

# NATIVE PLANT NEWS

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# Fall 2023/Winter 2024 contents

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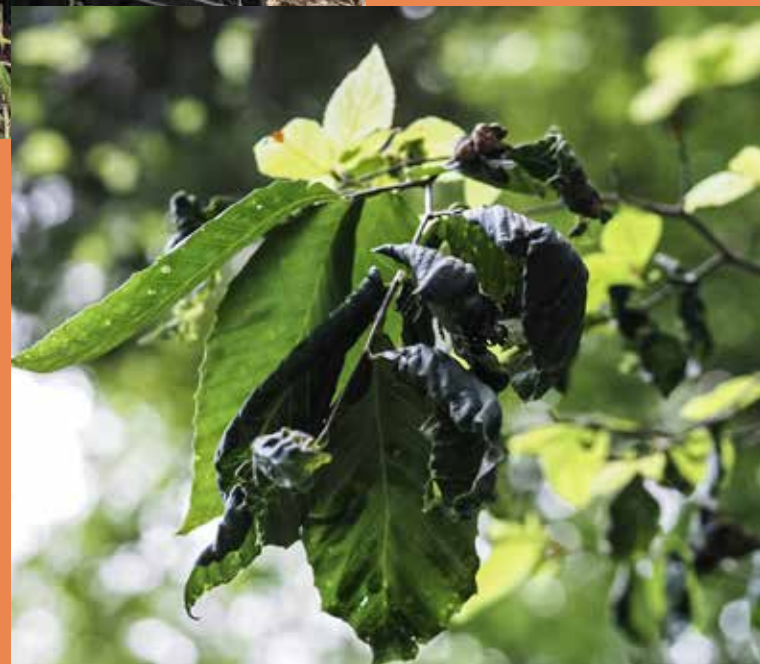
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### DESIGN

Moth Design  
Emily Renaud

### EDITORIAL

Jane Roy Brown; send comments to  
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### COVER

Red-backed salamander (*Plethodon cinereus*), lives under logs, bark, and leaf litter on the floor of northeastern forests, © Uli Lorimer

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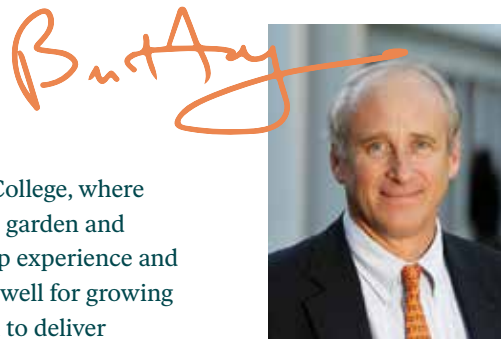
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# Welcoming our new CEO

On behalf of the Board of Native Plant Trust, I am thrilled to introduce Tim Johnson as our new chief executive officer, effective January 29, 2024.



**BILL HUYETT**  
Chair, Board of Trustees

Tim will be joining us from Smith College, where he served as director of the botanic garden and professor of practice. His leadership experience and academic background prepare him well for growing the Native Plant Trust organization to deliver impact in ecological horticulture, conservation, and education.

At the Smith College Botanic Garden, he broadened the integration of the garden and its programs—and awareness among students, alumnae, and the public. He revitalized the organization and expanded the impact of scientific programming and conservation science research. Working with his advisory board, he increased the botanic garden's fundraising capacity and led strategic planning, including the first comprehensive plan in its 128-year history.

Native Plant Trust thrives because of your support and your interest in our work in horticulture, conservation, and education. Please join me in following—and supporting—what promises to be unprecedented growth in our traditional programs and major initiatives.

Thanks to the search committee—Abby Coffin, Charles Fayerweather (chair), Dave Martland, Zibby Pyle, and Amira Quraishi—for its thoughtful work in preparing a recommendation from what was a rich pool of applicants.

Finally, thank you to Debbi Edelstein for her 15 years of outstanding leadership, right up to the end, building the incredible foundation that underlies our ambitious vision.

# IN BRIEF



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## Plant Conservation Volunteers Mark 30th Anniversary

—Jane Roy Brown, Writer-Editor

The exact date might be lost, but the year, 1993, is known. That's when Native Plant Trust's Plant Conservation Volunteers (PCV) program came into being. On November 4, past and present PCVs from all over New England gathered at Garden in the Woods to celebrate the program's 30th anniversary. They were joined by professional colleagues from Native Plant Trust, state Natural Heritage programs, and other agencies.

The program's founder, Bill Brumback, now Native Plant Trust Director of Conservation Emeritus, says that botanist and former trustee Frances Clark hatched the idea of a volunteer arm to augment the work of the few state and federal botanists in the region, who must visit populations of hundreds of rare species each year. In 1991, Brumback had formed the New England Plant Conservation Program (NEPCoP), in which

65 organizations and the state Natural Heritage programs now participate, to take a unified, regional approach to rare plant conservation. He reasoned that a squad of well-trained amateurs could tramp the wilds and gather some of the needed field data.

