

NATIVE PLANT NEWS



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COVER

The orange-fringed bog orchid (*Platanthera ciliaris*) is a fire-loving wet meadow species with showy orange flowers. This species is common throughout the mid-Atlantic coast, but is endangered in New England and found only in Connecticut and Rhode Island.
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A Change is Coming

On February 17, 2009, I drove to Garden in the Woods to start my new job as executive director of this great organization. I came with plenty of first-day jitters plus an undercurrent of imposter syndrome, given that a collapsed economy added to the ways I needed to stretch myself to succeed.



DEBBI EDELSTEIN
Executive Director

Fourteen years later, for me and for Native Plant Trust, the time is right to hand over the leadership reins. We are emerging from the challenges of the pandemic with a clear vision, impressively talented staff, strong board, and your wonderful support. It's a terrific recipe for continued momentum and success.

I'll be retiring this fall--although "retirement" strikes me as an odd word for the exciting opportunity to explore unfamiliar paths at will or to finally write the book that's been rattling around in my head.

In the coming months, the board, senior staff, and I will focus on both important initiatives and a smooth transition. A search committee and recruiting firm are seeking a talented person to lead the next phase of strategic growth. And I will be on hand to provide institutional knowledge, introductions, and any other orientation the new director needs.

My time at Native Plant Trust has flown by, as every day and year brought the pleasure of working with remarkable people to reach milestones in our mission. I want to thank all of you who have so generously offered your ideas, time, and support to the organization and to me personally. We have a busy six months ahead, and I look forward to every minute of it.

IN BRIEF

Heading Off Invasive Plant Migration

—Frederick (Erik) C. Sechler, Jr., Ecological Programs Coordinator

The recent news that Antarctic Sea ice has reached a new low is a reminder that the climate is already in rapid change, and the pace of plant migration continues to accelerate. Last year, we began working proactively to assess which invasive plants are likely to arrive and become widespread in the three northern New England states (Vermont, New Hampshire, Maine). Our goal: to guide near-future policy bans, early detection surveys, control, and management of potentially range-shifting invasive plants.

To identify likely species, in the latter part of 2022 we sifted through invasive-plant distribution data from the three southern New England states and New York. Our criteria included species that are: 1) listed in the Regional Invasive Species & Climate Change Management Network; 2) found in southern New England and New York but not yet present in northern New England; 3) present in only a few places now but likely to spread within the region's three northern states; 4) already on the watch list in southern New England and/or New York. We excluded already widespread invasive plants, those already on the radar for experts in northern New England, and



species occurring only in human-disturbed areas such as lawns. The process yielded a list of more than 100 plants, and we are now adding their biological and ecological attributes into our database. Next steps include interviewing policy makers from the three states to record state regulations governing the sale and distribution of these plants. Later this year we will finalize the list and present it to policy makers.



Expanding Community Science in Plant Conservation

—Micah Jasny, Botanical Coordinator

Community science (a.k.a. citizen science) emerged at the end of the 20th century and has become a major component of biological conservation worldwide. A successful example is Native Plant Trust's Plant Conservation Volunteer program, established in 1993 to train amateur botanists to monitor rare plants throughout New England. Since its founding, the program has trained more than 2,000 volunteers, contributed more than 15,000 rare plant observations, and serves as a national model of community science executed at the regional scale.

To evaluate the value of community science in plant conservation more broadly, we recently collaborated with Chicago Botanic Garden on a global assessment of community-science projects that conduct rare plant monitoring. We surveyed managers of 16 such projects and volunteers from 5 of them on topics including organization type, program age, number of taxa, program structure, data-collection methods, and volunteer demographics. Participants represented programs from across the US and internationally.

An article reporting the findings of our study, "Surveying the scope, success, and challenges of plant conservation community science," was recently published in the online journal *Frontiers of Conservation* (Vol. 3, 9 November 2022). Using the connections formed through this study, we have helped to establish a Rare Plant Community Science Network composed of the study participants and are working to spread the word to other organizations at professional conferences.



03

A New Focus on Art and Nature

—Bess Paupeck, Director of Public Programs

At Native Plant Trust we sometimes encounter the phenomenon of plant awareness disparity—a tendency to overlook the flora around us. In response, the spring/summer programs catalog presents a new focus for Public Programs: Art & Nature. These programs offer opportunities to better observe and understand plants through art.

Two new courses at Garden in the Woods this spring—one on developing a nature sketchbook, another a watercolor course—encourage deep looking and reflection.

We are also proud to introduce our Visiting Artist Program, which invites local artists and other creatives to explore their art while working among the plants at Garden in the Woods and in our sanctuaries across New England. Each visiting artist will complete a project and present it as a public program at the end of their time with us.



04

Restoring Bridges on Hop Brook

—Uli Lorimer, Director of Horticulture

In part, Garden in the Woods became what it is today because the site contained ponds, wetlands, vernal pools, and a lovely stream called Hop Brook. For the nearly 100 years that the Garden has been cultivated, the stream corridor of Hop Brook has been a favorite of visitors and staff, who are drawn to the sound of trickling water, birdsong, and the calls of insects. But over time this popularity has taken a toll on the bridges and trails along its course.

