

Farmscape Ecology at Hawthorn Valley Farm

It's evening of a warm spring day, and the ring of cow bells and grunts of pigs mix with the noise of another animal. Sounding like a flock of over-anxious ducks, wood frogs are calling from ponds around the Farm. It's breeding season for vernal pool amphibians, and wood frogs, together with the unvoiced spotted salamanders, are gathering at small ponds to lay their eggs.

Vernal pools are tiny puddles that form during the late spring and last into the summer growing season. Their drying out means that they are fishless, and several northeastern amphibians have evolved to take advantage of these relatively predator-free waters. Indeed, these species also readily use other shallow pools that, while holding water through the year, may also be fishless. The wood frogs this evening are calling from vernal pools in the nearby forests and from shallow farm ponds scattered across the fields. Some of these ponds are occasional watering holes for the cattle, and the visiting frogs are no inconvenience to head farmer Steffen Schneider. In addition to their lovely vocals, Steffen appreciates the ecological gifts that the amphibians offer, especially the removal of agricultural pests. Residents of Columbia County, New York have been witness to part of a widespread expansion of manmade ponds that has taken place across the United States during the last century. In 1948, there were an estimated 2000 of these ponds in Columbia County; by 2006 there were perhaps 15000 farm and house ponds the main reason for this increase being changing landscape fashion and agricultural use. As Conrad, the farm ecologist working with Steffen, notes, "we are rapidly dotting our land with ponds; a trend that no doubt has relevance to the ecology of wetland plants and animals" (Life as a Pond, 2007).



Although the amphibians of upstate New York can be categorized into many groups such as stream dwellers, upland dwellers, and marsh dwellers, a large sector of the amphibian community can be placed into the categories of vernal-pool amphibians and permanent-pond. Permanent-pond amphibians often overwinter and survive in areas where water will not dry out,

and such ponds commonly contain predatory fish. Vernal-pool amphibians, however, take a more hurry-up-and-leave approach. They depend on getting into ponds early, breeding, and having their offspring leave as miniature adults before their nursery dries up. These vernal amphibians spend their mature lives in woodland areas, except when returning to ponds to breed, where they



can suffer population declines if commercial and residential development destroys habitats adjacent to their breeding grounds. Luckily for these vocal creatures Hawthorne Valley Farm offers a fairly safe migratory routes to an upland environment with an assortment of protective areas including hedgerows and shrubland scattered across its open fields (Ponds as Relicts & Novelties, Deserts & Menageries, 2007).

The amphibians are but a small fraction of the native species that thrive on Hawthorne Valley Farm and are studied by “Farmscape Ecologists” Conrad Vispo and his wife Claudia Knab-Vispo. Farms in Columbia County are home to over 350 species of plants, 150 species of birds, and 49 species of butterflies all native to the Northeast. Many of these species are of conservation interest, including 45% of grassland plants. Additionally, 25 to 35 species of the farm’s grassland and shrubland

birds and 18 of its butterfly species have globally declining populations. Although no one has really kept tabs on butterfly species *globally*; these species show indications of reduced *regional* populations. The farmscape provides a wide range of microhabitats that enable organisms like these to flourish. Although a farmer, like Steffen, deliberately embraces the ecological benefits that biodiversity protection offers, many farmers are providing habitat unintentionally. Common areas of farms such as woodlots, hedgerows, wet meadows, old fields or pastures, ponds, and of course vernal-pools provide prime habitat for native species (Looking at Our Roots, 2007).

Conrad and Claudia, the two working ecologists at Hawthorne Valley Farm, have been studying these agricultural habitats in Columbia County for the past six years. Throughout this time they have described some of the positive ecological relationships between agriculture and native species, and have suggested ways in which farmers can facilitate these relationships. The Vispo’s have worked side-by-side with farmers at their own farm, and in the surrounding area to provide “the tools for understanding the distribution of natural habitats on their farms and the potential interactions of their management with residents of those habitats” (FEP-What We Do, 2009). By working with farmers as collaborators, they learn to recognize the agricultural constraints that come into play with protecting biodiversity, and help to form realistic management goals.

The practical management promoted by Conrad and Claudia’s Farmscape Ecology Program not only promotes the adoption of habitat-building practices, but helps illustrate the potential benefits to agriculture in protecting biodiversity. Their studies are just beginning to uncover many of the agriculturally viable effects of preserving habitat for native species, such as the deterrence of weeds, pests, erosion, and attraction of beneficial insects. Through surveying native species living in and around farmland Conrad and Claudia have been able to make some interesting connections through their findings. For example, in collaboration with Hawthorne Valley student (now alumni) Martin Holdrege they have spent years tracking native bee populations in Columbia County. Through their studies they found that many native bee varieties live both on farms and the surrounding floodplain forest habitats, possibly indicating that preserving floodplain forests may be beneficial for crop pollination. Constructive information like this finding has helped to validate the Farmscape Ecology Program within the agricultural

community in Columbia County. However, the program's essence lies in the inherent value placed on the natural world and the perceived importance of protecting biological resources by the farmers and staff at Hawthorne Valley, and the network of farms within the area.

Agricultural Habitat

Today a little under one third of the Earth's landmass is covered by agricultural crops or planted pasture, of this one quarter is used for intensive livestock grazing. More than 1.1 billion people live within the world's 25 biodiversity "hotspots"—the people most directly dependent on agriculture (Scherr & McNeely, 2004). With current trends pointing to a loss of over 23% of all earth's species protected on only 10% of all land, of which only 29% contains agriculture, there is a need to expand conservation efforts into the private sector (McNeely & Scherr, 2002). Recently, there has been a growing interest in the fields of ecology and natural resources, concerning the assessment of agricultural systems' conservation value. The continuing and growing demand on ecosystem services to support agricultural products, expected to rise 50% over the next two decades, has placed reevaluating the habitat needs for species at the forefront of modern ecological research (Scherr & McNeely, 2004).