PCVs have more than proved their value in the decades since, keeping watch on hundreds of rare plant populations, logging thousands of field hours, and helping to train about 2,000 successors. PCV George Kocur has also donated hundreds of hours to develop a new regional rare plant database, dubbed SPROUT, that has streamlined the data available to NEPCoP.

**Our PCV program needs your support to coordinate and train volunteers and to manage the data they collect. To donate, please email [gifts@NativePlantTrust.org](mailto:gifts@NativePlantTrust.org).**



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## Field Season Updates

—Michael Piantedosi, Director of Conservation

As we transition into a new year, I have been reflecting on our 2023 field work. The growing season was saturated with rain, to the confusion of plants—and the people who love them. We were surprised to observe vivipary in Jesup's milk-vetch (*Astragalus robbinsii* var. *jesupii*): Seeds were sprouting while still attached to the legume in which they were born. Vivipary usually occurs when the protective systems that keep seeds dormant are diminishing.

On the plus side, we observed hundreds of flowering and fruiting plants in the rare rose gentian (*Sabatia stellaris*), an annual high-marsh species. In 2022, this plant's wild populations did not fruit due to heavy rain after a season of drought. Also, we were able to rely on older phenology information for the timing of seed collection from a plant endemic to the White Mountains, Robbins's cinquefoil (*Potentilla robbinsiana*), from which we collected a small amount of seed for research into its germination.

## Changes at Garden in the Woods

—Jane Roy Brown, Writer-Editor

When Garden in the Woods reopens in April, visitors will see exciting changes underway. The Administration, Philanthropy, and Conservation teams have relocated to new offices 10 minutes away in Wayland, MA. The Visitor Center, Garden Shop, Public Programs, and Horticulture teams will remain at the Garden. This long-planned move provides the chance to reconfigure features at the Garden to meet the needs of visitors, plant shoppers, and those who attend our programs. The aging administration building will be demolished, and retail plant storage will be moved to that space. Workers will reconfigure parts of the parking lot and construct a larger, fireproof conservation seed vault, with a small seed-processing laboratory. New phone numbers for staff in Wayland are listed at [www.NativePlantTrust.org](http://www.NativePlantTrust.org).





"A limited supply of native seeds and other native plant materials is a widely acknowledged barrier to fulfilling our most critical restoration needs."

## Northeast Seed Network: Nasami Farm Gears Up, Plants Out

—Jane Roy Brown, Writer-Editor

Throughout the summer and fall, the din of construction punctuated the quiet at Nasami Farm nursery in rural Whately, MA, as contractors built a Quonset hut to house bulk-seed processing. The building is part of the new infrastructure for the Northeast Seed Network, for which Nasami Farm will serve as the regional center.

Nasami is also constructing a controlled-environment storage room for seed inside the existing main building and recently finished planting a new plot with the first five species to be grown solely for seed: swamp milkweed (*Asclepias incarnata*), boneset (*Eupatorium perfoliatum*), coastal Joe Pye weed (*Eutrochium dubium*), path rush (*Juncus*

*tenuis*), and blue vervain (*Verbena hastata*). The plot also serves as a study site to assess best-management practices for growing native plants for seed production. The results will inform the Northeast Seed Network's seed-increase program going forward, with a goal of enrolling growers throughout the region to produce seed for use in restoration projects and by nurseries.

Native Plant Trust administers the network, which has several partner organizations working together to develop protocols, species lists, seed-increase plots, and training materials. These include Ecological Health Network, Botanic Garden of Smith College, Eco59, Highstead Arboretum, Norcross Wildlife Foundation, and the Northeast Organic Farming Association of Connecticut.

Driving the demand for native seed are climate-change catastrophes that are harming or destroying ecosystems, which require restoration. As reported

by the National Academies of Science, Engineering, and Medicine (2023): "In the US just as elsewhere in the world, a limited supply of native seeds and other native plant materials is a widely acknowledged barrier to fulfilling our most critical restoration needs."

The infrastructure improvements are funded by anonymous foundation grants and the US Fish & Wildlife Service. Installation of the seed plot is funded by a grant from Northeast Sustainable Agriculture, Research, and Education (SARE, project number # FNE22-009). For more about the network, see [www.NativePlantTrust.org/northeast-seed-network](http://www.NativePlantTrust.org/northeast-seed-network).