This spring we are excited to be improving this pedestrian infrastructure, thanks to the generosity of the Cultural Facilities Fund of the Massachusetts Cultural Council, the Hope Goddard Iselin Foundation, and several individual donors. We are building new bridges and a low, raised boardwalk to connect them and help visitors navigate small inclines and large tree roots. When finished, they will provide visitors with safer access to this magical place.



05



Give smarter. Save more plants.

The new Legacy IRA Act makes it easier than ever to achieve a lifetime of rewards for you and for the planet. Beginning in 2023, if you are age 70½ or older, you may make a one-time gift from your Individual Retirement Account of up to \$50,000 to fund a charitable gift annuity. This gift would be considered part of your Qualified Charitable Distribution and, if applicable, would count toward your annual Required Minimum Distribution. Charitable gift annuities are among the most popular planned gifts and have been around for more than 100 years. This is a wonderful way to protect the native plants you care so deeply about while receiving tax benefits and annual partially tax-free income payments for yourself or a loved one.

To learn about Native Plant Trust's life-income options, including charitable gift annuities, or our gifts-in-wills program, please contact our legacy giving volunteer Peter Doyle (peterdoyle215@gmail.com) or the Philanthropy staff (development@NativePlantTrust.org; 508-877-7630 x3502).

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Unearthing Orchids' Mysterious Fungal Allies

—Amelie LeTierce, 2022 Petcavage Seed Conservation Intern

Orchids are the most diverse plant family on Earth, with many striking species that each fill unique habitat niches and ecological roles. Plant aficionados quickly find themselves dazzled by tropical species like moth orchids (*Phalaenopsis* spp.), which are often sold as houseplants. Fewer of us are familiar with the 59 orchid species native to our region. They abound in both upland and wetland habitats, with the most diverse orchid communities found in New England's bogs and fens.

Unlike tropical orchids, which are epiphytes that live in the canopy of trees, New England's native orchids are all terrestrial plants that live in the soil. These orchids form a special relationship with fungi hidden underground, which enable their seeds to mature into beautiful wildflowers. Understanding the interplay of orchids and their fungi is essential for orchid conservation, but there is still much to learn about this process, and orchid reproduction in general. As one of the country's leading native orchid experts, Dr. Dennis Whigham, Senior Botanist at the Smithsonian Environmental Research Center and Founding Director of the North American Orchid Conservation Center (NAOCC), acknowledges: "There's no standard procedure yet for producing an orchid from a seed to a plant that will grow in the soil."

The mystery of orchid reproduction begins with their seeds, which are among the smallest in the plant kingdom. The weight of a single orchid seed is about one billionth of that of a paper clip. To the naked eye, it resembles a fleck of dust. This minuscule size helps orchid seeds blow on the wind to suitable new locations to germinate, but the freedom to disperse comes at a price. For most flowering plants, when a seed first sprouts, the seedling feeds on nutrients passed on from its mother plant before it begins to make its own food through photosynthesis. But orchid seeds are tiny precisely because they do not contain the nutrients needed for a seedling to develop into an independent plant. Instead, young orchids must rely on nutrients delivered by soil-dwelling fungi. One of the first puzzles botanists are trying to solve is how long the seeds of various native orchid species can remain viable in the soil while awaiting a fungal association.

"Most people thought that since the seeds are so tiny, they probably lasted only a year or so," says Whigham. To explore the question, he and a Danish colleague designed fine-mesh packets, placed orchid seeds inside, and buried them in the soil. "What we've learned is that orchids are really tough," he says. "In the soil, many species can last a long time."

(Right) The tall white bog orchid (*Platanthera dilatata*) is a sweet-scented, acid-loving wetland species with small, dove-like white flowers. It occurs in the climax communities of the most hydrologically stable acid peatlands, where its populations often become quite large.

(Below) The rattlesnake plantain orchid (*Goodyera pubescens*) is one of North America's most common orchids. The tessellated leaves are evergreen and hide in the moist layer beneath forest debris. Each plant may flower only once, but it also divides vegetatively, creating dense clonal colonies.

© Amelie LeTierce





Unlike tropical orchids, which are epiphytes that live in the canopy of trees, New England's native orchids are all terrestrial plants that live in the soil.



The pink lady's-slipper (*Cypripedium acaule*) is often the first native orchid beginning botanists become familiar with. Its two large leaves emerge close to the soil in dry upland forests.
© Amelie LeTierce

Since 1982, Native Plant Trust Director of Conservation Emeritus Bill Brumback has conducted field research on small whorled pogonia (*Isotria medeoloides*), a perennial woodland orchid that is federally designated as threatened. Most of the world's populations of this delicate plant are found in northern New Hampshire and Maine. In 2003, Brumback placed *I. medeoloides* seeds in mesh packets obtained from Whigham and buried them under an inch or two of leaf litter within one of the existing New Hampshire populations. He exhumed two packets in 2007 and two in 2017, and each time sent them to Whigham, who used a staining technique to test whether the embryos were alive. In 2007 about 59 percent of the seed tested viable in each packet, and the 2017 packets yielded 42 percent and 45 percent viability, respectively. (Brumback plans to dig up the remaining seed packets this season, completing two full decades of the experiment.)

