LOOKING AT OUR ROOTS

NEW STUDY BY HAWTHORNE VALLEY FARM EXPLORES THE NATURAL ENVIRONMENT OF COLUMBIA COUNTY FARMS

By CONRAD VISPO and CLAUDIA KNAB-VISPO

This is the first of a multi-week series of excerpts from “The Flora and Fauna of Columbia County Farms: Their Diversity, History and Management” by Conrad Vispo and Claudia Knab-Vispo of the Farmscapes Ecology Program at Hawthorne Valley Farm. This first installment begins with a summary of the report followed by some of its observations on the history of farmscapes in the county and facts about plant life today. In succeeding weeks, sections on hedgerows, birds, other wildlife and streams will appear.—Ed.

FOR AT LEAST the past 250 years, agriculture has played a major role in determining the landscape of Columbia County. While it continues to do so, agriculture in the County faces a challenging future due to competition from farther away and increased land demand for other uses. While there are important socio-economic reasons to consider the future of local farming, the goal of our work is to evaluate the nature conservation value that current farming plays in our landscape. What are likely to be the conservation repercussions should farms disappear from our landscape?

To address this question, we have begun to evaluate the value of on-farm habitats to native plants and animals. We conducted farmstead surveys of herbaceous (and, to a certain degree, woody) plants, of birds, of butterflies, and of a variety of aquatic organisms.

Our work to date has concentrated most heavily on our “home farm,” Hawthorne Valley Farm. However, it also includes information from six additional Columbia County farms which we are studying.

Obviously, farms affect the native landscape. Were we not already a largely forested county, the negative impacts of farms on woodland organisms might be of concern. However, given the current scale of agriculture in the county, farms generally add to the native diversity of our county by providing refuge for grassland and shrubland organisms that might otherwise be largely absent. Many of these organisms found their original home in habitats that have diminished substantially at the national scale (e.g., prairies and wetlands). Thus, grasslands and shrublands of farms in our area can contribute to the conservation of species whose natural habitats have dwindled.

We found that Columbia County farms are home to at least 350 species of native plants, of which around 10% are open-land plants of conservation concern. We cite at least 150 species of birds found on Columbia County farms; these include 25-30 grassland and shrubland species, many of which are declining globally. Our farms provide habitat for at least 49 species of butterflies. While there does not seem to be a set of butterflies completely analogous to the grassland and shrubland birds, we present a list of 18 butterfly species to watch if farmlands decline.

Our work with aquatic organisms added nuance to this picture. In most cases, it is difficult to argue that farms provided important habitat for these species. However, our results do suggest that careful farming can be compatible with many species and, in the case of pond amphibians, can actually provide useful habitat if those ponds are managed appropriately. We are currently studying open land ponds throughout the county in order to better understand the effects of management.

In sum, we believe that there are conservation reasons for preserving working farmland in Columbia County. These benefits do not come without potential costs. However, given adequate safeguards and compared to the frequent alternative of large-scale development, we conclude that the conservation value of farmland supplements the already compelling socio-economic reasons for maintaining viable agriculture in our region.

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farms (i.e., specialized farms often involved in direct marketing) and horse farms.

As this brief history illustrates, the “farmscape” has not been fixed during its history. The past two or three centuries of European activity have been a major factor shaping today’s natural landscape. Because of that, we have concentrated substantial effort on understanding the ecological effects of that historical activity. Against this backdrop, historical research into native plants and animals also gives us insight into which native species were best served by agriculture. The land around us is not wilderness, and its dynamics cannot be understood by simply studying its current ecology and supposing a steady state. What we see today reflects a mosaic of effects—current land use, historical land use, and the natural ecological tendencies of the players.

The majority of the work presented here was conducted on Hawthorne Valley Farm, a 400-acre commercial organic/biodynamic farm in Harlemville, roughly in the middle of Columbia County. The farm is a component of the Hawthorne Valley Association, an educational non-profit. Approximately 300 acres of the land is in agricultural use, as are an additional 500 acres or so of land owned by others but worked by the farm. The farm has a dairy herd of about 60 animals and 12 acres of vegetable gardens. In addition, there are a few pigs and beef cattle. The milking herd is rotationally grazed during the summer and mainly hay-fed during the winter; no corn or other grains are grown.

This report also includes information from six additional farms in Columbia County. These are, working from south to north, the following:

- Chaseholm Farm, a 229-acre conventional dairy farm located in Ancramdale. Herd size is roughly equal to that of Hawthorne Valley’s. Cows are fed corn and other grains (almost all of which are grown on-farm), along with hay and grazing. The farmland is a combination of corn, grain and hay fields with a few pastures. There are wooded sections around the periphery, and several ponds.

- The Farm at Miller’s Crossing, a 200-acre organic farm in Claverack, between Philmont and Hudson, situated along the Agawamuck. It grows mainly vegetables. Some may provide more subtle benefits to agriculture as food plants for beneficial insects, such as pollinators and pest predators. Notorious are the “weeds,” which, by their presence, interfere with the growth of cultivated or agriculturally more productive species. However, the presence of the right amount of the right kind of weeds has also been suggested to benefit agricultural production.

- Gumaer Farm, a conventional dairy farm of roughly 60 animals. The herd has a corn-based diet, and much of the land is in corn production, with at least a couple of hay fields. There are two interesting woodland lots. One is a wooded wetland where Rusty Blackbirds were seen during migration. The other is a stretch of riparian woods along Kinderhook Creek.

- Harrier Fields Farm, an organic 60-acre farm in Stuyvesant near the Rensselaer County border, specializes in grass-fed Red Devon cattle for beef production and breed conservation. The farm is mainly pasture, with no woodlot but with a small, old orchard. Due to its location on high ground near the Hudson, it receives many migrating birds.

Many native wild plants (i.e., plants found here prior to European colonization) occur in the “neglected,” or less intensively managed, areas of farms: along cow lanes; in hedgerows and field margins; in riparian areas; on the shores of ponds; in wet meadows and shrubby swamps; and in old fields. Finally, most farms have long-maintained woodlots composed in large part of native vegetation.

Our main questions about farmland plants are: What role (if any) do farms play in the conservation of native plant species? What are the beneficial and detrimental effects of native plants on agricultural production? And finally, what can be done to enhance the farms’ role in native plant conservation and to increase the beneficial, while reducing the detrimental, effects of native plants on agricultural production? These “big” questions are our roadmap, and we won’t be able to tell you all the answers quite yet. However, our first two years of research have yielded sufficient information to start “chipping away” at these big themes and to discuss promising directions our work might take in the future.

