

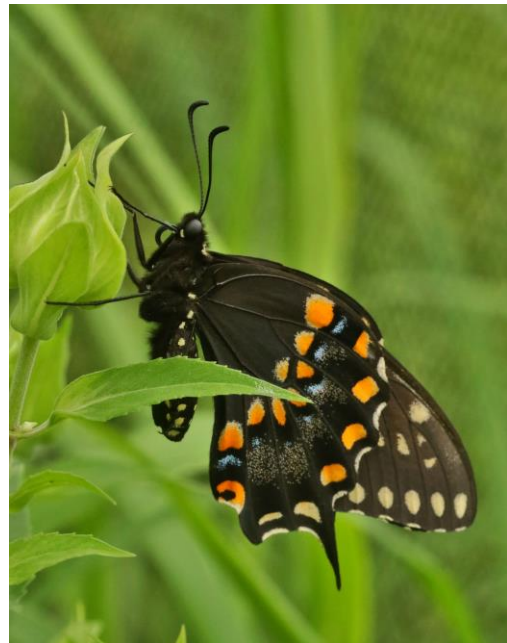


2021 – Year in Review

FEP is approaching its 20th year—much has changed and much has stayed the same during that period. Locally, Columbia County continues to be a semi-agricultural, largely rural county. Understanding how to fit farming and development into this landscape while respecting nature and looking for synergies continues to be important. At the same time, changes have happened: the global pandemic, social and racial justice movements, and ever-mounting concern about climate change have all contributed to a changing context.

We hope that our Program helps address at least some of these issues. During the past year, we have continued to work towards our core goals of increasing knowledge of and excitement about the landscape through ongoing outreach efforts, including Wonder Wanders, various walks and presentations, and work on our upcoming field guide. We have also, largely here at Hawthorne Valley and at the Hudson Valley Farm Hub, pursued our agroecological work, conducting research to understand how our region's relatively bountiful wild nature interacts with farming and how any potential synergies might be accentuated.

At the same time, FEP has evolved in response to the changes happening around us. Indoor outreach was largely replaced by enhanced outdoor offerings, which—we hope—not only helped to keep participants in touch with the natural world, but also helped them weather the pandemic. We continue to grapple with the impact of social and racial inequities in our community and in our broader field of work, and have been exploring how we can broaden access to both our offerings and our field of work. Finally, we have continued to explore new ways to build awareness and engagement around the local impacts of climate change (for example, in this year's annual appeal) by connecting New York State's rich history of meteorological and phenological data collection to current monitoring efforts.



A Black Swallowtail in temporary residence at the butterfly house.

Outreach and Opportunities to Participate

Learners and Long-term Volunteers:

Because many internship opportunities were still on hold due to Covid, we decided to expand our program and offer the opportunity for five learners to join our team for the summer. Erin Camire, Faith Novella, Irene Dickinson, Jennifer Campos, and Natasha Djuric came to Hawthorne Valley from Vermont, Connecticut, Nevada, New York, and Ontario, respectively. Thanks to their skills, energy, and enthusiasm, we were able to accomplish a lot of research this summer and to substantially expand our outreach offerings. This year's research efforts were also supported by summer volunteers Sophia Madey, a young high school student, and Lee Magadini, a high school teacher. And, a dedicated team of garden enthusiasts, Susan Arterian, Anne Codey, Eve Kaplan, Joanne Klein, Lauren Mundy, Tracy Pennea, and Deborah Thomas, volunteered weekly to work in the native plant garden and wildflower patches around the farm.



This year's FEP learners, a volunteer, and some staff members enjoying the new boardwalk. From left to right: Erin Camire, Irene Dickinson, Sophia Madey, Faith Novella, Conrad Vispo, Natasha Djuric, Jennifer Campos, Dylan Cipkowski.

Creekhouse Garden & Butterfly House:

We hosted more than 200 visitors to our native plant garden and butterfly house on 25 days between mid-June and the end of August. New offerings this year included live insect displays in addition to the butterflies, expanded gardens, an information kiosk, a phenology trail, a streamside boardwalk, and a roadside sign. Visitors were given personal tours and introduced to wildflowers and butterflies which are at home in our landscape. They also had the opportunity to experience the butterfly life cycle by observing eggs, caterpillars of different ages, and chrysalises of a variety of our local species. Visitors were encouraged to take plants from our native plant nursery home to make their own backyards more diverse and inviting for butterflies and other insects.



