

Some FEP Thoughts on HVA Land Use Fundamentals.

October 2014

Hawthorne Valley Association owns approximately 400 acres of land; that land is used in various ways including education, agriculture and recreation. In addition, given the Association's commitment to understanding the intricacies of place and the inherent values of nature and culture, the value of the land from the perspective of nature conservation and cultural heritage also needs to be considered.

We believe that, in a landscape such as ours, nature and culture are inexorably linked. The nature we see around us today has been and continues to be strongly influenced by human use. Human action, in turn, largely reflects the opportunities provided by the natural setting. If we are to understand where we come from (which, in turn, can help us think about where we are going) then valuing our ecocultural landscape, our farmscape, is important. As an educational organization, all of the ways in which we value and manage the land are tremendous educational opportunities – for shifting the conversation, the fashion, the understandings, the knowledge, the mentalities, etc. This 'education' can come about both explicitly, as part of particular classes or workshops, or implicitly, as visitors assimilate the HVA landscape.

This document has two parts: first, we identify and discuss the management of various places on HVA land which, from our perspective, have particular ecoculture value; second, deriving from reflection on past events and conversations, we briefly consider various themes in HVA land use.

Clearly, this document is written from the particular viewpoint of the Farmscape Ecology Program. It is meant as an invitation to dialogue as we try to consider generalities and specifics that might help shape the activity of a land use committee. This is *not* a position statement for that committee; rather we hope that either as responses to these comments or as free-standing contributions, groups and individuals from around HVA will be stimulated to express their perspectives on HVA land use.

Part 1: Culturally and Ecologically Valuable Places at Hawthorne Valley

Areas included in this document meet one or more of the following criteria:

- They provide habitat for regionally-rare organisms;
- They illustrate important aspects of past or current human/land interactions;
- They are relatively intact examples of natural habitats that are rare or challenged in our region;
- They provide particularly good educational or scenic opportunities related to the theme of nature and landscape use.

For some of the areas we describe, other, perhaps competing uses may be envisioned. Ultimately, usage will need to be decided based upon multiparty discussions which consider a variety of goals. This document is our contribution to understanding use from the perspective of one set of goals: conservation of nature and the cultural landscape.

Floodplain Forest

Location: Along east side of Agawamuck Creek south of School Bridge and in ropes course area.

Ecological Importance: Floodplain forests are both oft-used and sometimes overlooked habitats.

Floodplains can provide prime (aside from occasional flooding) agricultural lands, and many of the County's cornfields are on such lands. At the same time, forested floodplains often appear messy or unkempt because of periodic floods; they may seem initially uninviting. Ecologically, their rich soils can support a diversity of native plants and animals. In our study of floodplain forests in Columbia County, we estimated that only about 16% of our floodplains have not been cleared in the past 400 years and only about 35% of original floodplain forest area is now in forests of any age. The patch of floodplain forest south of the School Bridge is not ancient – it was apparently open farmland in the 1940s. However, it seems relatively free of invasive plants and harbors such native floodplain forest plants as False Mermaid Weed, Dutchman's Breeches, and Blue Cohosh. Ramps also occur in portions of this area. The ropes course area is on somewhat higher ground, but is included here because of its proximity to the Agawamuck.

Management Considerations: Trail erosion and spread, wildcrafting, timber use, and riparian management are all activities that may influence this habitat. In particular, the trail between the Swim Pond and the School Bridge has apparently widened as users seek to avoid muddy spots and as it is used by motorized vehicles. Floodplain forest plants, while resilient in the face of flooding, are usually quickly killed by trampling and compaction. The harvesting of ramps seems to threaten populations of these plants in the area. Unlike mushrooms, which can be harvested with little impact on the survival of the mother plant, harvested ramps usually *are* the mother plant. Single leaf and controlled levels of harvesting can be compatible with the survival of ramp colonies, but unmanaged harvests are a threat. No specific considerations of timber use or riparian management are applicable to these areas, and so readers are referred to the forest and stream sections below.

Around 2010, a small ropes course was established in the flat area north of the Ben Ocean Bridge. A network of steel cables bolted into trees supported various installations, including a large tire. This area was rich in spring ephemerals, and use of the ropes course resulted in trampling of some of these flowers. To our knowledge, the course is now largely unused, and we recommend its removal.

