



Beating Beech Leaf Disease

Empowering Yonkers public school students
to restore forests damaged by an invasive pest

John Zeiger, Preserve Manager, Westchester Land Trust

Executive Summary

Westchester Land Trust partnered with Groundwork Hudson Valley to restore 5 acres of forest impacted by beech leaf disease (BLD) in the Westchester Wilderness Walk/ Zofnass Family Preserve in Pound Ridge, NY. This project had four main goals, all of which were achieved during work in 2022.

1. ***Restore five acres of forest impacted by BLD.*** We removed invasive species from 10 acres of beech stands, twice the five-acre goal. We installed 2,000 linear feet of deer fencing to promote natural regeneration. In locations where fencing would not be feasible, 30 tree tubes were installed on suitable trees to protect them. Fifty sycamore live stakes were planted in wetland clearings near beech stands.
2. ***Create a paid opportunity for Yonkers public school students to learn about ecosystem restoration in the field.*** The Groundwork Hudson Valley Green Team (30 students) spent 4 days at the preserve, building fences and removing invasives.
3. ***Supervise a Conservation Apprenticeship, focusing on professional skills development.*** Two *Conservation Apprentices* were hired for 10 weeks at 32 hours/week, and one of the apprentices was an alumna of the Green Team. The Apprentices led the Green Team crew in the field, collected data, and assisted with writing final reports.
4. ***Write an invasive management plan for beech stands at the Zofnass Family Preserve.*** The invasive management plan will guide WLT's work at beech stands in the preserve moving forward, and it may also be used to apply for a Priority Conservation Area designation.



Brianna (right), a WLT Conservation Apprentice, shows a Green Team member how to install hardware.

Introduction

The spread of beech leaf disease (BLD) has the potential to significantly degrade forests in the lower Hudson valley, where beech trees make up a large percentage of the forest composition and canopy coverage. BLD has the potential to kill beech trees in two to seven years, according to the NYS DEC. While there are currently no known treatments for the disease, it is important to consider and mitigate the pathogen's effect on overall forest health. In some areas of the lower Hudson valley, especially in areas with high deer browse levels, trees do not regenerate at sufficient levels to replace trees that are lost to disease. When stands of trees die, creating forest gaps, more trees at the edges of the gaps will then begin to face additional stress from high winds and vines. It is important therefore to strategically promote natural regeneration in areas where stands of beech trees are threatened.

WLT partnered with Groundwork Hudson Valley (GWHV) to contract the Green Team, a crew of 30 students from Yonkers public schools, and created a paid field-based learning experience for the young conservationists. Most of the fence construction and invasive removal work was conducted by the Green Team crew between July 19-22. Additionally, this grant supported two summer conservation apprentices, college students interested in pursuing careers in the environmental field. As the apprenticeship is considered a pathway to a career in the field and is marketed (with strong support from GWHV) to Green Team alumni, one of the 2022 apprentices was a Green Team alumna. The apprentices led the Green Team crews in the field and communicated about the work through writing a newsletter article published in the fall of 2022 on BLD (see appendix) and presenting to the summer LH PRISM meeting on their work.



Green Team students build backcountry deer fences at the preserve. Photo credit C. Zeiger.

This work built on prior LH PRISM support. In 2021, LH PRISM funded WLT's internship program, which then evolved into the current apprenticeship program. During the 2021 internship, both summer interns were alumni of the GWHV Green Team. The 2021 interns

mapped all the beech stands in the Westchester Wilderness Walk/ Zofnass Family Preserve, creating the map that guided the 2022 forest restoration project.

Deliverables

All deliverables in WLT's contract with LH PRISM were accomplished.

