



TOWN OF ANCRAM NATURAL RESOURCES CONSERVATION PLAN

PREPARED BY

Hudsonia Ltd.

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THE TOWN OF ANCRAM
CONSERVATION ADVISORY
COUNCIL

2015

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SUMMARY

The Town of Ancram possesses an extraordinary concentration of unusual and regionally important habitats, clean streams, good farmland, and active farms. The Natural Resources Conservation Plan (NRCP) identifies these and other resources throughout the town, and provides guidance for land use planning, land development, and conservation that will help the town sustain the most important resources for generations to come.

This Summary (p. i - xiv) gives a brief overview of the main concepts and findings of the NRCP. More detailed information, discussion, and explanation of terms is in the body of the Plan.

The NRCP focuses both on resources—such as water and soils—that are critical to supporting the human community and the natural world, and those—such as scenic and recreational features—that deepen the connections of people with the land and enhance the quality of our daily lives. The plan considers many interrelated factors that are important to maintaining clean and abundant water, wildlife habitat, and regional biodiversity; contribute to climate moderation, carbon sequestration, farm viability, and food security; and are responsible for the beauty of the Ancram landscape.

A series of map figures illustrates major aspects of the physical and biological landscape (e.g., geology, topography, land cover), including the resources of conservation concern identified in this Plan:

- Enduring features
- Water resources
- Biological resources
- Farmland resources
- Scenic and recreational resources

In preparing the NRCP we reviewed the scientific and land use planning literature, assessed the threats to resources of concern, and outlined basic measures for effective conservation and sustainable uses of land and water. Some of the prominent threats, for example, are:

- climate change—which is likely to alter natural communities, favor invasive pests and diseases, upset pollinator life cycles, and cause more frequent and severe storms;
- habitat loss and fragmentation due to poorly planned land development and poor land management practices;
- depletion and degradation of groundwater and surface water due to land development, inadequate stormwater management, polluting substances applied to land and roads, and floodplain land uses; and
- loss of active farms and good farmland soils due to a difficult agricultural economy and the pressure of land development for residential uses.

Certain resources of concern are concentrated in different areas of Ancram, but resource conservation must occur everywhere—on every half-acre and three-acre house lot, as well as on every 50-acre woodlot and 500-acre farm; on residential and commercial land, as well as forested and agricultural land. The NRCP sets forth general conservation measures that can be applied everywhere to help ensure that our land uses are sustainable. These measures are aimed at protecting large areas of broadly-connected intact habitats, maintaining the water dynamics that ensure clean, ample water supplies, reducing soil erosion and loss, maintaining the present and future viability of agriculture, protecting scenic landscapes, and expanding and enhancing opportunities for outdoor recreation.

Ancram’s unusual physiographic and biological diversity is largely due to the bedrock geology of the Taconic Mountains, the Harlem Valley, and the western hills, and its influence on the soils, water, and biological communities that have developed here over millenia. The marble bedrock of the Harlem Valley helps to create the calcareous (calcium-rich) water and soils that support some of Ancram’s unusual habitats—such as fens and kettle wetlands. The calcareous soils have also helped to produce the wide-open landscapes that are the scenic legacy of Ancram’s farms.



Shrubby cinquefoil and small-flowered agrimony in a fen near East Ancram Road. Photo © Jamie Purinton 2014

The forested hills of the Taconics, the Fox Hill—Round Ball Mountain ridge, the Doodletown Road area, and elsewhere—underlain by more acidic bedrock—provide critical habitats for wildlife and plants, help to capture precipitation and supply surface water and groundwater that feeds lowland farms, habitats, and streams, and provide the scenic backdrops to the open lowland landscapes.

Ancram residents, businesses, farms, and visitors all benefit in countless ways from clean and abundant water, from thriving local farms, and from the services provided by intact natural communities and ecosystems. This Natural Resources Conservation Plan urges everyone to take responsibility for protecting the land and water in the places where they live, work, and visit throughout Ancram, so that the natural wealth will be equally available to future generations.

RESOURCES OF CONCERN

ENDURING FEATURES

The term “enduring features” refers to features such as bedrock, hills, and valleys that are substantially unaffected by human land uses and ordinary natural events such as floods, wildfires, hurricanes, and even climate change. These are the foundation upon which everything else has developed. For conservation planning, we can use enduring features as “surrogates” for the species, communities, and processes that sustain our ecosystems. Protecting representative intact areas of these features will help preserve a host of natural communities, interactions, and ecological services. This Plan considers three kinds of enduring features to be especially significant for conservation:

- bedrock—the variety of bedrock types throughout Ancram
- surficial materials—the gravel, sand, silt, clay, and peat that sits on top of the bedrock
- landforms—mountaintops, hillsides, and valleys.

This Plan seeks to protect intact representatives of all the enduring features of Ancram; that is, significant representative areas of all types of bedrock, all types of surficial deposits, and all kinds of landforms, undisturbed by roads, driveways, houses, mines, and other developed features.

WATER RESOURCES

Drinking water for nearly all of Ancram’s residents and businesses is drawn from groundwater. The surface water in our streams, lakes, and ponds supports farms, fish and wildlife, and recreation, and is important to the town’s scenic landscapes. A major goal of this Plan is the conservation of clean, ample surface water and groundwater. This will require close attention to land uses throughout the Ancram landscape, and adherence to measures that

- 1) maintain and restore forest cover wherever possible,
- 2) promote groundwater recharge and reduce rapid overland runoff of precipitation,
- 3) maintain intact habitats in floodplains,
- 4) minimize applications of hazardous materials (e.g., pesticides, fertilizers, de-icing chemicals) to land, and especially near streams and waterbodies, and
- 5) minimize hazardous land uses in areas where shallow aquifers are overlain by sands and gravels that can be efficient conduits for contaminants.

Land development (roads, driveways, parking lots, buildings, lawns, etc.) often results in reduced groundwater recharge and increased volumes of surface runoff of rainwater and snowmelt, with consequent increased flooding, and reduced base flows of streams. These outcomes can be extreme in densely settled areas. The changing climate is predicted to bring greater frequency

and intensity of severe storms and droughts, which will further exacerbate the flooding and stream flow problems. Maintaining suitable land cover (especially forests), minimizing impervious surfaces, and carefully managing stormwater along roadways and on developed lots can help to minimize, prevent, or even reverse some of these trends. Forests with intact vegetation and intact forest floors effectively promote infiltration of water to the soils, and may be the best insurance for maintaining flow volumes, temperatures, water quality, bank stability, and habitat quality in streams and ponds.



Long Lake. Photo © Choral Eddie 2014

BIOLOGICAL RESOURCES

Biological resources provide invaluable ecosystem services that support the human community and provide irreplaceable economic benefits to the town and region, such as climate moderation, native pollinators of agricultural crops, and free, longterm maintenance of water resources for agricultural, domestic, and other uses. The town hopes to protect important landscapes, ecosystems, habitats, and species of conservation concern, and improve the resiliency of local ecosystems to existing and new environmental stresses, including those brought on by climate change. To accomplish these goals the Plan incorporates basic biodiversity conservation principles, and recommends general measures that can be applied to both townwide and site-specific land use decisions. Protecting large, contiguous land areas will help to protect the habitats of area-sensitive wildlife species that require large habitat patches to

fulfill their life history needs, and will protect the array of natural communities in each area, including those of which we are yet unaware. Some of the recommended conservation measures include:

- Protecting significant representatives of “enduring features” in large, broadly connected areas.
- Protecting broadly-connected intact habitat areas that allow animals and plants to move freely and safely between habitat areas.
- Protecting high-quality representatives of all ecologically significant habitats.
- Protecting habitat complexes critical to known species of conservation concern.
- Avoiding fragmentation of large forests and large meadows by roads, driveways, clearings, and structures.
- Encouraging sustainable forestry in working forests.
- Encouraging sustainable agricultural practices that build soil, conserve water, and protect water quality.

Unlike most other towns in the region, Ancram has a map of **ecologically significant habitats** created by a biodiversity assessment team of community volunteers, with assistance from Hudsonia biologists. The northern half of town has been mapped to date, and the team hopes to complete the map for the rest of the town by 2016. The map depicts the locations and extent of significant habitats throughout the study area, including common habitats such as upland forests, meadows, and shrublands, and rarer habitats such as fens, kettle wetlands, oak-heath barrens, and calcareous ledges. An accompanying report describes the habitats and their ecological values, and provides recommendations for conservation applicable to all of Ancram. The map and report will help landowners, developers, and town agencies understand the parts of the landscape that support our biodiversity resources, and devise ways to protect the most important areas.

Ancram has been recognized by the DEC and the New York Natural Heritage Program (NYNHP) as having special importance for rare species of plants and animals and for high-quality examples of ecological communities. Most of the eastern half of Ancram is within the “**Harlem Valley Calcareous Wetlands Significant Biodiversity Area**” which includes both lowland areas and adjacent hills known to support rare and vulnerable species of plants and animals. The northeastern corner of Ancram is in the “**Taconic Ridge Significant Biodiversity Area**,” recognized by the DEC for the large areas of contiguous, high-quality hardwood forests that provide habitat for numerous plants and animals of conservation concern, and serve as a primary water source for the wetlands and streams of the Harlem Valley. In addition, the NYNHP has designated parts of Ancram as “**Important Areas**” for rare species and natural communities.