On the edge of the floodplain, near where the Ben Ocean Bridge reaches the forest, there is a cluster of Leatherwood bushes, a regionally rare shrub, named for its incredibly flexible branches. Located near the trail and amidst a tapped Sugar Maple stand, these bushes are at risk of damage by passing trail users and during the sugaring season. The bushes are relatively easy to identify, and we recommend that those leading sugaring or others activities in that area become familiar with the bush so that damage can be avoided. These bushes are also favored browse of our numerous deer during certain winters. Unless deer populations are reduced, it may be advisable to fence in or, as we did last winter, apply deer repellent on these plants. Such actions, as with most management considerations, could provide a meaningful educational opportunity around land stewardship and conservation.

Ponds and Pools

Location: HVA property supports a variety of ponds and pools. Some of these (such as the ponds in Valley Field, North Field, and on West Hill) originated as livestock watering ponds, although none continue to be used in that way. One such pond is now the camp swim pond. The corner field pond was recently dug as a run-off control element, and the fire pond was created by excavating a pre-existing wetland to feed a hydrant in the School parking lot. In addition, at least one vernal pool - a natural shallow pond that dries out seasonally - is located on the property with a couple of others nearby.

Ecological Importance: Other than the seasonal vernal pools and larger lakes, permanent natural open ponds were rare in our landscape prior to European colonization, and so few native plants and animals are dependent on them. There is, however, a community of amphibians, invertebrates and, potentially, even a couple of plants whose ecologies are tied to vernal pools. Animals include Wood Frogs, Spotted Salamanders and Jefferson Salamanders, species whose populations are challenged by factors such as the

loss of these inconspicuous habitats to development and the death of these long-lived species on roads during the breeding season. Vernal pools support these species because their seasonal drying eliminates potential predators such as fish and Bull Frogs. Permanent waterbodies without or with limited populations of predators can also support vernal pool amphibians.

Management Considerations: Aside from urging the conservation and careful treatment (i.e., limited visitation during the breeding period) of existing vernal pools, we also recommend that, when possible, existing permanent ponds be treated in ways that enhance their value to vernal pool creatures. This includes allowing the growth of shoreline vegetation and avoiding the introduction of fish. If no longer needed, existing ponds should be allowed to fill in naturally. Any construction of new ponds should only be done with careful consideration. Pond making is a current fashion in landscaping. In general, because of its potential impact on existing wetlands (ponds are often dug in small wetlands or vernal pools) and streams, we don't encourage this trend.

The swim pond is a special case. Clearly, its primary goal is for swimming. During some years, algae blooms pose an aesthetic if not health risk. Often such blooms are temporary events of Spring and are over by swim season. In general, such blooms often reflect an abundance of nutrients in a given water body. While not a silver bullet, avoiding the grazing of livestock around the pond or accumulations of waterfowl (and hence avoiding the in-flow of excrement nutrients) can help. Potentially, physically removing any floating alga and then depositing it elsewhere (e.g. compost piles?), can, at least, slow nutrient accumulation.

The ecologies that result in algae blooms are not well understood. Barley bales sometimes reduce algal blooms. Dyes, which block the light waves that algae need for photosynthesis, are sometimes recommended and may be partially effective, however, they do nothing to reduce long-term nutrient loading and, we believe, should only be used after careful consideration of alternatives. We do not recommend the use of direct algae toxins.

Streams: The Agawamuck and Farm Creeks

Location: Two streams cross HVA property the Agawamuck, which flows along the west base of Phudd Hill, and the so-called Farm Creek which flows out of Akker Pond and eventually joins the Agawamuck.

Ecological Importance: Both of our streams are home to various fish species and aquatic invertebrates and are regularly used by herons, shore birds, Kingfisher, Killdeer, and other stream birds. Brook Trout occur in the Agawamuck, as do the rare Long-nosed Suckers; Waterthrush have been recorded in Indian Valley; and Mink and Otter follow the streams' courses.

Management Considerations: Stream conservation can, in a general way, be divided into two thematic areas: maintenance of physical habitat and of water quality. The latter, in turn, can be partitioned into issues of nutrient overloading, pathogen contamination, and pollution by toxins. Water quality issues are discussed in the section on *water quality* and figured prominently in the Master Plan. In this section, we focus primarily on issues of physical habitat, including their interactions with water quality.