At least 536 plant species grow wild on farms (including their woodlots) in Columbia County. This means that the seven studied farms provide habitat for 42% of the 1,289 species known to occur in Columbia County. Even more impressive, Hawthorne Valley Farm alone harbors at least 486 wild plant species, or 38% of the flora of our county.

At least 350 species (65%) of the plants documented on the farms are considered native to our region. This is basically the same proportion of native plants as in the flora of the entire state of New York.

Native plants occur throughout the range of general habitats found on farms. However, the highest diversity of native plants outside farm woodlots tends to grow in wetlands, shrubby pastures and hay meadows. These latter habitats have also the highest proportion of native species of conservation interest. For example, we found the state-protected cardinal flower, turtlehead and the orchid nodding lady’s tresses exclusively on grazed wet meadows. Shrubby pastures provide habitat for another set of uncommon species, many of which are also components of the Midwest’s vastly diminished tallgrass prairie ecosystem. These include the state-protected ragged-fringed orchis, the regionally rare New Jersey tea, and the native grass little bluestem.

To our knowledge, native plants rarely become really troublesome weeds in market gardens and cornfields in Columbia County (compared, at least, to the headaches caused by certain introduced weed species). Probably the worst native weed around is ragweed.

Of the non-native plants listed in the New England Invasive Plant Atlas, 35 were found on Columbia County farms. Most of them occur on the meadows and include such common pasture weeds as globe-over-the-ground, field garlic, bittersweet, creeping buttercup, moneywort, sheep sorrel, ragged robin, and reed canary grass. These seem to occur...
Roots
Continued from page 13

in tolerable densities on all studied farms and don’t seem to worry the farmers.

An invasive species that might merit more concern and active management is spotted knapweed, which was found on most farms and in particularly dense populations on the dry hill-side meadows of Hawthorne Valley Farm. This species produces a chemical that inhibits the growth of other plants in the immediate area and might well contribute to the degradation of these already marginally productive meadows. Its population dynamics and interaction with more desirable native species, such as little bluestem, might be an interesting subject for further study.

A well-recognized introduced nuisance on most farms is mul-tiflora rose, which spreads quickly in hedgerows and into meadows. Of the other invasive shrubs found in the hedgerows, oriental bittersweet and autumn clematis might merit monitoring. The gardener of Hawthorne Valley Farm names Canada thistle as the most aggressive and hardest to manage garden weed. Currently, the fastest spreading invasive species in our farmscape seem to be purple loosestrife and common reed in wetlands, Japanese knotweed (often also called “Mexican bamboo”) along the creeks, and garlic mustard and Japanese barberry in woodlots. Where feasible, these plants should be mowed or cut before they go to seed to discourage their spread.

If the conservation of native, open-area plants is of interest to the landowner, the following general measures will likely be of benefit:

• Keep woodlots
• Don’t remove established hedgerows. Don’t keep field margins too tidy.
• Avoid drainage of wet meadows and continue the management that has kept them open, e.g., light grazing. Should wet meadows directly abut a creek, it usually is justified to restrict the access of grazing animals to the creek to reduce siltation, even if that measure may result in a reduction of habitat for native plants of open wetlands. The same is true for the shore of watering ponds. Restricted access reduces wetland plant damage from trampling and spreading invasive species. Such measures with other organisms, especially ants, might merit more concern and active management. This farm has old fields or native grasses already occur, consider management for these grasses as forage.

Farms have been an important part of our county’s social, economic, and nutritional landscape. As illustrated here with plants and in future installations of other organisms, they have also contributed to the richness of our natural landscape. Copies of this and related information are available on the Farmscape Ecology Program website, www.hawthornevalley-farm.org/fep/fep.htm. If you have questions, comments, or would like a free, digital copy of the full report, please contact Conrad at 672 7500 ext 254 or fep@taconic.net.
Life on the Hedge

This is the second in a multi-week series of excerpts from *The Flora and fauna of Columbia County Farms: Their Diversity, History, and Management* by Conrad Vispo and Claudia Knab-Vispo of the Farm-scape Ecology Program at Hawthorne Valley Farm. The study looks at seven farms around Columbia County, examining the history of farming and plant life on farms—both discussed in the previous segment—as well as, in upcoming editions, birds, other wildlife and streams.

Last week, after reviewing the history of our fields, we considered the habitat that farms provide to native plants. We highlighted the high diversity of certain areas such as brushy pasture and wet meadow. This week, we turn to hedgerows and butterflies. Our work on hedgerows focuses on the distributions and dynamics of the species they contain, and what that suggests about how they formed. In our work with butterflies we try to identify those on-farm habitats most important for butterfly conservation and those butterfly species most at risk.

Hedgerows have a checkered reputation. From England comes the image of hedgerows and windbreaks as bastions of botanical diversity—surely a truism once one has removed most of the forest. From the Midwest comes the demonizing of hedgerows as the series of raptors that fall upon hapless grassland birds. This is perhaps most true when hedgerows are the only trees in sight. The role of hedgerows, in our landscape, where forest abounds, is probably more subtle.

When we discuss "hedgerows," we also mean windbreaks or fence rows—basically any stretch of woody vegetation bordered on either side by grass and/or brush. For our purposes, this can include riparian woodlands along the banks of streams that wind through agricultural land. At what width a stretch of woods goes from being a hedgerow to being a patch of forest is arbitrary and depends upon which forest-like attribute one chooses to focus on. For some small insects, a 6-foot-wide strip of vegetation bordered on either side by grass and/or brush is enough to elude some plant species.

To better understand the botanical dramas being played out in our hedgerows, we divided the fence row woody plants into five different ecological groups based upon their distribution patterns and their means of seed dispersal.

The most abundant fence row species are the Super Colonizers. These are species that have many small, bird-dispersed seeds; which are thorny (and thus deter browsing); fast-growing; and which prosper in full sunlight. The archetypal species in this group are the multiflora rose and the various brambles (blackberry, raspberry, and their ilk). These species were found almost all hedgerows, although, because of their sun-loving nature, they probably become less common in those fence rows with taller, more forest-like woody vegetation.

Next in apparent abundance are the Weedy Trees. These are shrubs that share the love of sunlight and ease of seed dispersal characteristic of the first class, but that are tamer. They do not stem too little to deter browsing. Exemplars of this group are arrowwood and the dogwoods, both native taxa. While they range widely in the hedgerows, they are largely absent from the most intensively-used central stretches.

The Adventurous Forest Trees have a more limited distribution. These species tend to have heavier seeds; some are still wind-dispersed, others distributed by mammals and gravity. They are likely browse-sensitive. Representative species include red maple, white ash, red oak, and the hickories. Here the pattern of greater abundance near forests is readily apparent. Finally, the plants that have broken the barrier of soil-tillage may be most affected by soil conditions; for example, the lovers of moist soil (e.g., willows, red-osier dogwood, speckled alder) and those that range widely in the hedgerows, they are largely absent from the most intensively-used central stretches.