10 Moth caterpillars.

Other In-person Outreach/Participatory Research:

In addition to the tours of the Butterfly House and Creekhouse Garden, we offered 20 public, guided outdoor natural history programs at a variety of sites throughout Columbia County, again serving a total of approximately 200 participants. These programs started with a series of our long-established and popular spring flower walks, and then continued throughout the seasons with habitat-themed walks at Hawthorne Valley Farm, including a nature photography walk.



Facilitating an insect-themed, bi-lingual ecology walk with farmers at the Hudson Valley Farm Hub.

We also delivered more than 20 customized programs for different groups, ranging in age from young children to high schoolers, university students, farmers, and landowners. We partnered with Olana, PS21, Kite's Nest, Hudson Youth Programs, Taconic Hills School District, and the Hudson Valley Farm Hub to bring these programs to a wide audience, including Spanish-speaking farmers and under-resourced youth.

Finally, we provided opportunities for the farmers and farm apprentices at Hawthorne Valley Farm to participate in biodiversity surveys of the farm in order to help them become more familiar with the farm's wild organisms. Toward the end of the year, we even managed an in-person presentation linking historical and modern data regarding local climate change to the Austerlitz Historical Society.

Farmscape Ecology Documentary:

The 2020 documentary movie "Farmscape Ecology" by Jon Bowermaster and Oceans 8, which features our team's agroecology research at the Hudson Valley Farm Hub (as well as that of other members of the Applied Farmscape Ecology Research Cooperative), continues to be shown both locally (for example at an in-person screening at the Churchtown Diary this summer) and in the wider world (including at the International Films for the Earth Event and the Wild & Scenic Film Festival).

Virtual Outreach and Self-guided Offerings:

Throughout the year, we maintained our “Farmscape Wonder Wanders,” weekly photo essays of place-based, seasonal nature observations on our blog the [Progress of the Seasons Journal](#) and on Facebook. We also fielded numerous inquiries from members of the public seeking help in identifying local plants and animals.

Early in the year, in partnership with the Columbia Land Conservancy, we facilitated four self-guided “Winter Wonder Wanders” through the various habitats in four public conservation areas, where temporary signage highlighted some of the seasonal natural phenomena. For those interested in “diving deeper,” we also coordinated with the Chatham Recreation Department and PS21 to offer a self-guided study of winter botany, which included online videos, maps, and written instructions, combined with trees that were marked for study in a public park.



A juvenile Great Horned Owl was featured in one of the "Wonder Wanders".



Cardinal Flowers were observed blooming along the rewilded sections of the Farm Creek at Hawthorne Valley Farm in large numbers this year.

To complement our biodiversity research here at Hawthorne Valley Farm, we established an iNaturalist project. iNaturalist is a citizen science platform and nature learning app. The Hawthorne Valley Biodiversity Study Project allows anyone using the iNaturalist app to submit photos of life on our home farm. Using artificial intelligence, the app automatically attempts to identify the plants, animals, or fungi depicted in the photographs; users of the app can also offer input regarding species identification. So far, 220 species have been documented on the farm through our iNaturalist project, and we have received contributions from more than 30 unique observers, including farmers, our staff, and other members of the local community. To learn more, visit

<https://www.inaturalist.org/projects/hawthorne-valley-biodiversity-study>.

What Can Farmland Provide to Nature Conservation?

Biodiversity Inventories at Hawthorne Valley Farm and Beyond

Farmscape Ecology involves not only asking what wild nature can do for farm production, but also what a farmed landscape can provide to wild biodiversity. What better place for a case study than our home farm.

At the occasion of Hawthorne Valley's 50th anniversary, we spent a lot of time this season revisiting familiar haunts and exploring new nooks and crannies of our "home territory" to document the farm's wild biodiversity in this special year. We inventoried plants, amphibians, birds, butterflies, dragonflies, and aquatic invertebrates in order to provide a snapshot of the wild species on the farm, to describe the changes we have witnessed over the last two decades, and to provide a baseline for monitoring biodiversity in the future. We invited Hawthorne Valley farmers and farm apprentices to participate in these surveys whenever they could find the time. This winter, we will be analyzing the information we gathered and working with the farmers to find useful and engaging formats for sharing what we learned.



