

THE SHADE TREE

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

Volume 98 – January – February 2025 – Issue 1 & 2

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WHAT DO TREES DO IN THE WINTER?

By Lindsey Purcell, Purdue Landscape Report Iss 21-02, March 2, 2021

So, what do trees do in the winter? Do they freeze up like unprotected water pipes? Or burst when it gets below freezing? Yes, the below-ground parts of a tree are kept insulated by mulch, soil and a layer of snow, and that is important to survival, but the exposed parts of a tree are not protected.

Deciduous trees, like maples and oaks, have a lot of water inside their trunks and branches. Water is the single most important substance for tree life, comprising nearly 80% of tree material. Although there is a little less inside the tree during the winter, if the temperature drops low enough, the water in even the most cold-hardy tree will freeze. Broadleaf, deciduous trees lose their leaves in the winter to reduce water loss inside the trunk and branches. Most needle-leaved trees, known as conifers, which include pines and spruce, retain needles year-round – with exceptions of some deciduous evergreens such as larch and bald cypress– only losing older, or damaged needles. Needles are better at retaining water than broadleaves due to their small surface area and waxy outer coating limiting water loss to transpiration, the evaporation of water from leaves. A hard freeze or poorly timed drop in temperatures can be devastating to living tree cells since ice crystals can shred cell membranes, leading to dead leaves, branches, and even whole trees. Most trees live through the winter despite prolonged exposure to brutally cold air and wind and snow, with special strategies and planning.

Dormancy of trees can be divided arbitrarily into three phases: early rest, winter rest, and after-rest. Each of these phases is marked by a distinct set of physiological processes. The transition between the three phases is gradual and there are many metabolic and developmental processes going on in the buds and twigs. A tree begins its preparations in late summer as day length shortens to survive winter temperatures. Cold acclimation occurs gradually and fall color is a sign that the process is in place and pre-dormancy is beginning.

BULLETIN OF THE NEW JERSEY SHADE TREE FEDERATION

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WHAT DO TREES DO IN THE WINTER?

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When the tree enters the winter rest stage, research suggests three basic ways in which a tree prevents freezing. One is to change their membranes, so the membranes become more pliable; this allows water to migrate out of the cells and into the spaces between the cells. The relocated water exerts pressure against the cell walls, but this pressure is offset as cells shrink and occupy less space.

The second way a tree helps prevent freezing is to thicken the fluids within the cells. When days begin to get shorter, trees convert starch to sugars, which act as a natural antifreeze for the plant. The cellular fluid within the living cells becomes concentrated with natural sugars, which lowers the freezing point inside the cells, while the water between the cells is allowed to freeze. Because the cell membranes are more pliable in winter, they're squeezed but not punctured by the expanding ice crystals.

The third mechanism involves what has been described as a "glass phase," where the liquid cell contents become so viscous that they appear to be solid, a kind of "molecular suspended animation" and mimic the way silica remains liquid as it is supercooled into glass. This mechanism is triggered by the progressive cellular dehydration that results from the first two mechanisms and allows the supercooled contents of the tree's cells to avoid crystallizing.

All three cellular mechanisms are intended to keep living cells from freezing. That's the key for the tree; don't allow living cells to freeze.

A tree doesn't have to keep all of its cells from freezing, just the living ones which are primarily the phloem cells. This is significant, since much of a tree's living trunk is made up of cells that are dead, such as xylem cells. These dead cells can and do freeze, but even the lowest temperature doesn't have an adverse effect. While a majority of a tree's above-ground cells do indeed freeze regularly when exposed to subfreezing temperatures, the living cells remain unfrozen and active on a reduced level. There are living cells in the trunk that remain unfrozen even though they are right next to – and at the same temperature as – dead cells that are frozen solid!

This seemingly mystical combination of pliable membranes, natural antifreeze, and glasslike supercooling, with frost on the outside and viscous dehydration on the inside, helps trees avoid freezing injury to living cells. Trees are the largest, oldest living organism on our planet and don't grow older and larger without having very specific strategies for survival.