The majority of research touching on the role of agricultural lands in maintaining biodiversity currently comes from Europe. Agricultural activities in western and central Europe has been linked to the rapid decline in populations of butterflies, wildflowers, game species, and birds that inhabit farmland areas. According to BirdLife International, agricultural intensification is the leading threat to birds in Europe; however, farmland abandonment has been found to be a significant threat to over 600 IBAs (Important Birding Areas). Without improved management there is predicted to be a decline in over 40 species of arable land dependent bird species. In the EU over 20% of all farmland is now protected under agri-environmental schemes, systems that grant government payment per hectare of land under measures to conserve and enhance the landscapes historic and wildlife value. Measures include allowing for buffer strips, species rich meadows, and natural pastures or rough land (Donald & Evans, 2006).

Recent dialogue at the Convention on Biodiversity has demonstrated a clear move within the international conservation community towards a more "ecosystem approach" to managing biodiversity. Among the many goals drawn at the CBD: by 2015, over 10% of every habitat type worldwide will be under effective management, and by 2010 over 30% of agricultural lands will be managed to protect native flora (Scherr & McNeely, 2004). These goals indicate recognition of agricultural land as an essential habitat, as well as a widespread commitment to ecological communities living outside of protected areas.

To learn more...

[Ecoagriculture: Strategies to Feed the World and Save Wild Biodiversity](#), by Jeffrey A. McNeely and Sara Scherr

"Habitat connectivity and matrix restoration: the wider implications of agri-environment schemes," by Paul F. Donald and Andy D. Evans

[Farming with Nature: The Science and Practice of Ecoagriculture](#), by Sara J. Scherr and Jeffrey A. McNeely

Biodynamic Agriculture

The establishment of sustainable, diversified, and holistically rooted agriculture has been on the rise throughout the US, and represents a growing fraction of the farming community in Columbia County, located east of the Hudson River. Hawthorne Valley Farm practices a particular form of sustainable farming known as Biodynamic agriculture. Several other farms in the County also are biodynamic and there is an active community of biodynamic farmers. Hawthorne Valley is the oldest biodynamic farm in the County.

Biodynamic agriculture is both a philosophy and practice based on the teachings of Dr. Rudolf Steiner in the early 1920's. Steiner is the founder of anthroposophy, a philosophy that is often recognized as a spiritual science (Owens, 1990). Anthroposophy posits the existence of a spiritual world accessible to direct experience through inner development of an individual distinct from any sensory experience. More specifically, anthroposophy aims to attain the precision and clarity of natural phenomena through the exploration and study of the physical world (Owens, 1990). Biodynamic agriculture is a more physical translation of this philosophy, emphasizing the

forces of nature, and identifying and describing specific practices and preparations that enable a farmer or gardener to work together with these natural elements. The biodynamic farmer grows food for nourishment, not only to support him or herself, but for the spiritual nourishment it can provide. This common philosophical belief unites many of the employees at Hawthorne Valley and some of the farms in the surrounding area.

In practice, biodynamic is a form of organic agriculture that considers the farm as a unified, self-sustaining, and individual organism. Biodynamic



farms work to create a self-sufficient ecosystem on a local level, but maintain a connection to the larger context of a district or agricultural community, as well as the entire biosphere.

Accomplishing this lofty goal requires that a farmer must be in tune with the geology, soils, climate, wildlife, economy, and social dynamics of his landscape. Aspects of organic farming such as composting, the use of manures, and the absence of artificial chemicals are also emphasized (Owens, 1990). The more unique elements to biodynamic practices include the use of specific herbal and mineral substances as compost additives and field sprays, as well as the use of an astronomical sowing and planting calendar. A farmer seeks to produce food that nourishes the whole human being, both physically and spiritually. As explained by Hugh Lovel in his book A Biodynamic Farm, “We may think of food as our medicine, and not simply medicine for our ills—though it may be. Above all, it is our medicine for our health and evolution.”

Biodynamic agriculture is a way of living—working with nature and agriculture based on common sense practices, a conscientious outlook on the uniqueness of a landscape, and inner development. The goal of self-sufficiency reaches beyond the agricultural elements of a biodynamic business, extending to one's order, focus, observation, attention to detail, and prompt work ethics. Each element of an operation is structured to develop with a natural rhythm, with each new concept and development evolving organically. The natural progression of growth in a biodynamic system allows for the building of synergies, the collaboration of various programs or individuals working within the operation. The closed-loop system employed by the biodynamic philosophy often entails staying small in terms of the organization's size; however, if an operation evolves organically it may grow to remarkable levels.

Biodynamics: Sustainable or Myth?

The management of soil fertility is a key component of any agricultural system, whether conventional, or biodynamic. A fertile soil provides essential nutrients for crop plant growth, supports a diverse and active biotic community, exhibits a typical soil structure, and allows for an undisturbed decomposition (Mäder, 2002). One of the main difference between biodynamic and organic management is

the use of eight specific mineral amendments spread across their soils and crops (Reganold, 1994). Although both organic and biodynamic farms pride themselves on steering clear of the ecologically detrimental chemicals utilized by conventional farmers, it is commonly argued that these methods cannot compete with the yields of their intensive agriculture counterparts. So how sustainable is biodynamic farming?

A study conducted in central Europe tracked the agronomic and ecological performances of biodynamic and conventional farms (and organic too, no?) over the course of 21 years. Throughout the course of their research they found the nutrient inputs (N, K, P) of organic and biodynamic systems to be approximately 34% less than conventional farms, with a mean crop yield lower by only 20%. The energy used to produce a crop in an organic or biodynamic system was nearly 56% lower and 36 to 53% lower per unit of land used. Additionally, the study found that biodynamic farms contained greater levels of microbial biomass and biodiversity than both of the other categories of farm (Mäder, 2002).

To learn more...