**The Northeast Seed Network has only short-term funding and needs your donations to meet the urgent need for native seeds. Please contact our Philanthropy Department at [gifts@NativePlantTrust.org](mailto:gifts@NativePlantTrust.org).**

## Grant Enables Continued Study of Rare Alpine Species

—Michael Piantedosi, Director of Conservation

Robbins’s cinquefoil (*Potentilla robbinsiana*) is a tiny, rare, alpine plant endemic to the White Mountains of New Hampshire. Though it would likely be overlooked by most observers, it is quite familiar to us at Native Plant Trust. In 1980, this species, which occurs at only two locations in the world, was added to the federal endangered species list. A significant factor in its decline was accidental trampling by hikers. Through partnerships with the USDA Forest Service, US Fish & Wildlife Service, and the Appalachian Mountain Club, workers redirected hiking trails away from the plants, and Native Plant Trust botanists augmented the populations (approximately 1,800 flowering plants) using seed from our seed bank. Over the ensuing decades, the populations rebounded dramatically, meeting federal

recovery goals. The species was removed from the federal endangered species list in 2002. Follow-up monitoring in 2005 and 2006 revealed that the populations had reached about 4,800 flowering plants.

In July of this year, we were awarded a grant through the Rare Plant Partnerships program, funded jointly by Botanic Gardens Conservation International and the USDA Forest Service, to continue studying Robbins’s cinquefoil in the field. This season, staff members visited the sites and collected a small amount of seed. With this generous funding, we will continue to add to the conservation knowledge about the species as we investigate the longevity of its seed in storage and its specific germination requirements.



## Save Orchids—the Pandas of the Plant World

Rare and awe-inspiring, native orchids urgently need your help to survive. Like their charismatic counterparts in the mammalian world, these beautiful plants are threatened by a changing climate and habitat encroachment by invasive plants. Native Plant Trust’s seed banking program is our regional initiative to collect and bank the genetic material of all New England’s rare and endangered plants, including orchids. Funded solely by individuals like you, seed banking is the only practical scientific action that can preserve native plants into the future.

Will you be a conservation champion with your gift to help protect rare and endangered species, including native orchids, today and forever?

**Please donate today:**  
[www.NativePlantTrust.org/seedbanking](http://www.NativePlantTrust.org/seedbanking)

**Contact: 774-519-5571 / [gifts@NativePlantTrust.org](mailto:gifts@NativePlantTrust.org)**



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## Ambitious Intern Projects Wow the Crowd

—Jane Roy Brown, Writer-Editor

Supporters, staff members, and trustees assembled at Garden in the Woods on the cusp of fall to hear what this season's four Conservation and three Horticulture interns learned in their time with Native Plant Trust. Destynn timerard, Marylee Everett conservation intern, led off the annual Intern Showcase with her research on the spread of beech leaf disease. (Read her story, p.08.) Alaina Bandanza, Herbert J. and Esther M. Atkinson intern, investigated how to restore the rare green dragon plant (*Arisaema dracontium*) at Native Plant Trust's Plainfield Sanctuary and to bolster pollinator plants at Hobbs Sanctuary, both in New Hampshire. Petcavage Seed Conservation intern Katie Rahaim identified species from the Southeast that would be suitable for assisted migration to the Northeast, while Lovejoy intern Dana Barry continued collating Native Plant Trust's herbarium, an ongoing project.

Horticulture intern projects spanned art and science. At Nasami Farm, Chester B. Allen, Jr., propagation intern Kurt Dietrich designed experiments to identify mycorrhizal associations in Ericaceous (heath family) species, which are difficult to grow from seed. At Garden in the Woods, Horticulture intern and artist Elias Keller, seeking to interest children in the reptiles and amphibians at the Garden, created an illustrated digital guidebook. Elizabeth J. Farnsworth intern Sophie Lurz extolled the inspirational beauty of mosses: "Giving them our deep attention as we walk slowly can be a form of meditation."

## The Art and Science of Native Plant Education

—Bess Paupeck, Director of Public Programs

At the recent annual meeting of the Society for College and University Planners, I spoke about creating learning opportunities that offer access to new material by embracing a multidisciplinary perspective. At Native Plant Trust, for example, our new Art & Nature programs enhance our established ways of teaching scientific material by looking through the lens of the arts and humanities. This approach to seeing and understanding native plants is already drawing a new group of learners.