Goal 1: Restore 5 acres of forest impacted by BLD

- *Remove invasives and install deer fencing and tree tubes.* WLT staff, volunteers, apprentices, and conservation partners removed invasive species from 10 acres of beech stands in the Westchester Wilderness Walk/ Zofnass Family Preserve. A crew of 3 people from the Van Cortlandt Park Alliance assisted with the work. Four deer fences, with 2000 linear feet of fencing, were installed at the Central Roundabout (a backcountry location >0.25 miles from the nearest trailhead). Thirty tree tubes were installed at suitable locations across the preserve. Tree tubes were used when beech stands were either too small or on unsuitable terrain for fencing. Lastly, volunteers planted 50 sycamore live stakes in wetlands adjacent to beech stands.
- *Community volunteer events.* Three community events were held in 2022. One event focused on invasive removal (May 24), another on making final touches to the deer fences (August 28), and the last on planting sycamore live stakes (October 25). 70 volunteer hours were donated during this project. Volunteer events were attended by supporters from the local community, including the chair of WLT's board of directors, Bruce Churchill. Claire Lignac, the field crew lead of the NYNJTC Invasive Strike Force, joined for the sycamore live stake planting.



John Zeiger, WLT Preserve Manager, leading the field walk for conservationists

- *Fieldwalk for conservation practitioners.* A fieldwalk, targeted to an audience of professional conservationists was held on September 9, which was attended by nine people. Attendees included conservation practitioners from the Department of Environmental Conservation (DEC) of NYS, Teatown Lake Reservation, Westchester Parks, and a private treecare company. During the fieldwalk we walked the entire Central Roundabout and discussed BLD and the work promoting forest regeneration.
- *Establish Baseline BLD data.* Since the DEC has 5-year plots on the preserve that monitor disease progression, we focused our data collection on tree regeneration instead of tracking BLD spread, and utilized the [ten tallest methodology](#). In brief, for each plot we installed a permanent metal stake and then measured an 18.5' radius circle around the stake. Within the plot area, we counted the ten tallest seedlings of any tree species (for example, red maple) that is affected by deer browse. This method monitors populations, not individuals, so trees were not marked. The eight ten tallest plots were installed, with one plot inside and another outside each deer fence, in similar soil and light conditions. Canopy leaf cover measurements were taken using CanopyApp. Data collection protocols were approved by WLT's official DEC liaison, Maria MoskaLee, who was officially advising the project per LH PRISM request.



Brianna, Conservation Apprentice, works with Bruce, WLT's Board Chair to collect ten tallest data

Goal 2: Create a paid opportunity for Yonkers public school students to learn about ecosystem restoration in the field

- *Contract the Green Team for 4 days of work.* The Groundwork Hudson Valley Green Team worked on site to remove invasives and construct deer fences from July 19-22 (4 days total). Each day 15 students worked on the project, and we worked with 30 students in total. One group of 15 worked with us Tuesday and Wednesday, the other worked Thursday and Friday. The students created teams of 3-5 and worked under the mentorship of WLT staff and apprentices. This was a very challenging week for outdoor fieldwork because afternoon temperatures were greater than 95 degrees Fahrenheit and we had scattered thunderstorms late in the week, but work was still accomplished safely and efficiently. The Green Team was paid and transportation to the site was arranged by Groundwork Hudson Valley.

Goal 3: Supervise a Conservation Apprenticeship, focusing on professional skills development

- *Two students hired for 10-week 32 hour/week apprenticeship.* WLT hired Brianna Rodriguez and Christian Fierek for the 2022 Conservation Apprenticeship. Brianna, who was starting college in the fall, was a Green Team alumna. The apprenticeship was intended to be a high-level internship that exposed the students to all aspects of land trust functions, including development, leadership, and hands-on conservation work in the field. The apprenticeship specifically focused on building practical skills, including leadership, communication, and critical thinking. The apprentices led crews of Green Team students in the field to construct the deer fences and were involved in writing up the invasive management plan afterward. The apprentices wrote a short article on BLD and the Green Team's work, which was used as the centerpiece of WLT's fall newsletter.
- *Apprentices will create a short video on invasive work.* Apprentices focused their video on silver grass *Miscanthus sinensis*, a relatively new invasive that is becoming prevalent in BLD impacted woodlands.