We have discussed the internal dynamics of hedgerows, but, regardless of how they evolve, what role do they play as habitat for native plants and animals? And, when is this habitat a conservation benefit and when a pest-control issue?

While few of the woody plants that we found in hedgerows were unusual, the growth of certain native woodland shrubs, such as beaked hazel and nannyberry, seemed particularly exuberant in certain hedgerows.
Farmland Butterflies

Because more people are familiar with birds than with butterflies, it is useful to compare the ecology of the two groups to think about how butterflies interact with our landscape.

A few of our butterflies, like many of our birds, are migratory and overwinter in warmer climates. However, unlike birds, breeding occurs on the wintering grounds, and it is a subsequent generation that returns in the spring. In our area, winter does not remain active like birds. Rather, they hibernate as eggs, caterpillars, or, more rarely, as adult butterflies. This pattern of year-round residency means that for most of our butterflies (the migratory monarchs are a noted exception), the habitat that we provide here makes all the difference.

In describing habitat, nesting location seems to be an important characteristic for birds. Butterflies don’t nest; rather, the food of the caterpillar stage is as important as providing home habitat for wildlife. Butterflies can also serve as corridors or bridges that help wildlife animals move between inter-connected forest patches. We have snow-tracked mink, fisher and bobcat moving along hedge rows.

While we haven’t studied it personally, maintaining vegetation along waterways is said to work as a filter, trapping nutrients and sediments that might otherwise lead to muddy banks and sullied streams. Such strips can also stabilize stream banks and prevent erosion during heavy rains.

Researchers in Quebec looked at hedgerows and found that the lowest weed density was in mature, rather than in young, hedgerows. Researchers there also found that the number of natural hedgerows is maintained by allowing the growth of woody vegetation rather than being cut back periodically. Such woody hedgerows were also found to host a greater number of native plants of conservation interest. We recorded 49 species of butterflies on Columbia County farms during 90 surveys lasting a total of about 22½ hours. While none of the species that we found are considered regional or greater conservation concern that we did not see during our fieldwork. There are dozens of other similar species of either great or conservation concern that we did not impinge on our work and that may or may not occur on Columbia County farms. The regal fritillary, for example, once had a great wintering population in our region, this is often accomplished by brush hogging, but grazing is widely used in Europe, and our results from Hawthorne Valley suggest that it might be possible. Cows feed quite selectively, and control of woody plants on occasionally grazed pastures will require either periodic cutting or grazing by browsers such as goats or Highland Cattle. Aside from large-field patches, farm woodland value can be enhanced by allowing the growth of ample nectar-producing plants along field edges and in other less-utilized portions of the land. From our experience, clusters of wildflowers are often butterfly oases in intensively utilized areas.

While the patterns that we have described for hedges and butterflies often cannot be seen as clear-cut as those we previously detailed for herbaceous plants, the viability of nature on farms is evident.

Copies of this and related information are available on the Farmscape Ecology Program website, www.hawthornevalleyfarm.org/fep/fep.htm. If you have questions, comments, or would like digital copies of the full report, please contact: Coastal Cottontail Habitat project. 672-7500 ext 254 or fep@aconic.net.

North American butterfly species that may be found in hedgerows.

Farmland Butterflies Watch List

The Independent, Friday, June 2, 2006
A killdeer takes wing in Columbia County. It is one of many grassland species here, but the loss of open space threatens birds.

Flight patterns

Farmscape Ecology Program documents reasons for decline of farmland bird species

By Conrad Vispo and Claudia Knab-Vispo

The Independent, Friday, June 9, 2006

The decline of farming (and hence the loss of grasslands) in the Northeast was paralleled by the expansion of agriculture in the Midwest. The result was that as grassland birds lost ground in our region, their original native prairies were likewise disappearing and in many but not all cases being replaced by monocultures unsuitable for many bird species. Reportedly less than 10% of original North American grasslands remain. Due to this decline in their demographic heartland, the Northeast's on-farm grasslands became more important for the conservation of these birds.

The justification for the preservation of shrubland habitats is a bit different. Most birds that we consider to be shrubland species were probably associated with shrubby wetlands prior to the extensive shrublands created by agricultural edges and abandoned farmland. They probably experienced a historic population boom from which they are now receding as farmland reverts to forest or wetlands. This week's installment is the story of those species. Reportedly less than 10% of original North American grasslands remain. Due to this decline in their demographic heartland, the Northeast's on-farm grasslands became more important for the conservation of these birds.

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WHO ARE the farm birds? Given that our definition of a farm includes its woodlots, potential farm birds are all the birds that might occur in the county. However, we'll concentrate on the birds of grasslands and shrublands. These are the habitats that farms are most directly responsible for creating and maintaining.

The declines in North American grassland birds have been widely recognized. The declines in shrubland birds are only beginning to come to light. The decline of both groups is attributed at least in part to loss of habitat as first natural and then anthropogenic grasslands and shrublands waned.

Given that prior to European settlement much of our region was forest, one can well ask why grassland birds and their habitats should be preserved in the Northeast at all.
The Independent, Friday, June 9, 2006

The declines in North American grassland birds have been widely recognized. The declines in shrubland birds are only beginning to come to light. The decline of both groups is attributed at least in part to loss of habitat as first natural and then anthropogenic grasslands and shrublands waned.

We considered three inter-related aspects of grassland habitat: vegetation height, habitat type and the occurrence of nearby brush. Several patterns were evident. For example, Bobolink and Field Sparrows definitely favored tall grasslands. Neither was present in the shortest fields. However, they differ in their preferred habitats, with Bobolink occupying hay fields (or fields used for hay and pasture) and the Corn Bunting occurring in short cropped pastures and fields. Indeed, that latter species favored brushy areas, while the former restricted itself to open grasslands. Field Sparrows appeared in pastures and fields. In different groups were those that appeared to favor areas with some shrubs. Red-winged Blackbirds favored similar vegetation, while the Corn Bunting was more diverse, but were more wide-ranging in their choice of habitat types and more tolerant of brush. Finally, the Killdeer sought the lowest vegetation, found mainly in the short-cropped pastures. These results parallel the findings of other researchers.

While this detail may be of interest to an ardent birder or a wildlife manager, it also has broader significance.