“Soil Quality and Profitability of Biodynamic and Conventional Farming Systems,” by John P. Reganold
“Soil Fertility and Biodiversity in Organic Farming,” by Paul Mäder, Andreas Fliebach, David Dubois, Lucie Gunst, Padruot Fried, and Urs Niggli

Hawthorne Valley

What we are founding here is a seed, the seed of a living organism. The organism is essentially threefold—pedagogical, artistic, and agricultural—as reflections of thought, feeling, and will. Each needs the other if the whole is to flourish. All are interrelated... For young and old alike, this work together will create a place in which to become, in a true sense, a full human being. Karl Ege, one of the founders of Hawthorne Valley, door to Hawthorne Valley Farm Offices.

Hawthorne Valley began in 1971 when a team of farmers, entrepreneurs, and educators worked together to purchase a farm and start a program that took children out of the city and onto the farm. This idea was inspired by a deep and prevalent concern for the path that agriculture was taking in the United States. The group’s apprehensions were fueled by the rapid decline in small family farms, the shift towards mechanization and commercialization in agriculture, and above all a growing disconnect between agriculture and education for children living outside of rural America. Since its foundation, the farm quickly evolved, establishing itself as a working biodynamic business and developing its multiple education programs through the non-profit parent entity, Hawthorne Valley Association (Hawthorne Valley Farm, www.hawthornevalleyfarm.org).



Hawthorne Valley Association consists today of various educational programs that take place in Columbia County (<http://www.hawthornevalleyassociation.org/>). These programs include the Visiting Students Program, Adonis Press, the Hawthorne Valley School, and various other smaller educational programs . Today, over 150 people work within this organization and this number continues to grow (<http://www.hawthornevalleyassociation.org/>). The headquarters for Hawthorne Valley Association is located on the farm, in Harlemville, NY. Harlemville is only minutes away from the Massachusetts border, about 40 minutes from Albany, and two hours from New York City (Hawthorne Valley Farm, www.hawthornevalleyfarm.org). Its accessible location has made it a prime country getaway for many people from New York City.

Hawthorne Valley School is situated on the farm, and is the largest of the educational branches of the association. It is a Waldorf school, employing a unique educational system inspired by the pedagogical insights of Dr. Rudolf Steiner. It offers classes for grades 1 through 12, and early childhood programs for children from ages 3 to 6. Waldorf education takes an interdisciplinary approach incorporating academics, arts, and hands-on learning experiences. Teachers, who will follow students throughout their early years at school, are provided with considerable freedom to implement curricula. The teachers of Hawthorne Valley work to utilize the farm for their classes. For example, upper level science courses will often use the farm for their lab component, which might include the assessment of water quality in local streams to observe firsthand the chemical consequences of current land use. The access to the farm is one of the many unique elements to the Hawthorne Valley school, providing a sense of place as well as a real agricultural experience are key aspects of nearly all of the educational programs connected with Hawthorne Valley Association (Introduction, <http://www.hawthornevalleyschool.org/>).

“On the farm students are the oxygen providing a vital function, providing the air or new ideas we need to be innovative.” Martin Ping,
Executive Director of Hawthorne Valley Association

The visiting students program, the first program created in 1972 with the purchase of the farm, has a tradition of taking children out of their urban



environments for a week to expose them to a rural lifestyle. During the school year, the Program hosts a series of schools which visit for one week at a time. The program was developed in response to what the founders perceived as increasing threats to childhood development posed by the materialistic and mechanistic prevailing world view that they believed may arise from a disconnection with nature. Students live and work at Hawthorne Valley farm, gaining a real farm experience, taking part in daily hands-on activities within the various agricultural divisions of the farm. The students also gain an appreciation for the wildlife in the surrounding area, through occasional lessons from both the Farmscape Ecologists and interns who guide walks and instruct interactive classes on aspects of the natural-rural landscape. The Visiting Student Interns come from a wide-range of academic institutions across the country, mainly from programs focusing on outdoor and agricultural education, to teach at the farm for one year. The Summer Camp is a more recent addition, and provides the opportunity for children ages 8 to 15 who are unable to visit over the school year to have a similar experience. Although students are consistently moving in and out, the farm still maintains its status as a self-sustaining agricultural enterprise (Visiting Students Program, <http://www.vspcamp.com/>).

Hawthorne Valley Farm is diverse despite its fairly modest size. The farm covers around 400 acres, nestled into the lush hills of the Hudson River Valley, including some 250 acres of pastures and hayfields, roughly 100 acres of woods and a 12-acre market garden (Hawthorne Valley Farm, <http://www.hawthornevalleyfarm.org>). In addition to its beautiful location, it is exceptionally productive, offering a variety of food for consumers with a dairy, vegetable and no fruit production, and value-added dairy processing, bakery, and fermented vegetables operations. Hawthorne Valley has diverse markets, distributing its products through a farmstore, a CSA, and 2 NYC Green Market stands (Hawthorne Valley Farm, <http://www.hawthornevalleyfarm.org>) Dairy and fermented products are also sold through regional and national food distributors. The Hawthorne Valley Farmstore provides a unique experience for the local community. Located on the farm, patrons are able to see directly where some of their food is being produced and processed. The CSA has over 250 shares, with nearly twice this number on its waitlist; during the growing season, Hawthorne Valley collaborates with other local farms to provide weekly vegetables and fruit to consumers in the local and city community (Hawthorne Valley Farm, <http://www.hawthornevalleyfarm.org>). In addition to Hawthorne Valley's economic foundation as a fully functional farm, it hosts a variety of educational programs under a branch known as the "Learning Center."