Several state-listed rare species of plants and animals are known to occur in Ancram. These include bog turtle and marsh valerian (both NYS Endangered), timber rattlesnake, least bittern, culver's root, handsome sedge, Davis' sedge, and swamp birch (all NYS Threatened), and spotted turtle, sharp-shinned hawk, and grasshopper sparrow (all NYS Species of Special Concern). Other species on the list of NYS Species of Greatest Conservation Need include four-toed salamander, New England cottontail, black-billed cuckoo, and willow flycatcher. At least 16 species of county-rare butterflies, dragonflies, and damselflies have been observed in Ancram by the Farmscape Ecology Program.



Rock talus can provide habitat for eastern small-footed bat and slimy salamander.
Photo © Choral Eddie 2014

FARMLAND

Productive and profitable local agriculture benefits the local economy, local food security, the visual landscape, and the culture of the human community. Active, fallow, and abandoned farmland can also contribute significantly to native biodiversity, and intact habitats in the vicinity of farms can, in turn, provide services and resources—such as climate moderation, clean and abundant water, flood attenuation, and habitat for pollinators—that may be critical to the success of local farms. The town's dedication to supporting Ancram's working farms, and protecting the best farmland for current and future agricultural uses is documented in the *Agriculture and Farmland Protection Plan* (2011).

The viability of agriculture in Ancram is threatened by rising property values, the marginal profitability of farming, and competition for prime farmland from land development interests. This Plan places a high priority on support of active farms and conservation of the best farmland soils to maximize the current and future potential for farming in the town. The Plan also promotes best farming practices



Cows at the Lampman farm. Photo © Choral Eddie 2014

that improve soils, conserve water quality and quantity, enhance wildlife habitats, reduce wildlife mortality, and increase resiliency to the effects of climate change.

SCENIC AREAS

Most parts of the Ancram landscape would be considered “scenic” by most observers—the views of pastures, hayfields, marshes, lakes, streams, and forested hills are all important to the daily lives of Ancram citizens. Although Ancram’s Scenic Corridor Overlay Zone and Ridgeline and Steep Slope Protection Overlay District seek to protect views of prominent ridges and hillsides, many other parts of town also deserve conservation attention for their scenic values.

Because the beauty of the landscape and the charm of the hamlets are attractive for new residential development, the town needs to guard against the potential for residential sprawl—widespread, low-density residential development that in Ancram tends to happen not in large subdivision projects, but one house at a time. Moreover, the current fashion for building houses at high elevations, in the midst of farmland, and on lake shores, and for constructing long driveways to houses set far back from a road can be harmful to scenic landscapes, biodiversity, and water resources. The more splendid the view from any house location, the larger the visual impact on the landscape of the house and associated disturbance.

The potential for rural sprawl can be reduced by town policies that encourage new development in and near existing hamlets and other developed areas instead of in the countryside, and policies that discourage the siting of new houses at locations where they will visually blight large areas of the landscape. Such policies will also help to protect farmland and significant habitats from fragmentation and other adverse effects of land development.

A common desire to maintain Ancram’s “rural character” was expressed by townspeople during preparation of the Comprehensive Plan. Ancram’s rural character, however, consists not only of the visible landscape from public roadways, but also the ecological condition of the land, and the land uses such as farming, logging, and mining that directly depend on the land and have shaped the culture and character of the town for 200 years. Were it not for these “working lands” and the Ancram citizens that work them, Ancram would be just another bedroom and retirement community with pretty views. The NRCP recognizes the importance of working landscapes and land-dependent uses, and seeks to promote the continuation of such uses that employ sustainable practices and protect sensitive biological, water, and scenic resources.



Intermittent woodland pool .Photo © Jamie Purinton 2014

The NRCP recommends that intact natural areas and farmland visible from public roads and public-access lands be maintained wherever possible, but not at the expense of important habitats. (The ecological harm caused by hiding a new house deep inside a large forest, for example, may be greater than the visual harm caused by building the house at a location near a road.) The NRCP also recommends that the location and design of any new structure or land use consider the visual impacts on the entire viewshed of the structure, the associated cleared land, and associated exterior and interior lighting.

RECREATION

Outdoor recreation improves the daily lives of residents, attracts visitors, and benefits local businesses, and can serve to strengthen people’s connections to and appreciation for the land. The kinds of public outdoor recreation best suited to Ancram are those that take advantage of natural landscapes and cultural features while protecting intact the resources of conservation concern.

Existing public recreation features in Ancram include hiking trails in the Taconic State Park, the Harlem Valley Rail Trail north from Under Mountain Road, hiking trails at the Round Ball Mountain and the Drowned Lands conservation areas, and a public access site for fishing on the east bank of the Roe Jan at County Route 3.

Planned and potential features include a hiking trail connecting Round Ball Mountain with Fox Hill (Columbia Land Conservancy), the Millerton-to-Boston Corner segment of the Harlem Valley Rail Trail (in development), rail trails along other abandoned railroads, potential trails and other recreational features on the 29-acre Ancram Town Hall property, and perhaps additional walking trails at Long Lake and Lower Rhoda Pond.

Walking and bicycling opportunities can also be improved and expanded if Ancram adopts the “Complete Streets” principles for public roads. The Complete Streets program uses sidewalks, paved shoulders, lane striping, bicycle lanes, “share the road” signage, crosswalks, pedestrian control signals, curb cuts, and traffic calming measures to improve the suitability and safety of roads for all users, including bicyclists, pedestrians, and people with disabilities, as well as motorists. Ancram could greatly expand the opportunities for cycling and walking by upgrading our roads to a Complete Streets standard.



Winter outing at the CLC's Round Ball Mountain Public Conservation Area. Photo © Jamie Purinton 2014

CONSERVATION AREAS

All parts of Ancram contain features worthy of conservation—streams, aquifers, wetlands, lakes and ponds, forests, meadows, ledges, other significant habitats, farmland soils, scenic landscapes, and others. To draw the attention of landowners, town agencies, and others to the natural features of particular concern, we have divided the town into six “Conservation Areas,” each of which is characterized by certain unifying physiographic, biological, or land use features: the Taconic Mountains, the Noster Kill Valley, the Round Ball—Fox Hill ridge, the Punch Brook Valley, the Roeliff Jansen Kill Farms, Lakes, and Kettles, and the Western Hills and Forests.

Taconic Mountains

The Taconic Mountains in Ancram are part of an immense and substantially **unfragmented forest** that extends into Connecticut, Massachusetts, and Vermont. Large forests have particular value for biodiversity, for regional climate moderation, for carbon sequestration, and for conservation of water resources. The Taconics are not only a scenic and recreational landmark in this region, but also have been designated a “**Significant Biodiversity Area**” by the New York State Department of Environmental Conservation (DEC), and an “**Important Area**” for rare species and significant natural communities by the New York Natural Heritage Program (NYNHP). In addition to the large forest area, the Ancram Taconics have two **intermittent woodland pools**, and the rare occurrences of a **cool ravine** and of **oak-heath barrens**. The Ancram portion of the Taconics is within the Taconic State Park, and includes two **hiking trails** that originate in Ancram. The conservation of adjacent and nearby areas on privately-held lands will help protect the wildlife habitats, water resources, climate buffering, and scenic values of the Taconics.

Noster Kill Valley

The Noster Kill is a perennial stream in eastern Ancram that flows north into Bash Bish Brook, a tributary to the Roeliff Jansen Kill (Roe Jan). The Noster Kill is classified by the DEC as a **trout spawning** stream which indicates **clear, cool stream habitats** with coarse substrates—conditions that support wild populations of cool-water fishes and other organisms of clean streams. The Noster Kill Valley is within the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area** designated by the DEC, and most of the valley is within **Important Areas** for rare animals designated by the New York Natural Heritage Program. There are **extensive wetlands** along and near the Noster Kill, including several **fens**. The Noster Kill Valley also contains **large meadows** on **active farms**, and large areas of good **farmland soils**. The valley is underlain by an **unconsolidated aquifer** in an area vulnerable to contamination from surface activities.

Fox Hill—Round Ball Mountain

The Fox Hill—Round Ball Mountain corridor has **high elevations**, a **large contiguous forest**, **exposed ledges**, **wetlands**, and small **streams**. The hills are within the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area** designated by the DEC, and parts of the corridor have been identified by the NYNHP as **Important Areas** for rare animals. These hills and the Taconics are the only representatives of Everett Schist bedrock in Ancram—an example of one of the “**enduring features**” to be preserved if possible. The Fox Hill—Round Ball ridge provides **groundwater** that feeds the fens, other wetlands, streams, and farms in lowland areas to the east and west, and is an important **scenic asset** for Route 22 and areas to the west.

Several thousand acres of land in this corridor is protected by the Columbia Land Conservancy (CLC)—either owned outright or with conservation easements held by the CLC. Conservation of lands adjacent to those protected areas would enlarge the protected areas of contiguous habitats, provide larger buffers for interior habitat areas, benefit the plants and animals of the corridor, and further protect the water resource services provided by intact habitat areas.