The value of established streamside vegetation is widely recognized. Well-vegetated stream corridors serve several functions: they intercept sediments and nutrients applied on higher ground (e.g., cow manure), they somewhat stabilize stream banks, and they provide shelter for both streamside and, through fallen trunks and branches, in-stream organisms. Maintaining well-vegetated strips between pastures and streams is thus advised so as to reduce the infiltration of mud and nutrients. Reducing cattle time in streams is also recommended for similar reasons, especially where their presence is causing active erosion. Given the relatively stable and firm nature of the main cattle ford, we are not sure that its replacement should be a primary concern, provided that cattle aren't permitted to loaf in those waters. If possible, the pump house ford should be eliminated.

As we have discussed with some of the farmers, it would be ideal to re-establish a wooded corridor along the Farm Creek. This would incorporate both the already-wooded corridor back of the Creek House, the re-vegetating corridor between the old pump house and the main cattle ford, as well as the sections between the Valley Field and the old Pump House and between the main Cattle Ford and the Agawamuck. This corridor would have the added benefit of providing a protected pathway for the movement of wildlife through the Valley. Such a corridor would need to be broad enough so as to allow natural stream wandering to occur. While such corridors can reestablish on their own if given room, they may be enhanced through the planting of willows and other native streamside vegetation. Many of the ecological benefits of such revegetation can occur without extensive active intervention, so choice of actions may be more determined by aesthetics, heuristics, and available resources.

Stream wandering is natural but often irritating to humans. It is exacerbated when human management of the stream corridor augments downstream water flows and/or increases the susceptibility of banks to erosion. A case in point is the Agawamuck, where the installation of rip-rap behind the School may have channeled faster flow downstream to the Pond Field where extension of the pasture to the stream edge has left banks exposed to increased erosion. In general, we strongly discourage any floodplain construction which cannot tolerate periodic flooding. Management of the Pond Field should be carefully considered and, perhaps, the advice of outside experts sought. We hope that a combination of an enlarged stream corridor and the planting of woody stream-side plants, perhaps helped in part by the 'Trees for Tribes' program, can reduce the rate of field loss.

We strongly support the already-implemented efforts by the Farm to avoid soil erosion and stream sedimentation by converting ploughed lands in the floodplain to permanent pasture, as well as the fencing of most of the stream corridor to put it off limits for the cows.

Wetlands

Location: While 'wetlands' can be broadly defined to include streams and ponds, in this case, we are referring to wet meadows, wooded swamps and marshes. These are found in three primary situations on HVA land: around existing cattle ponds where broad, wet margins have formed; in the North Fields where two occasionally-grazed wet meadows occur; and as a complex of interconnected wet areas off of Faust's Nose and below Steep Hill. HVA also owns the "Nature Institute Wetlands", a beautiful example of a swamp forest, on May Hill.

Ecological Importance: Wetlands were probably historically relatively widespread in our landscape, as glacial ponds filled in, beaver meadows came and went, and water pooled at the base of slopes. We thus have a diversity of native wetland plants and animals, many of whom are relatively rare given the fact that wetlands are more frequently removed than conserved by human action. On HVA lands, such organisms include Spotted Turtles, Ribbon Snakes, Woodcock, various dragonflies, Bronze Copper Butterflies, some orchids, Swamp Candle, Monkey Flower, Green-headed Coneflower, and Cardinal Flower.

Management Considerations: Wetland conservation-based management depends in part on goals and resources. For example, grazed wet meadows will, over time, often convert to wooded wetlands if grazing ceases. This creates habitat for some organisms and removes habitat for others. Because of this we suggest a mixed approach that allows some areas to revert to wooded wetland but maintains others in an open state that might be partially analogous to beaver meadows.

Given adjacent wooded swamp on private land, we suggest that the wetland off of Faust's Nose be allowed to continue its evolution towards swamp forest. Already, young Red Maple are growing up in this area. However, because of their use by sun-loving and rare reptiles, such as Spotted Turtles and Ribbon Snakes, we suggest that the wetlands at the base of Steep Hill and downstream from Faust's Nose be kept relatively open by occasional grazing or the select removal of tree saplings. Exact management will need to

be determined in consultation. Likewise, at this point, we recommend that the North Field wetlands also be kept somewhat open, again through a managed mix of grazing and the occasional removal of woody vegetation.

