

# NATURAL HISTORY

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**TUYAS**

# Seeds of Hope

## Restoring native plants

As rural landscapes in Connecticut have been increasingly transformed in recent decades by commercial and residential development, the state has seen a precipitous decline in native plants—335 species, or 19 percent, are on the state’s list of Endangered, Threatened, and Special Concern. A

project is working with scientists, farmers, seed savers, nurseries, landscapers, homeowners, and conservationists to increase the number of native plants in the region.

An ecotype is a genetically distinct population of a species that evolved through isolation and natural selection and that is adapted to specific

shire; and the southern Maine coast. It hosts a geographically distinct assemblage of species, natural communities, and environmental conditions.

Dina Brewster, the executive director of CT NOFA, is credited as the visionary behind the Ecotype Project. She is the third-generation owner of The Hickories, now a diversified organic farm in Ridgefield, Connecticut. The genesis of the idea for the Ecotype Project happened one early spring day, when Brewster was walking in the woods with her young



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decline in bees and other pollinators that rely on these species has ensued. The decrease in pollinator populations threatens the state’s remaining ecosystems and food and timber production. Now in its third year of operation, the Ecotype Project, an initiative of the Northeast Organic Farming Association of Connecticut (CT NOFA), is growing native plants from seed with local genes to support pollinator health, farms, and food crops, and to restore ecosystems. The

environmental conditions. The Connecticut Ecotype Project collects and grows seeds from Ecoregion 59, the Northeastern Coastal Zone, as classified by the federal Environmental Protection Agency. This ecoregion includes Connecticut, except for the northwest corner; New York’s Hudson Valley; Rhode Island; Massachusetts, except for the Berkshires and Cape Cod; the Connecticut River Valley in southern Vermont and New Hampshire; southeastern New Hamp-

*Aspetuck Land Trust board member and Westport resident Ellen Greenberg tagging and sorting the customer orders for pickup day at the spring 2021 native plant sale.*

son and spotted a queen bumble bee. They watched as it skimmed over the forest floor, searching for a hole in the ground to nest in. It occurred to Brewster that the queen bumble bee was essentially carrying inside her The Hickories’ entire vegetable harvest for the coming season. Her



HIGHSTEAD



Joe-Pye weed (left) and mountain mint (right) are two of the plants grown at Highstead, a nonprofit education and conservation organization.

eggs would hatch into the worker bees that would pollinate Brewster’s crops. “Farmers need to honor that fragile moment,” Brewster thought, “and appreciate the web that supports farms.”

Concerned about insect decline, Brewster worked to expand the pollinator health initiative that CT NOFA had begun. She contacted entomologist Kim Stoner of the Connecticut Agricultural Experiment Station, chair of a native plant working group, looking to purchase native plant seed to distribute to farmers to create meadows and other insect habitat. Stoner recommended planting Connecticut ecotypes—seed with local genes—but said that unfortunately none was available for sale. “Maybe we can grow them,” Brewster thought.

Another impetus to the project was the pollinator legislation passed by

Connecticut in 2016. An Act Concerning Pollinator Health restricts the use of neonicotinoid pesticides and encourages the Department of Transportation to replace turf grass with pollinator-friendly, native plant communities along highways. It also authorizes the Connecticut Siting Council to require revegetation with pollinator habitat in permits for transmission line rights-of-way. A University of Connecticut study recommended that local ecotypes be used for this work, but there were no sources of seeds or plants available. There was also a demand from Pollinator Pathway, which was working with homeowners to plant natives and create pollinator corridors connecting towns (see “*Pathways for Pollinators*,” by Susan Shea, *Natural History*, April 2021).

Now, behind Brewster’s two-story white farmhouse, antique barn, and greenhouses is a typical farm scene—pigs root in the mud, chickens

peck at the ground, sheep graze in the pasture, apples are ripening in the orchard, and rows of vegetables have been planted. Complementing this scene, however, are masses of cardinal-flower with bright red blooms, lavender joe-pye weed, orange butterfly milkweed, and other wildflowers, growing in densely packed beds. Woodland wildflowers, such as white woodland aster, grow under the shade of trees. Fourteen beds of native wildflowers are “founder plots” for the Ecotype Project. The plants began their life as wild-collected seeds planted in a greenhouse run by Highstead, a nonprofit education and conservation organization in Redding, CT. Multi-celled trays of seedlings (known as starter plugs) were given to The Hickories and seven other organic farms in the ecoregion to grow the plants to maturity.