Despite this good news and bad news, the good news is that a variety of birds at Red- wax can provide habitat for at least some grassland species. Pasture and grassy shrubland, for example, can apparently serve as habitat, but those that want to keep our complete roster of grassland species might let us compare fields more specifically, we conducted 10-minute point counts. During 10-minute point counts, we tallied all birds that were within a 100-foot radius circle. Point counts were completed between sunrise and 9:30 a.m. during the breeding season. Many of the grassland and shrubland birds we found on farms are, according to the National Breeding Bird Survey, experiencing significant declines nationally. Of the 31 birds that we chose to explore in depth (because they occurred in our data and were grassland or shrubland species), 23 (or nearly 75%) are declining in North America. This is a stunning number given that it includes not only those relative rarities as Henslow Sparrows and Northern Bobwhite, but also species such as Bobolink, Song Sparrow, Red-winged Blackbird, Baltimore Orioles and Eastern Kingbirds. While the breadth of these declines indicates the need for us to focus on the many habitats in which these species are found, it compels us to think about what is happening to them and to ask whether or not their habitats are improving or declining locally. These are the same questions that reflect dramatic changes occurring in our bird communities.

So, what has driven these declines? Part of the answer is loss of breeding habitat. For migratory birds, another part of the answer is loss of wintering habitat. Below, we will mainly discuss the case of grassland birds; next week, we’ll focus more on the shrubland species.

Between 1800 and 1900 Columbia County was part of the USA’s “broadleaf” producing, if little wheat, then other grains, straw and hay. At the peak of agricultural activity (ca. 1850-1900), more than 75% of the County’s land was actively being farmed. During this time, the Society for the Prevention of Cruelty to Animals was formed, leading to a movement that prohibited the haying of hay fields (or fields used for hay and pasture), while Field Sparrows were found in pastures and fields. Indeed, that latter species favored brushy areas, while the former restricted itself to open grasslands. Field Sparrows appeared in pastures and fields. In different groups were those that appeared to favor areas with some shrubs. Red-winged Blackbirds favored similar vegetation, while the Corn Bunting was more diverse, but were more wide-ranging in their choice of habitat types and more tolerant of brush. Finally, the Killdeer sought the lowest vegetation, found mainly in the short-cropped pastures. These results parallel the findings of other researchers.
Given the historical landscape, it is surprising that some grassland birds remained in the county as long as they did.

The neighbors of Miss E. Sackett and Margaret R. Wilbur were not managing for grassland birds; they were making a living as best they could. Their techniques and tools just happened to be largely agreeable to grassland bird species. Today, we are little different in attitude; it is just that our tools are more powerful. We can drive and communicate much faster (and so settle farther from work and stores), can build houses more rapidly, can cut hay earlier and quicker, can import food from farther away.

These new abilities give us novel capabilities and motivations for changing our landscape. But how should the land use ethics that guide our hands take into account the tremendous new powers of those hands? How can we make room for Bobolink in a modern landscape? How can we make room for productive farmland?

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This statistical aside not only gives you a sense for our methods, but also highlights one of the main issues facing shrubland management: if grassland birds are the Hollywood stars, albeit battered ones, then shrubland birds live on the wrong side of the tracks (or, better put, right along the tracks). Many people don’t even consider brush to be a habitat of its own. “Wasteland,” “old field” and “abandoned pasture” are all names which suggest that shrubland is not a habitat in its own right. But it is.

Find a shrubby field and walk around it. You’re likely to hear birds that you find almost nowhere else: the bancing ping-pong ball chirp of a Field Sparrow, the rising buzz of a Prairie Warbler, the buried “Ho—Hum” of the Blue-winged/Golden-winged Warbler, the Eastern Towhee’s “Drink your Tea—ee—ee—”, the Brown Thrasher’s hoarsely shouted mimics, and, if you’re lucky, the non-musical, almost-mechanical rasp of a Clay-colored Sparrow. If our description of shrubland as a transition is correct, then how can it be home to a unique suite of birds? Obviously, these birds must have had natural haunts that they frequented before the advent of shrubby pastures, and to understand what might happen as agriculturally created shrubland wanes, we need to understand where these natural habitats are.

Prior to European colonization, shrubland in our area arose in at least three ways: human clearing, natural disaster (e.g., hurricane, tornado, fire storms, fire) and “extreme” conditions (e.g., sodden soils, exposed hilltops). Although there is substantial debate, regional indigenous peoples probably did not create extensive shrublands. The Northeast does experience natural disasters from wind and fire, but rarely with a frequency or intensity that creates much shrubland. Alpine habitats are rare in Columbia County. Hence, it seems that brushy areas in and about wetlands were the main original habitats for many of our shrubland birds.

This is an important point because, as we mentioned last week, over the past 200 years wetland area has declined by more than 50% in New York. Furthermore, fire and flood control have reduced the effects of natural disasters. Thus, as the agriculturally created shrublands disappear, shrubland bird populations are likely to tumble below their initial densities due to the disappearance of the natural habitats. Many of the species whose songs we described above have begun their declines; we don’t know where they will end.

**JUST AS GRASSLAND includes a variety of bird habitats, so does shrubland. We distinguish several kinds of on-farm shrublands: abandoned fields and...**
brusky pastures; hedgerows; forest edges; and wet-ground margins. Below are informal assignments of our most common bird species to different shrub types based upon field notes and recollections (improvements are welcome); some species occur across several types, others appear more picky.


• Forest edges: Baltimore Oriole, Bluebird, Chestnut-sided Warbler, Indigo Bunting, Blue-winged Warbler, Common Yellowthroat.


• Hedgerows: Grey Catbird, Yellow Warbler, American Goldfinch, Song Sparrow, Common Yellowthroat, Eastern Kingbird, Brown-headed Cowbird.

Unlike grassland birds, shrubland birds do not seem to require especially large habitat patches. This makes evolutionary sense in that they probably evolved as a part to exploit small patches of edge habitat. The fate of both grassland and shrubland birds in our region is tied to that of agriculture, because farmers are largely responsible for creating suitable habitat. However, both on and off farms, certain types of open-land management are more or less conducive to these birds. Below, we will discuss some management ideas, but before we discuss specific management techniques, it’s important to consider context.

We have taken a the-cup-is-half-full perspective on farming and nature conservation. Not all farming benefits nature, but by emphasizing the positive, we open up possibilities. Those possibilities will only be fully realized until we, the public, begin to appreciate, in a social and economic sense, the key role that farmers play in creating the “rural” character that figures prominently in so many regional strategic plans. Just as farmers become willing to see an explicit ecological role not as an insult to their paramount food-producing role or as a dangerous slide towards becoming land managers but rather as an evolution of their unique place in society.