The Learning Center was the brainchild of Rachel Schneider, the wife of the head farmer at Hawthorne Valley. She developed the center within the last few years in hopes to further connect many of the educational programs already taking place on the farm. As Rachel puts it, "if housed under one roof, it would lead to the sharing of synergies." Currently, established programs at the Learning Center are: the Farm Apprentices Program, the Farm Beginnings Program, and the Farm and Arts Program. The Farm has been training apprentices for many years and was instrumental in founding the Collaborative Regional Alliance for Farmer Training (CRAFT). The

apprentice program invites young adults interested in learning how to farm or gain farming experience to work for the farm with an exchange of food, housing, a modest stipend, and lessons from Steffen and his permanent staff of farmers. The new Farm Beginnings Program, which has its origins in the Land Stewardship Project in Minnesota, invites people of all ages interested in learning how to start their own farm, to gain the technical knowledge needed to start a farm. This

program is taught by a group of expert farmers from around the area. The lessons provided extend beyond the technical side of farming and often incorporate elements of finance and land purchasing. Programs like Farm Beginnings are in increasingly high demand, and the Hawthorne Valley staff is constantly working to accommodate the large number of individuals interested in the instruction provided at the farm (Martin Ping).

“People come from all over for the opportunity to work with Steffen, the man has a unique authority just through the integrity of his being.” Martin Ping

As the farm matures, both through gaining economic edge and educational recognition, the number of new programs continues to escalate to new levels. Rachel explains, “It’s the first time we would be leaving our little internal ‘valley’ reaching out to others.” With a large population of supportive customers, and a growing innovative and well-organized staff, Hawthorne Valley has developed a certain level of freedom in their education initiatives. While visiting the farm, one can feel the innovation in the air; nearly every member of the Hawthorne Valley community is working to perfect a side project or explore a new idea. Synergies are in the making. The diversity amongst the staff in areas of expertise—whether economic, agricultural, ecological, or governmental—provides the grounds for collaborative, multidisciplinary approaches to the educational, business, and even the agricultural aspects of the system. In the words of Steffen Schneider, “Like any other organism the farm is multidimensional, Hawthorne Valley is constantly changing or evolving, it’s dynamic!”

Farmscape Ecology

“Through our actions we have encouraged some species and discouraged others, but, in most cases, what each species was looking for in terms of habitat has hardly changed. In other words, they “judge” the doings of each generation by the same criteria. Nature is both honest and consistent.” Conrad Vispo and Claudia Knab-Vispo, Reflection of a Farmscape

Conrad Vispo moved to the Hudson River Valley in 1970 when he was 8 years old. He grew up in a little town called Canaan, only a few minutes away from Hawthorne Valley Farm. After attending Cornell University, and receiving his masters from Indiana State University, he went to the University of Wisconsin to get his doctorate, where he and his wife Claudia met. The couple headed to South America to work with the local people to understand the diversity, uses, and management of native plants and animal species. They returned to upstate NY in 2001 to raise their son Otter. The family quickly established a sense of place within the community—familiarizing themselves with the natural, social, and political landscape. They soon began searching for means to get back into ecology work while raising their son in the county in which Conrad grew up.



Like many other citizens of Columbia County, Conrad and Claudia were drawn to Hawthorne Valley Farm. In 2003, the Farmscape Ecology Program was founded after much discussion with Steffen and Rachel Schneider, the head farmers of Hawthorne Valley Farm. Farmscape Ecology would be a uniquely research-based

outreach program of Hawthorne Valley, helping the biodynamic farm “practice a learning agriculture.” The primary focus would be educating the various parties that interact within the agricultural community, both farmers and citizens alike. The program established four concrete goals at this time: 1) to educate farmers about the ecology of their landscapes, 2) to educate the non-farm sector about how nature and farming may complement instead of harm each other, 3) to provide potential farmers with the networking and information to start agricultural productions that are ecologically mindful, and 4) to inform regional institutions about the ecological needs of the county. Conrad and Claudia’s role has evolved throughout time, but they continue to play the part of “information activists rather than political activists” (FEP-What We Do, 2009).

Conrad and Claudia’s research encompasses many topics regarding the ecological relationships between agriculture and nature.. Conrad and Claudia work to eliminate the view of agriculture as an automatic antagonistic to the environment (FEP-What We Do, 2009) and to show that, in some cases, the openings created by agriculture can be key to the local future of certain organisms. Their work continues to send the message that agriculture and native species, particularly plants, can coexist in their home county and throughout the region. By bringing into light the complex and dependent ecological relationships, such as those between wet meadow creatures and farmland habitats. They continue to establish the conservation value of agriculture within their county and region. Conrad and Claudia have presented much of their research in



reports and newspaper articles, however, they are still working to publish their findings in peer-reviewed journals. Provided the great range in active participants in the local food system, the Vispo’s persistently reach out to different audiences from some political figures, to fellow ecologists, to consumers, to community members, and of course to farmers.

“Conrad represents the scientific voice to the lay person.”-Roland Vosburgh, Columbia County Planning and Economic Development

Conrad and Claudia have spent much of their time in Columbia County collaborating with local farmers. By working side by side with practitioners, the Vispo’s continue to attain new levels of understanding of the real day-to-day challenges of protecting native species while running an agricultural business. In 2008, with support from the Glynwood Center, Conrad and Claudia collaborated with Steffen to assess both the agricultural and conservation potential of five farms owned by non-farmers; the goal was to help the land owners understand how they could manage their lands for both farm production and nature. The Farmscape Ecology Program also did detailed mapping of another local biodynamic farm - Roxbury Farm, one of the biggest CSAs in the country. The final reports presented to each of these local land owners provided an overview of the species present on the farm, including those of conservation interest, as well as a detailed “habitat map” The “habitat maps” helped to facilitate awareness of the ecological conditions of various areas within each farm, leading to more site-specific suggestions. They also discussed the conservation value in terms of agricultural benefits of protecting many of these species, providing some key suggestions for agricultural management to help ensure that the positive relationships continue or develop further. The management suggestions incorporate

elements of agroecology, including the use of native plant species for weed control and methods to increase beneficial insect populations. By working with Steffen, a well-respected farmer within both the biodynamic and conventional circles, the Vispo's provided straightforward and practical conservation suggestions.