WHAT DO TREES DO IN THE WINTER?

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However, sometimes, trees aren't able to withstand extreme conditions, especially if nature provides an unusual change. While trees have evolved amazing strategies for withstanding the winter cold, sometimes it gets so cold that trees can explode. During spells of extreme cold or especially when trees haven't had time to acclimate before the cold arrives, the life-sustaining sap inside a tree can begin to freeze. Sap contains water so it expands when frozen, putting pressure on the bark, which can break and create an explosion, so to speak.

Proper winter care is critical to protect your trees with mulch and water to help trees make it through the winter months.

WINTERIZE YOUR TREES

By Lindsey Purcell, Purdue Extension, FNR-484-W, November 2013

As trees in our urban and suburban landscapes prepare for winter dormancy and cold, they could use a little extra care from you to ensure a good start in the spring. As the seasons change, trees prepare to overwinter in a dormant state. Dormancy is not death; it is a natural state in which trees prepare and adapt to cold conditions with physiological and structural adjustments. Even though the leaves are changing colors and falling to the ground, trees are still active, making necessary preparations for winter.

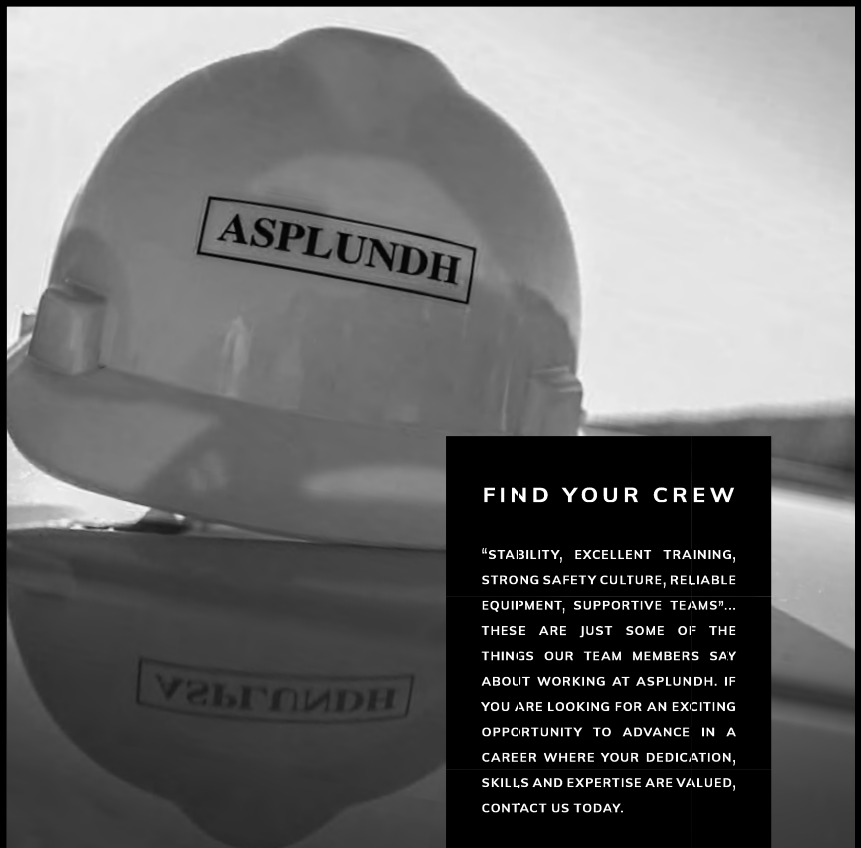
Winter conditions will make finding moisture a challenge—and keeping plant cells hydrated in winter is critical for survival. Potential sources of winter water include unfrozen soil; internal reservoirs; and the area above the ground, but just under the snow cover (the subnivean zone). If trees cannot find needed water in these areas, expect poor health and growth the following spring.