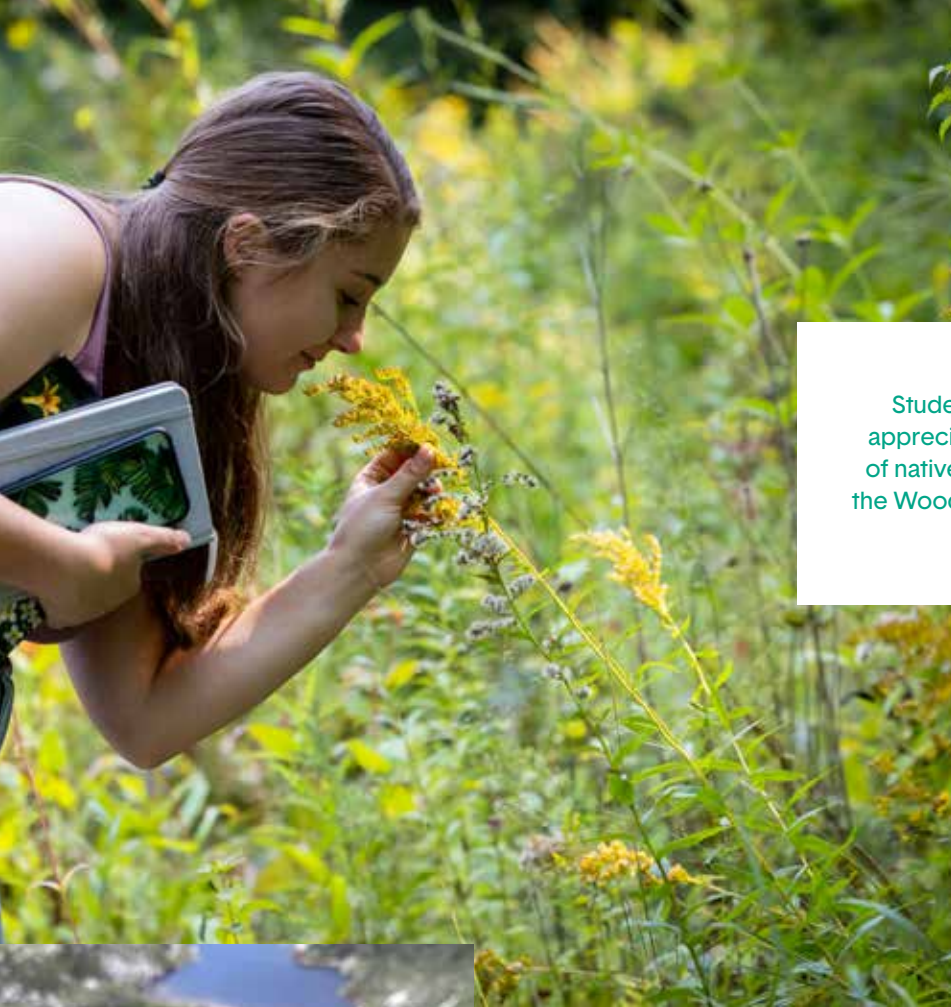
With the woods, gardens, parks, and the virtual world as our classrooms, we are able to focus on developing visual intelligence, including how to see, how to look, and how to infer information spatially. We can borrow tools from the arts—such as noticing that the purples and yellows of asters and goldenrods are complementary colors on the color wheel—to more closely observe, explore, and find wonder in the natural world.

**Our paid internships are helping to educate the next generation of botanists and ecological horticulturists. Will you please support our internships? Contact our Philanthropy Department at [gifts@NativePlantTrust.org](mailto:gifts@NativePlantTrust.org).**

**"We can borrow tools from the arts to more closely observe, explore, and find wonder in the natural world."**







Students gain a deeper appreciation for the beauty of native plants at Garden in the Woods, © Melissa Blackall/Wildlinks



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## Botanist Rediscovered Rare Willow on Katahdin's Brow

—Jane Roy Brown, Writer-Editor

This season, Senior Research Botanist Arthur Haines trekked over glacial scree and through dense subalpine forest up the slopes of Katahdin (elev. 1.61 km/5,269 ft), which is Maine's highest and arguably New England's most challenging mountain to climb. His mission was to locate rare species not seen for decades and, if he found them, to document their location and population numbers—what botanists call a field survey.

Haines found the rare species he was looking for, notably the very rare northern willow (*Salix arctophila*) and white-flowered willow-herb (*Epilobium*

*lactiflorum*, see p.16.) Of the two, northern willow is slightly rarer than white-flowered willow-herb from the regional perspective, though it is more common in the North—Canada, Alaska, and Greenland, says Haines. It grows in only one place in the eastern United States, right where Haines spotted it, in a remote glacial basin devoid of trails.

“It grows on the side of a long, open slab of rock that requires technical rock-climbing skills to navigate,” Haines says. “To get there, you must climb via one of several different trails and then descend into the basin, which requires you to re-climb the mountain and descend again to get back.”

The willow is only staminate (pollen-bearing), so it is not capable of producing fruit at this location, and vegetative growth is the only means by which it can expand or spread. At this point, Haines says, providing a means of sexual reproduction, such as a carpellate (ovule-bearing) plant that would be planted there from another location is not being considered by the region's conservation community. Given its near-inaccessible location, simply confirming that it is still clinging to Katahdin, and recording the need to conserve it, was the goal.