Finally, because wetlands are part of our natural water system and support somewhat delicate natural communities, we suggest that any top soil disruption, storage of manure/compost, or dumping of materials occur on lands outside the direct run-off path of existing wetlands.

The Nature Institute has been diligent in maintaining and respecting the May Hill wetland; we recommend that HVA continue to support their administration of those lands.

Dry, Shrubby Pastures

Location: These pastures are located on well-drained hillsides around HVA land, specifically on Steep Hill, North Hill, and Indian Valley.

Ecological Importance: To understand the potential ecological significance of these sites, it is important to realize that the Northeast probably had few extensive grasslands prior to European colonization; what open upland did occur was probably found on the thinnest, driest soils of hilltops or as part of pine/oak savannas on particularly sandy, fire-prone soils. This means that we have a relatively reduced set of native openland plants and animals, and many of these do not find a home in the moister, nutrient-enriched conditions typical of many pastures or hayfields; under those conditions, something resembling a replica of European meadows exists where many of the plants and animals are intentional or inadvertent imports from Eurasia.

Our agriculturally poorer fields may more closely resemble historically natural openlands and so can be home to a greater diversity of native plants and animals. Thus, on some of our slopes, a more native-rich flora exists, including Little Bluestem, Sweet Fern, Mountain Mint, and a few other rarer species. A diversity of namesake Hawthorns also occurs in and around these fields. Such plants, in turn, are the potential home of rare insects such as the Leonard Skipper butterfly. In addition, a variety of shrubland birds prefer nesting in shrubs located in semi-open landscapes. These include Prairie Warbler, Brown Thrasher, Mockingbird, and, on rare occasion, Clay-colored Sparrow.

Dry shrubby pastures are also home to interesting ant fauna. One species is from the Midwest whose populations we have found in the County but are otherwise unknown from the rest of New York or anywhere else on the east coast. Colonies are on Steep Hill and North Hill. *Polyergus lucidus* is another interesting ant on North Hill. This species is recognized as being vulnerable to endangerment. The nest on North Hill is only the second one we have recorded in the County.

Management Considerations: Maintenance of shrubby pastures for both conservation and agriculture requires on-going consultation between farmers and ecologists - shrubby dry pastures will not remain open without some active management, such as grazing, brush hogging and select tree removal. At the same time, to a certain degree, shrubbiness and nutrient poverty can run counter to what are perceived as the most productive grazing conditions. Potential synergy exists if cows can use such pastures as medicinal leys, where access to unusual plants, perhaps including some shrubs, allows them to self-medicate. We would recommend that consideration of the management of North Fields, Steep Hill and Indian Valley be included in winter-time management meetings between farmers and ecologists.

Mature Hayfields

Location: Our main hayfields include those on HVA property, such as the Cemetery Field, Atelier, Across-from-Atelier, Tom's Field and Bee Field. In addition, through lease arrangements, we manage extensive fields on the property of others, including the Iselin, Coe and Haley properties.

Ecological Importance: Although most of our hay fields are dominated by the non-native forage plants which tend to be most productive under typical hayfield conditions, they can be home to grassland birds such as Bobolinks, Savannah Sparrow, and, with increasing rarity, Meadowlarks. As noted earlier, extensive natural grasslands were probably relatively rare in the Northeast, and so pre-colonial populations of grassland birds were correspondingly much lower than their peak numbers during the 19th century maximum extent of grass-based agriculture. (In pre-colonial times, aside from their heartland in the Prairies, these species may have frequented somewhat moister habitats than those we now associate with them, e.g., wetland edges). Despite what may have been modest regional historical populations, Northeastern Northeastern hayfields took on a greater importance in the conservation of these birds, as Prairie habitat was reduced during the Midwest's conversion to intensive agriculture. On HVA lands, we use Bobolink abundance as our primary index of grassland value to birds.

Management Considerations: Bobolinks make their nests in the central areas of long-grass fields. Nests are made on the ground or low in the grass. As such, if hayfields are cut prior to the time when the nestlings fledge (i.e., leave the nest), then substantial loss of nestlings can occur. We thus recommend that those fields which are managed for Bobolink not be cut until after the first week of July, at which point most Bobolinks have probably fledged their young. Clearly, such management is somewhat opposed to best field use in terms of hay production. For this reason, we plan to continue informal surveys of hayfields and the earmarking of select fields for a late cut based on bird presence. Because this may not result in optimal hay production, we advise farmers to attain access to more than a minimum amount of hayfields.