“IN THE STORY of the blind men touching the elephant, each man touches a different part of the beast. The man who touches the trunk proclaims the elephant to be very much like a snake, he who touches the elephant's sides declares the critter similar to a wall; and he who hugs a leg states that the elephant resembles a tree. None is fully wrong, none is completely right. A farmer sees a pond as a source of water for cattle or irrigation, a fisher views it as a place to go fishing, a young family looks at it as a place to swim. These perspectives occur together with that of the pond as home to native plants and animals, and our goal ... to consider how these uses can coexist” Conrad and Claudia Vispo, What are Ponds For?

Shortly after joining the Hawthorne Valley family the Vispo's began working to organize the meetings of the Farmer's Research Circle, an open gathering of farmers from the local surrounding area. Meetings were organized on a monthly basis, designed to be non-intrusive, with farmers' busy schedules in mind, and have often been a place for Claudia and Conrad to first present their research and contemplate new ideas. Foremost, they help to facilitate an open dialogue where farmers can voice their opinions on regional issues, explain their views on agricultural practices, and offer suggestions to one another on how to farm sustainably. Whether organic or conventional, most farmers have a strong connection to the ecology of their land and a fairly proficient understanding of the impact of their practices. Despite their diverse backgrounds, and differing environmental views and agricultural practices, above all they share a common bond in utilizing nature to provide food for their community. The meetings have strengthened the relationships between these farmers on both a business and social level. The Research Circle has also promoted the collaboration of farmers on various educational projects. An ongoing sub current of Hawthorne Valley's work is exploring land access issues for prospective farmers (FEP-What We Do, 2009).

“Our outreach with the general public has derived from our on-farm research and is intended to help people appreciate their landscape from both a cultural and ecological perspective. We believe that strengthening that connection is crucial for motivating informed public interest in the future of the County, including its agriculture.” Conrad Vispo

In addition to collaborating with farmers, the Vispo's have helped to bridge divides and develop working relationships among various sectors of the agricultural community.. Collaboration with the local community has been a key tool for their research, as many ecological assessments have led them into the backyards of their cooperative neighbors. The Vispo's in return provide a large range of educational outreach, including nature walks, lectures, and classroom activities for Hawthorne Valley students. Additionally, Conrad and Claudia have worked with various community groups including local environmental organizations, students, landowners,. Over the years they have worked with governmental and semi-governmental conservation organizations including the Hudson River Estuary Program, Columbia County Soil and Water Conservation, and the New York State Museum, and non-profits such as the Glynwood Center, and the Columbia Land Conservancy (FEP-What We Do, 2009). They also have connected the area with academia, collaborating with the Harvard Forest, the Institute for Ecosystem Studies, and Cornell University. These relationships provide the Farmscape Ecology Program with a number of academic resources and contacts to benefit their own research; this has consequently brought the farm recognition.

As with many other aspects of Hawthorne Valley, the Farmscape Ecology Program is constantly moving forward. Although most of their work has reflected on the ecological value of farmland, they have recently hired a social scientist, Anna Duhon, to gain new perspective on the changing landscape of Columbia County. Stimulated by a question posed by the Farmers' Research Circle, Anna is helping to coordinate a county-wide community food assessment that will help the community understand the County's strengths and limitations in terms of accessibility to healthy, local foods. Anna is also collaborating with Claudia and Conrad on the "Know Your Place Project." This is a research and outreach initiative that focuses on stimulating, facilitating and informing the Public's exploration of their landscape. It is based on the idea that land use decisions (including the degree to which local agriculture should be encouraged) will only account for natural and human ecology if people better understand their landscape. This project thus seeks to create different 'entry points' for people interested in exploring their landscape, such 'portals' include an expanded web page, an oral history project, and participatory natural history surveys.

The Community

As one walks through the doors of the main offices at Hawthorne Valley Farm and its neighboring Farm Store, it is difficult to ignore the overwhelming sense of welcome. Doors are left open, people are constantly moving in and out, greeting each other as they pass, and the line between consumer and staff quickly dissolves. The stable and close-knit consumer base is a fundamental characteristic of Hawthorne Valley Farm, and a key indicator of a strong local food system. Many residents have come to be a part of the agricultural and educational movement within Columbia County. As a result, the community is active in keeping the movement alive through their support, both economically to local business and through social organization. The wide range of agricultural and environmental support organizations is a rich component of the community's culture and has had a positive effect on government support for farmland protection and local environmental initiatives.

"We have something valuable here we need to protect." Chris Reed, Friends of Hudson and NY State Ag Markets.



Although Hawthorne Valley has led the way in sustainable agricultural education, it is part of an exceptional circle of institutional support for the environment. In addition to governmental support to farmers by Cooperative Extension, Natural Resources Conservation Service, and Columbia County Soil and Water there are a number community organizations that work to preserve agriculture within Columbia County.

Among the many groups of concerned citizens, the Friends of Hudson group, a well supported and active community organization, has been influential in channeling attention to local environmental issues as well as promoting sustainable agriculture. The group contains a unique mix of farmers, citizens, and local government employees. The president of the organization itself is a member of the NY State Agriculture Markets Board, who works extensively with farmers to help them gain farmland protection. Friends of Hudson began in 1999 in response to a proposal for expanding a local cement plant. After winning their battle against the cement plant in 2005, the group now works to influence local farmers and agricultural businesses to exercise the “cleanest agriculture” possible. Although today the group mainly works on a grassroots level to influence the non-farm sector, hosting a variety of lectures series, writing in newspapers, and conducting smaller research projects, the group is always ready to take on their past activist role (Friends of Hudson, <http://www.friendsofHUDSON.com/>).