# The Race to Save American Beech

— Text and photos by Destynnie Berard, 2023 Marylee Everett Conservation Intern

A deadly disease is ravaging one of New England's most beloved—and vital—forest tree species. Here's what scientists are doing to manage its spread.



## American beech (*Fagus grandifolia*) is an iconic part of the New England landscape in all seasons.

Its brilliant green leaves turn gold in autumn, and many still cling to its branches in winter, clattering in the wind. New England is one of the most forested regions in the country, with 80 percent total forest cover, and beech is one of the dominant canopy trees in the region's Laurentian-Acadian northern hardwood forests, along with sugar maple (*Acer saccharum*) and yellow birch (*Betula alleghaniensis*).

This plant community supports a diverse ecosystem of approximately 235 species of birds, caterpillars, mammals, and insects, as well as other native plants. Some of these species depend almost exclusively on beech, such as the imperiled early hairstreak butterfly (*Erora laeta*), which lays eggs in the canopy and feeds on beech leaves in its larval stage. In fall, beeches produce nuts rich in fat and protein that help wild turkeys, martens, black bear, white-tailed deer, rodents, and other animals survive the winter. A study by the US Department of Agriculture (USDA) Forest Service found that beechnuts are such an important food for black bear in this region that ecologists can estimate the following year's bear population based on the quantity of beechnuts produced in fall (Jakubas et al., 2005).

Since the 1930s, this crucial forest tree has been plagued by beech bark disease, which is caused by the scale insect (*Cryptococcus fagisuga* Lindinger) and canker fungi (*Neonectria faginata* and *Neonectria ditissima*). Now American beech is under attack by another deadly threat, beech leaf disease (BLD), that is spreading throughout its range at a disturbing speed. Identifiable by darkened bands



Identifiable by dark bands in the canopy, beech leaf disease impedes photosynthesis. **Top L, bottom R:** Dark, withered leaves reveal infection. **Middle:** Drooping leaf bud, another sign of disease.





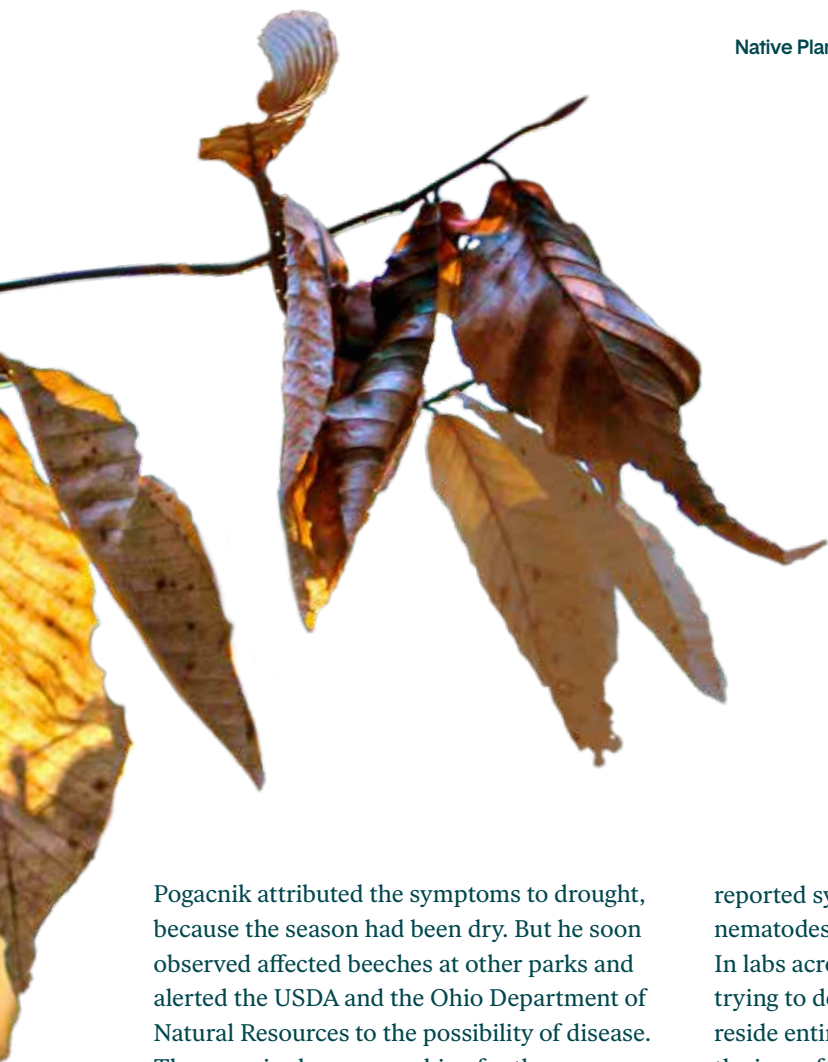
**"Diseased stands can suffer from defoliation and canopy dieback, which tends to increase in severity following multiple years of infection."**

in the canopy of otherwise translucent green leaves, the disease impedes photosynthesis, which limits the nutrients the tree can produce and store.