“We know now that some of these species have seeds that can last a long time in nature. However, they didn't germinate,” says Whigham, who has repeated the experiment in West Virginia with similar results. There was one exception: One packet contained a protocorm, a structure formed in an early phase of orchid development.

The germination conundrum leads to the current frontier in orchid science: the role of fungi in orchid reproduction and sustenance. Fungi are thread-like microorganisms that live in the soil. Mushrooms that poke through leaf litter in the early fall are only the fruits of a fungus, a tiny part of a vast underground network that decomposes dead plant matter and relocates water and minerals. Plants and fungi sometimes come together to form specialized structures, called mycorrhizae (“fungal roots”) to share these resources. The plant receives water and minerals from the fungus, and the fungus receives sugars that the plant has created by photosynthesis.



Most orchid fungi are microscopic species that never form mushrooms, but this brittlegill mushroom (*Russula* sp.) is an exception.
© Amelie LeTierce

The relationship between mature, photosynthesizing orchids and their fungi is considered mycorrhizal; but since orchid seedlings have no resources yet to share, a more one-sided relationship called mycotrophy (“fungus feeding”) occurs in this early stage of development. The fungal species that form mycorrhizal and mycotrophic relationships with orchids are widespread globally but may have only patchy distribution locally, limiting the habitat range of orchid species to areas where these fungi are present.

Whigham explains that fungi that interact with orchids fall into two big categories: decomposers, which depend on dead organic matter for their resources; and symbionts, which share resources with the roots of living plants, often trees. In the latter case, “the tree is giving the fungus what it needs, the fungus is giving the tree what it needs, and the orchid is out there interacting with the fungus,” he says. “There are orchid species that have become so good at getting resources from fungi that they have evolved so that they can't make their own food. They go through their entire life cycle living off fungi. Chemically, the orchids look like the fungus and the tree or shrub whose roots the fungus interacts with.”

“There are orchid species that have become so good at getting resources from fungi that they have evolved so that they can't make their own food.” –Dr. Dennis Whigham

As to determining which fungi associate with particular orchids, Whigham's colleague Melissa McCormick and other scientists are now employing molecular techniques that involve getting the fungus out of the orchid, extracting and sequencing its DNA, and then comparing its genome with those of different fungi groups. "What we know so far is that there tend to be groups of fungi, such as tulasnellas [patch-forming fungi], that are more commonly associated with orchids," he says. "But there's such a rich diversity of fungi, and we have a lot more work to do."

The reliance of young orchids on their fungi creates a conservation dilemma: When orchid habitats become compromised, how can botanists best protect them? For example, the prairie white-fringed orchid (*Platanthera leucophaea*), a federally listed endangered species, is found at just one site in Maine, and the population has been in decline for decades due to changes in hydrologic and fire regimens on the site. Attempts by site managers to plant new individuals using seed gathered from

midwestern populations have failed for unclear reasons, indicating again that there is much to learn about how orchids establish themselves. Ongoing research will employ controlled burns in an attempt to revive this fire-loving species.

Orchid seed stored long term in Native Plant Trust's seed bank in collaboration with the North American Orchid Conservation Center has its own troubles. The nearly invisible seed is difficult to handle, and it is also unclear how long it lasts in frozen storage. If botanists hope to one day use it for restoration, they need to be prepared with methods of successful seeding and propagation.

"Eventually, we need to figure out what is required to regenerate native orchids, particularly for the species that are in real trouble," says Whigham. "We don't have the answer yet for any of them, and it's going to be a long journey, because there aren't many people who are doing the research."



ONGOING FIELD RESEARCH

As the Petcavage Seed Conservation intern in 2022, I explored the challenges of handling orchid seed and examined the importance of their fungal associates. My intern project was to monitor orchid seed germination in the field and the lab. Accompanied by Research Botanist Dr. Jessamine Finch, I visited upland, fen, and coastal meadow orchid habitats across Massachusetts and Rhode Island, where orchid seed in our seed bank was originally collected. Species in the project include downy rattlesnake-plantain (*Goodyera pubescens*), rose pogonia (*Pogonia ophioglossoides*), little club-spur bog-orchid (*Platanthera clavellata*), and the regionally endangered orange-fringed bog-orchid (*Platanthera ciliaris*). At each site we used Dr. Dennis Whigham's field-germination method, burying small mesh packets of native orchid seed.

In the 2023–25 field seasons, we will revisit the sites to collect a portion of the buried seed and look for signs of germination and interactions with fungi. We will also collect new seeds and soil samples from each site to attempt to isolate orchid-associated fungi in the lab. Between collection seasons, we will simulate the transmission of nutrients from fungi to orchids by germinating seeds on a growth medium containing concentrated nutrients, a technique that might prove useful for monitoring viability in seed bank collections. —A.L.