Goal 4: Write an invasive management plan for beech stands at the Zofnass Family Preserve

- *Report is attached.* The invasive management plan focuses on WLT's future management of beech stands as the area regenerates young forest. Much of the report was written by WLT's conservation apprentices, Christian and Brianna.
- *Data on invasive removal was added to iMapInvasives.*

Communications

As public engagement is an important part of WLT's work, we made every effort to educate the public on this project and the threat of BLD to local forests. WLT created two posts to Facebook and other social media, which tagged LH PRISM, and referenced the collaboration with Groundwork Hudson Valley's Green Team (August 11 and 16). The centerpiece of WLT's fall 2022 newsletter, which is mailed to our supporters, was an article on the project written by the conservation apprentices. A local newspaper, the Bedford Record Review, wrote about the project in an article on August 13. The main photo used in the article, of an infected tree displaying textbook symptoms, was provided by WLT. See the appendix for more details on the communications work.

To explain the project to conservation practitioners, WLT staff led a field walk on the project site attended by about 10 conservationists, and presented via Zoom to PRISM partners in December. WLT staff, through collaborating with the *BLD Coalition* (see "Next Steps" section below) plan to continue communicating to the public and land managers about the threat of BLD to forest health.

Collaboration

This project would not have been possible without the support of partners, many of which are members of the LH PRISM. WLT worked closely with Groundwork Hudson Valley (GWHV) to coordinate the Green Team work. GWHV also advertised the *Conservation Apprentice* position to their alumni network.

The work was officially advised by Maria MoskaLee from the NYS DEC, as a condition of receiving the grant. I spoke with Maria twice on the phone, and she advised our data collection methodology. Without her input, we would not have considered using the CanopyApp to collect data on canopy cover at the restoration sites.

The Van Cortlandt Park Alliance assisted with invasive removal. Their experienced crew of three people removed invasive species from 4 acres during a day of work. Additionally, the interns of the Pound Ridge Land Conservancy worked with WLT's Conservation Apprentices to set up almost all of the data collection sites.

This project was contracted by the Lower Hudson Partnership for Regional Invasive Species Management using funds from the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation. The Conservation Apprenticeship was also partially funded by the Rusticus Garden Club.

Next Steps

This work was planned as a pilot project, to demonstrate the feasibility of conducting proactive forest restoration in beech stands affected by BLD, while also engaging with students and the community. The broader objective is to use this case study as the basis for larger-scale work promoting forest health. Beech trees are one of the most abundant and important tree species in Westchester and the surrounding region, and their loss could have a huge impact on forest health, especially in suburban and exurban areas where deer overbrowse largely prevents natural tree regeneration. WLT plans to continue work identifying affected beech stands on preserves and promoting natural regeneration.

On a regional scale, Westchester Land Trust staff have co-founded the *BLD Coalition*, a group of land managers interested in actively working to promote forest health in degraded beech stands. We have already had two meetings, and are working with a handful of PRISM partners to create messaging around BLD. The end goal of this partnership is to communicate our messaging and engage landowners to conduct large-scale restoration that will prevent a degradation of our local forest resources.

Conclusion

WLT achieved its goals and all project deliverables for this work. WLT staff will continue to maintain and monitor the project site to ensure forest restoration is successful. As this was intended as a pilot project, WLT staff hope to work with the *BLD Coalition* to promote similar forest restoration projects in the region.

Appendix:

WLT's fall 2022 newsletter centerpiece on BLD written by the conservation apprentices

The full newsletter [can be found here](#).

A BAD DAY AT THE BEECH

The new disease that is decimating Westchester's trees

by Brianna Rodriguez and Chrstian Flerek, WLT's Summer Conservation Apprentices



Have you ever hiked along a nature trail and noticed dark stripes forming between the veins of the leaves of beech trees?

American beech is an abundant tree in our area with smooth, silvery bark. These trees produce beech nuts in the fall, a vital source of food for animals. Unfortunately, that darkening indicates the presence of beech leaf disease (BLD). In the short time since BLD has been discovered in Westchester, it has already begun to damage our native beech trees and the forest ecosystems that rely on this important species.

According to the NYS Department of Environmental Conservation (DEC), BLD may be caused by a nematode, a type of microscopic worm. Some common symptoms of BLD are rounding, curling, and change in leaf texture from soft and smooth to leathery and coarse. Another common identifier of the disease is the formation of dark stripes on sections of the leaves, while the surrounding surface area maintains its normal light green color. The leaves eventually wither away and die, draining the tree of its energy until the entire tree eventually dies, too.

