Hawthorne Valley
FARMSCAPE ECOLOGY PROGRAM

2017 – Year in Review

Evidence of change comes in various ways. The image to the right shows a pressed butterfly diorama that was probably made in the Northeast in the late 19th or early 20th century. While perhaps dated in our 21st century eyes, dioramas like these were a way to display both the science and the beauty of the surrounding nature. What makes this particular diorama intriguing is one of the species present, the Regal Fritillary. Originally found from the northern Midwest through the Northeast, including Columbia County, this butterfly is now extinct in New York and New England and is declining sharply in most parts of its remaining range.

A historic butterfly diorama featuring the now almost extinct Regal Fritillary (with open wings in top center and with folded wings left below).

More recently, a study suggesting a decline of 75% in insect biomass in certain parts of Germany has garnered attention. While neither of these data points can address whether widespread insect decline is happening in our region, it is easy to imagine why insect populations may be changing: habitat loss, pesticide use, chemical and light pollution, introduced species, and climatic change are among possible causes. Conserving insects maintains these life forms both for their own sake, and for the beauty and potential benefits they provide us.

Our own work is meant to contribute to the conservation of organisms like insects in two basic ways: through projects that aim to connect people to the nature around them, such as the Cultural and Ecological Field Guide, the Progress of the Seasons Project, and our free ecology walks; and through efforts, such as our Applied Farmscape Ecology Research, to document and enhance the agroecological services that nature can provide to us. There are various approaches to nature conservation, some of which include environmental regulations and land preservation. We hope to complement the valuable work of others by exploring and sharing nature's beauty and function, and thus building informed compassion for the world around us.

Applied Farmscape Ecology Research

'Habitat' is, essentially, a way of saying 'home' for wild organisms. From our encounters with butterflies, warblers, wildflowers, and other forms of life, we each know that life is not one uniform spread of biotic mayonnaise across the bread slice of our landscape. That awkward analogy, aside from being meant to wake you up, can help one think of how life flows across our land, with a given species pooling here and 'running' there. For example, hedgerows may have a gentle bubble of jumping spiders, flowery old fields may house the tiny hums of parasitic wasps, and, in winter, rocky field edges may resonate with whatever is the ground beetle equivalent of snoring.

What happens if we overlay agriculture on these habitat preferences? Which organisms find homes in which sorts of on-farm habitats, and what does the presence of those organisms mean for food production? Those questions have been at the core of our applied farmscape ecology research this year, and we have tried to tackle them in two general ways.

The FEP team setting up an array of tools used to inventory insect abundance and activity in farm fields and surrounding wilder habitats.

First, through our work at Hawthorne Valley Farm, Hearty Roots Community Farm, Hudson Valley Farm Hub, and Ironwood Farm, we have been comparing the insect communities of farm fields with those of the surrounding wilder habitats. For example, do any of the bees we encounter pollinating crops also find flowers or nesting sites that they like in nearby old fields? Do any weed-seed eating ground beetles overwinter in adjacent hedgerows? What might these shared usages imply about the value of wilder habitats around farms? We supplemented our habitat-specific inventories with an effort to detect movements between intensively managed fields and the wilder surroundings, and to index aspects of the 'pest control services' some of these creatures provide (an attempt that involves reviewing thousands of photographs of pest-baited yoghurt tops!).

Second, through our collaboration with the Hudson Valley Farm Hub and Xerces, a national invertebrate conservation organization, we have been able to establish and monitor experimental wildflower meadows. Many farms have areas such as flood zones or field edges which, at least during some years, are out of production. Converting these areas into beneficial habitats can support populations of native plants and insects, while

also enhancing the natural pollination and/or pest control experienced in the adjacent crop fields.

However, installing a native wildflower meadow at the scale of even part of a farm field can be a costly venture if one uses standard landscaping procedures. Xerces has teamed up with NRCS/USDA to translate some of these techniques into more practical on-farm approaches and link such management to NRCS funding. By working with Xerces to select a suitable seed mix and management regime, and by then monitoring the results, we hope to begin documenting and demonstrating the potential of such plantings to attract beneficial insects. Some of this work was described in our recent blog posting.

A native wildflower trial area seeded in May 2017 at the Hudson Valley Farm Hub.

In 2018, after looking at our results and learning from the collaborating farmers and researchers, we hope to again work with multiple farmers and to focus on linking habitat management to insect abundances and thence to effects on crop production. We will use the results to further refine our recommendations for on-farm habitat management meant to address those dual goals of nature conservation and enhanced agricultural benefits.

Progress of the Seasons – A Curriculum, Scientific Paper and More!

Students at Darrow make spring observations. These flower buds are often mistaken for open flowers. Can you guess the tree they belong to?

The Progress of the Seasons Project is one of our approaches for building awareness of the changing nature around us. Thanks to generous support from Dale McDonald, this past spring we were able to bring the Project to life by designing curriculum and piloting it in three 9th grade Environmental Science classes at Darrow School. We engaged students in the fascinating exploration of how the current timing of seasonal events, like spring flowering, compares with the timing of those same events historically. As part of this work, students created their own "phenology trail" and monitored flowering and leaf-out throughout the spring. They also investigated

the timing of these seasonal events in New Lebanon and nearby areas from the 1830s through the 1920s using Shaker Diaries and our newly updated historical phenology browser (check it out – it is now fast, snazzy and with a fully standardized dataset).