Toward a New Environmentalism

Native Plant News Interviews Dr. Kendy Hess



Dr. Kendy Hess is the Brake-Smith Associate Professor in Social Philosophy and Ethics at College of the Holy Cross.

She was a corporate environmental lawyer for 15 years before earning her PhD in Philosophy. She is a lecturer, the author of numerous articles and books on philosophy, and a member of Native Plant Trust's Board of Trustees.

Native Plant News: You have given an environmental ethics lecture for Native Plant Trust, a short version of a course you teach undergraduates. Your talk outlines four different value systems, or ethics, that potentially guide decision making about our environment:

- 1) **anthropocentrism**, which teaches that only humans have intrinsic value and ought to be treated with respect
- 2) **sentiocentrism**, which teaches that all sentient beings have intrinsic value and ought to be treated with respect
- 3) **biocentrism**, which teaches that all living being have intrinsic value and ought to be treated with reverence
- 4) **ecocentrism**, which teaches that the community of living and nonliving things, of which humans are just a part, has intrinsic value as a whole and ought to be preserved

Of these, only the last two include plants among the life forms that hold intrinsic value, correct?

Kendy Hess: Yes, sort of. For ecocentrism, none of the individual parts of the land community has intrinsic value—only the whole of it. So, plants do matter for ecocentrism, just not exclusively for themselves. And I should point out that these are not the only environmental ethics, just the most common ones.

If we're not working to preserve and restore some identifiable set of "native" plants, some identifiably "natural" systems, then what are we working toward?

NPN: If you had to rank these four in the order of most widespread, how would they stack up?

KH: First, I'd like to point out that most people don't think of themselves in these terms. It's something you discover about yourself that comes out in your decision-making. And for most people, that is anthropocentrism. People tend to worry about people and not about other animals, plants, or ecosystems. If they do worry about those other things, it's usually in terms of how they affect human beings. Anthropocentrism thus serves as a lowest common denominator for conversation. If you want to get a lot of people to do something, you need to be able to "speak" anthropocentrism, regardless of what your personal value system is. For example, some environmentalists intentionally use that line of thinking when they argue that we should save forests for recreation tourism because of the economic benefit.

NPN: Doesn't this just perpetuate the anthropocentric view that other life forms have value solely for human use?

KH: Yes, and that's a problem. It's an appeasement strategy that sacrifices authentic values, for some, and deep, long-term change for immediate action. At the same time, we are running out of time on so many issues, and that makes short-term action really important.

NPN: I want to jump to ecocentrism, the environmental ethic promulgated by Aldo Leopold [1887–1948] that upholds the rightness of preserving existing natural systems as they are. Your critique of ecocentrism gets at the crux of what many environmentalists are struggling with now, which is that "nature" and natural systems have been irreversibly altered by human activity. So, you ask, if nature no longer holds its original integrity, what are environmentalists trying to protect or restore? And in the case of plants, what is "native"?

KH: Yes. The other ethics focus on protecting existing individuals—persons, puppies, plants—whatever they are. Ecocentrism is the only ethic that can gaze backward, demanding that we restore a system to some earlier, more "natural" state of existence. But when we ask which earlier

state was the natural one and which plants are native, people start looking for a time before humans "messed things up," and there are two problems with that. The first is the practical problem of going back in time and having any real knowledge of how that earlier ecosystem worked, much less finding all of the pieces and reintegrating them. The second is that this falls into the fallacy that humans aren't part of the land community, and to find the "natural" part we have to go back before people showed up. That in turn suggests that we're the problem, that the changes we make are automatically wrong or violative. That can't be right. We belong here too.

NPN: But humans *have* messed things up. If we foxes readmit ourselves into the henhouse, what are the new rules of engagement with our environment? And how do we define the natural world?

KH: What we need to do is reshape human behavior so we don't need to wall off nature. My environmentalist students don't abandon their environmentalism when they realize that they can't have the "nature" they wanted. They just ask the next question: If we're not working to preserve and restore some identifiable set of "native" plants, some identifiably "natural" systems, then what are we working toward? I suspect that we need to move beyond our focus on things that are "native" or "natural," at least the way we define those terms now, and, as my students suggest, figure out what we're really trying to protect, if it's not these particular species or collections of species. Because there's something out there that people care deeply about that we were trying to capture with our terms "native" and "natural."

NPN: What, then, is an environmentalist now?

KH: At the end of that logical path of environmentalist thinking, we are left with a feeling that part of a good life involves being in relationship with other organisms, and even with the nonliving parts of the world. We can realize that nature was never an "other," and develop a concept of nature that includes humanity.



(Above) spicebush swallowtail larvae (*Papilio troilus*) on host Spicebush (*Lindera benzoin*) seedlings in the nursery

(Right) Wild bergamot (*Monarda fistulosa*)



(Below) Seedheads of Virginia virgin's bower (*Clematis virginiana*)

Alexis Doshas © Native Plant Trust





Gardening for Climate Change

—Alexis Doshas, Nasami Farm Nursery Manager

New England gardeners are experiencing first-hand the effects of climate change, as different temperature and precipitation regimes affect growing conditions. In this region, temperature, especially in the winter, is rising faster than in the rest of the country, and there is less snow, more rain, and more frequent summer drought (National Oceanic and Atmospheric Administration 2022).