Summer and fall drought conditions can place trees in an overall water deficit, predisposing them to pest issues and poor health the next growing season. Likewise, spring and summer weather affects the trees' ability to survive winter weather. Young or newly planted trees will require more attention because of limited abilities in obtaining water in their growing environment. The key to survival is giving trees adequate moisture before winter freezes the world around them.

Good cultural practices and proper plant health care make a difference in how much water is available to your trees in winter and how well they survive. Tips for winter preparation include:

Trunk wrapping

Smooth or thin-bark trees like honey locust, crabapples, lindens, and especially maple, are susceptible to sunscald and frost cracks because of the temperature fluctuations from sun exposure in the winter. The wounds caused by temperature fluctuations can leave the tree exposed to fungal organisms, which cause decay in the tree. Prevention includes guarding the trunks of younger and



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WINTERIZE YOUR TREES

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smooth-bark trees up to about the first branches using a flexible, white tree wrap. Leave the wrap on until after the last freezing temperatures. Remove tree guards in the spring to reduce potential damage from disease and insects.

Mulching

Mulch benefits trees all year long, not just during the summer months. Refresh the mulch layer placed in the spring so that there are about 2–3 inches of wood chips, bark, or other organic mulch over the root zone of the tree. Start at the base of the trunk, but not against it, and extend mulch to the edge of the outer branches or dripline. This will reduce soil evaporation, improve water absorption, and insulate against temperature extremes.

Pruning

Late fall and early winter are acceptable times for limited, functional pruning of most tree species. Prune trees to remove dying, diseased, or dead branches, or to improve branching structure. This also is a good time to remove water sprouts and basal sprouts. However, limit the amount of green wood pruning going into winter to reduce the amount of energy reserves the plant must use to heal the pruning wounds. Be sure to use proper pruning practices as outlined in *Trees Need a Proper Start: Prune Them Right* (FNR-FAQ-19-W) found at Purdue Extension's The Education Store.

Fertilizing

If trees are not stressed from moisture deficits, apply a complete fertilizer with micronutrients. Use a low-nitrogen formulation (5-10-10 or similar ratio/composition) to prevent a late flush of new growth. Be sure to broadcast the material uniformly over the root zone and with sufficient water so that roots can absorb nutrients. You can apply water-soluble fertilizers during watering to provide nutrients as well. Follow label directions. Providing trees essential elements just before winter will enhance next season's growth.

Watering

Whenever rainfall is insufficient for extended periods, supplemental water is needed, especially on newly planted and less-established trees. Follow the “5 + 5 rule,” which says to provide 5 gallons of water plus another 5 gallons for every diameter-inch of tree trunk. This should provide plenty of water to help a tree during times of inadequate rainfall. For mature and well-established trees, 1 inch of supplemental water applied to the root zone every week should keep soil moisture adequate. Continue to water through the fall until the ground is frozen, so that trees have ample moisture to survive the winter months and are ready for spring growth. If limited rain or snowfall in winter indicates drought, it may be necessary to water in the winter. The best time for winter watering is a warm day, when the temperature is above 40 degrees. Refer to *Drought? Don't forget the trees!* (FNR-483-W) for more information on watering trees.

These simple guidelines will help trees get off to a good start after the long winter, when we are ready to transition from snow white to growing green.

Note: The Purdue Extension has the referenced “FNR” info sheets available for free pdf download in their extension education online store: <https://extension.purdue.edu/>

A COMMUNITY PROGRAM IS TRANSFORMING NEW YORK SCHOOLYARDS INTO CLIMATE-RESILIENT SPACES

By Jen Shin and Anna Kustar, WRI: World Resources Institute,
September 3, 2024

In Brooklyn, one of New York City’s five boroughs, a new schoolyard features newly-planted native trees offering shade and bright playground equipment that sits adjacent to a track and turf field. Colorful murals celebrating the diversity of its Boreum Hill neighborhood surround the area. Seniors play chess while toddlers run past. It could easily be mistaken for a public park if it weren’t for the school signage on the building next door.