Fox Hill viewed from Boston Corner. Photo © Jamie Purinton 2014

Punch Brook Valley Fens

Punch Brook is a large perennial stream that runs south-to-north through the middle of Ancram, and joins the Roe Jan at the north end of the Drowned Lands. It was classified by the DEC as a **trout stream** for most of its length in Ancram, and several of its tributaries were classified as **trout spawning streams**, an indication that these streams were clear, clean, and cool. The corridor includes **Old Croken**, the **Drowned Lands** wetland, and the largest concentration of **fens** in the town. The corridor is underlain by significant areas of **unconsolidated aquifer**. The entire corridor is within the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area**, and Old Croken/Drowned Lands and the large wetland area south of Miller Pond are designated by the NYNHP as “**Important Areas**” for rare plants, rare animals, and important wetland communities. This Conservation Area borders the eastern edge of **Lower Rhoda Pond** and **Long Lake**, and contains **intermittent woodland pools** within **large forested areas**, **kettle wetlands**, other large and small wetlands, broad **floodplains** along Punch Brook and the Roe Jan and several significant **floodplain forests**. Much of the corridor is **active farmland** on **Prime Farmland Soils** and **Farmland Soils of Statewide Importance**.



Gretchen Stevens (Hudsonia Ltd.) leads a fen tour on the Lampman farm. Photo © Choral Eddie 2014

Roeliff Jansen Kill—Kettles, Lakes, and Farms

Most of the land in Ancram drains ultimately to the Roe Jan, but this Conservation Area covers only an area in western Ancram characterized by large areas of glacial outwash deposits (sand and gravel), and calcareous glacial till. It is underlain by an **unconsolidated aquifer** and is considered to be an area of **high hydrogeologic sensitivity**. This CA has the largest areas of **Prime Farmland Soils** in Ancram, and many **active farms** with **large contiguous meadow areas**. The Roe Jan is classified by the DEC as a **trout stream** for its entire length in Ancram, and a **trout spawning stream** for the entire reach upstream of the Ancram hamlet. This CA has **Lower Rhoda Pond, Long Lake, intermittent woodland pools, kettle wetlands**, many other large and small wetlands, and large areas of **floodplain forest** along the Roe Jan and tributaries.



Young raccoon in eastern white pine. Photo © Choral Eddie

Western Hills and Forests

This Conservation Area encompasses Prospect Hill and vicinity, the Doodletown Road area, and many of the other forested hills west of Route 3. It includes most of the **high-elevation areas** west of the Fox Hill/Round Ball Mountain ridge, the **large forests** west of Route 82, and a forested area in northwestern Ancram that is part of a much larger **forest (>6,000 acres)** extending into the towns of Copake, Gallatin, and Taghkanic. The forest in the vicinity of Doodletown Road contains at least 24 **intermittent woodland pools**—the largest concentration in Ancram—in addition to several isolated **hardwood swamps** and **intermittent streams**. Two small areas of the CA have been designated by the NYNHP as “**Important Areas**” for rare animals.

THE CONSERVATION PLAN

To fulfill the purposes outlined above, the Natural Resources Conservation Plan lists recommended actions, ranging from public education and voluntary activities by landowners and developers, to procedural measures for environmental reviews, to regulatory measures added to the town code, to land acquisition or establishment of conservation easements, all to help ensure that the resources of greatest value to the human community and the natural landscape are maintained intact. Many landowners, public agencies, and NGOs with shared concerns can serve as partners in accomplishing these goals. The conservation plan includes action items aimed at:

- protecting representatives of “enduring features”
- ensuring adequate groundwater recharge
- preventing contamination of surface water and groundwater
- ensuring sustainable rates of groundwater withdrawals (e.g., from wells)
- maintaining and restoring the natural functions of floodplains for flood attenuation, groundwater recharge, and fish and wildlife habitats
- protecting broadly-connected areas of ecologically significant habitats
- protecting habitat complexes required by animal species of conservation concern
- promoting resilience of natural areas, farmland, and developed land to the effects of climate change
- protecting scenic landscapes
- expanding outdoor recreational opportunities
- educating the public about natural resource conservation
- promoting greater connections between people and the land.



Claudia Knab-Vispo (Farmscape Ecology Program) leads Girl Scouts on an outing to a vernal pool near Route 3. Photo ©Jamie Purinton 2014

TOWN OF ANCARAM
NATURAL RESOURCES CONSERVATION PLAN
2015

INTRODUCTION

This Natural Resources Conservation Plan (the “NRCP” or the “Plan”) was developed to guide the town’s stewardship of the land and water that supports the people, farms, businesses, and natural areas of Ancram. The NRCP helps to carry out the objectives of the *Town of Ancram Comprehensive Plan* (2010) and specifically to fulfill Goals 1 and 2 of that *Plan*: 1. “Encourage farming and the rural, small town, scenic character of Ancram by promoting the profitability and productivity of our town’s current farms, attracting new farming ventures, protecting farmland, and preserving open space and important scenic views.” 2. “Develop policies and programs to protect groundwater, watersheds, streams, wetlands, woodlands, ridgelines and wildlife habitats...” The NRCP also complements the findings of the Ancram *Agriculture and Farmland Protection Plan* (2011) and the *Heritage Resources Plan* (2012), and shares many of the goals and recommendations of those documents.

The Town of Ancram is within the Hudson River Valley National Heritage Area (NHA)—one of 48 such places designated by the US Congress as a place where natural, cultural, and historic resources form a nationally important landscape (National Park Service 2014). Most of Ancram’s active farms are 150-275 years old (Piwonka 2013), and the vicinities of some of the historic farms have significant other resource values in addition to their farmland soils and farming history. In a survey of Ancram’s historic features Piwonka (2013) suggested that the hamlets, other residential clusters, and several rural “corridors” could be proposed as candidates for the National Historic Registry due to their industrial, agricultural, and transportation history. Ancram’s physical and biological attributes, and the history of mining, manufacturing, and agriculture, have all helped to shape the present-day hamlets, working landscapes of fields and forests, and wildlands.



Purple trillium at Lower Rhoda Pond. Photo © Jamie Purinton 2014

This document describes the natural resources of conservation concern, illustrates their distribution throughout Ancram, explains principles and measures for effective stewardship, and sets forth means of accomplishing the town’s conservation goals. Recognizing that human uses of the land will continue to expand, and that all parts of the landscape cannot be protected in their natural state or their current uses, the Plan provides general conservation guidelines for the town, and identifies some of the features of highest priority for protection.

Early in the preparation of this Plan, it became apparent to the authors that Ancram possesses an extraordinary concentration of unusual and regionally important natural features related to water resources, biodiversity, and farmland, in addition to the scenic beauty that surrounds us all. We intend that the NRCP will bring this natural wealth to the attention of citizens and town officials, and inspire a sense of appreciation, responsibility, and stewardship that will inform the town's policies and practices related to natural resources.

Appendix A contains a glossary of terms used in the NRCP; Appendix B an explanation of rarity ranks of plants and animals (e.g., Endangered, Threatened, Special Concern) referred to in the Plan; Appendix C an explanation of the New York State Climate Smart Communities program, and Appendix D the Habitat Summary prepared by the Hudson River Estuary Program.

This Natural Resources Conservation Plan was prepared by Hudsonia Ltd and the Ancram Conservation Advisory Council, with funding from the Town of Ancram, the Hudson River Valley Greenway, and the Hudson River Bank and Trust Foundation.



View from Old Croken. Photo © Jamie Purinton 2014

PHYSICAL SETTING

Ancram is a sparsely settled rural town. The three hamlets—Ancram, Ancramdale, and Boston Corner—are the historic population and cultural centers of the town, but residences are also clustered in the Long Lake/Lower Rhoda Pond region and scattered widely along roads throughout the town. With a population of 1,573 (US Census 2010), the population density in Ancram is approximately 37 people per square mile.

The Town of Ancram covers approximately 27,475 acres in southern Columbia County, New York. Much of the town lies within the “Harlem Valley,” a physiographic region extending from mid-Columbia County to Westchester County and characterized by a deep bed of marble bedrock that is responsible for many of the unusual ecological communities, habitats, plants, and animals that set this region apart from surrounding areas.

A deep bed of marble sets the Harlem Valley apart from neighboring regions.

The northeastern corner of Ancram contains a part of the Taconic Mountains which extend from western Vermont through Rensselaer, Columbia, and Dutchess counties (NY) and neighboring Massachusetts and Connecticut. These are rocky forested hills reaching elevations of 2,040 ft above sea level (asl) in Ancram, underlain by metamorphosed schist, phyllite, and slate, according to Fisher et al. (1970). The Noster Kill Valley, underlain by dolostone and shale, lies just west of the Taconics at elevations of approximately 580-730 ft in Ancram, and is flanked on the west by the forested ridge of Fox Hill (1,346 ft) and Round Ball Mountain (1,318 ft). Fox Hill is on schist and Round Ball is on slate, phyllite, schist, and metagraywacke bedrock. The rolling hills west of that ridge reach elevations of approximately 1,050 ft asl in Ancram, and are mostly underlain by slate and shale bedrock of the Walloomsac and Normanskill formations (Fisher et al. 1970). An exception is Old Croken, a limestone knob (850 ft asl) adjacent to the Drowned Lands wetland (Figures 1 and 2). The lowest elevation in Ancram is ca 430 ft asl where the Roe Jan flows into the neighboring Town of Gallatin near Hall Hill Road (Figure 2).