The rare Twin-spotted Spiketail dragonfly was observed at Hawthorne Valley Farm for the first time this year. After photographic documentation, the dragonfly was released unharmed.



One of the beetle banks at Hawthorne Valley Farm which we installed to provide overwintering habitat and flower resources for beneficial insects in the vegetable fields.

In addition, we maintained (and expanded) the beneficial habitats we established on the farm in past years. We also facilitated the farm's third year of participation in the Bobolink Project, a program that awards grants to farmers who are adjusting their cutting schedule of qualifying hayfields (and, as a consequence, to accept a loss in hay yield and/or quality) in order to allow Bobolinks and other grassland birds to raise their young.

Meanwhile, at the Hudson Valley Farm Hub, we are documenting the development of vegetation on approximately 12 acres of formerly tilled fields on marginally productive soils, which were either seeded with native plants or allowed to rewild through oldfield succession.

Elsewhere, we drafted a habitat map and conducted biodiversity inventories at Arrowhead Farm Center in Kerhonkson NY, and documented biodiversity and land use history on a handful of private properties.

How Might Wild Nature Benefit Farm Production & How Do You Encourage That? Agroecological Research

Wild pollinators, pest predators, and pest parasites help facilitate organic and, to some extent, conventional agriculture. It may be possible to favor such interactions through on-farm habitat management. Our long-term research at the Hudson Valley Farm Hub explores the role of edges in “feeding” beneficials to adjacent cropland and tests the utility of management approaches that farmers can potentially receive funding for.

2021 was the 6th season of our long-term agroecology monitoring at the Hudson Valley Farm Hub. This included detailed insect sampling along three transects extending from forest edges into adjacent fields. While patterns may differ markedly across the growing season, our results suggest that, for some insect groups, there is a substantial drop in abundance by the time one is 600 feet into a field. Do agroecological benefits show a similar decline?



FEP technician Kenny Fowler and learner Irene Dickinson are catching flying insects in a hayfield with the help of a Malaise trap as part of our long-term agroecology monitoring at the Hudson Valley Farm Hub.

We also completed our 5th year of documenting the development of plant and insect communities in our experimental native flower and grass plantings (which we pair with fallow and hay “control” plots). As our earlier work had hinted at, the results suggest that one size does not fit all—bumble bees and butterflies, for example, may have loved the seeded wild flowers, but tiny (yet hard-working) parasitic wasps may have preferred

small-flowered weeds. Indicating the complexities of these relationships, our 3rd year of raising crops adjacent to the trial plots suggested that, if anything, yields may have been higher next to the controls.

In addition, we installed a 1000 foot long beetle bank (a low berm intended to support ground beetle populations) in a 50+ acre field. Can such a structure serve as an “injection” of beneficials into large farm fields?

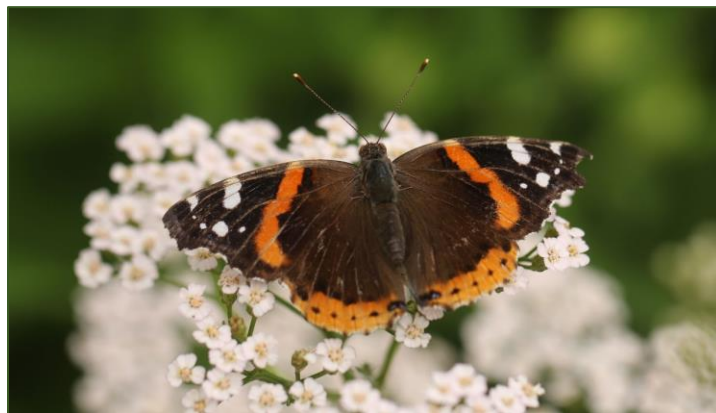


With magnification, one comes to appreciate the beauty and the variety in shapes and colors of our smaller insects, which remains hidden from the naked eye. This is a tiny parasitoid wasp (Torymus sp.).

An essential piece of this research is the data processing. Our learners, volunteer, and staff spent countless hours processing insect samples collected during our Farm Hub research. Nearly 13,000 insects have been sorted and identified (to species, genus or other taxonomic group) this year!

You can follow our agroecology research by consulting the FEP website’s [Agroecology page](#), which presents a chronological series of reports.