The Pacific School (P.S. 38K) is one of more than 220 New York City public schools to transform its asphalt playground into a vibrant community space over the past two decades thanks to Trust for Public Land’s (TPL’s) Green Community Schoolyards. The program aims to create safe, accessible green places for New Yorkers — particularly those in disadvantaged neighborhoods — to gather close to their homes and connect with nature.

“I grew up in New York City, and I played on an asphalt playground,” recalls Mary Alice Lee, director at TPL. “It was adjacent to a park, and I would stare through the chain-link fence thinking it’s not fair that we don’t get to enjoy the playground equipment, the trees, the shade.”

Lee has since dedicated her decades-long career to creating open spaces for New York City’s residents to enjoy the outdoors. “I think every child deserves a place to play in,” she says.

But TPL’s program offers much more than recreational and community-building opportunities. In an urban landscape otherwise dominated by concrete, green schoolyards are also critical climate-resilient spaces to help mitigate the increasingly extreme heat and flooding impacting New York City.

Green Community Schoolyards Address New York City’s Climate Needs

Nicknamed the “concrete jungle” in the mid-1900s, New York City’s dense urban landscapes of skyscrapers, concrete pavements and bustling streets are legendary. But with temperatures rising and the urban heat island effect exacerbating extreme heat in cities, New York faces a growing need for cool, shaded green spaces where all members of a neighborhood can spend recreational time, meet neighbors and form community connections.



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A COMMUNITY PROGRAM IS TRANSFORMING NEW YORK SCHOOLYARDS INTO CLIMATE-RESILIENT SPACES

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New York City is home to only 2.2 public playgrounds per 10,000 residents, far below the average of 3.1 playgrounds in America's 100 largest cities. The hundreds of green community schoolyards TPL has created seek to address that shortage. The program has succeeded in making playgrounds accessible to more than half of all New Yorkers, with 5 million residents now living within a 10-minute walk to a green space. TPL estimates that 220,000 children and community members have directly benefited from these new schoolyards.

"Overall, New York City is over 70% impervious," explains Melissa Enoch, assistant commissioner of the New York City Bureau of Environmental Planning. "That means we've paved over a lot of our land. We've developed it. We're preventing stormwater from soaking into the ground like it used to before development."

Without enough soil and natural terrain to absorb water quickly, cities are at higher risk of flooding during extreme rain events. In 2012, for example, Hurricane Sandy devastated New York City with unprecedented flooding. In the span of 48 hours, the storm damaged 69,000 residential units, left hundreds of thousands without power and limited critical services like access to food, drinking water and healthcare for people across all five boroughs. As the city recovered and looked to make itself more resilient in the face of future extreme weather events, New York City's Department of Environmental Protection joined TPL as a partner to ensure all future schoolyards would feature green infrastructure.

The sites now serve as a network of both physical and social infrastructure, alleviating climate-related flood risk and urban heat island effects, while providing 5 million New Yorkers access to green space.

Students and Neighbors Take Ownership of the Schoolyards

A unique and critical component of the Green Community Schoolyards initiative is that children are heavily involved in the design process. TPL introduced lessons on climate science and stormwater management into the school curriculum to educate students on the importance of water absorption, shade, native species and gardening, all critical components of a green schoolyard. Students then co-design their own schoolyards, facilitated by TPL and the landscape architecture firm, Studio HIP.

"We had a lot of puddles in the yard when we had rainstorms," Pascale Pradel, principal of P.S. 38K The Pacific School in Brooklyn, says. "[When] our kids got to see the construction process of the yard, they understood the importance of getting the water off the streets — and they felt like they were making a difference in our school environment."

Participating in the design process challenges schoolchildren to think

A COMMUNITY PROGRAM IS TRANSFORMING NEW YORK SCHOOLYARDS INTO CLIMATE-RESILIENT SPACES

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about needs beyond their own, like playground equipment for younger students and creating shaded bench spaces for caregivers. “It’s a very heartwarming feeling,” reflects Alex, now an eighth-grade student. “I started this project when I was in sixth grade. But knowing that when I’m an adult there will still be kids who get to play around in this yard, it’s a really cool idea.”