The surficial material (loose deposits over bedrock) in Ancram is predominantly glacial till—mixed clay, silt, sand, and boulders transported and deposited by glacial ice—but there are broad bands of alluvium (material transported and deposited by running water) along the Roeliff Jansen Kill and on an unnamed tributary to the Shekomeko Creek, running along Route 82 in southwestern Ancram, and glacial outwash and kame deposits along Punch Brook, along and near the Roeliff Jansen Kill, and in the Noster Kill and Webatuck valleys (Figure 3). There are significant areas of exposed bedrock in the Taconic hills, on the Fox Hill ridge, on Prospect Hill, and on Poole’s Hill southeast of the Ancram hamlet (Figure 3).

Due to the limestone, dolostone, and marble bedrock underlying much of Ancram, many of the soils are circumneutral (Figure 4), and this helps to explain the presence of some of the distinctive habitats in the town. The soils tend to be shallow (less than 20 inches depth over bedrock) on all but the lowest elevations (Figure 5).

Most of the town is drained by the Roeliff Jansen Kill (hereafter the “Roe Jan”), a major tributary to the Hudson River (Figure 6). A ca 4,700-acre area in the southeastern part of town drains to Webatuck Creek—a tributary to the Tenmile River in the Housatonic River drainage, and a 190-acre area in the northwest corner of town drains to Loomis Creek in the Claverack Creek (and Hudson River) basin (Figure 6).

The Drowned Lands is a large and diverse wetland located along Punch Brook and the Roe Jan. The northern part of the Drowned Lands and the adjacent Old Croken knob are owned by the Columbia Land Conservancy and managed as a public conservation area. Other large wetland complexes lie in the floodplains of the Roe Jan and Bash Bish Brook north of Wiltsie Bridge Road/County Route 3, and here and there elsewhere along the Roe Jan and along the Noster Kill; smaller wetlands are well-distributed throughout the town (Figures 7 and 8).

Agriculture has long been a prominent part of Ancram’s economy and culture, and today the town has a strong interest in promoting the economic viability and success of local farms. Active and inactive farmland constitutes over 50 percent of the Ancram landscape (Figure 11). Not surprisingly, much of the farmland is on the best agricultural soils (Figure 10).



A view of the Drowned Lands wetland from Route 3. Photo © Jamie Purinton 2014

Bedrock Geology

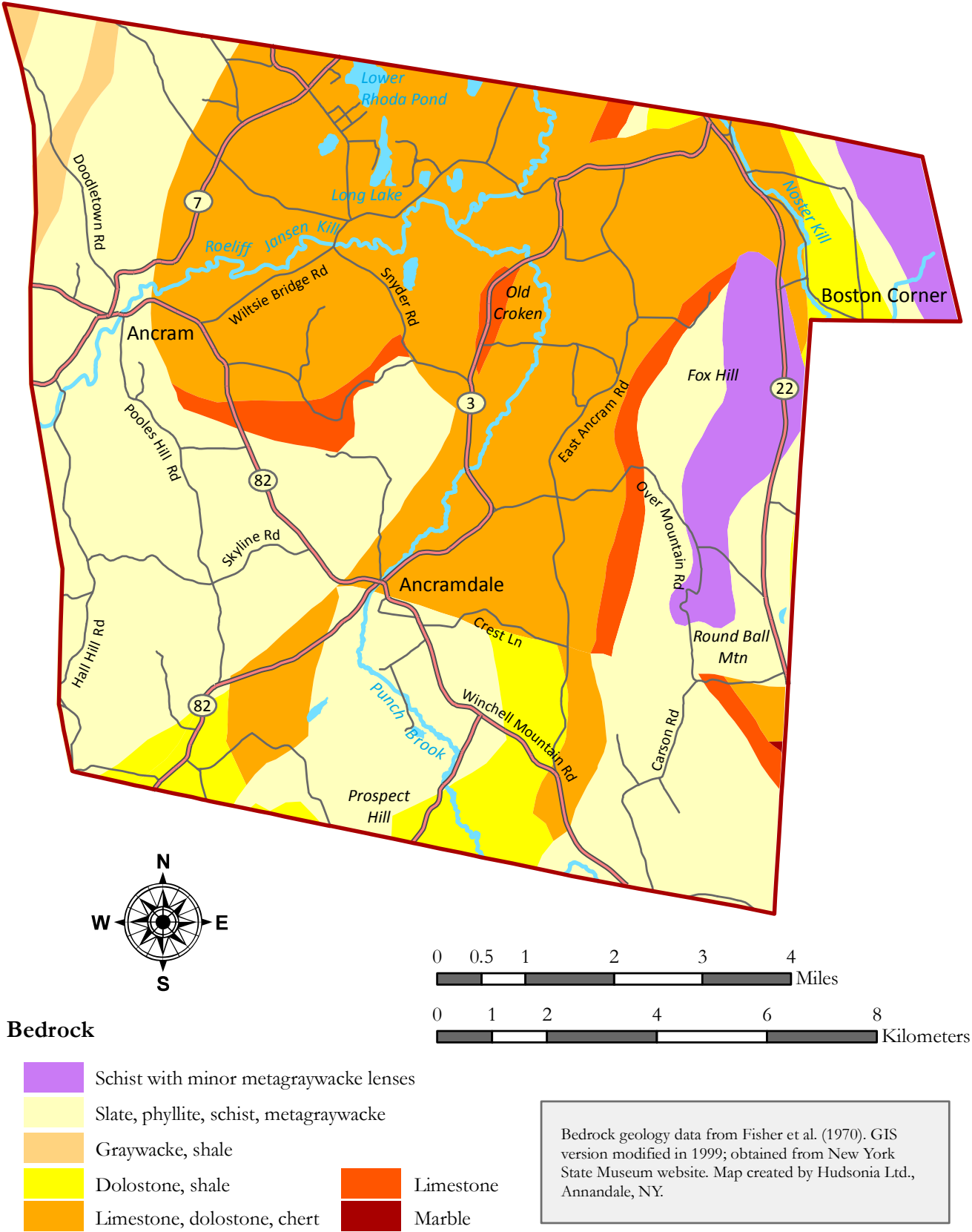


Figure 1. Generalized bedrock geology in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Topography and Elevation Zones

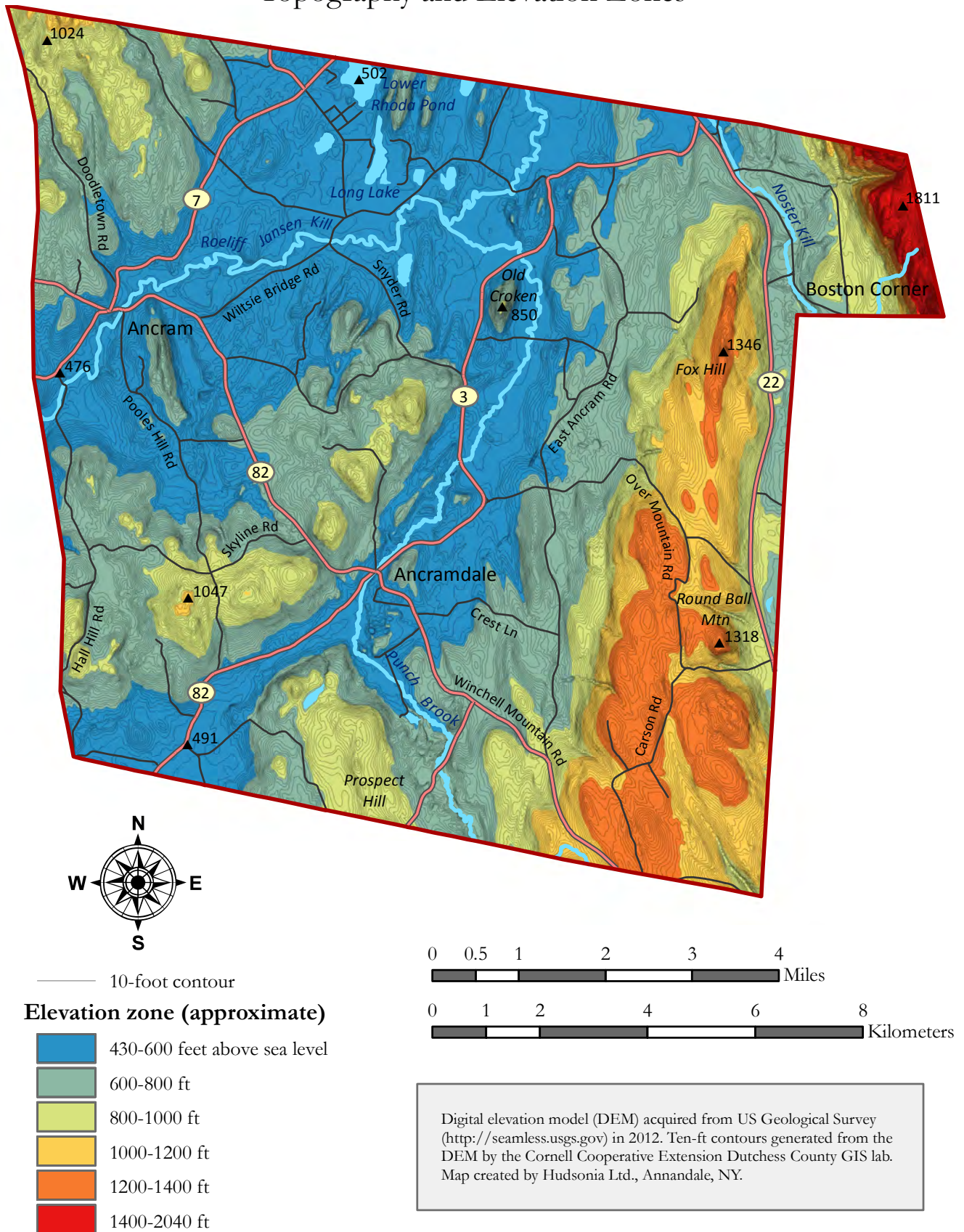


Figure 2. Topography and elevation zones in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Surficial Geology

