable for stewardship and have a love and deep appreciation for oaks. With these tools, we can look at our oak forest with more awareness and discover what we can do to help increase oak forest resilience. Collaborating with our Forrester’s, natural resource professionals, and other landowners and making wise Forest stewardship decisions will have a greater collective impact on our forest health.

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## **HOPE FOR THE AMERICAN CHESTNUT**

By Roberta Ficke, MD • The Forestry Source • July 2022

Buying a 14-acre woodland home 8 years ago in the Baltimore, Maryland area started my Odyssey into learning and caring more about trees. Through the influence of my father-in-law, retired USDA Forest Service veteran James Ficke Sr., I was catapulted down an unforeseen path to protect, Plant, and otherwise learn about the secrets of our tree neighbors. My husband and I enrolled our property into the Maryland Forest Stewardship Program and we have spent thousands of hours, along with extended family and friends, caring for our woodland habitat. Now a master gardener, I devote a lot of time and effort to adding more and more trees to our property and spreading the knowledge of controlling invasive plants and other infestations that threaten them at every opportunity. When they call arose to be part of an American chestnut experiment, my hand shot a pie. Involvement in this trial

sparked so much interest from people I was compelled to write about it.

The American chestnut was decimated more than a century ago when an exotic pathogen was introduced by an imported Chinese chestnut around 1904. Over a 50-year time period, 4 billion trees over 2,000,000 acres died from the fungus *Cryphonectria parasitica*. The fungus has caused the chestnut to be functionally extinct because the trees root system underground remains alive even though the above ground trunk succumbs to the infection. The species extended from Georgia to Maine and was the cornerstone of the rural Appalachian economy. The demise of the chestnut from America has been called the worst environmental disaster ever to strike our country. People relied on the nuts for income as well as for free forage for their hogs and cattle destined for market. The bulk of the annual 20-million-pound nut crop now comes from introduced chestnut species or imported nuts. Although larger than the American chestnut, Asian and European nut varieties are not as sweet.

The tree was prized not only for its delicious nuts, but also for its rot resistance and fine-grained wood. Chestnut wood was used for rot-prone foundation logs, railroad ties, flooring, and furniture. It was used to make everything from the cradle to the grave (coffins).

Not only did humans depend on this large and abundant tree, wildlife also suffered its loss. Bears, deer, turkeys, raccoons, and squirrels could depend on the significant mast produced annually, which could not be replaced by the oak. Passenger pigeons and the Carolina parakeet are extinct in some part due to the lack of this food source. Pollinators were also dependent on the early flush of abundant flowers.

Though the hard work and persistence of many scientists and citizens, research to produce a blight-resistant American chestnut has progressed over the last century. The state of Maryland has a program of growing cultivars to select for blight resistance and offers the opportunity to private landowners to help plant these young saplings and monitor their progress over a minimum of 5 years. One of the only 8 private landowners chosen last year to steward these precious young trees, we planted 49 on our property in May 2021. We initially protected them in tubes due to the coincident arrival of the 17-year cicada to insure no undo damage to the new trees.

They have grown an average of 28 centimeters in their first summer with us. The chestnuts' success is hope for the many other American trees that are succumbing to foreign pests such as the elm, Eastern hemlock, and the ash. When a blight resistant American chestnut is confirmed, we will all need to contribute to planting these giants of America's Eastern states to restore this area's unique ecosystem.

# WHY LIMBS FALL IN YOUR YARD

Travel around a leafy neighborhood after a storm and you will see tree limbs, large and small, scattered about the ground. Why do some limbs fall in high winds or after ice storms while others merely bend? Should you worry about that large limb overhanging your driveway?

“One reason trees fail is weak branch unions,” says Peter Gerstenberger, senior advisor for safety, standards and compliance with the Tree Care Industry Association. “Homeowners can educate themselves about tree limbs, but they should call a professional arborist if they are worried about an overhanging branch.”

Trees may suffer from naturally formed imperfections that can lead to branch failure at the union of the branch and main stem. There are two types of imperfections that create weak unions: a branch union with included bark and an epicormic branch.

## Weak Unions

Branch unions can be characterized as strong or weak. Strong branch unions have upturned branch bark ridges at branch junctions. Annual rings of wood from the branch grow together with annual rings of wood from the stem, creating a sound, strong union all the way into the center of the tree.

A weak branch union occurs when a branch and stem (or two or more co-dominant stems) grow so closely together that bark grows between them, inside the tree. The term for bark growing inside the tree is “included bark.” As more and more bark is included inside the tree, the weak union is formed that is more likely to fail.