While the ecological management recommendations below focus on what a farmer might do, this is not because the farmer per se is uniquely responsible for the fate of these birds. The direct benefits derived from farming are almost always fed from reducing nutrient runoff and erosion, which hay cutting can do, but are often realized in ways other than regularly cut and not, as with hayfields, mowed to create ground cover that is more diverse than incidental habitat, it is more a product of overall farm management than specific production plans. Shrubbery pastures seem ideal for this purpose. Unfortunately, one can’t just forget about a field and hope it will stay as shrubland; left unattended, it will eventually grow up to woodland. This is true even if occasional cattle grazing occurs. Hence, periodic brush-hogging (preferably by the owner's son) or visits by browsers (e.g., goats or Highland cattle) may be useful.

In order to maintain shrubland birds, some sort of rotational clearing may be best. That is, one clears rotational patches in any given field, rotating through all such areas every 5 to 10 years.

Maintaining streamside/riparian areas, aside from reducing nutrient runoff and erosion, can also support shrubland birds. As we have already noted, the natural habitat for many shrubland species is just such places. Maintaining wet meadows, especially when they are brushy, can also provide good shrubland bird habitat.

The work of others indicates that reducing the use of herbicides and, especially, pesticides may help birds. Reducing herbicides can increase ground cover, and this can help some birds. Reducing pesticides likely increases foods available for insectivorous species. Pesticides can also be directly poisonous. Bird deaths from pesticide poisoning have been reported from our region (Dutchess, Columbia and Rensselaer counties). Birds of prey and other meat eaters (such as cows) appear to be the most commonly affected. However, any effects on young birds, which are somewhat always insects, are far less easy to detect. We have no direct observations bearing on the effects of herbicides and pesticides, and consideration of chemical effects has to be in the context of the assessment as a whole.

For example, in our area at least, organic dairy farming is apt to be based upon rotational grazing rather than conventional dairy farming is often corn based. Separating differences in the bird fauna due to agricultural uses from those due to land use is difficult.

HISTORICAL STATISTICS are wonderous fodder for the imagination. We still remember when we first came upon the crumbling census sheets that detailed the activities of each 1855 household in Columbia County. The numbers could paint a thousand pictures. Yet, at the same time, juxtaposing those individual statistics with the county summaries highlighted how time coldly calculates the net effects of all the little, day-to-day decisions that make up our lives and spits out the trends and patterns that will be our legacy.

Shaping that legacy is a matter of technique and will. We have discussed aspects of technique above. At its base, we think that if we are to have a consciousness will towards the land then it should derive from breathing the land, from listening to it, from reading it.

When grassland or shrubland birds are on one’s property, training their numbers can be beneficial. Strawberry fields or potato patches aren’t usually very busy from a bird-perspective. Small patches of edge habitat, however, are usually very busy and fairly conspicuous; recently fledged birds are often noisy and a bit clumsy in flight. With a little practice, one can get a fairly good idea of what birds have fledged. This takes you only as long as walking (or even driving) your fields.

We think that if we have a conscious will towards the land then it should derive from breathing the land, from listening to it, from reading it.
The exceptionally permeable skins of amphibians serve as sentinels of farmland health

By CONRAD VISPO and CLAUDIA KNAB-VISPO

This is the fifth in a multi-week series of excerpts from “The Flora and Fauna of Columbia County Farms: Their Diversity, History and Management” by Conrad Vispo and Claudia Knab-Vispo of the Farmscape Ecology Program at Hawthorne Valley Farm. The study looks at seven farms around Columbia County, examining the history of farming, plant life, wildlife and streams.

Amphibians are of especial interest to us because they are considered especially sensitive to water quality. They are thus useful “bio-meters” of aquatic and, hence, landscape health.

The sonorous Bullfrog is a widespread resident of larger ponds. Its tadpoles overwinter once or twice before becoming frogs, thus they can survive only in permanent ponds. There is debate about the original native range of Bullfrogs, and they are classified as an invasive species in some parts of the United States. However, it seems likely that they have long been native to this area; early travelers mention their dramatic calls and earlier scientific work mentions them as residents. Their populations bear watching because they are likely favored by the deeper and larger ponds that are now the fashion. They are euger carnivores and can reduce the populations of other amphibians that try to share their habitats.

The widespread occurrence of Green Frogs on Columbia County farms is not surprising, because this is a generalist species that seems relatively resilient to modern onslaughts. Their tadpoles frequently overwinter at least once before changing to frogs. As a result, both Green Frogs and Bullfrogs can breed late into the year, and these two species are the main ones that are still calling as you read this.

We were surprised by the relative abundance and widespread nature of the masked Wood Frogs. Wood Frogs are normally conspicuous only during their brief spring breeding period, and so are easy to overlook. As their name implies, they are forest frogs as adults and pass the winter well frozen in some woodland retreat.

The tiny Spring Peeper is one of our most ubiquitous frogs. That so common and loud a frog could be so small and hard to find was a great puzzlement when we were young.

Breeding by American Toads was detected more rarely than we had expected, given the frequency with which one happens upon them away from breeding ponds. Their breeding period seems short in any one location, but yet relatively long when considered across locations.

The Gray Treefrog is our third most common frog (after Peepers and Green Frogs). As with Peepers, it is surprising that a frog that is so common when congregating at its breeding ponds can “melt into the woodwork” so easily during the rest of the year. No doubt their exquisite camouflage deserves at least part of the credit.

Pickerel Frogs are widespread but never abundant at any given pond. They are early breeders, and we found their eggs together with those of Wood Frogs.

We found Leopard Frogs on only one farm. This is a frog of wet meadows, and we discovered them in shallow puddles in a moist pasture. Records suggest that they were previously more common in the state, when the timing of their arousal in spring resulted in their being dubbed “Shad Frogs.”

The Spotted Salamander’s large (up to 6” or 8”) black body with bold yellow spots is striking and...
ONE SIMPLE but important conclusion from these observations is that farms are home to an array of local amphibians. Some of ourlivestock pools were cattle ponds. In discussing these results with other researchers, we found corroboration of our conclusion that at least some farm ponds can be valuable habitat for our frogs and salamanders. That tentative conclusion spurred our current year’s study of ponds throughout the County.

However, to make the case that farm-land ponds are important for conservation, it is also important that we establish population trends. Can we, as we did with the birds, link historical landscape changes to with changes in amphibian populations?

Because they don’t cause nasty bites, afflict crops or provide an important raw material, and because they are generally small and retiring, amphibians have largely gone unnoticed in history. However, our efforts at historical research are favored by the fact that about 1850 and 1850, New York, Massachusetts and Vermont all decided to survey their faunas (and floras). While these works were rudimentary by modern standards, they were important first steps towards understanding the species of our region. Conveniently, these surveys occurred when agriculture was at or near its maximum extent. Thus, they tell us about the species that were affected by early agriculture, and they give us a point of comparison from which to judge changes.