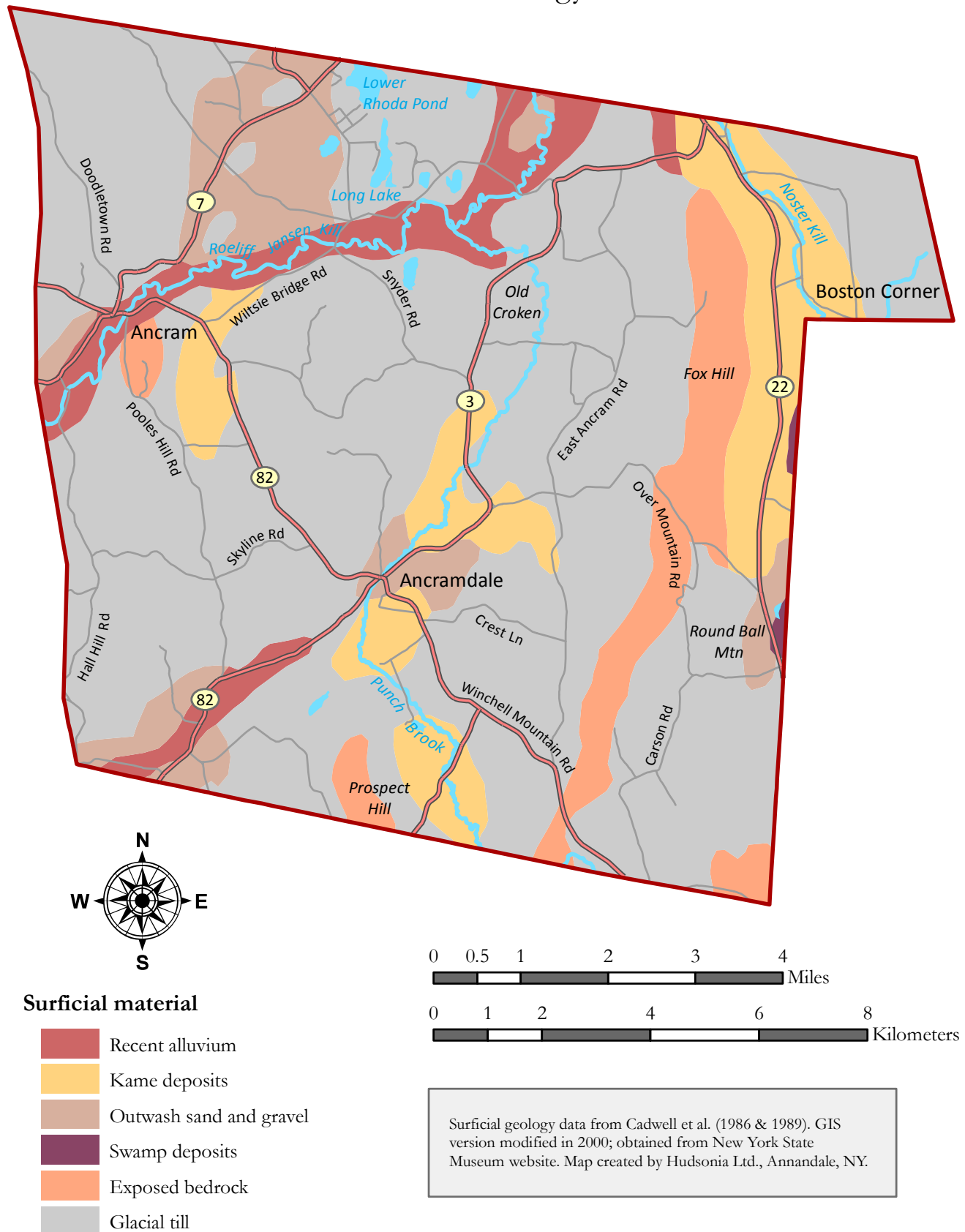


Figure 3. Surficial geology in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Calcareous and Outwash Soils

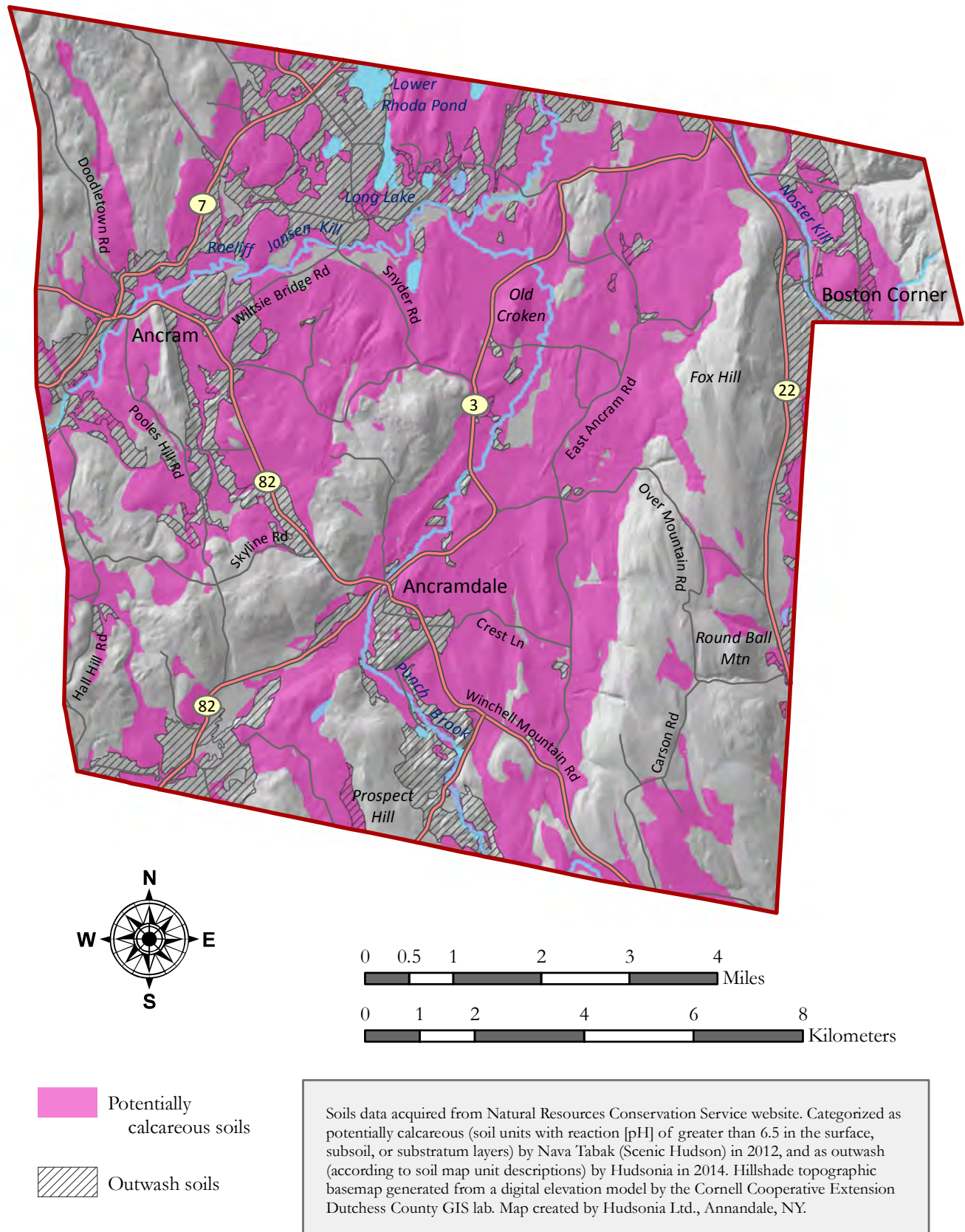


Figure 4. Potentially calcareous and glacial outwash soils in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Steep Slopes and Shallow Soils