In Storm damage surveys conducted by the University of Minnesota’s Forest Resources Department, 21 percent of all landscape trees that failed in windstorms failed at weak branch unions of co-dominant stems. Some species are notorious for having included bark: European mountain ash, green ash, hackberry, boxelder, willow, red maple, silver maple, Amur maple, cherry and Littleleaf linden.

## Epicormic Branches

Epicormic branches (also called water sprouts) are formed as a response to bad pruning, injury or environmental stress. Epicormic branches are new branches that replaced injured, pruned or declining branches. Commonly, epicormic branches form on the stems and branches of topped trees. When old, large epicormic branches are growing on decaying stems or branches, the epicormics are very likely to fail.



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## **WHY LIMBS FALL IN YOUR YARD** *Continued from page 58*

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Epicormic branches, by their very nature, form weak unions because they are shallowly attached instead of being attached all the way to the center of the stem. Epicormic branches grow very quickly so they become heavy very quickly. After a time, they lose their connection to the main branch and may fall to the ground because the underlying wood cannot support their weight.

If a weak union is also cracked, cankered or decayed, the union is likely to fail, causing the branch to fall off the tree. Sometimes, ridges of bark and wood will form on one or both sides of a weakened branch union in order to stabilize the union. The branch is very likely to fail when a crack forms between the ridges.

*This information is brought to you by the Tree Care Industry Association and the NJ Shade Tree Federation.*

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## **CALIFORNIA'S FAMOUS REDWOODS GROWING SPECIAL LEAVES TO COMBAT HISTORIC DROUGHT, SCIENTISTS FIND**

By Abe Asher • The Independent, May 19, 2022

California's famous redwood trees grow leaves specifically designed to suck in enough water from the air around them, according to a new study.

It has long been accepted scientific fact that trees absorb water through their leaves. But the new study published in the American Journal of Botany, shows in new detail how redwoods adapt their capacity for water intake to their particular environmental conditions.

Redwoods, which once thrived in the western hemisphere but can now only be found in coastal California and southern Oregon, have two types of shoots: axial shoots, which are bunched together and located close to the twig, and peripheral shoots, which are longer and more commonly identified as leaves.

The axial shoots are major sources of water. They absorb water at four times the rate of peripheral shoots, which have other critical functions like powering photosynthesis.

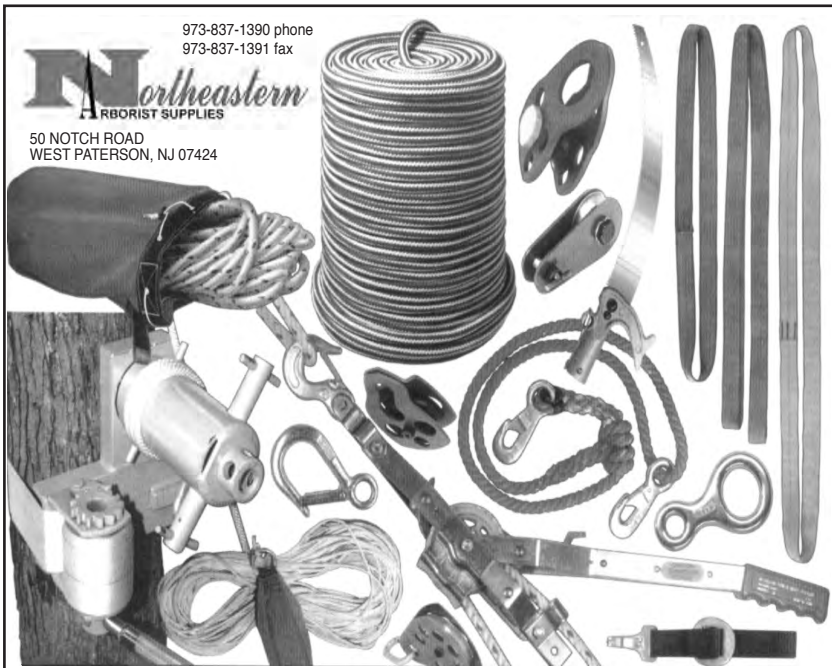
Researchers, including ecologist Alana Chin of ETH Zürich, found that in trees located in drier, more southern locales, redwoods' axial shoots are located higher on the tree — while in wetter, more northern climates, the trees' axial shoots are located lower down.

# SAVE THE DATE:

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The higher location of the axial shoots allows them to better absorb moisture from rain and fog for trees that might not see a great quantity of rain during the summer months.

Redwoods' ability to adapt to their environmental conditions will likely only become more important in the coming years as climate change continues to make California and Oregon drier and hotter.

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