Warmer temperatures not only increase plant growth, but also can speed up plants' rate of development, causing them to emerge and flower earlier.

Higher temperatures throughout the year, and even throughout the day, can alter plant development. The added heat and the higher carbon dioxide concentrations that contribute to it will increase plant growth if other factors, such as water and nutrient availability, are not limited. Although this sounds like a good thing, it may result in some species not faring well. For instance, the seeds of many of our native plants have a dormancy period to protect them from harsh winter conditions and will not germinate without experiencing a cold period. This includes many trees and shrubs, such as hawthorne, beech, and magnolia, which require a period of dormancy before blooming. Dormancy is often a time of high internal activity that prepares the plant for the next season's growth.

Warmer temperatures not only increase plant growth, but also can speed up plants' rate of development, causing them to emerge and flower earlier. This can disrupt the interaction of spring blooms and pollinators, especially bees, which over millennia have evolved mutually beneficial relationships essential for their survival. In the same way that butterflies specialize on a few closely related plants for their caterpillar food (think monarchs and milkweeds), many bees specialize when gathering pollen and nectar to feed their larvae. If bloom time is out of synch with the emergence of pollinators, both species may suffer. The plant may not receive sufficient pollination to produce the abundant fruit through which it reproduces, and the native bee may not acquire sufficient pollen and nectar to raise her brood. If there is a mismatch between the time a butterfly emerges and the availability of its caterpillar food, the butterfly will not be able to reproduce. Ultimately, both the plants and pollinators will either adapt in place

to the altered temperature, shift their ranges to more hospitable conditions, or decline because not able to adapt or migrate. And in all these scenarios, what will thrive in your own garden may change.

New England is also experiencing a significant change in precipitation, with more coming in the form of heavy rainfall events and with more frequent droughts. The effects vary across the region and even on individual sites, depending upon local conditions and features. Your site may become more suitable for rain or rock gardens, for drought-tolerant species, or for a combination of gardens that together respond to both heavy rains and late-summer droughts. Make note of how stormwater moves across your planted land and hardscapes (paved or hard-packed surfaces). Installing a rain garden or reshaping existing garden beds to capture water can mediate flooding or erosion. Troubled areas along roadsides and driveways may become drier and hotter and could benefit from drought-resistant groundcovers. Consider replacing stressed northern tree species such as hemlock, spruce, and birch with warmer-adapted natives such as red maple, pine, and cedar. Observe changes caused by changes in precipitation, both frequency and form, and choose native plants that will best match the new site conditions.

By planting for rain and drought, focusing on your soils, and reducing or replacing your lawn, you will foster conditions for a variety of native plants and the other forms of life they support. The following section contains details about how to achieve these goals.

A version of this article originally appeared in Butterfly Gardener magazine.

Fallen leaves feed our soil, improve soil structure, regulate water retention, and create habitat for overwintering larvae.



Planting for Rain and Drought

We advocate for gardening with a diverse range of site-suitable native plants because they are adapted to and support the soils in which they evolved. This means that they are generally low maintenance, require no fertilizer, seldom need watering once established, and sustain insects and wildlife. Below are other ways to build both climate resilience and habitat.

FOCUS ON THE SOIL

Temperature and precipitation also influence the soil food web, which is a major driver in nutrient and water availability for plants. The soil food web is the community of life that lives in or interacts with the soil, from plant roots, bacteria, and fungi to insects and groundhogs. These organisms regulate and influence nutrients, keep each other in check, and store carbon—all of which are functions of healthy soil and the foundation of a healthy ecosystem.

- Disturb the soil structure as little as possible. When creating new beds, forego tilling or using heavy machinery and instead use the “lasagna” planting method: Cut existing vegetation low and cover with clean cardboard, layer with mulch, hay, leaves, compost, grass clippings, etc., and plant; or simply leave the cardboard anchored down for about three months to kill off the existing vegetation and then plant. These techniques also keep carbon in the soil rather than releasing it into the atmosphere as tilling would do.
- Avoid chemicals—pesticides, fungicides, fertilizers—that can harm the bacteria and fungi that are critical to soil health (and that can harm insects and animals too).
- Leave the leaves: Fallen leaves feed our soil, improve soil structure, regulate water retention, and create habitat for overwintering larvae. Leaves can be raked into garden beds, folded into compost piles, concentrated into leaf mold, or worked into raised beds.



REDUCE OR REPLACE YOUR LAWN

- Substitute any combination of native herbaceous perennials, shrubs, and trees that makes sense for your growing conditions and the way you use your property.
- This will provide habitat, improve stormwater management, and help remove carbon dioxide and other pollutants from the atmosphere and water.