Work in Vermont has suggested that some Bobolinks may be able to successfully re-nest after a May hay cut, if their field is then left uncut for a minimum of two months. While such an approach may allow for a crop of nutritious hay and some reproduction of grassland birds, we would not suggest relying on this approach on a regular basis. However, it may be used some years, when an early cut seems necessary for the maintenance of desirable hayfield vegetation.

We suggest that bird surveys and consultation with farmers remain part of Spring consultations between farmers and ecologists.

Hedgerows.

Location: Hawthorne Valley Farm is crisscrossed by hedgerows, including those bordering roadways.

Ecological Importance: Hedgerows have a special place in agroecological literature because of their particularly important role in areas with little forest, such as parts of Europe and the Midwest. In the East, they are less important as forest remnants, but can remain important as wildlife habitat. That said, certain native 'edge' plants such as Nannyberry, Hawthorns, and even Hazel occur in these hedgerows. Numerous birds nest in the hedgerows, flying out to feed on insects in the adjacent fields. In addition, in Autumn, hedgerow fruits may be important for birds during the migration period. Ground Beetles, Bumble Bees and some spiders may also over winter in hedgerows. It is thus probable that one of the most important roles of our hedgerows is to provide habitat for beneficial organisms in relative proximity to agricultural operations. While not usually consider part of hedgerows per se, weedy areas near hedgerows or forest can harbor important ecological resources, such as the Milkweed that is crucial in Monarch natural history.

Management Considerations: As Multiflora Rose gets knocked back by Rose Rosette Virus, most hedgerow

maintenance can probably become more passive - allowing healthy diverse hedgerows to develop around field margins and clearing only as needed to maintain fences. If shading is seen as a potential issue, then the select removal of trees might be needed. If rose clearing seems necessary, then hedgerow cutters should be trained to avoid the cutting of other, native bushes. Groundhogs like hedgerows, their control is best achieved by trapping, dogs, or hunting, rather than habitat destruction.

We suggest that, when possible, weedy areas of herbaceous vegetation on unused areas near edges or hedgerows be cut only once per year, either in early Spring or in Autumn, so that Milkweed and other wildflowers can prosper and support native animal life.

Upland Forest

Location: By far the largest amount of forest on HVA lands occurs on the slopes of Phudd Hill. This includes Chestnut Oak and Hemlock on the steeper slopes, and Sugar Maple, Black Birch, Red Oak, Hickories and other trees on level ground.

Ecological Importance: As our predominant natural land cover prior to European colonization of the region, forests are home to a large variety of native plants and animals. These include birds such as Hermit and Wood Thrushes, Black-throated Green Warbler, and Scarlet Tanager and mammals such as Fisher, Porcupine, and Black Bear. Woodland plants such as Pink Lady's Slipper, Coralroot Orchid, Wild Ginger, Trillium, Jack-in-the-Pulpit, Dutchman's Breeches, as well as Walking and Maidenhair Ferns occur in our forests.

Management Considerations: Our forests provide several opportunities from a human use perspective and these, in turn, pose several potential challenges to forest nature conservation. Specifically, Phudd Hill provides educational and recreational opportunities, together with opportunities for the harvesting of forest products such as firewood and maple syrup. At the same time, extensive off-trail forest use can result in widespread trampling and increased soil erosion, and wood harvesting may cause compaction, forest opening (which can invite colonization by *invasive plants*) and the removal of valuable deadwood habitat. Maple syrup production, while generally less intrusive, can, as mentioned earlier, cause trampling damage to some rare plants.

As key ingredients in the development of a deep conservation ethic, we would not want to discourage in-forest education, recreation and forest use. At the same time, we believe it is important that these activities occur in ways that are compatible with the continued role of HVA forests in conservation, as they provide opportunities to develop an understanding of human responsibilities towards nature. It needs to be recognized that, in most cases, the overall ecological health of the forest (in contrast, for example, to highest timber production) is best served by minimal human intervention. We also need to realize that HVA forest land is limited, and portions of it receive especially heavy use. Acquisition of additional forested land above West Hill or on adjacent property elsewhere might allow HVA to spread forest use over a larger area and thereby reduce its ecological impact.