To ensure that schoolyards accommodate the diverse needs of the surrounding community after school hours, the program also collaborates with local senior groups, sports clubs, cultural clubs and others. By actively engaging communities and schoolchildren in the design of their own green spaces through civic action and advocacy, the program creates a sense of ownership and fosters long-term stewardship.

Keeping the Momentum Going

Witnessing the impact that TPL’s Green Community Schoolyards have had on students and broader communities, and the important benefits the spaces offer for climate resilience, it’s no wonder that the City of New York continues to champion the project. Several municipal agencies provide support, and the city has even included the project in its green infrastructure and formal flood mitigation plans.

TPL has created a sustainable public-private partnership that will ensure the program continues. In this model, various public sources, such as the Mayor’s Office and the Department of Environmental Protection, provide capital funding, private donors cover programmatic costs, and TPL carries out project implementation together with communities. TPL also works with the New York City School Construction Authority to ensure projects are completed within the tenure of a student’s time at a school.

The project’s relative simplicity — transforming empty asphalt lots into vibrant, green community spaces — makes this kind of intervention highly replicable and scalable. To date, similar projects have been completed in 15 other U.S. cities, including Philadelphia, Tacoma, Wash. and Oakland, Calif., with differing urban forms and densities, governance structures and climates (including desert climates). TPL is working on a federal program to set aside \$150 million per year for nationwide schoolyard renovations based on the organization’s model of green design, student engagement and community stewardship.

For Lee, there is no greater reward than seeing the parks bustling with activity. “I love being able to be part of this project. It’s so important to me that we’re creating these green spaces for New Yorkers ... for people who might not have access to open space. They’re able to sit in the shade, they’re able to smell the flowers, and they’re able to have fun and relax. They’re also able to run around on the track or play soccer, and it’s really wonderful to give that gift to the people of

A COMMUNITY PROGRAM IS TRANSFORMING NEW YORK SCHOOLYARDS INTO CLIMATE-RESILIENT SPACES

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New York City.”

Note: Read more and watch clips about this project online here: <https://prizeforcities.org/project/green-community-schoolyards>

NJ SHADE TREE FEDERATION PROFIT & LOSS STATEMENT

October 2023 through September 2024

Income

Dues

Associate	325.00
Commercial	700.00
Industrial	9,100.00
Municipal	14,780.00
Total Dues	24,905.00

Earned Revenues

Interest-savings/short-term inv	132.72
Total Earned Revenues	132.72

Outreach Coordinator 15,000.00

Publications

“The Shade Tree” Ads	1,133.83
Laws for NJ Trees	114.00
Laws of NJ	24.00
Mulch Brochure	60.00
Proper Tree Planting Brochure	60.00
Soils for NJ Trees	48.00
Trees for NJ Streets	123.00
Publications- Other	640.00
Total Publications	2,202.83

Special Events

Annual Conference 2021

Exhibit Booth Rental	300.00
Total Annual Conference 2021	300.00

Annual Conference 2022

2022 Registrations	1,565.00
Total Annual Conference 2022	1,565.00

Annual Conference 2023

2023 Registrations	111,699.88
Exhibitors	2,050.00
Annual Conference 2023 - Other	5,350.70
Total Annual Conference 2023	119,100.58