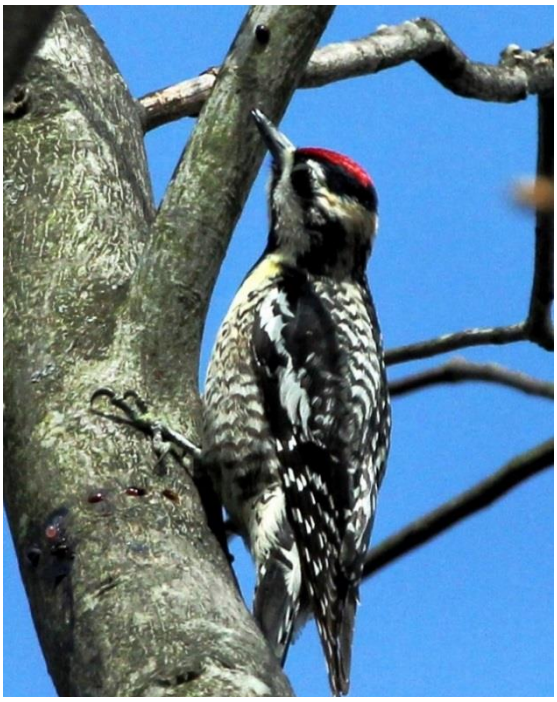
The initial comparison of the historic and modern timing of seasonal events completed by the students did indicate some shifts. Kerissa Battle of the New York Phenology Project is exploring long-term shifts in the seasonal timing of natural events in more detail by analyzing the historical data we made accessible and modern phenology data from throughout New York State. We hope this will lead to a co-authored scientific paper in the coming year. Stay tuned for more details!

Ecological and Cultural Field Guide to the Habitats of Columbia County

Our field guide, amply introduced in previous years, is slowly inching its way towards completion. It is meant as tool to help people explore and understand the County's diverse habitats. The most exciting news about the field guide is that Black Dome Press has agreed to publish it. Work on drafting the chapters is continuing in spurts during the off season and we still hope to accomplish publication in late 2018.

Biodiversity/Natural Resource Inventories

Biodiversity inventories for public organizations or private landowners form an integral part of our research and contribute to our database of the distribution of plants and animals throughout Columbia County (and beyond). Such data can help conservationists and land managers focus their efforts and can help all of us better appreciate local diversity. We are expanding on our taxonomic expertise to encompass certain groups of spiders and beneficial insects, such as hover flies and parasitoid wasps. As a way of expanding our inventorying abilities, we have also been working to improve our sound-mapping capabilities. Sound maps are a non-invasive technique to map the habitats of singing insects like katydids and crickets. With the help of Julius Madey, we are developing the methodology to create animated sound maps in the future.


A Sapsucker at the Harris Public Conservation Area.

We contributed material from our biodiversity databases and photo archive to the Columbia County Natural Resource Inventory and the New Lebanon Natural Resources Conservation Plan, both of which are being compiled by our

colleague Gretchen Stevens from Hudsonia Ltd. We also partnered with Larry Federman to conduct a breeding bird survey at the Harris PCA for the Columbia Land Conservancy.

Creating Beneficial Habitats at Hawthorne Valley Farm

This year, we made great strides increasing the abundance and variety of native plants at Hawthorne Valley Farm. In a truly collaborative effort, several areas of native plants (both shrubs and perennial wildflowers) were planted around the edges of the Corner Garden to provide habitat for beneficial insects, and to generally support and showcase the synergies between vegetable production and wild nature. This work was facilitated by the Hawthorne Valley Collaborative Fund, a donation of seeds from the Hudson Valley Farm Hub, enthusiastic help from volunteers (spearheaded by Betsy Goodman-Smith, who lovingly raised hundreds of seedlings in her pop-up nursery here at the Creekhouse), farmers, and other HVA staff, as well as ample rains.

Creating a patch of native wildflower meadow out of former lawn at the edge of the Corner Garden's vegetable fields.

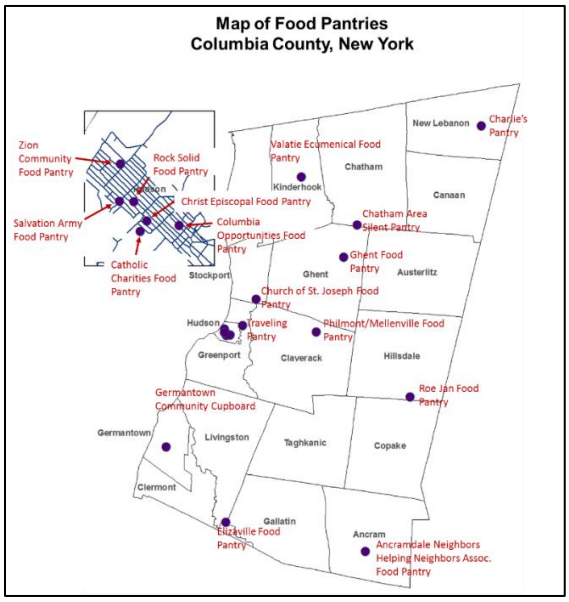
Native plants such as New England Aster and Showy Goldenrod served as feeding stations for many migrating Monarch butterflies in the Creekhouse Garden this year.