Given the above considerations, our recommendations for forest use include the following:

- enhanced field education for those teachers and counselors using the forest with their classes so that they are sensitive to rare habitats and appropriate activities;
- restricting the brunt of class and camper use to established trail ways,
- greater incorporation of forest ecology and history into upper class and place-based learning center curriculum so that there is a larger educational stake in an intact forest and so that our forests contribute more to the world views of our students

- restriction of forest product use to light gleaning for firewood and the occasional tree felling for demonstration purposes and the educational processing of wood; given its topography and restricted extent, we do not believe that Phudd Hill should be relied upon for extensive firewood or timber production; any logging that does occur should be properly managed so as to avoid needless forest opening and damage to the forest soil and ground flora.
- respecting of natural forest processes; for example, fire, ice, wind and disease can all cause major forest disturbance; for the most part, such disturbance should be seen as a natural part of forest life rather than an event requiring extensive forest clean-up. An introduced disease, such as Hemlock Woolly Adelgid, should be combated when possible, however, once it takes hold, we recommend that natural processes then be able to take their course. It has been shown that natural vegetation often recovers best if human disturbance is not added to natural disturbance. Exceptions may occur along frequented trails where there is a danger from falling limbs.
- because of deer abundance (and associated ecological and agricultural effects) and because good hunters as a group are one of the most active wildlife stewards, we recommend the continued regulated deer hunting of the property

Historical Buildings

Location: HVA owns several Harlemlville buildings that date from 1850 and earlier. Elucidating the exact dates and histories of these buildings would be an excellent student research project which we would be glad to help with.

Eco-cultural Importance: In the same way that the stone walls that lace some of the property are extant illustrations of how our ancestors interacted with the land, so too are our houses. The architecture implemented, the woods used, and the construction technology all reflect ways in which earlier people in the Valley created their ecocultural landscape.

Management Considerations: Once demolished, historical houses are gone forever. While we realize that condition and design might not always meet current needs, we urge that the values of these structures as physical manifestations of human interpretation of place not be overlooked. At the least, detailed research and photo/drawing documentation of structures should be undertaken. When possible, we urge preservation (including necessary updating) of existing structures, and their incorporation into the constructed culture of Hawthorne Valley.

Part 2: Land Use Themes.

Some of these themes were touched upon above, but seem to deserve more consideration; others touch on philosophical generalities that might be useful to recognize specifically.

Overall Land Use Philosophy

From our perspective, the goals of HVA land use should include the following (in no particular order): demonstrate productive biodynamic agriculture which includes conscious respect of natural habitats, both for their own sake and for their potential benefits to production; provide the grounds for education and experiences that encourage a connection with the ecology of the land and a consideration of human

interaction with that; provide a publically visible example of sustainable, affordable living with the land in a way that satisfies not only human needs but also those of other organisms.

Exploring Synergies between Farm Production and Nature Conservation.

We believe that consciously attempting to merge agriculture and nature conservation is a stimulating and important field. Clearly, this needs to be done in a place-specific way that recognizes both the agronomic demands of successful food production and the ecological needs of native organisms. Rather than framing the discussion in terms of pests and beneficials - a stark perspective that judges organisms from solely an agronomic perspective - we suggest that conversation focus on 'landscapes of interaction' between agricultural production and native species habitat with the emphasis being on creating landscapes that are beneficial to both goals. That is, how can we create integrated landscapes which support food production and native species conservation?

Such an approach requires input from farmers and ecologists who, in a mental reflection of the hoped-for physical integration on the ground, explore the questions of 'what can local nature do for our farming?' and 'what can our farming do for local nature'? Examining these questions would involve on-going adaptive management, which trials different configurations of the farmscape and monitors their agronomic (in terms of production) and ecological (in terms of nature conservation) consequences.

Various aspects of Farm activity already reflect movement in this direction. Biodynamic agriculture, with its emphasis on organic methods and whole-farm integration, provides a sound basis. On-going conversations around grassland birds, shrubby pasture management, and stream corridor conservation have resulted in relevant, on-the-ground activities. We recommend an annual farmer/ecologist meeting that works on themes, identifies areas of collaboration, and reviews the results of past activity.