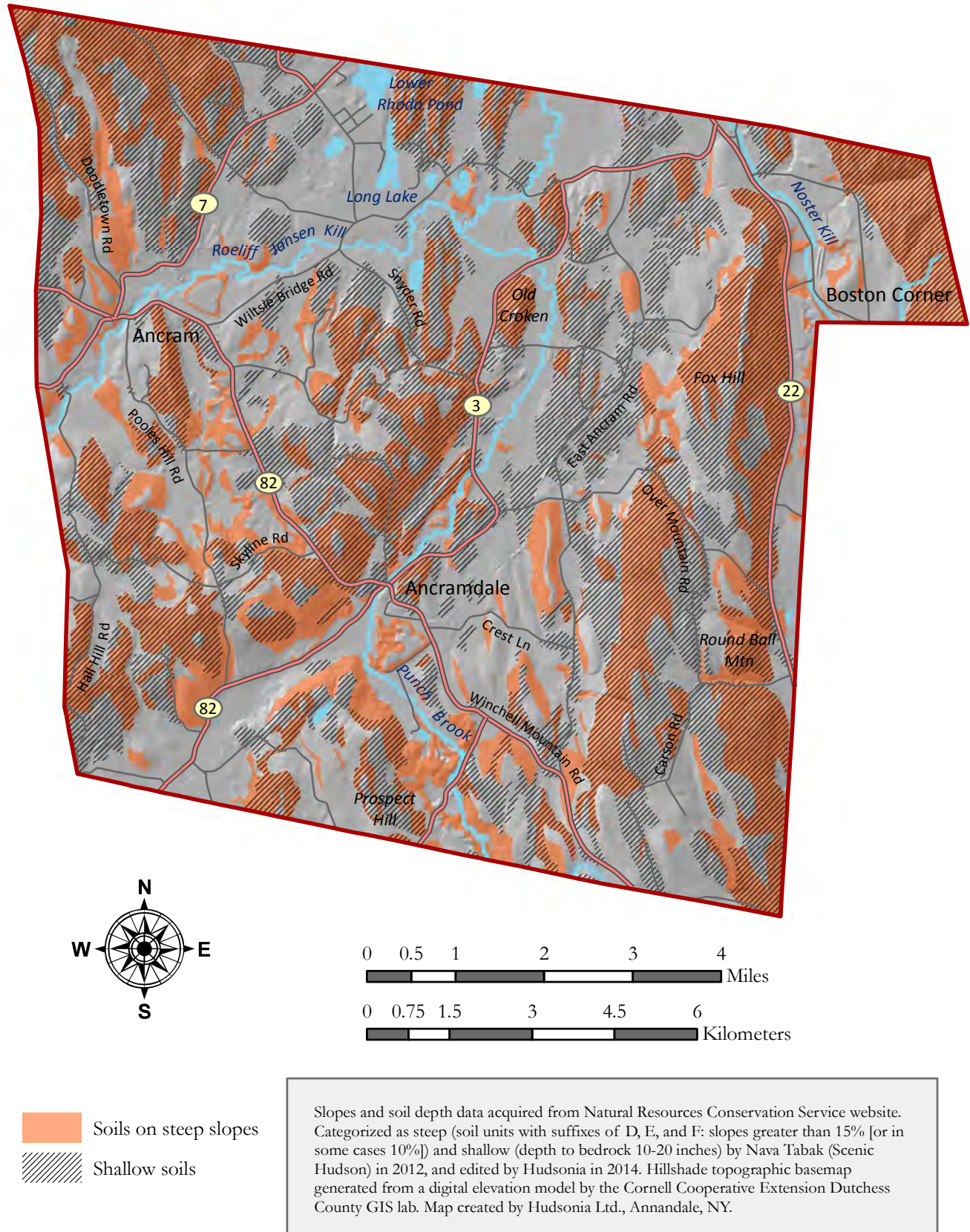


Figure 5. Steep slopes and shallow soils in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Major Watersheds, Streams, Flood Zones, and Waterbodies

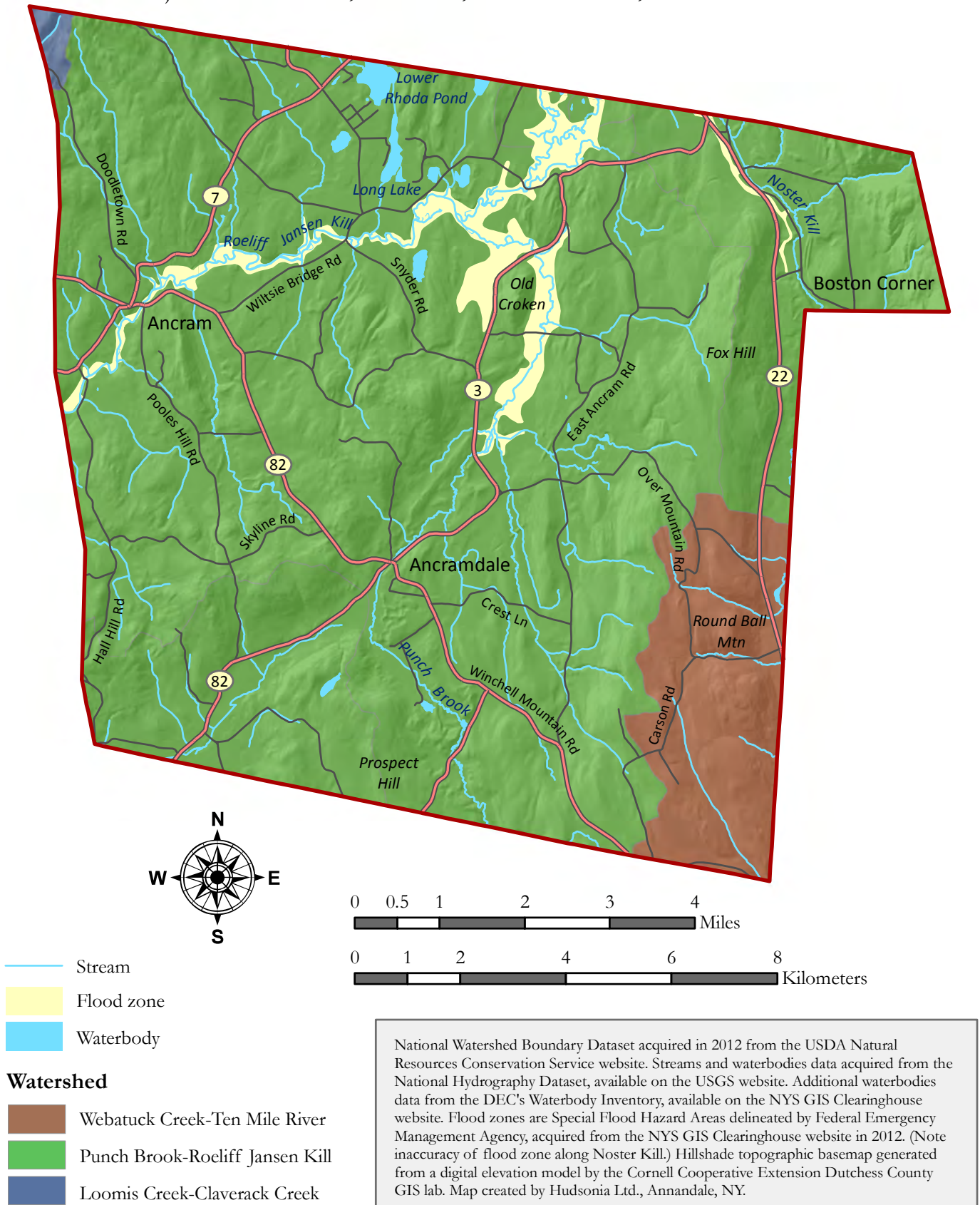


Figure 6. Major watersheds, streams, flood zones, and waterbodies in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Wetlands and Hydric Soils