These works suggest that some species have long fared well: Green Frog, Gray Treefrog, Spring Peeper, American Toad and Red-spotted Newt have been and continue to be fairly common. The dynamics of a few other species is less certain: the status of Pickerel Frog and Bullfrog are simply not clear; those of Spotted Salamander and Wood Frog suggest that there may be recent declines (although their status at the peak of farming is also uncertain). Lastly, Leopard Frog and Cricket Frog may have benefited from the open wet meadows of farms and have almost surely declined substantially since then.

However, a few factors are probably responsible for these patterns. We have chronicled the general clearing and reforestation of our landscape in previous installments. Concurrent with that were certain activities affecting wetlands.

For most of the 19th century, unirrigated grains were our main agricultural product; corn has continued that tradition. For these crops, drainage that makes rich bottomland soils available for farming has been popular. Drainage became particularly common once clay tiles were introduced around 1850. The result has been an estimated 60% decline in wetlands in the state since 1870. The sheep craze around 1820 may have necessitated some water- spots, but these animals probably ranged widely and may have found them if they could find. As dairy awoke in the last quarter of the 1800s, the need for watering holes probably became more immediate, especially given that rotational grazing prevailed and indoor plumbing was lacking; however, the backhoe had yet to be invented. Although agricultural extent was declining by the mid 1900s, there was a bount of government-funded farm pond construction in the 1960s.

It is residential development rather than farming that is probably most affecting our area’s amphibians today. First, there has been the pond-building boom. Our analysis of aerial photographs of a roughly 1 square mile area around Hawthorne Valley showed that detectable ponds went from roughly 2 to 24 between 1845 and 2001. Much of this may be related to current tastes in landscaping. While these ponds may be a boon for some amphibians, certain species suffer when the ponds are dug in former vernal pools, when landscaping results in closely cropped margins, or when ponds are stocked with fish. Second, houses are being built higher up on hills. While vernal pools can occur on lowlands, most of our remaining ones may be nestled in the dips of historically less-accessible ridges. As houses move into these areas, they may be destroying or damming the pools and their surroundings. Lastly, those high houses require long entry roads—n our little aerial study, road length increased about 25% between 1945 and 2001. Many animals are killed in spring as they cross roads on their way to ponds. In this context, farmland ponds can actually be refuges for amphibians, especially those favoring lightly worked but open land.

ON MANY EVENINGS this spring, we have been out at ponds listening for frogs. Some ponds do trap. Few, however, seem to have found an old home: a pond surrounded by grassland that must be traversed is important: a pond surrounded by grassland or shrub land is likely better than one surrounded by parking lot or, worse yet, open field. Increasing insight into salamander psychology, researchers found that salamanders forced to cross pavement to reach their breeding ponds had higher levels of stress hormones in their blood. Shallow areas can also provide refuges. Clearing pond margins of rushes and controlling predators. Shallow ponds collect what we scatter on the land around them. Amphibians breathe and drink through their skins and are thus particularly exposed to water chemistry. While we had no fish available for this study, other impacts on amphibians, especially those suffering from acid rain, invasive species and climate change have all been implicated in the declines of some species and have broad regional effects that will need to be approached with similarly scaled solutions.

TO UNDERSTAND a little about how ponds can be best managed for frogs and salamanders, it helps to think about what characteristics of ponds are most important to amphibians.

From a frog or salamander’s point of view, not all ponds are created equal. We have already alluded to one important distinction: vernal vs. permanent ponds. Obviously, drying out puts pressure on those species (e.g., Wood Frogs and Spotted Salamanders) whose young develop in vernal ponds. And yet, that same drying out is what protects them from predaceous fish and Bullfrogs. Indeed, permanent ponds that happen not to have many fish or Bullfrogs can be good habitat for “vernal pool” amphibians. When vernal pools are dug out for ponds that are then stocked with fish, few amphibians can persist. Unfortunately, vernal pools often look like more than just large puddles in spring and muddy depressions later in the year. As such, they are often ignored and destroyed when they are not needed. And yet, they are the source of the nutrient cycle—polished margins, or when ponds are stocked with fish. Second, houses are being built higher up on hills. While vernal pools can occur on lowlands, most of our remaining ones may be nestled in the dips of historically less-accessible ridges. As houses move into these areas, they may be destroying or damming the pools and their surroundings. Lastly, those high houses require long entry roads—n our little aerial study, road length increased about 25% between 1945 and 2001. Many animals are killed in spring as they cross roads on their way to ponds. In this context, farmland ponds can actually be refuges for amphibians, especially those favoring lightly worked but open land.

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THE CONTENT OF STREAMS

Farmland study examines the place of County waterways and the fish that inhabit them

By CONRAD VISPO and CLAUDIA KNAB-VISPO

This is the sixth in a multi-week series of excerpts from “The Flora and Fauna of Columbia County Farms: Their Diversity, History and Management” by Conrad Vispo and Claudia Knab-Vispo of the Farmscape Ecology Program at Hawthorne Valley Farm. The study looks at seven farms around Columbia County, examining the history of farming, plant life, wildlife and streams.

Some of our best novels can be read on at least two levels: as stories and as comments on contemporary conditions. Often one can enjoy them as tales, without understanding their relevance to the time when and place where they were written. There is nothing wrong with enjoying a book solely as a tale, but you’re not really reading all that the author had to say. In some ways, streams are the same way. We can enjoy a stretch of stream without understanding where it’s coming from or flowing to, or how it has and is evolving. Yet, to miss the second layer of understanding is perhaps to overlook part of what the stream can tell us. And streams have a lot to tell.

Drive west in Columbia County and, for the most part, you’re traveling downhill, following the flow of water to the Hudson. You’re traveling from gurgling streams to slower, lazier creeks (except where they fall over faults). You cross eroded valleys where, oddly enough, older rock erodes down to newer. You go from acidic to basic and back to acidic again. You travel over soils where agricultural quality is in large part measured (inversely) as degree of slope. You bridge waters whose rounded pebbles hale not from the hillsides around you but from cliffs many miles to the north. You travel by mill ponds and cow ponds; by iron mines and gravel quarries.

This scenery both forms our streams and reflects them. Hydrologists talk about stream “order,” a ranking that follows a given flow of water from its mouth on the ocean back to a wet trickle over a mossy rock. Each stage in the path has its own characteristics. While the exact number of orders will depend upon the particular stream, in general, the higher the order (i.e., the farther it is from the flow’s mouth), the quicker and rougher the flow. The closer to a stream’s headwaters, the cooler the water and, being both cool and aerated by rapids, the more oxygen dissolved in the flow.