In addition to the 554 farms in Columbia County there is an array of agriculturally related businesses including distributors, processing facilities, and local restaurants (Ag Census, 2007). Supporting local business has been a cause for much community activism and organization that has helped accelerate the local economy. Columbia County Bounty began in the 1990’s to help solve a common distribution issue for local restaurants and food outlets (Columbia County Bounty, <http://columbiacountybounty.com/>). At the time, many chefs had to travel to New York City to purchase Columbia County products, with little communication between local farmers and business owners (Columbia County, <http://columbiacountybounty.com/>). Bounty started to open this chain of communication by making the problem public—hosting a number of events to which farmers and business owners were invited. With the help of savvy and well-connected local foods supporters, the group eventually expanded outward to major city distributors, wealthy consumers, and a plethora of influential individuals within the food industry inviting them to take part in the events.

In the small village of Chatham, a divide between the agricultural and non-farm populations caused local community members to rally and conduct a formal investigation of agriculture within the town. After nearly 3 years of work, requiring the help of the Glynwood Center and local volunteers, the organization was able to survey the entire village. Their final product was a series of GIS map of all of the farms and agricultural businesses within the town and details about the type of agricultural production taking place across these farms. The maps, as well as many of the associated measures, such as acreage of tillable land and number of livestock, was provided on an easily accessible website for the public to observe. Like Bounty, Chatham



Keep Farming holds a range of community events to attract local farmers, including a farm film festival, harvest dinners, and farm tours. Additionally, and supported by the map, the group provided a list of recommendations to keep farms viable, many of which are now being utilized by local officials. The success of Chatham Keep Farming and Columbia County Bounty are but two examples of the many efforts of the community to protect and boost their local rural economy (Chatham Keep Farming, <http://www.chathamkeepfarming.org/>). Chatham is also home to the Chatham Real Food Coop (<http://www.chathamrealfoodcoop.net/real-food-coop.html>), a recently established store that strives to strengthen local community through the marketing of locally-grown and processed foods.

“The CSA is the most pure, simple way the economy has to go, in my opinion. It balances social and financial capital: It’s about relationships and quality. You invest because it’s the right thing to do; it’s not just about the cost of broccoli; it’s investing in something down the street from

you.” Woody Tasch, venture capitalist, entrepreneur, and the Chairman and President of Slow Money

Even without taking an active part in the various community organizations and events occurring, many citizens of Columbia County invest in local agriculture out of their own pocket. The county contains at least nine CSAs that provide their products weekly to customers, a number which continues to grow as more and more farms are converting to direct market approaches. Member of the Farmers’ Research Circle and a fellow Biodynamic operation, Roxbury Farm is the largest CSA in the country, selling its produce and grass-fed meat to over 1,000 shareholders. Meanwhile, Threshold Farm in nearby Philmont is one of the few biodynamic orchards in the country; in addition to extensive marketing of its apples, peaches and pears, it provides fruit shares to more than 50 CSA members. For farms like Hawthorne Valley, and a number of those represented in the Farmers’ Research Circle, the demand often exceeds their supply. Due to the overwhelming support of consumers and local business, citizens also have the opportunity to purchase locally produced goods at a number of restaurants, farmstands, U-pick operations, and even grocery stores. Cooperative Extension of Columbia County is in the process of creating a report that quantifies these indicators. Moreover, and even though Columbia County is by no means an “industrial, job-rich, high-tech county,” its booming direct market economy has attracted a number of investors, and high profile economists, including Woody Tasch of the up-and-coming Slow Money Movement (Mason, 2009). Mr. Tasch and others are looking at Columbia County and the greater Hudson Valley as one promising region in which to create a bioregional fund to support small organic businesses (Mason, 2009).

As the local and sustainable foods movement continues to grow, the collective synergies of new passionate citizens coming to join the active community in Columbia County appear destined to reach new heights.

Community Supported Agriculture and the Slow Money Movement

CSAs

Over the last last 20 years, Community Supported Agriculture (CSA) has become a popular way for consumers to buy local, seasonal food directly from a farmer. Here are the basics: a farmer offers a certain number of "shares" to the public. Typically the share consists of a box of vegetables, but other farm products may be included. Interested consumers purchase a share (aka a "membership" or a "subscription") and in return receive a box (bag, basket) of seasonal produce each week throughout the farming season. This arrangement creates rewards for both the farmer and the consumer. It is a simple idea, but its impact has been profound. Tens of thousands of families have joined CSAs, and in some areas of the country there is more demand than there are CSA farms to fill it. The government does not track CSAs, so there is no official count of how many CSAs there are in the U.S. See: <http://www.localharvest.org/csa/>

Slow Money

Slow Money is an up-and-coming philosophical, strategic, and pragmatic macro-economic movement that escalated after the publishing of Woody Tasch's Inquiries into the Nature of Slow Money. Tasch states that "money must be brought down to the earth," supporting a new business strategy investing in local food systems. The slow money movement works to design a new capitalist economy that is based entirely on preservation and restoration, and is slowly gaining recognition in networks of investors, venture capitalists, and foundations. Tasch is the Chairman of Emeritus of Investors' Circle, a nonprofit that has facilitated the flow of \$130 million to 200 early-stage companies and venture funds dedicated to sustainability. He is also the president of the newly created NGO Slow Money which works to gain recognition and support to local food systems throughout the country.

To learn more...

- Civic Agriculture: Reconnecting Farm, Food, and Community, by Thomas A. Lyson
- Inquiries into the Nature of Slow Money, by Woody Tasch

Rural/Urban Fringe Agriculture

In 1995, rural sociologists Dr. Max J. Pfeffer and Dr. Mark Lapping reported in "Prospects of Sustainable Agriculture in the Northeast's Rural/Urban Fringe" the recent agricultural development in a distinct area of the Northeast they identified as "the rural/urban fringe." The two rural sociologists examined the County Agricultural Census for counties within the rural urban fringe from 1978 to 1987, and surveyed over 259 professional planners from the 1993 Census Bureau to determine past trends and the future prospects. Amongst their many findings they found an overall decrease in the number of large and mid-sized farms throughout the Northeast, with a surprisingly growing population of small farms. Pfeffer and Lapping also exposed a number of commonalities between farms situated on the fringe, often sharing similar benefits from their urban connections in business, as well as similar threats of urbanization. As they found in both their census research and surveys the key to the survival and success to urban/rural fringe farms was in their ability to adapt to the continuously changing economic, social, and political landscape (Pfeffer & Lapping, 1995).