Highstead’s role in the Ecotype Project is to test-grow wild-collected seed in its greenhouse in order to

learn the best propagation techniques. The organization has a history as a native plant arboretum and relationships with land trusts and regional conservation partnerships, such as Pollinator Pathway. The project has chosen plants from a variety of habitats and with different bloom times to determine the best species to grow. Highstead is also involved in a research project with lepidopterist Victor DeMasi and the Peabody Museum of Natural History to determine which insect pollinators use which plants.

Horticulturist Geordie Elkins is operations director of Highstead and arborist Jesse Hubbard manages the organization's property and facilities. In addition to their operational duties, Elkins and Hubbard are actively involved in field work for the Ecotype Project. Two years ago in early October, for example, they searched an oak-hickory-maple forest in Redding for the locations of black cohosh plants (*Actea racemosa*) that Elkins had seen in bloom late that July. GPS readings led the men to fifteen plants.

They carefully clipped off rattle-like tips of dry, black fruit capsules and placed them in manilla envelopes, taking care not to remove more than 20 percent of the seeds from each plant.

After collecting black cohosh seeds from another site in southwestern Connecticut and one in nearby South Salem, New York, Elkins and Hubbard brought the seeds to Highstead. Later, they and other staff crushed the black cohosh capsules to remove the seeds and cleaned them. They placed the seeds in wax envelopes for

storage in a refrigerator, along with the seeds of white woodland aster, swamp milkweed, bee-balm, New York ironweed, and other native species they had collected.

According to Elkins, the seeds of native plants usually need thirty to sixty days of cold, moist storage.



*Sefra Alexandra rubs the seed of New York ironweed to remove the pappus (feathery appendage that some seeds use to disperse in the wind) from the seed. These will then be hand-screened to separate the seed from the chaff.*

Some require alternating warm and cold environments. Each species has different germination requirements, which he is learning through Internet research and trial and error.

As fall approaches, ethnobotanist Sefra Alexandra, Ecotype Project's coordinator, regularly checks the wildflowers in the founder plots at The Hickories to see if the seeds are ripe. At the right time for each species, she harvests and cleans the wildflower seeds, using a seed

cleaner called a "winnow wizard," which CT NOFA acquired with a U.S. Department of Agriculture Specialty Crop Grant. The self-proclaimed "Seed Huntress" is always on the "hunt to preserve the biodiversity of the Earth through seed conservation" and has travelled the world collecting seeds to help communities fortify local seed banks.

The goal of the Ecotype Project is to preserve "the wild, genetic diversity of place" and create a living seed bank, explained Sefra. Native plants and seeds originating in the Midwest, for example, are not identical to the same species growing wild in Connecticut. They may bloom at different times, and may be out of sync with local insect pollinators. Neither will they be as well suited to grow in the local environment.

The first commercial nursery to participate in the Ecotype Project is Planters' Choice in Newtown, CT. The nursery was started fifty years ago on family farmland by Chuck Newman and is run by Newman and his son Daryl. There are now eight growing facilities,

two sales yards, and 250 acres for growing plants. A wholesale grower and reseller, it sells mostly to landscapers.

The project needed a nursery with sufficient scale to take the wildflower seeds grown by farmers and produce large quantities of plants. Darryl Newman was contacted by Elkins, who used to work for Planters' Choice. Newman had noted the growing interest in supporting pollinators and sensed there would be a demand for native plants. In the spring and fall of 2020, thousands of ecotype plants

that Newman and his staff grew over the winter in their greenhouses from seeds and cuttings sold out quickly at four public plant sales sponsored by Wilton High School and the Aspetuck Land Trust. Newman now considers growing local ecotype native plants a viable, new offshoot of their successful business and expects other nurseries will follow. He is working on organic certification, and plans to sell seeds for large-scale restoration projects by 2025. This initiative could be the majority of the nursery's business by 2030.

Mary Ellen Lemay is the Director of Landowner Engagement for the Aspetuck Land Trust, the largest land trust in Fairfield County. The nonprofit is working to create a donut-shaped Green Corridor linking preserves and public and private lands across 40,000 acres through six towns. As the climate changes, the corridor will allow plants and animals to travel to areas with more favorable microclimates. Lemay encourages private landowners in the area to "become a stepping stone in the Green Corridor" by planting and maintaining natives, foregoing the use of pesticides, and reducing the size of lawns or making them bee-friendly. Recognizing the need for greater availability of native plants, the land trust has become deeply involved in the Ecotype Project.