"Diseased stands can suffer from defoliation and canopy dieback, which tends to increase in severity following multiple years of infection," says Dr. Cameron McIntire, a plant pathologist at the USDA Forest Service office in Durham, NH. "This reduces canopy cover to as little as 10 percent, halting nut production, as the tree spends all its energy producing new leaves. Without beechnuts to depend on, wildlife must find alternative sources of food or starve. Without its leaves, beech trees cannot exchange oxygen or photosynthesize. Age does not protect the individual trees, as even mature trees can succumb within two to seven years of initial infection."

BLD was first observed in 2012, in Lake County, OH, which lies along Lake Erie northeast of Cleveland. John Pogacnik, a biologist with Lake Metroparks, noticed shriveled, leathery leaves and dead branches on some beeches. At first,





"Some trees appear to be naturally resistant to infection, and they could hold the key to what causes the disease—and what could prevent it from spreading."

Pogacnik attributed the symptoms to drought, because the season had been dry. But he soon observed affected beeches at other parks and alerted the USDA and the Ohio Department of Natural Resources to the possibility of disease. The agencies began searching for the cause.

It was not until 2017 that scientists at the Ohio Department of Agriculture discovered an invasive nematode in infected samples. Nematodes are microscopic worms that live in soil or plant tissues. Most nematodes play an essential role in the ecosystem by feeding on organisms that harm plants or by making nutrients available for the roots. But other nematodes can cause significant damage.

The USDA Agricultural Research Service in Maryland compared DNA samples of the nematode to confirm its identity as *Litylenchus crenatae*, a foliar shrub nematode that moves on water films, suggesting that it could spread through irrigation, rain, or snowmelt. This was the first observation of this organism in the Western Hemisphere. Due to its new range and choice of host, the nematode was given a subspecies: *Litylenchus crenatae ssp. mccannii*.

Soon after the nematode was identified, BLD appeared in New England. Connecticut first

reported symptoms in 2019, and by 2021 the nematodes had spread as far north as Maine. In labs across the country, researchers are trying to determine how the nematodes, which reside entirely in the leaf and bud tissue, make the jump from one tree to another miles away. Researchers at Ohio State University are taking samples from insects and birds to determine if they are carrying the nematode, while others are assessing environmental patterns. Current hypotheses include transmission by beetles carrying bacterial and fungal pathogens, birds that eat beech buds, or windborne mites.

To aid the research, the USDA Forest Service is working with states to gather data to form a cumulative picture of the disease and its spread. This includes monitoring state-owned properties for signs of progression. But so far, research has not confirmed how the nematodes spread or why they target beech trees.

Scientists are also tackling the issue from a management perspective. The University of Rhode Island is building on the work done in Ohio by testing fungicides to potentially manage BLD in individual trees. Arborists are conducting research into whether mulching or irrigation can protect individual trees, and citizens are getting



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involved by submitting photographic reports of both healthy and infected trees. Worried that beeches will vanish from the landscape, some people are saving the beechnuts that fall on their property, and others are looking for alternative plants to support wildlife.

While some landowners might be tempted to remove beech trees before they are infected, healthy trees could hold the key to resistance. “We have to give beeches a chance to adapt,” says Joe Orefice, from the Yale School of the Environment. “Some trees appear to be naturally resistant to infection, and they could hold the key to what causes the disease—and what could prevent it from spreading.”

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**Native Plant Trust helps train tomorrow's botanists and ecological horticulturists through paid internships, funded or endowed by generous donors. To learn about our internships or how to fund them, contact our Philanthropy Department at [gifts@NativePlantTrust.org](mailto:gifts@NativePlantTrust.org).**

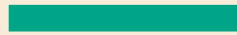
## If you see BLD, report it

Scientists emphasize that community reports of both diseased and healthy trees are a critical component of ongoing scientific research. If you see a beech tree with BLD symptoms, please report it to your state conservation website or university extension service. You can also record it through free mobile apps such as iNaturalist.org. This community science data will help scientists track down the cause of the disease and, they hope, a cure.

—D. B.

## 2022 By the Numbers

**701**

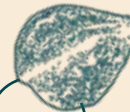
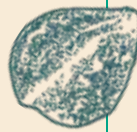


people attended the  
"Need for Seed" symposium



**626**

rare plant populations monitored



**50,357**

plants grown from seed

**14,955**



volunteer hours contributed

**16,920**



people visited  
Garden in the Woods



**6,000**

plants of the rare annual rose  
gentian (*Sabatia stellaris*)  
planted to augment its  
population in Connecticut.