ENCOURAGE INSECTS AND WILDLIFE

- Use a variety of native plants to support an equally diverse population of insects, many of which are beneficial as pollinators. Some benefit plants by recycling detritus, and others prey upon less desirable insects. For example, different species of wasps keep Japanese beetles, tomato hornworm caterpillars, and aphid populations in check.
- Plant native species that flower and fruit in different seasons, to provide a sustained source of food for birds and other wildlife.
- Be messy: Create habitat by leaving hollow stems and fallen leaves in your garden, and, where feasible, leaving downed logs and limbs for shelter.
- Avoid pesticides. Most insects are physiologically similar, and pesticides harm both beneficial insects and those deemed less desirable. Pesticides also harm other animals in the food web.

THE TAKEAWAY: Gardening for climate change means being observant and flexible. Pay attention to the changes on the landscape and in your garden, and then choose native plants that both please you and support healthy ecosystems.

—A. D.





Realizing an Ambitious Vision

—By Tracey Willmott, Director of Philanthropy

Bill Huyett, the new chair of our Board of Trustees, comes to the position with impressive professional qualifications. He is a senior partner emeritus of McKinsey and Company, Inc., where he advised clients in the pharma/biotech sector on operating, strategy, corporate finance, and governance matters. He co-authored *Value*, a text on corporate finance for executives (John Wiley & Sons, 2011). For several years he was the chief financial officer of Cycleron, a development-stage central nervous system biotech firm. In addition to being our new chair, Bill serves on the boards of several other nonprofits including the Marine Biological Laboratory (Woods Hole), Rockefeller University, and National Parks Conservation Association.

“I am fortunate to step into this role now, when Native Plant Trust has launched an ambitious 15-year vision,” Bill says. (See www.NativePlantTrust.org/about/.) “It challenges us to increase our impact across our historic strengths—native plant conservation, horticulture, and education. I also see increasing urgency to preserve and restore ecosystem biodiversity, and greater public awareness of the importance of native plants in habitats.”

Bill is excited by the widening interest in the ecosystem view of natural habitats, in which native plants play a foundational role. “Native Plant Trust has much to contribute in translating this interest into action, given

our conservation science and horticulture expertise and our effectiveness in partnering with other organizations,” he says, adding that the organization is already reaching people through its botanic garden and sanctuaries, educational programming, and volunteer networks.

Building on Native Plant Trust’s 120-plus years of success, Bill is focused on continuing to develop a strong financial base as the underpinning for mission-critical action.

“My goal is to harness the power of your passion to protect nature.”

“We are poised to make major strides for the New England environment,” he says. “The energy of everyone reading this article is needed to deliver on this vision. My goal is to harness the power of your passion to protect nature. I

encourage you to raise your voice for this cause and to get in touch with me about how you would like to support native plants.”

Bill adds that he is inspired by the expertise, energy, and excitement of his board and staff colleagues: “To me, that energy reflects the emotional appeal of native plants. I will never be the skillful gardeners that my mother and grandmother were, but I am equally passionate about plants.”

Please join us in welcoming Bill to his new role. If you would like to get in touch, please email development@NativePlantTrust.org, and we’ll forward your message to Bill.

Native Plant Trust CELEBRATING YOU

Thank you to everyone who understands that plants are the cornerstones of our planet and whose financial support has helped conserve and promote New England’s native plants. We especially want to recognize those of you who have made Native Plant Trust one of your philanthropic priorities.



Exploring the wetlands along the Coonamessett River as part of our 2022 Behind-the-Scenes Tour, the Conservation Circle examined native wild flower plots established from seed collected by Native Plant Trust as part of a federally funded restoration project in the wake of Hurricane Sandy. Tracey Willmott © Native Plant Trust

CONSERVATION CIRCLE AND LEADERSHIP GIFTS

The total giving noted here is for fiscal year 2022, ending December 31, and reflects restricted and unrestricted gifts, membership dues, and pledges. Our Conservation Circle honors individuals whose generous support reached \$1,000.00 or more. Leadership gifts and grants from companies and foundations also had an extraordinary impact.

\$100,000+

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† Denotes deceased donors



The Seed Ark Endowment Challenge Match helps preserve forever the genetic material of our region's most endangered native plants. Thank you to everyone who has taken part in the challenge in its first four years. 2023 will be the final year of the match so please support while your gift can be doubled! Northern blazing star (*Liatris novae-angliae*), © Arthur Haines

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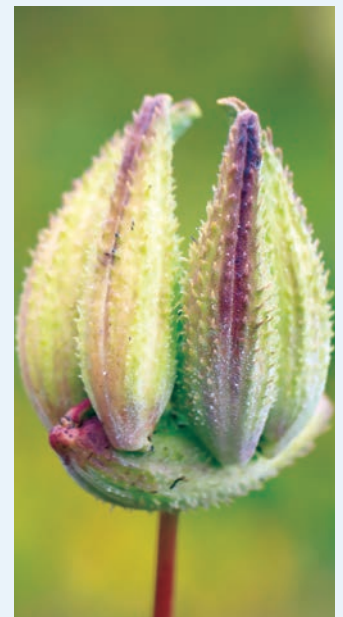
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 Louise Keogh-Weed and John Keogh