What the stream flows over shapes it also—limestone rocks dissolve their natural antacids into the water; sandy stretches plug the little nooks and crannies that house many of the small aquatic insects the fish eat and that even hide some small fish from bigger, hungry brethren.

As if the complexity of this physical groundwork were not enough, for at least the past 200 years and probably longer, humans have been muddying the waters both literally and figuratively. Mud is not a sign of a stable landscape; mud is eroded soil, and soil is usually only exposed to erosion by turmoil. Often, humans and specifically the plow have been the source of that turmoil.

Mud reforms valleys and remakes streams. Early farming, which paid relatively little heed to the problem of soil erosion, remade many streams and valleys. The muddy flow was punctuated by dams that controlled and harnessed flow, caught suspended sediments and altered fish movements. The pace and regularity of that flow was affected not only by dams, but by how spongy the land was—a forest of thirsty trees sucks up water for its own ends and the roots can physically hold it. Get rid of the trees, and the water runs off the hills much like rain off a shirtless back.

We have also sullied the stream chemically, dirtying the rain and/or the inflow with various compounds not natural to our waters.

Finally, we have played with the fauna itself. It is very difficult to know the original distributions of fish in New York state, for we have spread fish far and wide by stocking game fish, releasing

David Lee
I would be intriguing to have an account of the changes in our fish fauna over the past, say, 300 years. However, for the most part this is impossible. Even a fish as palatable as a brook trout might be found in our area prior to 1900. Works of the 19th century often focus on identification and give only a rudimentary idea of distribution and abundance. The New York State biological surveys of the 1960s and ’40s were the first attempt to systematically describe the distributions of our more “obscure” stream fish.

So, if we want to begin gauging our interactions with stream fish, we are left to look at current geographic patterns and suggest their causes. This book’s list of stream fish, in the words of our county scientist, is the Index of Biological Integrity. The idea is somewhat similar to what we have already touched upon with plants, birds and butterflies: one asks first which species are most sensitive and then judges a habitat’s quality by how many of the sensitive species one finds there. In deriving the index, researchers correlated the presence or absence of fish with water and aquatic habitat quality. They found, for example, that a brook trout is a pretty good indicator of how fresh, cool, oxygenated waters; a creek chub, on the other hand, seems a sturdier beast.

With this in mind, let’s travel down our imaginary creek and see where we might meet. We assembled our data to do this thanks to the help of Bob Daniels and Douglas Carlson of the State Museum and state Department of Environmental Conservation, respectively. Having made our list of the stream fish we found on different farms, we used this information to explore how these fish were distributed in the county. We divided our fish into four groups based upon their distributions: Upland Species, Foot-hill Species, Lowland Species and Ubiquitous Species. There are additional fish in county ponds, lakes and streams that we simply never caught.

The rapid headwaters where we might start our trip are home to what we dubbed the Upland Species. If you look at a map of the county, you’ll see that our Taconic rubble rolling along the eastern edge and slowly smoothing out into the Ghent flats and similar portions of the county near the Hudson. Our Upland Species are the ones confined mainly to these hills (see table). The brown trout is not a Upland Species, Foot-hill Species, Lowland Species and Ubiquitous Species. The common lowland and ubiquitous species would, for example, at least four times that of hillier Austerlitz, and many activities, such as farming, are most common on flatter valley land.

How do we relate this to our fish distributions? The common lowland and ubiquitous species would, by implication, appear to have a relatively high tolerance or the headwater environments found in the higher hills. In fact, the Upland Species are all sensitive to subtle poisoning is more difficult to detect. Dramatic fish kills are obvious but thankfully rare events. However, chronic poisoning is as difficult to detect as it is to consume. Damage to fish as in humans. The New York surveys make frequent mention of the impacts of raw sewage contamination of streams and of toxic industrial effluent. It’s difficult to quantify these historical effects and estimate the consequences of more modern inputs such as runoff from roadways and the soup of new chemicals that arrive with rain and sewage. Not surprisingly, recent analysis of surface waters reads like an inventory of the chemicals found in our personal cupboards. Meanwhile, state advisories caution against eating fish from many of our waters. We are probably doing a better job of at least planning agricultural inputs elsewhere than for many of the other influences. Agricultural runoff has been widely recognized as an issue. A variety of actions such as the institution of CAFO (Confined Animal Feedlot Operation) regulations for large animal farms and the spread of organic or low-input farming in our landscape are probably having important effects. On farms, perhaps the most important...
management actions have been controlling soil erosion, treating animal waste, and re-vegetating of stream banks. Better municipal water treatment has likewise probably improved water quality or, at least, mitigated the damage.

And yet, the rain falls, our septic tanks seep, our vehicles drive the roads, and, if the current bottled-water boom is to be believed, our main response appears not to be trying to shut our doors. In other words, rather than investing in cleaning up our waters, we invest primarily in personally avoiding the problem. It would be as if our primary response to air pollution were to filter the air coming into our homes, rather than try to clean up what is outside (a response which a quick search of the Internet will confirm is already well underway).

The main problem with this response is the people and other organisms who can’t defend themselves in this way.

In addition to fish, another group of organisms frequently used to study such questions are the aquatic young of such insects as dragonflies, mayflies and midges. Like fish, some of these species are particularly sensitive to how we treat our waters and can serve as useful indicators. Much work has been done with these critters and anybody who’s interested in getting their feet wet should contact Hudson Basin River Watch (www.hudsonbasin.org), a volunteer network dedicated to monitoring water quality in our area largely through this technique. Perhaps by understanding the health of these organisms, we better understand what we are doing to ourselves or, at least, our neighbors.

Among the first extensive publications on our fish was DeKay’s 1842 contribution to the _The Natural History of New York_. Inside the copy we happen to have on our shelf is, in a modest hand, the name John R. Greeley. The name meant little to us until we delved into the DEC’s 1983 survey of our watershed alluded to earlier: it was John Greeley who, as state ichthyologist, described the fish of our watersheds some 75 years ago. One of his successors, C. Lavett Smith, published the current benchmark on our state’s freshwater fish, _The Inland Fish of New York State_, in 1985. It is dedicated, in part, to John Greeley. Like Dickens, Pasternak or Vonnegut, each of these authors reflected their own times. By their focus and commentaries they alluded to the world around them. As our bookshelf attests, they read who had written before them, and tried to understand what they could see. Our landscape is also a story, one that we should read both for the beauty of its tale, and for the significance of its portents.