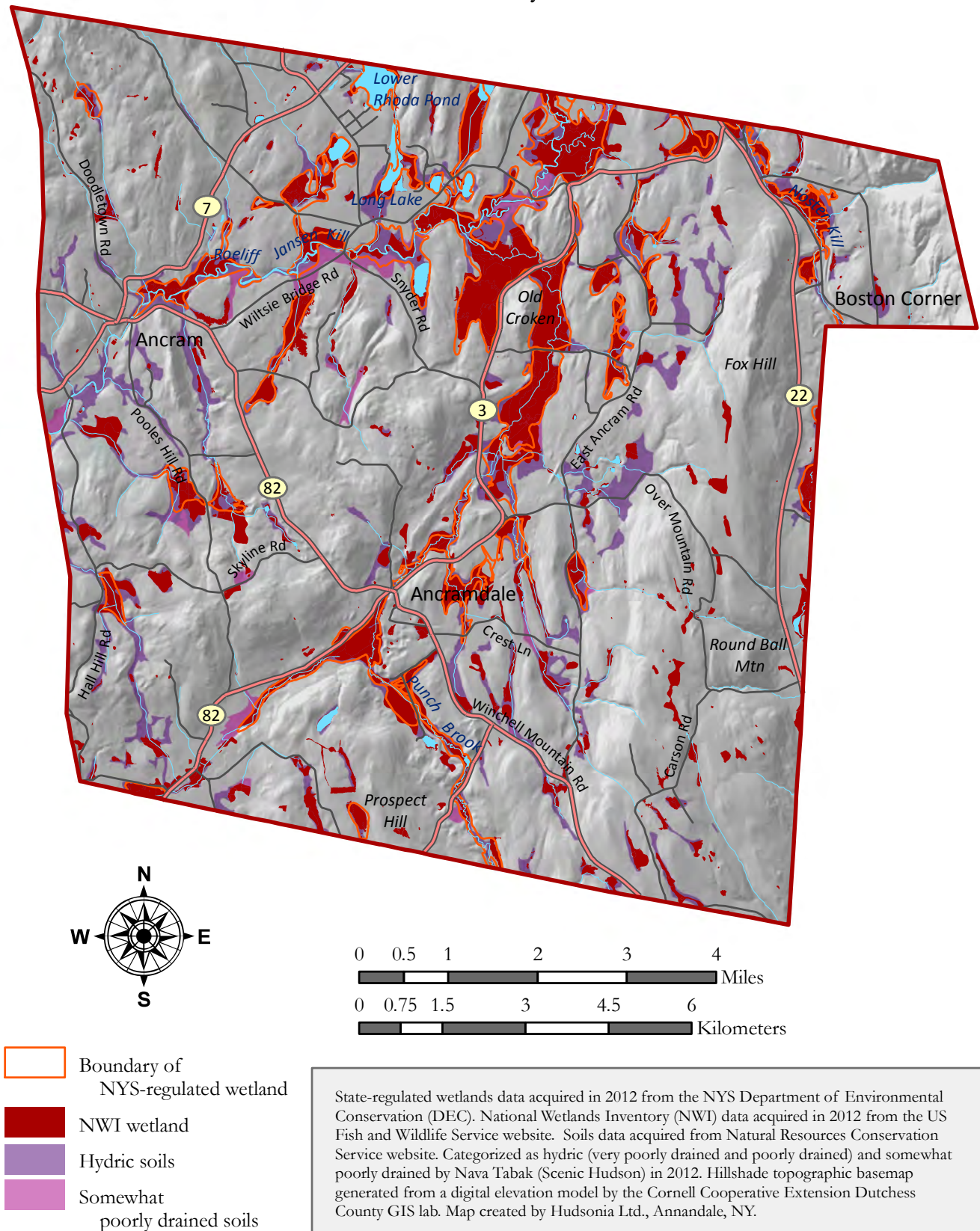


Figure 7. Wetlands on the New York State (NYS) and federal (NWI) wetland maps, and hydric soils, in the Town of Ancram, Columbia County, New York. Hydric soils are shown only where they do not coincide with mapped wetlands. Ancram Natural Resources Conservation Plan, 2015.

Detailed Wetlands

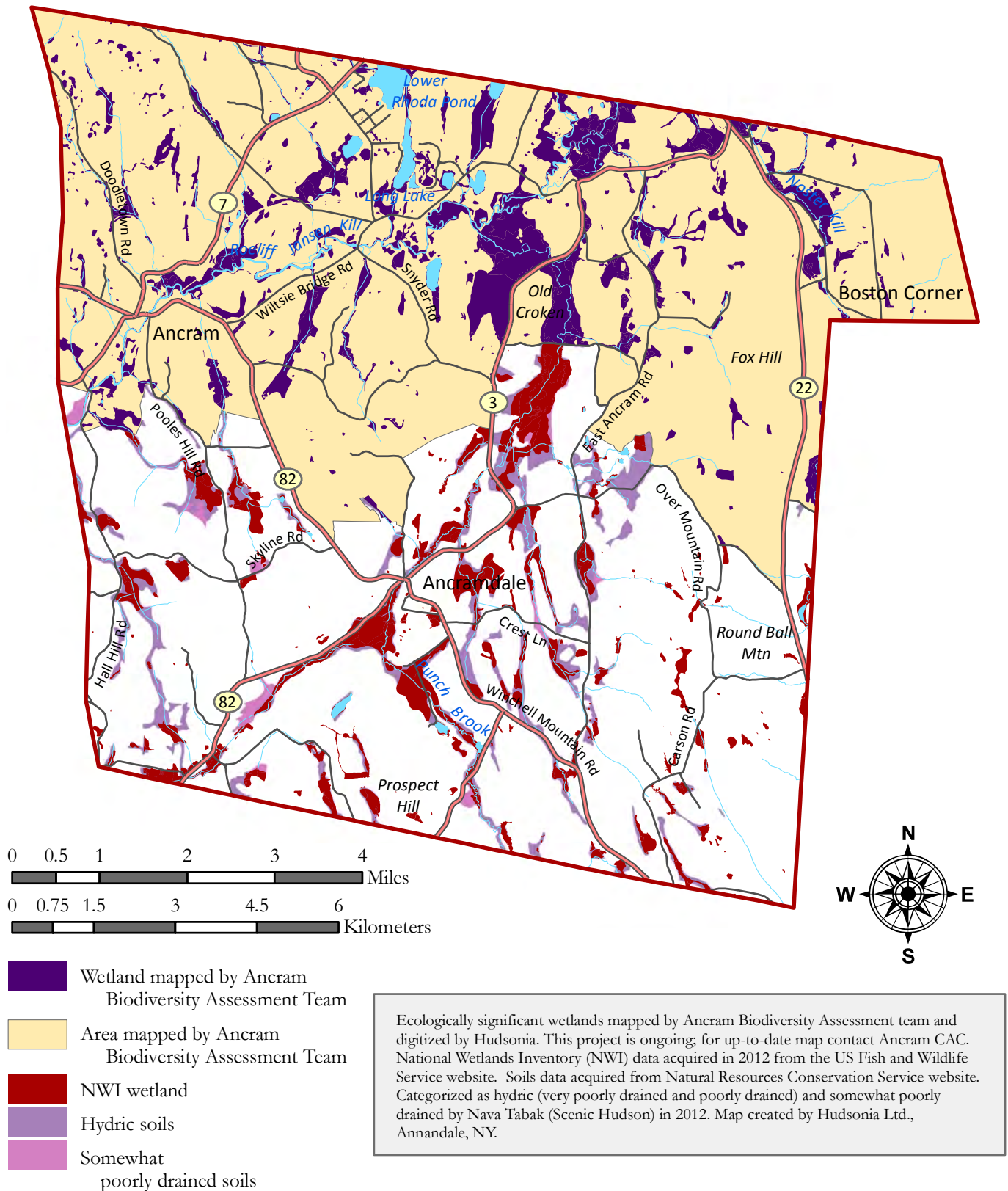


Figure 8. Wetlands identified in detail by the Ancram Biodiversity Assessment Team. Only the northern half of town has been mapped by the team to date. In the area yet unmapped, National Wetland Inventory wetlands and hydric soils are shown. Ancram Natural Resources Conservation Plan, 2015.