Native Plant Trust is proud to be managing the new Northeast Seed Network, launched in 2022 thanks to funding from private foundations and the US Fish & Wildlife Service. The common species seed will be used in ecological restoration projects and by nurseries to grow plants for retail sale. Common milkweed (*Asclepias syriaca*) seed pods, Uli Lorimer © Native Plant Trust



Helmut Klohn and
Michael Davison
George Kocur and
Katherine Woodworth
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Martha and John Price



The seed ecology research conducted by the first Petcavage Conservation Intern delved into plant species that are difficult to maintain in a seed bank, including American ginseng (*Panax quinquefolius*), and/or are difficult to propagate from seed, including terrestrial orchids (*Orchidaceae*). American ginseng (*Panax quinquefolius*), © Arthur Haines

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Richard S. Wood
Candace J. Young
Linda and Mark Zaitlin

Our grateful thanks to everyone who helped raise the match for the Massachusetts Cultural Council's Cultural Facilities Fund Grant. The Hop Brook Trail is a much-loved part of Garden in the Woods and replacing the three bridges over the stream will bring much joy to visitors and their families.
Uli Lorimer © Native Plant Trust



\$500 – \$999

Anonymous (6)
Julia Africa and
Bryce Klempner
James and Susie Anderson
Judith T. and James F. Barr
Nancy A. Benchoff
Laura Bentz and Ken Kuttner
Susan B. and Barry Bergman
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Catherine M. and
Craig L. Weston
Harriet P. S. Williams and
Peter L. Askin
Susan and Paul Young

A series of essential improvements completed last year, including polycarbonate endwalls and doors, increased the efficiency of Nasami Farm's heating systems and allowed more light into the greenhouses. This was all made possible by generous donors.
Alexis Doshas © Native Plant Trust



LIFE MEMBERS

These dedicated individuals have chosen to play a long-term role in the preservation of New England's native plants by becoming life members.

Judy A. Artley and
Charles T. Moses
Nancy H. August
John C. Barber
Julia A. Barber
William Brumback
Patricia Callan and
Chuck Crafts
Jane Chatfield
Terry A. Chvisuk
Edward H. and
Sandy Coburn
Frederick R. and
Jeanine Coburn
Martha F. Coburn and
Robert W. Carlson
Robert S. Coburn
Virginia and Jay Coburn
Judith H. Cook
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David L. DeKing
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Ann Dinsmore and
Richard Nemrow
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Elizabeth S. and
Frederic A. Eustis
Janet Fillion and
Richard Laine
Mary F. and Joseph Fiore
Joanne C. and Lionel L. Fray
Anne and Walter J. Gamble
Newton Garland
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Mike Kotarba
Christine M. Gradijan
Marjorie D. and
Nicholas P. Greville
Barbara A. and
Charles A. Grunden
Ervina Hamilton
Dena and G. F. Hardymon
Allyson Hayward

Exceptional volunteer Peter Doyle was presented with a Life Membership at the event to honor him as the 2022 Service Award recipient and to celebrate all our fabulous volunteers. Congratulations, Peter, and thank you for sharing your planned giving expertise with Native Plant Trust members. Photo courtesy of Peter Doyle



Deborah and
Richard D. Hellmold
Thelma K. and
John H. Hewitt
Catherine M. Huntley
Dr. Kristina N. Jones
Larry L. Jones
George Kocur
Arthur P. Kreiger and
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Robin E. Wilkerson and
Steve Atlas
Patty Wylde
Margaret F. and
T. C. Price Zimmermann



TRILLIUM SOCIETY

To help ensure our future ability to conserve native plants and their habitats, the following generous friends have included us in their estate plans.

Anonymous (14)
 Elizabeth L. Aghajanian
 Annemarie Altman
 Joyce H. Bisson
 Lalor Burdick
 William J. Claff
 Frances H. Clark
 Sarah A. Cline
 Abby Coffin
 Stuart L. Cummings
 Ruah Donnelly
 Peter V. Doyle and
 Ellen Clancy
 Christopher R. Ely
 Nancy L. Goodman
 George C. and
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 Leslie Turek
 Dr. Edward S. Valentine
 Martha J. Wallace
 Dr. Nancy L. Weiss
 Cheryl K. Wilfong
 Erika Wolbach
 Patty Wylde

MATCHING GIFT COMPANIES

We extend special thanks to these businesses, and their employees, for their generous support in 2022.

AbbVie Inc.
 FactSet Research Systems Inc.
 Givinga Foundation, Inc.
 Google Inc.

Johnson & Johnson
 MFS Investment Management
 Pfizer Inc.
 Point32Health Foundation, Inc.

Spotify USA Inc.
 Takeda Pharmaceutical Company
 Voya Financial

TRIBUTES

In 2022, we received honoraria or memorial donations in tribute to the following friends, colleagues, mentors, and loved ones.