Copies of this and related information are available on the Farmscape Ecology Program website, www.hawthornevalleyfarm.org/fep/. If you have questions, comments, or would like a free, digital copy of the full report, please contact Conrad at 872-7500 ext 254 or fep@taconic.net.
NATURE IS THE ULTIMATE honest witness. As our rationales for and means of existence change, nature's rationales and means are largely immutable. Nature follows no fashion, is convinced by no fad, subscribes to no party. It is likely that the red-winged blackbirds and spring peepers colonial farmers heard were little different from those we hear today and that the sulfur butterflies that sought salts at horse dung along muddy roads were essentially the same as those now loitering near tractor tails. Through our actions we have encouraged some species and discouraged others, but, in most cases, what each species was looking for was essentially the same as those now following the history of humans and of nature. We are, therefore, convinced that farm habitats in comparison to others are at least comparable to the proportions found in woodlots. In terms of absolute numbers of declining species, the non-forested habitats together hold at least as many as the forest itself. Our point is to document that certain agriculturally created or preserved habitats have the potential to be of similar conservation value as wilder habitats (i.e., forests), at least in terms of species of conservation interest.

Because the studied farms are not a representative sample of all county farms, these data document the potential for the given habitats of certain species, rather than offer proof that these species often or even usually are present on farms. It is also worth noting that the valid comparison is not always with "wilder" habitats: these days, when farms go out of production, development rather than reforestation is frequently the alternative.

Are these on-farm habitats declining?

In parallel with the overall decline of land in farms, the extent of each of these habitats on farms has declined in Columbia County over the past 150 years (see Table 2). On average, each cover type has declined by at least 2/3 since its maximum extent. Permanent pasture has declined most dramatically because of its large extent during the sheep boom and because of the advent of silage-based dairy herds. The ecological effects of these declines in extent have probably been exacerbated by a trend towards increasing intensification of use. Depending upon the crop, yield has increased from 200 to 600% since 1910. As a consequence, total agricultural production in the county did not begin to tail-off until around 1970.

Table 1. The number of native plants, birds and butterflies found exclusively or predominantly in the given on-farm cover-type habitat and the % of those species which are declining or otherwise of conservation interest.

Table 2. The current extent of land in farms and of on-farm habitats as a percent of their historically recorded maxima.

Table 3. A comparison of estimated on-farm extent of various habitats in comparison with county totals.
Do active farms account for an appreciable proportion of these habitats in the county?

Having established that certain on-farm habitats contain appreciable numbers of species of conservation interest and that these habitats have declined substantially, it remains for us to demonstrate that active farms are important sources of these habitats. For example, if, as we have pre-supposed, on-farm woodlots only account for a relatively small proportion of the forest in the county, then one can hardly argue that preserving farms helps conserve forests (although such woodlots might represent some of the most continuously forested lowland sites).

To explore this question, in Table 3 we compare estimates of habitat extents in the entire county (derived from a Cornell analysis of a 1993 aerial photograph) to estimates of the extents of these habitats on county farms (derived from a roughly concurrent agricultural census).

We estimate that more than 60% of the county’s grasslands were found on farms in 1993. Shrubland and wetland were distinguished in aerial photo analysis, but not in the agricultural censuses. We assume that these two habitats are the major component of the agricultural census category denoted as “unimproved, unwooded.” We believe that farms probably account for at least 50%, and possibly as much as 70% of the combined shrubland/wetland cover type.

Thus, preservation of farms has the potential to assist regional nature conservation in important ways. HOW WE REACT to our reflections in the mirror is determined as much by how we feel about ourselves as by the characteristics of the reflection itself. Likewise, taken alone, the above conclusions mean little for local farming. Often when we present these data, the response is: What does it mean for local farming. Often when we present these data, the response is: What does it

matter, farming is already dead in the county? We have neither the space nor the expertise to argue this point extensively. Suffice it to say that some types of farming definitely live on to some degree; one need only visit a local farmers market or search for Columbia County CSAs (community supported agriculture) groups to realize that. The competition between farming and development, illustrated by Figure 1, hints at a troubled future for our farmland. Similarly, maps showing a distinctively stratified distribution of wealth in the county (the average per capita income of our poorest town is half that of our richest), coupled with a proliferation of posted signs and a sad dearth of public lands hints at a bleak future for environmental justice and, ultimately, nature conservation in the county.

The viability of our food production and of our nature is being challenged. We believe that these are allied causes, but that the alliance must be consciously nourished by the general public and by farmers. Nature cannot tell us what to do, but when we fail to recognize that the health of the land around us is central to our physical and mental sustenance then there is a clear call for re-thinking our ways, for heeding our honest witness. Acknowledgements: We are happy to acknowledge the hospitality of many farmers and the important help of our field assistants and colleagues. We are grateful to the state Department of Environmental Conservation’s Hudson River Estuary Program, the Berkshire-Taconic Foundation, the Kaplan Fund and private donors for financial support. Copies of this and related information are available on the Farmscapes Ecology Program website, www.horthornevalleyfarm.org/fep/fep.htm. If you have questions, comments, or would like a free, digital copy of the full report, please contact Conrad at 672-7500 ext 254 or fep@atconic.net.

Figure 1. This map of Columbia County illustrates patterns of building and agricultural land. The data on construction are overlaid on agricultural districts, with the borders of each town shown. The average number of construction permits for single family homes was calculated for each town for each of the two time periods. The higher values indicate more rapid recent expansion. There were no data available on the Town of Gallatin. Permit data from the U.S. Department of Housing and Urban Development, www.socds.huduser.org/permits/index.html.

To explore this question, in Table 3 we compare estimates of habitat extents in the entire county (derived from a Cornell analysis of a 1993 aerial photograph) to estimates of the extents of these habitats on county farms (derived from a roughly concurrent agricultural census).

We estimate that more than 60% of the county’s grasslands were found on farms in 1993. Shrubland and wetland were distinguished in aerial photo analysis, but not in the agricultural censuses. We assume that these two habitats are the major component of the agricultural census category denoted as “unimproved, unwooded.” We believe that farms probably account for at least 50%, and possibly as much as 70% of the combined shrubland/wetland cover type.

Based upon the above considerations, we conclude the following:

- Farm habitats can harbor numerous species of conservation interest.
- These on-farm habitats are all declining.
- While these habitats are not exclusive to farms, farms are a major source for them.

Introducing Ronald J. Innerfield, MD Endocrinology, Diabetes & Metabolism

Dr. Innerfield is an Board Certified Endocrinologist with a special interest in diabetes and he will be enhancing the Diabetes program already in place at Columbia Memorial. Dr. Innerfield completed a residency in internal medicine and a fellowship in endocrinology at Bellevue Hospital in New York City and served as Chief for the Clinical Endocrinology branch at the National Diabetes Center in Washington, DC.

He will be practicing at Hudson Medical Care located in the new Hudson River Bank & Trust Foundation Medical Office Building on the hospital campus, First Floor, Suite 130; Phone 697.3540.

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