As part of our engagement with the Hudson Valley Farm Hub, we continue to coordinate (together with our Farm Hub colleague Anne Bloomfield) the multi-institutional [Applied Farmscape Ecology Research Collaborative](#). This research collaborative includes investigators from seven regional universities, colleges, and other organizations, who study aspects of the on-farm water cycle, soil microbes, soil macro invertebrates, terrestrial and aerial insects, turtles, birds, and plants. Most researchers are involving students and interns in their field activities, giving those young people the unusual opportunity to be part of this multi-perspective approach to farmscape ecology.



Red Admiral on Yarrow in the butterfly house.

Monitoring at the Martin Van Buren National Historic Site

In an effort to take our work to new audiences, we also are in the second year of working with Martin Van Buren National Historic Site. This work has involved setting up and training park staff on a phenology trail that can engage park visitors in monitoring the local effects of climate change on the timing of plant cycles. Ecological work at the site this year included breeding bird surveys, bee surveys, and participating (for the second consecutive year) in a continent-wide effort to monitor insect abundance spearheaded by Dr. Peter Dunn at the University of Wisconsin-Milwaukee. Building on this work, we are planning to begin long-term monitoring projects around insects, amphibians, and birds next year. We are exploring how to apply and showcase some of our agroecological research and creating content for signs along the phenology trail that will be installed next spring.

Other Ongoing Projects

Field Guide: We continue to work on our forthcoming book, *Ecological and Cultural Field Guide to Columbia County Habitats*. This work has, admittedly, been too many years in the offing, but we are happy to report that chapters covering all of our county's major habitats have now been drafted and half have been laid out by the book designer. By incorporating descriptions of the role of past agriculture in shaping many of our regional "wild" habitats, by distilling and sharing our stewardship recommendations, and by explicitly including agricultural lands as a habitats, we hope that this book will foster the landscape-wide ecological thinking that we believe is important not only for understanding where we are now, but also for meeting the impacts of climate change and COVID-induced increases in development pressures on our local landscape.



This Spotted Salamander was helped across the road on a rainy night in the autumn and featured in one of our Wonder Wanders.

3D Map of Columbia County: Visualizing the stories that play out on our landscape—from the historical evolutions of populations and of transportation corridors to the county-scale variation in climate and the patterns in biodiversity—can help us to better understand the context we are operating in. Thanks to Markley Boyer, Charlie Coan, and Otter Vispo who lent their talents, and David Newman and Stephanie Lazar who sponsored this pilot project, we now have a new, useful tool for making such visualizations: a portable 3D model of Columbia County onto which we can project animated maps and other visual content. Now we just need to fill its surface with good stories!

Looking Ahead

Harkening back to the first paragraph, we are taking this season to reflect on how the Farmscape Ecology Program and its surroundings have evolved, to recommit ourselves to those undertakings that still feel meaningful, to tweak those aspects of our Program that need tweaking, and to develop new and exciting initiatives. Don't expect a sea change, but know that we're "huddling"!



This little hoverfly, a Wavy Mudsucker, is looking ahead with its psychedelic eyes.

Acknowledgements

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Little Club-spur Orchid is an unusual native plant that thrives in a wetland at Hawthorne Valley.

We thank Markley Boyer for volunteering his time to help us pilot the 3D Map of Columbia County, as well as David Newman and Stephanie Lazar, who sponsored that project. Much appreciation goes to the lovely group of weekly volunteers who have helped with weeding and planting, collecting seeds, and fundraising. We also wish to thank the following people for volunteering to enhance the Creekhouse Garden trails and other infrastructure: a group of 8th grade students from Hawthorne Valley Waldorf School helped create the new loop trail; Jon Greene built the beautiful boardwalk along the trail; and Paul Rix and Luke Van Horn created our information kiosk.

Finally, a big thank you goes out to this year's group of FEP learners and summer volunteers, as well as to the staff at Hawthorne Valley and at the Hudson Valley Farm Hub who helped with many aspects of our research and outreach.



Most of the FEP staff, learners, and volunteers who formed an amazing learning community, accomplished a lot of research and hands-on garden work, and offered a variety of outreach programs in 2021.

Front row: Faith Novella, Lauren Mundy, Lee Magadini, Nellie Ostow, Natasha Djuric, Jennifer Campos, and Sophia Madey. Back row: Joanne Klein, David Lee, Kenny Fowler, Tracy Pennea, Conrad Vispo, Irene Dickinson, Dylan Cipkowski, and Erin Camire.