## Message from the Treasurer

In 2022 Native Plant Trust continued its record of success in core programs and maintained a strong financial position.

The organization continued to attract support for key initiatives and ended the year with a modest increase in net assets, for a total of \$17,635,299. Net assets include \$9.17 million in permanently restricted endowment funds, \$1.8 million in accumulated earnings on endowment funds, and \$1.6 million in gifts restricted by donors to specific initiatives. The latter includes \$440,000 in capital funds for expanding seed-processing capacity at our nursery. In operations, the year concluded with a deficit of \$202,878, which is less than the noncash depreciation carried in expenses. However, we also received \$416,869 in federal Employee Retention Tax Credits, which was booked as nonoperating revenue.

Toward the end of the year, the Board of Trustees voted to move the organization’s headquarters out of Garden in the Woods, to demolish the administration building, and to build an expanded vault for the seeds of rare and endangered plants. In mid-2023 we secured a 10-year lease for office space with favorable terms reflecting the current state of the market. The lease will appear as a liability on the FY23 financial statements.

Thanks to the hard work of our Board, staff, volunteers, and the generous gifts of our many members and supporters, Native Plant Trust had an impressive year in 2022.

Sincerely,

**SUSAN SCHADLER**

Treasurer

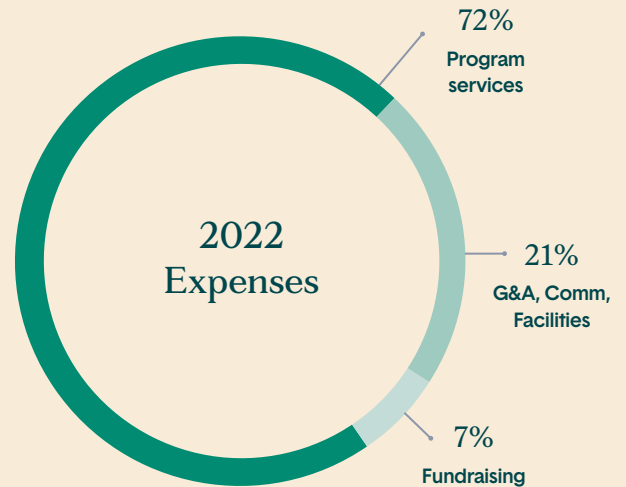
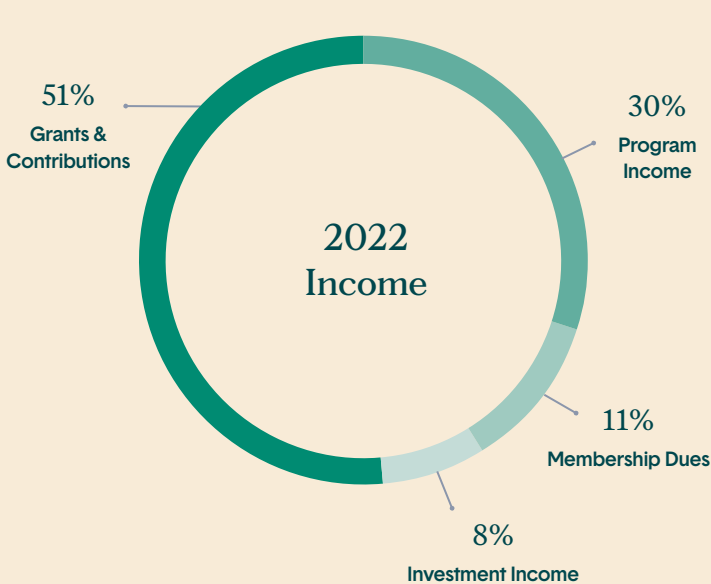
## Fiscal Year 2022 Operating Results

INCOME	
Grants and Contributions	\$1,981,613
Program Income	\$1,160,764
Membership Dues	\$437,514
Investment Income	\$288,858
<b>TOTAL INCOME</b>	<b>\$3,868,749</b>

EXPENSES / PROGRAM SERVICES	
Conservation & Sanctuaries	\$1,057,392
Horticulture	\$771,015
Education	\$374,632
Member Services	\$282,823
Retail Shops	\$424,129
<b>Total Program Services</b>	<b>\$2,909,991</b>

EXPENSES / SUPPORT SERVICES	
G&A, Comm, Facilities	\$898,793
Fundraising	\$262,843
<b>Total Support Services</b>	<b>\$1,161,636</b>

<b>TOTAL EXPENSES (INCL. \$203,302 DEPRECIATION)</b>	<b>\$4,071,627</b>
<b>OPERATING SURPLUS (DEFICIT)</b>	<b>(\$202,878)</b>