Since 2020, Aspetuck Land Trust has organized four sales of the ecotype plants grown by Planters' Choice, in addition to those held by the Wil-

ton High School Garden Club. In the midst of the COVID-19 pandemic, they developed an online store so homeowners could order plants in advance and pick them up at a local nature center and a farm. Native trees and shrubs, the foundation of a good pollinator garden, were included in the sales. "It's important to have a whole, multi-layered landscape," said Lemay. "We tell people that you

six different kits that included ecotype plants, garden plans, and planting directions: one kit of thirty-two plants sold for \$80 and a smaller, mailbox garden of fourteen plants was \$40. In the first year, both the spring and fall sales sold out of everything—a total of 11,000 plants—in five days online. Customers included backyard gardeners, farmers, and conservation groups from Connecticut, New York, and as

far as Massachusetts. The most popular choice was beard-tongue (*Penstemon digitalis*), an important pollinator plant with a long bloom time, attractive to many species of bees.

Stone pillars mark the entrance to Aspetuck's Caryl and Edna Haskins Preserve in Westport, a twenty-two-acre former country estate where a Tudor mansion once stood, along with a large greenhouse, lawn bowling court, and exotic trees. Here the land trust is developing a demonstration site using Connecticut natives. It includes a 20,000 square-foot formal garden, a bee-friendly lawn, a pond with wetland plantings, and a meadow. "Our goal is to show people how they can

improve the biodiversity in their backyards and help increase the number of pollinator and bird species," explained Lemay. "We need to get them used to seeing the plants that were meant to be here, and infuse a new aesthetic into their gardens." The land trust plans to hold educational workshops at the site.

Aspetuck has also begun a pollinator research project at the Haskins



Arborist Jesse Hubbard, manager of facilities for Highstead, is collecting native wildflower seeds for the Ecotype Project.

want your oak leaves to look like Swiss cheese," because that indicates caterpillars—the larvae of butterflies, moths and other pollinators—ideal food for baby songbirds. According to entomologist and author Doug Tallamy, oak trees alone support over 550 species of butterflies and moths.

To make it easier for homeowners to install pollinator gardens, Aspetuck's intern, Page Lyons, designed

GEORGE ELKINS



*The Hickories, a diversified organic farm in Ridgefield, Connecticut, is one of eight farms collaborating with the Ecotype Project to grow native plants to support efforts to boost pollinator habitat in the region.*

Preserve, working with Massachusetts-based Landscape Interactions. A bee ecologist catalogued pollinators before changes to the landscape were made, and will return in three years to conduct another survey. This study will show whether integrating ecotype plants into the landscape has brought back more bees. When pollinators and other insects return, birds and other wildlife in the food chain will follow, healing the landscape.

Eventually the Ecotype Project hopes to grow enough seed to supply large infrastructure plantings, such as highway corridors, utility line rights-of-way, and solar panel arrays. One idea is to use Connecticut farmers who can accommodate larger seed

plots. Another is to look into whether Midwestern seed companies could grow native seed of different ecotypes. After three years of tending crops of perennial wildflowers, in fall 2021 farmers participating in the project launched a seed collaborative called Eco59. They have harvested, cleaned, tested, and packaged their seeds for direct sale to homeowners

In the future, Brewster would like to grow ecotypes of coastal species, such as salt-marsh cordgrass for plantings along Long Island Sound. Improving the Sound's water quality by using plants' filtering ability is important for many reasons, she noted, including shellfish farming, one of the highest-grossing types of cultivation

in Fairfield County. Plants along the coast, such as seaside goldenrod and milkweed, would also improve the migration path for monarch butterflies.

CT NOFA has created a model that can be replicated in other ecoregions. "We must preserve these arks of biodiversity," said Sefra. "Seed sovereignty is a tool of resilience in the face of climate change."

Besides its potential to improve Connecticut's pollinator populations, restore the health of ecosystems, and benefit farms, "This project is building a stronger bridge between the conservation and farming communities, both of whom love nature and the outdoors," said Brewster.

**Susan Shea**, naturalist, conservationist, and freelance writer based in Vermont, is a contributor to *Natural History*.