A somewhat related area of work is nutrient flow – how does landscape management, including agriculture, influence the flow of nutrients through the farm and how, in turn, does that influence the production and requirements of the farming and the soil habitats that are created? Rigorously approaching this question would require an intensive project involving outside collaborators and various measurement technologies. While it may not immediately be practical, achieving a deeper understanding of the flow of nutrients through our local landscape would, doubtless, provide insights that could be cautiously applied in other situations. Such nutrient flow remains a key theme of sustainable agriculture but one that is rarely addressed at the landscape scale.

Expanding our Land Base

An adequate land base is central to the realization of our land use philosophy: an integrated agricultural approach (one that values both food production and nature conservation) to a farmscape likely requires more space than one which focuses solely on the most space-efficient forms of production; education which incorporates extensive outdoor experiences in field and forests needs adequate land to insure that such use does not simultaneously damage the very land being studied; the attraction of customers, students, conference attendees, and visitors requires certain levels of infrastructure, but, again, the creation of such infrastructure needs to be balanced by the realization that it can potentially destroy lands that are valuable for agriculture and nature conservation. Only an adequate land base, perhaps including pre-existing buildings, can avoid these potential clashes. For these reasons, land acquisition needs to remain an important component of any development plans for the Valley.

The Value of Native Plants

Many garden and agriculture plants are non-native; some were chosen because of their production or aesthetic qualities, others came along unasked. While many of these plants are central to agricultural production and others are relatively innocuous, certain non-native plants can invade semi-wild areas and threaten the ecology of native organisms. These are usually termed “invasive species”. In addition, while perhaps not actively competing with native organisms, other non-native species are analogous to gastronomic “fillers”, i.e., they take up space that could perhaps be occupied by more beneficial items. Specifically, as (sub) urbanization spreads, greater and greater amounts of land are occupied by landscaped areas. If such areas are occupied by native plants, then they have the potential not only to contribute aesthetically but also to enrich such ‘middle ground’ with habitat for native insects and other organisms; additionally, non-native garden plants have sometimes been the source of subsequent invasive species.

Consideration of the value of native flora has two corresponding management implications: the control of non-native plants which threaten the ecology of native organisms (i.e., those ‘invasive species’) and the enrichment of campus landscaping with native species.

Invasive species control can be a highly consuming (in various ways!), sometimes fruitless activity, and some so-called invasive do provide food and shelter to native organisms – one need only look at where hedgerow birds, mice and rabbits often make their homes. For these reasons, we recommend only focused efforts to control invasive plants. These include the following:

- **Multiflora Rose:** Control where it interferes with farming practices. At this point, the effects of Rose Rosette Virus appear to be extensive, and additional removal may not be necessary.
- **Purple Loosestrife:** Purple Loosestrife is currently largely absent from our wetlands. Vigilance and the pre-seeding breaking off of the flower heads when noticed could easily keep this species in check.
- **Oriental Bittersweet:** This species is particularly damaging because mature vines can strangle the trees they grow up. While its complete removal from HVA property is impractical, we would recommend the cutting of any vines observed growing up mature trees on the property (these vines need only be cut at the base, they do not need to be removed from the tree). Likewise, the cutting of large Oriental Bittersweet vines on telephone poles or other structures would help reduce the dispersal of seeds.
- **Japanese Knotweed:** This is a particularly quick spreading plant of stream edges; it quickly takes advantage of disturbed streamside grounds. Stopping its spread requires not only repeated cutting but the safe disposal of the cuttings which can readily re-root. While its control would be ideal, it may not currently be practical. Decisions on its control depend upon the availability of person power.
- **Japanese Stiltgrass:** We just recently discovered a first small patch of this invasive grass (which has just recently begun to appear in Columbia County and is rapidly spreading) in the vicinity of Mike Pewtherer’s camp. We are planning to weed this patch next year before the plants go to seed and to continue to monitor the area in the coming years.
- **Garlic Mustard:** This invasive herb has long been present in the floodplain along the Agawamuck and seems to have established a more or less stable population in this area. Complete removal would require a lot of effort and would have to be done in spring when the native spring wildflowers are most prone to trampling and uprooting. Therefore, we recommend not intervening at present.