Total Special Events 120,965.58

Special Events Annual Mtng 2024



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2024 Meeting Sponsor	3,000.00
Exhibitors	14,800.00
Exhibitors Extra Staff Reg	110.00
Meet & Greet	500.00
Registrations	48,686.50
Special Events Annual Mtng 2024- Other	17,925.00
Total Special Events Annual Mtng 2024	<u>85,021.50</u>
Total Income	<u>248,227.63</u>
Gross Profit	<u>248,227.63</u>
Expense	
“The Shade Tree”	
Postage	20.93
Printing	6,963.48
Total “The Shade Tree”	6,984.41
Annual Conference 2023	
Annual Conference 2023 Printing	2,505.97
Credit Card Fees	0.00
Give Aways	2,540.24
Hotel Expense	62,733.71
Pipe & Drape	5,432.50
Scanners	1,773.80
Speaker	3,650.00
Speaker Travel & Meals	1,421.36
Supplies	<u>821.37</u>
Total Annual Conference 2023	80,878.95
Annual conference 2024	
Annual Meeting 2024 Hotel	1,000.00
Printing	2,781.43
Registration Return	<u>210.00</u>
Total Annual Meeting 2024	3,991.43
Awards & Scholarships	130.29
Bill Porter Memorial	1,750.00
Business expenses	
Taxes- other	<u>75.42</u>
Total Business Expenses	75.42
League of Municipalities	
Exhibit Booth	1,437.63
Giveaways	88.43
Meals	115.68
Parking	110.00
Rooms	1,116.67
Travel & Tolls	365.59
League of Municipalities – Other	<u>1,338.83</u>
Total League of Municipalities	4,572.83
Misc expenses	
Interest expense - general	29.00
Membership dues - organization	2,500.00
Misc expenses - Other	<u>0.00</u>

NJ SHADE TREE FEDERATION PROFIT & LOSS STATEMENT

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Total Misc expenses	2,529.00
Office expenses	
Accounting Fees	4,159.60
Annual Report	33.00
Credit card processing fee	1,291.60
Executive Board Meetings	908.34
Executive Director Expenses	142.71
Insurance	
General Liability	4,166.00
Workman's Compensation	412.00
Total Insurance	4,578.00
Miscellaneous	200.00
Mulch Brochure	653.50
Parking Permits	333.88
Postage	399.10
Printing, Postage, Stationery	334.66
Publications	153.53
Software	4,057.09
Supplies	93.80
Telephone & telecommunications	1,360.87
Website	2,703.12
Office expenses - Other	148.00
Total Office expenses	21,550.83
Other personnel expenses	
Temporary help - contract	750.00
Total Other personnel expenses	750.00
Salaries & related expenses	
Employee benefits – not pension	4,458.79
Officers & directors salaries	48,512.32
Payroll taxes	
Federal Withholding	9,923.56
FICA Withholding	66.11
State Withholding	3,002.19
Total Payroll taxes	12,991.86
Total Salaries & related expenses	65,962.97
Travel & meeting expenses	
Conference, convention, meeting	300.00
Total Travel & meetings expenses	300.00
Total Expense	<u>189,476.13</u>
Net Ordinary Income	<u>58,751.50</u>
Net Income	<u>58,751.50</u>

CALENDAR OF EVENTS 2025

June 30th	Application Deadline: 2025 Porter Community Tree
Project Award & Scholarship	
October 16-17	NJ Shade Tree Federation 100th Annual Conference,
Harrah's Atlantic City, NJ	

NJ SHADE TREE FEDERATION OFFICERS AND DIRECTORS FOR 2024-2025

Subsequent to The New Jersey Shade Tree Federation's Annual Business Meeting, a formal vote on the election of Officers and Executive Board was concluded in December 2024. The following are retained and new members of the Executive Team.

Officers:

Neil Hendrickson – President, Retired, Readington Township
George Meglio – Vice-President, Wood-Ridge Borough
Richard Wolowicz – Executive Director
Emily Farschon – Outreach Coordinator

Directors:

2025: Mary Charlotte Gitlin, NYC Parks Department, Staten Island Forestry
Al Birchler, Professional Tree Care
Jeff Cramer, South Brunswick
Christopher Raimondi, Raimondi Horticultural Group

2026: Pam Zipse, NJ Tree Foundation
Stephen Chisholm, Jr., Aspen Tree Expert Co.
George Sweetin, Chatham Borough
Barbara Ronca, PhD, Bridgewater Township

2027: John Anderson, Retired, First Energy, Jersey Central Power & Light
Tim Foerster, Mendham Borough
Roslyn Dvorin, Rutgers University
Thomas Ritchie, Freehold Township Shade Tree Commission





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