Despite its country appearance- nestled into the lush green meadows of the Hudson River Valley- Hawthorne Valley Farm is part of an extensive chain of farms surrounding the Metropolitan area. Columbia County farms have a long history of supplying food for New York City residents and continues to cater to their needs. This key location places Hawthorne Valley Farm under the category of "Rural/Urban Fringe Agriculture." Although Columbia County is quite removed from the fast pace of city life, it faces many of the same threats as other rural/urban farms.

The urban-rural fringe includes land along the boundaries of a city, in the suburbs, in small unincorporated, partially developed countryside surrounding the city. It is the area where land is in transition from agricultural to urban use. – "The urban demand for urban-rural fringe land," LJ Hushak, Land Economics, 1975

Ways Forward?

“Hawthorne Valley Farm has undeniably been an incubator for sustainable farms and businesses to the area searching for the right community.” Sarah Shapiro, one of the Green Market Managers for Hawthorne Valley Farm and previous vegetable farmer for Roxbury Farm

In Columbia County throughout the past few decades, the farmscape has evolved like many of its rural urban fringe counterparts towards smaller and more sustainable farms. Many speculate that the challenge of farming in this unique manner is that it requires a strong and established like-minded community, one that Hawthorne Valley Farm has provided for many sustainable farms in the surrounding area. Despite the various economic, social, and political threats to those within the agricultural community, a new generation of farmers has been migrating towards Columbia County. A cohort of new farmers sometimes referred to as “city kids with the farming bug” is looking for the agricultural and entrepreneurial training to create their own businesses. Hawthorne Valley continues to reach outward towards this growing population of youth, working to create the next generation of farmers and agriculturally aware and connected individuals.

With more favorable government policy, a growth in innovative practitioners, and active well-connected citizens, farms within the county have thrived within the rural urban fringe setting. Agriculture in Columbia County is not a relic of old times, but the forerunner of businesses, organizations, and practitioners that will dominate the future.

Conrad and Claudia pose the questions below, answers to which will help them advance their farmscape ecology program as well as Hawthorne Valley’s approach to agriculture and development more generally.

Farmscape Ecology Program Questions

(1) "Weeds" as indicators for soil conditions: We have many wild-growing plants (native and introduced species) that were never intentionally seeded growing in our hayfields and pastures. These wild plants are by no means evenly distributed among and within our meadows. We know relatively well which of them like to grow in extremely wet or dry places. However, we are less certain about the indicator value of the plants for more subtle soil characteristics. A better knowledge about which plant abundances are good indicators for deficiencies in the soil (e.g., acid soil, soil lacking in certain macro- or micro-nutrients, soil polluted with toxins, soil compaction, lack of organic matter, etc.) could help us in our management decisions. We are certain that not all plants are equally good indicators and that their indicator value varies with soils and climates. Hence the question, *what value might ‘weeds’ have for helping farmers understand their soils?*

Therefore, our specific questions are for permanent grasslands in the Northeast:

- Which are the soil characteristics (other than water regime) that can be inferred from the abundance (or absence) of certain wild-growing plants?

- Which plants seem to be good indicators for each of these soil characteristics?
- What sort of studies support these claims?

(2) Potential benefits from "weeds" in pastures: Our pastures have diverse plant communities composed of grasses, legumes and "weeds". There may be from 30 to more than 100 plant species growing together in each of our pastures. While we know of the importance of forage plants such as grasses and legumes for the nutrition of our dairy cows, we are less certain about the benefits of a diverse "weed" community interspersed with the forage plants. *Do these "weeds" just take away space from the more productive grasses and legumes, or does their presence have a direct benefit for our grazing animals?* For example, a diverse "weed" community in a pasture might allow the cows to self-medicate, to help themselves counteract intestinal parasites or nutrient imbalances by eating more or less of certain plants with certain chemical characteristics. Another potential benefit of a diverse plant community is that different plants have different root characteristics which lead to different abilities to access nutrients. Theoretically then, a diverse plant community might overall be better able to provide balanced nutrients to grazing animals than a mono-specific pasture.

Our specific questions in this context are:

- Has anybody documented self-medication in livestock?
- If so, which plant species was utilized for which purpose?
- Has anybody documented differences in the ability of different plant species, esp. grasses and legumes vs. "weeds", to access certain soil nutrients?
- If so, which "weeds" were particularly good at accessing which nutrients?

(3) Much of the Farmscape Ecology Program's work has focused on looking at the interaction of native species and on-farm habitats. To a large extent, this has taken the form of research asking what does farming do for/to native species (e.g., what habitats does it create or destroy)? However, the flip question (i.e., what do native species do for farmers?) is also important and is more directly relevant for farmers. This reasoning has led to the following question: *How can farmers in our area use on-farm habitat management to control pests and diseases and to encourage beneficial species?* While work on such questions has occurred, much of it has been done in other climes.

Specifically,

- What are the major pests and diseases that farmers in our area face?

(The following questions are probably best approached on an organism-by-organism basis)

- What are the ecologies of these pests and diseases (e.g., Where do they live? What do they eat? Who eats them?)