- Toringo Crab and Autumn Olive are two highly invasive shrubs that are colonizing shrublands and hedgerows. Both have some ornamental value for their spring flower displays, and Autumn Olive also has edible fruits which provide an opportunity for wildcrafting. Therefore, we do not recommend attempting complete eradication. However, both of these species have a potential to take over unmanaged fields and we suggest that their management continues to be integrated into the overall shrubland management.

Landscaping with native plants is becoming an increasingly common undertaking and many relevant resources exist. While it can be applied anywhere, at any scale (we have a small native plant garden around the Creekhous), it does mean something of a change in aesthetics and horticulture. We would encourage its application at least around production gardens, where it can serve an agroecological and educational purpose.

Water Quality

The Master Plan highlighted the need to deal with our effluent before any additional major infrastructure expansion occurs. This includes waste water treatment not only of human sewage, but also of dairy waste and, in some ways, of manure run-off. Various integrated systems exist, including artificial, managed wetlands. We don't pretend to have expertise in the relevant technologies, but would encourage that consultation with knowledgeable and creative water-treatment advisors be undertaken and acted upon prior to additional development in the Valley.

Wildcrafting

Wildcrafting refers to the harvest of wild-growing plants for human use for medicines, food, or crafts. It is not normally applied to logging for timber or firewood.

Wildcrafting forms one way in which people can connect to the ecology of the land around them. As such, sustainable forms of wildcrafting are to be encouraged. Unfortunately, human demand can easily outstrip the ability of wild plants to reproduce (hence one of the origins of agriculture). For example, uncontrolled harvesting of ramps on HVA land seems to already have decimated populations of this native plant; likewise, extensive use of some mosses for displays and associated trampling could greatly impact local populations. In general, usages that do not require harvesting of the mother plant are more sustainable than those that do. For example, maple syrup extraction, mushrooming, and nut and fruit collection, if carefully conducted, can generally occur sustainably. These uses could, however, deplete the available harvest during a given year, and thus may need to be more consciously coordinated.

Because of its potential educational value, we would not, out-of-hand, recommend the elimination of all wildcrafting. However, we would recommend that it only be conducted by members of the HVA educational community who have trained themselves on sustainable harvesting. Wildcrafting provides one valuable educational opportunity not only in what nature can provide, but crucially, in how we can interact respectfully with the natural world. We would be glad to provide suggestions and training regarding the use of specific wildcrafted species.

Sustainable Energy Use

Reduction of fossil fuel consumption is beneficial for various reasons, both environmental and heuristic. Given the complexity of modern technologies and the complex webs of our energy networks, outside

advice is needed to tackle this wisely. That said, we believe it is crucial that such advice come from people who are not interested in selling any particular solution. Instead, such an advisor needs to honestly explore HVA's energy-related goals and come up with a practical, suitable set of recommendations derived in regular communication with HVA. Any solution needs to be sensitive to our particular agricultural and ecological desires. Perhaps a graduate student from a university such as RPI might begin to give us some insights.

Darkness

We consider the dark sky above the Valley a resource worthy of conscious and responsible stewardship. In this day and age, a good view of the stars is an exceptional experience for many people. We therefore recommend that the opportunity for residents, coworkers, and visitors to the Valley to visually connect with the cosmos be safeguarded. In this respect, when outdoor lighting is necessary, we support the continued use shielded lights (i.e., such as the parking lot lights which focus light downward).

We also consider the experience of darkness at ground level to be an important part of the rural experience in the Valley and suggest that we not apply urban standards to the amount of lighting needed in the hamlet. There is an educational opportunity for people to learn to explore and feel safe in darkness.

Finally, we would like to draw attention to the ecological effects of light pollution. They range from the killing or ecological disruption of insects attracted to artificial lights to the disorientation of migrating birds. Artificial lights also interfere with the activities of night-active predators and can lead to shifts in species composition. For example, it has been observed that light-tolerant spider species, who take advantage of the insects found around artificial lights, increase in number at the expense of spider species who require darkness.

Clearly, some level of lighting is required for safety, we only urge that this is tempered by recognition of the above values of darkness.

That's it for the moment! Please feel free to add your thoughts as comments on this document or as free-standing contributions. Our hope is to create a virtual reading room for sharing these materials.