Seedlings from Betsy's nursery were also planted in several new areas at the Creekhouse Native Plant Garden, which serves both as an example of a wildlife/insect friendly yard and as on-farm habitat for beneficial insects. Finally, the native trees and shrubs (donated by the Trees for Tribs Program) that we planted along the Farm Creek to stabilize its banks and build a riparian corridor are thriving, and soon will have outgrown their tree tubes!

More detail and images from some of these plantings are featured in our recent blog.

Community Food Access

Agriculture interacts with wild nature, but, of course, also with people. In partnership with the Hawthorne Valley Institute for Mindful Agriculture and the gleaning organization Long Table Harvest, we received a grant from the Berkshire Community Taconic Foundation's Fresh and Healthy Food for All initiative to address food access in Columbia County. One of our efforts towards that end was to conduct a Capacity and Needs Assessment of all 17 of the food pantries in Columbia County. In January we presented this work to a dynamic group of food pantry coordinators, along with up-to-date information about all of the food pantries in the County. This led to the delivering of 11 refrigerators, 4 freezers, 4 shelving units and 3 computers to 11 different local food pantries to meet the major material needs identified in the Assessment.



A map of food pantries in in Columbia County assembled as part of an assessment of their capacities and needs.

We also prepared a report on Food Access in Rural Columbia County, NY to provide some of the research needed to guide the continued work of the Healthy Food for All initiative.

Outreach and Educational Programming

We continued to share our enthusiasm for Columbia County's natural and human history through a rich offering of public programs and internet resources designed to help people develop their own informed, heartfelt connection to the land and its inhabitants.

We led 15 well-attended public ecology walks to destinations throughout Columbia County, and guided an equal number of customized walks and field experiences. These included bilingual farm ecology walks for farm apprentices and Latino farm workers, a land use history walk for Kinderhook history fans, property tours with individual landowners, and hands-on workshops for students from Columbia University and the Omega Institute.

Students from Columbia University getting introduced to beneficial insects at Hawthorne Valley Farm.

We also shared aspects of our work in more formal settings, including a presentation at a Harvard Forest grazing and conservation

workshop, a radio show on Hudson Community Radio Station WGXC, and a seminar at the Conway School of Landscape Design.

Image of a Spring Peeper seen at Harvey Mountain in late fall and shared on social media.

Aside from irregular and detailed blog postings on a range of themes, we continue to use our Facebook page as a way of frequently sharing current field observations with a wide audience and are beginning weekly postings on Hawthorne Valley's Instagram page. We also hosted several training sessions: on monitoring Hemlock Woolly Adelgid led by Mark Whitmore from Cornell University's NY State Hemlock Initiative; on early detection of Asian Earthworms by master gardeners Glenda Berman and Tim Kennelty; and on phenology monitoring with Kerissa Battle, the director of the New York Phenology Project.

Staff Developments

In early June Julia Meyer, newly graduated with a B.A. in Environmental Studies from Connecticut College, joined us as a field intern and has enthusiastically taken up working with wolf spiders (the Lycosidae family). At the end of the summer she left briefly for a pre-arranged Iceland trip to work on a field guide to birds on hiking trails around Reykjavik, but we're very happy she returned and extended her internship through the fall.

Meanwhile we are also very happy to report that our field technician, Dylan Cipkowski, was accepted to the Environmental Studies graduate program at Antioch University. He started classes this fall while continuing his work at the Farmscape Ecology Program part time. This is an exciting opportunity for Dylan, but also for the Program, as Dylan brings new research projects and skills back with him.

Julia works on wolf spider identification with a little help from puppy Delia.

Finally, we have a very important new member of the team – Delia, a 4 month old Black Lab mix who came north from a rescue shelter after the recent hurricanes and is now the new office mascot.

Acknowledgements

We are very grateful for support from the Arthur & Eileen Newman Family Foundation, Berkshire Taconic Community Foundation, Fidelity Charitable Gift Fund, Gerda and Ole Skaarup Fund, Hawthorne Valley Collaborative Fund, Hygeia Foundation, New World Foundation, RSF Social Finance Commonplace Fund, Sandy River Charitable Foundation and T. Backer Fund (in alphabetical order), and from more than 100 private donors.

Our thanks also goes to the many volunteers, above all Betsy Goodman-Smith, and Hawthorne Valley staff who helped with the establishment of beneficial habitat at Hawthorne Valley Farm.

Finally, we would like to thank the farmers at the four collaborating farms for tolerating our research in and around their vegetable beds this year.

Sunrise over Hawthorne Valley Farm on a frosty morning