In Honor of

Caitlin
Dawn Burau
Arabella S. Dane
Kathryn deKrafft
Jane A. Desforges
Paul Dworkin
Karro Frost
Marjorie D. Greville
Ervina Hamilton
Anne Hayek
Rebecca and Matthew Henning
Jeanine Hensley
Barbara M. Keller
Kristin Lutz
Mary McCarthy
Virginia McIntyre
Amy Mertl
Catherine Merwin and
Conor Piercey
Elizabeth P. Meyer
Mary Norton
Jessie B. Panek
Polly Pierce
Michael Potsaid
Nancy Sodano
Sheila Trask
Martha J. Wallace
Paul Wexelblat

In Memory of

Todd
Carol Topping Bentz
Ann Bissonnette
Sonny Cafiero
Hugh J. and
Elizabeth L. Caperton
Jennifer Malloy Combs
Margaret and Wellen Colburn
Dr. Shirley G. Cross
Ann DeLucia
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Beverly J. Greer
Michael Grossman

Jane C. Hallowell
Richard and Rosemary Harris
Bryan Ivory
Shirley Kabler
M. Donna LeClair
Margarete (Gretta) A. Mutter
Richard G. Nelson
Deborah S. Petri
Dr. Michael J. Robinson
David B. Rundle
Arlene J. Toler
Karl H. West, Jr.
Gray H. Wexelblat
Stanley David Wharton

GIFTS-IN-KIND

Gifts-in-kind uniquely allowed us to expand our programmatic impact in 2022.

Pamela V. Roberts



Along the Hop Brook Trail at Garden in the Woods, a tuliptree (*Liriodendron tulipifera*) has been planted in memory of Suzanne Camyre. She will be remembered by everyone seeing this young sapling grow into a majestic tall tree with beautiful flowers. Uli Lorimer
© Native Plant Trust

Rare Plant Spotlight



Yellow Lady's-slipper

(*Cypripedium parviflorum*)

—Arthur Haines, Senior Research Botanist

This orchid is rare to uncommon on the New England landscape, depending upon the state. Yellow lady's-slipper (*Cypripedium parviflorum*) occurs within several different plant communities in the region, from rich, upland, deciduous forests (with moist to drier soils), to river shores, to forested wetlands with nearly neutral pH. For much of the botanical history of the Northeast, botanists have recognized two forms of this orchid: a small-flowered variety (*var. parviflorum*) and a large-flowered variety (*var. pubescens*), distinguished chiefly by differences in flower size and overall plant stature.

In the early 1990s, a study by the orchid specialist Charles Sheviak recognized two distinct entities within the small-flowered variety, which suggested that, in fact, three taxa exist within this complex. One of the small-flowered varieties, named *var. parviflorum*, has a red-purple coloration on the sepals made up of closely spaced spots; short hairs on the bracts near the base of the plant; and a floral scent that was rose-like or musty. The other—the beautiful and rare *var. makasin*, originally named in 1918 as a variety of the

species—has red-purple coloration of the sepals made up of an even suffusion of color, lacked hairs on bracts near the base of the plant, and emanated a sweet, sometimes intensely floral scent. Sheviak's distinction has yet to be recognized officially.

Meanwhile, a recent development might reduce the number of *C. parviflorum* varieties from three to two again. New research suggests that the two varieties almost universally recognized over the past century—the large-flowered (*var. pubescens*) and small-flowered (*var. parviflorum*) forms—overlap too much in floral measurements to be considered separate. If additional research confirms this, we in New England would settle back into recognizing two varieties of *C. parviflorum* (*var. parviflorum* and *var. makasin*), but with different circumscriptions than those recognized by botanists of the previous century.

Please support the work of our conservation botanists with a donation to Native Plant Trust. www.NativePlantTrust.org/support. Thank you.

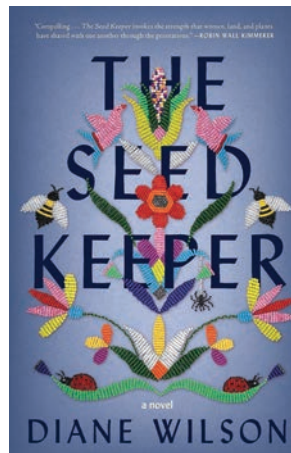
HAPPENINGS



SATURDAY, OCTOBER 28, 3:00–4:00 P.M.

Author Talk: *The Seed Keeper* by Diane Wilson (Dakota)

Join author Diane Wilson (Dakota) for a conversation about her award-winning book *The Seed Keeper*. A haunting novel spanning several generations, *The Seed Keeper* follows a Dakota family's struggle to preserve their way of life and their sacrifices to protect what matters most. Weaving together the voices of four women, *The Seed Keeper* is a story of reawakening, of remembering our original relationship to seeds and, through them, to our ancestors. A book signing by the author will follow the talk. Copies of *The Seed Keeper* will be available for purchase in the Garden Shop as well as at the event.



Location in the greater Boston area will be announced closer to the date. Please check www.NativePlantTrust.org/education for updates.

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