The disease was first documented and discovered in the state of Ohio in 2012 and after a few years, many neighboring states also began to find the infection. The beech populations of New York, Pennsylvania, and New Jersey all have noted sites plagued by BLD. The disease has even been detected as far north as Rhode Island and Ontario, Canada. And we're not only losing a valuable species of tree in our native ecosystem—creatures that depend on beech such as birds, squirrels, and even black bears, will also be negatively affected.

All hope is not lost, yet. Local conservation organizations are making major strides to protect American beech and our local forests. Westchester Land Trust (WLT) and Lower Hudson Partnership for Regional Invasive Species Management (LH PRISM) are working together to learn more about BLD and

Groundwork Hudson Valley's Green Team (right) is made up of local teenagers enrolled in the Yonkers Public School system who are hired for environmental jobs. For many of the students, the Green Team serves as a launching pad for a career in conservation



ensure that new forests will grow in areas where beech trees die off. In 2021, WLT staff and interns mapped 15 acres of beech woodlands within the Westchester Wilderness Walk / Zolness Family Preserve in Pound Ridge. In 2022, we worked within these mapped woodlands to remove invasive plant species and install deer exclusion fences, tree cages, and tree tubes to prevent deer from eating young native saplings that will take the place of beech trees. Much of this work was carried out by Groundwork Hudson Valley's Green Team, a paid crew of high school students and young adults from Yonkers schools that work on environmental projects. Unfortunately, the goal of this work is ultimately not to save beech trees themselves, as there is very little information

known about the causes of BLD and how to stop its spread. Instead, we want to make certain that the young trees in the new forest openings, where beech once stood, will thrive, eventually growing into a healthy new forest. The NYS DEC will conduct further monitoring of the effects of BLD throughout the forest and WLT staff will collect data on the growth of new saplings in beech woodlands.

With such limited information on BLD, protecting our forests may seem like a daunting task. But given that the health of our forests is at stake, participating in efforts to preserve what is left of our vital greenspace during this time is all the more important.

Tips for LANDOWNERS

The future of our forests is dependent on us and the work we must do now.

- If you notice beech leaf disease in your area, take photos and report it on [iNaturalist](#)
- In addition to vigilantly looking out for the spread of BLD, you can contribute to conservation efforts by volunteering in your area to help with the work being done to aid the regeneration of healthy forests.





WLT's work to combat BLD at the Westchester Wilderness Walk / Zolness Family Preserve is partially funded by the Lower Hudson PRISM using funds from the NYS Environmental Protection fund administered by the NYS Department of Environmental Conservation.

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August 13 article in a local newspaper

WLT's Preserve Manager, John Zeiger, was interviewed by the *Bedford Record Review* on the project. The article on BLD was published on Aug 13. Link to article [here](#) (behind paywall). The main photo was provided by WLT and taken by Mike Surdej, a volunteer on the BLD project.

Beech leaf disease 'spreading like wildfire' in local forests

By LILY CAREY Aug 13, 2022 Updated Aug 13, 2022 0



Beech tree leaves showing signs of disease.
Mike Surdej photo



Discolored, curling, and even fallen leaves — this is what local hikers may see happening to beech trees as they make their way through Leon Levy Preserve in South Salem.

1 of 2



35°

Clear

WEEKLY PAPER

RECORD

Student outcomes show some bright spots



The Rockefeller Center Christmas tree of 1950

Inside

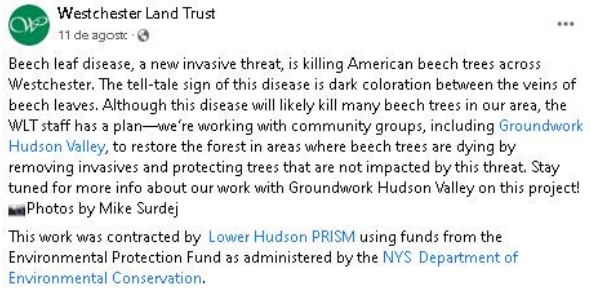


Ambulance corps around region

As part of the...

August 11 Facebook post (also posted to other social media)

LH PRISM was tagged



Aug 16 Facebook post (also posted to other social media)

LH PRISM was tagged