## Rare Plant Spotlight



# White-flowered willow-herb (*Epilobium lactiflorum*)

—Arthur Haines, Senior Research Botanist

**The last time *Epilobium lactiflorum*, a high-mountain member of the evening-primrose family, was seen in New England “in the flesh” was almost a century ago. Historical collections housed in regional herbaria show that this species has been collected from three mountains—Katahdin, in Maine, and Mount Washington and Mount Monroe, in New Hampshire.** While *E. lactiflorum* has been observed in multiple places on those mountains, it has been seen nowhere else. Combined with the fact that it was last seen in 1929, this makes this plant a high priority for conservation.

What we know about the distribution and observation dates for *E. lactiflorum* comes from museum specimens, which enable us to not only glean important location details from the labels, but also determine if the collectors actually gathered the species. The specimen serves as a physical voucher to verify the identification of the plant, unlike many digital records, which cannot capture micromorphological details at the resolution needed for verification. Also, the scale of physical specimens enables us to make the careful measurements that accurate identification requires. While it is clear that the world is moving

toward electronic record keeping, herbarium specimens have many advantages that remain crucial to the study and conservation of rare plants.

Following the leads provided by these early collections, I spent time this summer in a remote glacial basin on Katahdin searching for *E. lactiflorum*. Nearing the top of a wet, mossy slab of rock after a long, grueling day of climbing, I believe I found it. I can't claim absolute certainty because the persistent clouds and rain this summer had set the plant's phenology back several weeks, denying me observation of seed-coat ornamentation, the most valuable trait in distinguishing *E. lactiflorum* from its close relative, Hornemann's willow-herb (*E. hornemannii*), which co-occurs at this and several other New England sites. The other traits of the plants I found, however, were a good match for *E. lactiflorum*. We will need to return to Katahdin at another time to determine how abundant this species is on the mountain today.

**We rely on your generous support to keep our extraordinary research botanists in the field: [gifts@NativePlantTrust.org](mailto:gifts@NativePlantTrust.org).**

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# CHANGING SEASONS

When the dry leaves of American beech (*Fagus grandifolia*) cling to their branches in winter and rattle in the wind, the leaves are not diseased. They are demonstrating marcescence (mar-SESS-ence). That is, though dead and withered, they persist.

Marcescence is common in oaks as well as beeches, especially in young trees. It is not the norm in most of New England's deciduous species, which shed, or abscise, their leaves in fall. In autumn, the tree's veins that carry sap to the leaves slowly close, until the abscission layer of cells shuts off the vein, and the tree abscises the petiole (stalk), attached to the leaf or the fruit, which then falls off.

Not so for marcescent leaves, which hang on well into spring. And scientists don't know why. One recent study (Heberling and Muzika, 2023) summarizes some common hypotheses, acknowledging that none has been proven:

1. Marcescence has no adaptive function and is just an evolutionary byproduct;
2. Marcescent leaves deter herbivores from winter browsing;
3. Retaining leaves through winter improves nutrient resorption during autumn senescence;
4. Prolonged leaf shedding into spring minimizes nutrient leaching and promotes decomposition;
5. Marcescent leaves protect overwintering buds from frost or desiccation;
6. Marcescent canopies provide winter cover for animals (including insects, birds, bats), whose excrement provides nutrients in spring.

Whatever the reason, the sound of marcescent leaves is a gentle companion to those who walk in the winter woods, as well as a reminder that when we can't explain a thing, we can still appreciate it.



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## Celebrate Native Plants with a Smart Gift

From monitoring, protecting, and restoring rare plants to detecting and controlling invasive species, our work is possible only with your support. That's why we're sharing that donating a non-cash asset—gifts from an IRA, grants from a Donor-Advised Fund, cryptocurrency, or appreciated stocks—can be one of the smartest ways to give.

Visit [FreeWill.com/SmartGiving/NPT](https://FreeWill.com/SmartGiving/NPT) or scan the QR code below to begin.



## HEADQUARTERS

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## CLIMATE CHANGE CAN-DO

### Purge plastic

Plastics contribute to climate change from their manufacture (from fossil fuels) to the incineration of plastic waste. (See [stories.undp.org/what-do-plastics-have-to-do-with-climate-change](https://stories.undp.org/what-do-plastics-have-to-do-with-climate-change).) Deleting all plastic from daily life is nearly impossible, but you can greatly reduce your use of it: Don't buy bottled water. Skip single-use plastic items, from razors to coffee pods to cutlery. Swap cling-film for wax wrap and glass or steel containers. Buy storable foods in bulk.

For more ideas, see [myplasticfreelife.com](https://myplasticfreelife.com).