- How can habitat management change on-farm ecology so as to reduce these organisms? (“Habitat management” can occur at a variety of scales such as neighborhood, on-farm, and within-plot; it might, for example, involve looking at the tapestry of habitats across farms, the ‘wild’ habitats allowed to arise adjacent to a particular farm’s garden, or the diversity of plants, wild or cultivated, that grow in each bed.)
- What effects would these changes have on farm economics and on “non-target” wild organisms (including some which might provide important services, such as native bees)?

(4) One of the Farmscape Ecology Program’s main goals is to encourage and facilitate the connection of the County’s residents to their landscape – its past and its present. We do this because we believe that such a connection is central to informed and inspired attempts to address our future. Columbia County has a diverse population, *what are the various themes and outreach approaches that can be used to stimulate people to learn about their surroundings?*

Specifically,

- What are the different cultural groups in Columbia County? (These could be ethnic, economic, age-based, historical... which groupings influence how people learn about and interact with their environment?)
- What ‘connecting themes’ (e.g., agriculture, ecology, history, economics) might appeal to these different groups?
- What outreach techniques (e.g., web pages, walks, talks, newspaper articles, focal groups, participatory research) might be most effective in reaching each group?

(5) While some of the interactions between agriculture and the environment are readily visible, others are not. For example, there has been recent concern about the accumulation of airborne heavy metals (e.g., mercury) in milk, vegetables, and other foods. However, we are only just now beginning to understand the distribution of such pollutants, their incorporation into foods, and the consequences for human health. *In our region, what risks are most likely from pollutants incorporated into locally-grown foods from the air or water?*

Specifically,

- What is the likely distribution of airborne and waterborne pollutants in our county?
- Once such pollutants are in the soil or water, how are they transferred into

agricultural products (i.e., dairy, meat, vegetables, fruits)? Which pollutants are most apt to be transferred to which products under which conditions?

- Once in the foods, which pollutants pose the greatest health risks? How do levels likely to cause health effects compare to the levels likely to be in foods? Who is most at risk?

(6) The Farmscape Ecology Program is part of an educational non-profit. This means that while we focus on research and education, we need to also raise funds to pay salaries and expenses. We have done this through seeking grants, donations and opportunities for paid consultancies. One of our key challenges is that our approach is, by its nature, very localized (basically limited to the County), but most granting agencies want to see geographically broader applications of their monies. *How can we survive financially while being true to two of our mission goals, that of connecting with diverse audiences, not only the ones who have the money to fund us; and that of introducing people to their own 'backyard' (i.e., doing very regional studies)?*

Specifically,

- Which of our activities are most 'sellable' as consulting services?
- How do you convince grantors to invest in a localized project?
- Conversely, how does one make a project whose products extend beyond the property lines of a single (wealthy) land owner sufficiently interesting to that landowner so as to encourage donation?

(7) Dairy has been one of the most important agricultural activities in Columbia County for over a century, and the vast majority of agricultural land in the County is tied to dairy and related hay and corn production. The Farmscape Ecology Program is located on a biodynamic dairy farm that is exceptional in having its own bottling facility and on-farm market for raw milk and other dairy products. We also, however, interact with many conventional and organic dairy farmers in the County who are deeply bound within the dairy industry. For instance, we are embarking on an Oral History Project of such dairy farmers to be able to better understand this agricultural livelihood and lifestyle through the eyes of farmers.

Question: *What are the major factors and historical circumstances that have led to the current "dairy crisis" in the Northeast, and how can dairy farmers best weather the crisis?*

Specifically,

- What management practices are most cost effective for dairy farms?
 - How do grazing and grain-fed systems compare?
 - How does scale factor in to profitability? Is there an optimal or necessary scale for dairies in the Northeast (areas like Columbia

County)?

- What would enable dairy farmers to better take advantage of the market for local food?
 - What are the major barriers (i.e. infrastructure, demand capacity) to selling milk more locally?
 - What alternative production or business/economic models have had success in addressing these barriers?
 - How many people and what size of a geographic area radiating from Columbia County could dairy farmers in Columbia County supply with milk? What about other dairy products?

(8) Like many small, diversified farms in Columbia County, much of the food that Hawthorne Valley Farm producers either goes to markets outside of the County (namely New York City), or is marketed locally at prices that are out of reach for many full-time residents, and thus its market depends significantly on visitors, second homeowners, and upper-income residents. The Farmscape Ecology Program is conducting a Community Food Assessment of Columbia County to look more closely at the food from local farms can be made more accessible to local residents.

Question: *How can small, diversified farms in the Northeast, such as Hawthorne Valley Farm, produce food at prices that ensure agricultural livelihoods but are also affordable and accessible to more low and moderate-income local residents?*

Specifically,

- What are examples of farms that embrace the mission of balancing sustainable livelihoods with accessibility, and how do they attempt to achieve this balance?
 - What successful models of such farming exist, and how do they function?
- What would enable supermarkets to source more local and regional food?
 - What factors would make it possible for farms to sell some or more of their produce to area supermarkets?

(9) The Farmscape Ecology Program spends a lot of time looking at historical land use and interpreting what it might have meant for human and ecological communities. In the 18th century, for example, the land in Columbia County was supplying a large amount of the food consumed, and in the 19th century, it was locally supplying many of the products of a more industrial age. Today, of course, most food and material products in the County come from elsewhere, though there is a growing focus on re-localizing.

Question: *What are the landscape implications for increased re-localization of agriculture?*

Specifically,

- How much land, located where, and in what type of production would be required for the County to be able to produce 20% of the food it consumes? What about 50%?
 - How does this compare to the current type and amount of land in agriculture?
 - What percentage of the food consumed in Columbia County could be supplied by current agriculture?
 - What percentage of the food being consumed in Columbia County is produced here? (On average, or for an area like Columbia County with a large external market)
 - How would this increased level of food production affect important ecological habitats?
 - How would food system activities need to be conducted to protect the quality of a community's air, water, soil and biodiversity at larger levels of production?
 - What methods and organization of farming would best support increased levels of agricultural production for food in Columbia County?

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