Land Cover

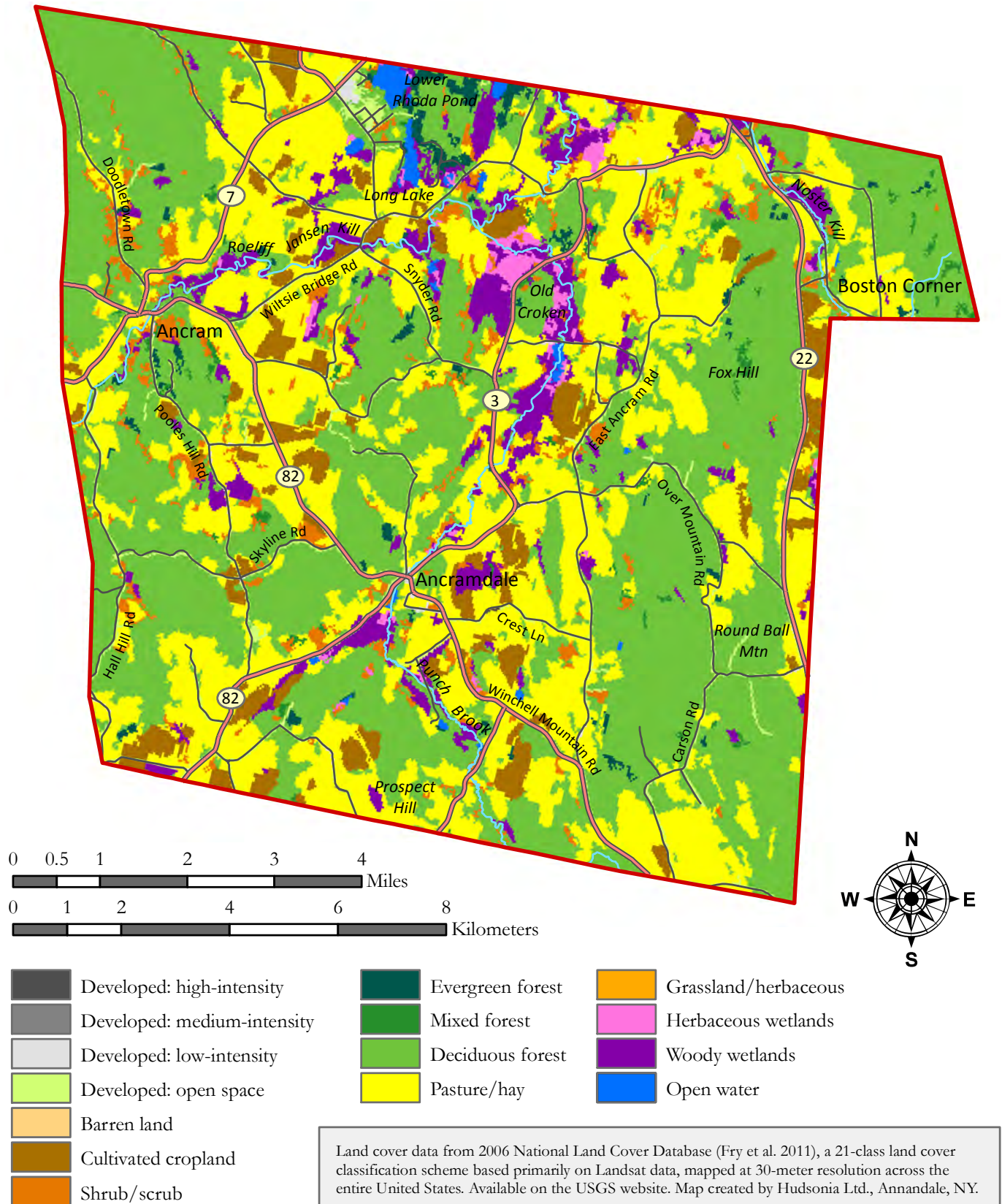


Figure 9. Land cover in the Town of Ancram, Columbia County, New York. See Figure 14 (Ecologically Significant Habitats) for detailed habitat information in northern Ancram. Ancram Natural Resources Conservation Plan, 2015.

Farmland Soils

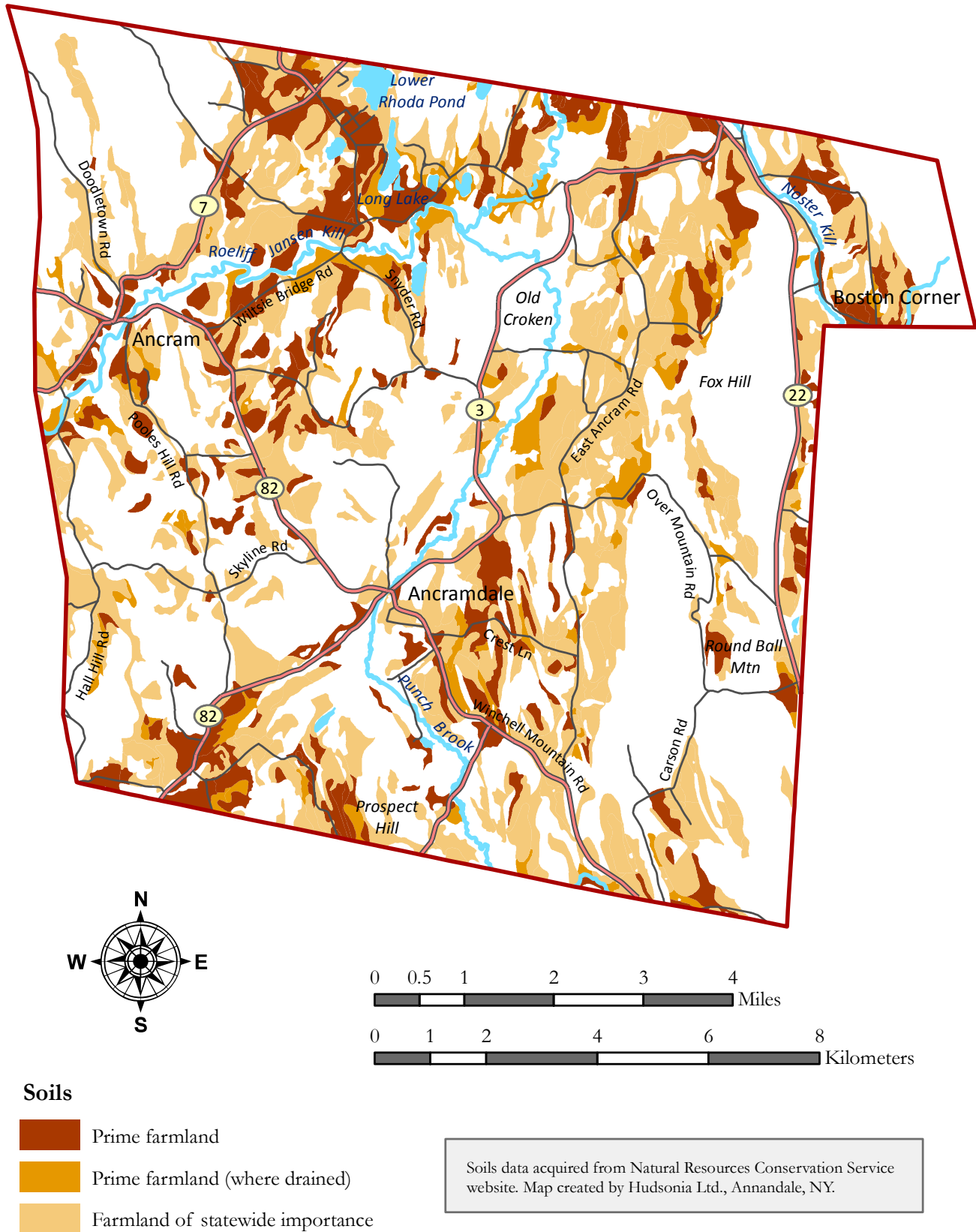


Figure 10. Farmland soils in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Lower Rhoda Pond

Long Lake

Roeliff Jansen Kill

Snyder Rd

Wiltsie Bridge Rd

Old Croken

Ancram

Poole's Hill Rd

82

Skyline Rd

Hall Hill Rd

82

Ancramdale

Crest Ln

Winchell Mountain Rd

Punch Brook

Prospect Hill

East Ancram Rd

Fox Hill

Over Mountain Rd

Round Ball Mtn

Carson Rd

22

Boston Corner

Doodletown Rd

7

3

8

0 0.5 1 2 3 4 Miles

0 1 2 4 6 8 Kilometers

N

E

S

W

Agricultural district

Farm

Farms data derived from the tax parcel layer, obtained from Columbia County in 2011. Farms of about 10 acres or greater identified using property class codes, agricultural assessments, and aerial photos, by Don Meltz Planning and GIS (2011). The agricultural district layer encompasses lands under the protection of the NYS Agricultural District Law, NYS Department of Agriculture and Markets (2009); available on the Cornell University Geospatial Information Repository website. Map created by Hudsonia Ltd., Annandale, NY.

Figure 11. Farms and agricultural district in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

THREATS TO RESOURCES OF CONSERVATION CONCERN

CLIMATE CHANGE

The large storms and unusual temperatures in Ancram in the last few years are apparent effects of climate change, which is expected to fundamentally alter temperature and precipitation patterns throughout the northeastern United States in the coming decades. The effects on local biological and water resources could be huge, but the specific nature and magnitude of those effects are difficult to predict.

Already, New York's average annual air temperatures have risen over 1.5°F since 1970, and winter temperatures have risen over 4°F in that time (NECIA 2007). Changes in seasonal temperature patterns combined with increased frequency of severe storms will affect all aspects of regional hydrology and ecology. Warmer, shorter winters are predicted to increase the occurrence of rainfall while the ground is frozen, hastening snowmelt, reducing groundwater recharge, and increasing the likelihood of flooding. Changes in snowmelt may reduce groundwater infiltration and increase the frequency and severity of droughts. The frequency of extreme precipitation will continue to increase and may bring devastating effects to the quality and quantity of water supplies.

Climate change is likely to reduce water supplies, stress cold-adapted wildlife, and encourage insect pests.

Floods and droughts, as well as changes in water temperatures are likely to adversely impact populations of trout and other sensitive stream organisms that rely on cool, clear streams. Alterations in the timing of the



onset of spring thaws and fall frosts may upset the life cycle timing of pollinators and other insects with respect to native plant communities and agricultural crops.

Together with non-climate stressors such as habitat fragmentation, water pollution, invasive species, collection and overharvesting, climate change may have synergistic effects that magnify the stresses and hazards to wildlife (Hannah et al. 2005).

Sunlight and mist over a kettle shrub pool. Photo © Choral Eddie 2014

Warming temperatures are likely to significantly affect the composition and distribution of habitats and wildlife, and force many species to migrate as former habitats become unsuitable. Cold-adapted species such as sugar maple, brook trout, spring salamander, and fisher are especially at risk. Shorter, warmer winters and longer, hotter summers are already aiding the spread of forest pests, such as the hemlock woolly adelgid, and invasive species such as mile-a-minute-weed are expected to thrive under elevated atmospheric levels of carbon dioxide. Large rainstorms and mild winters may lead to burgeoning mosquito populations, along with the risk of mosquito-borne diseases.

Hotter days and more frequent and more extended droughts may reduce crop success and may encourage increased use of irrigation on crop lands, which will be costly to farmers and put additional stress on groundwater and surface water supplies. Rising winter temperatures are already allowing the northward expansion of agricultural pests that further impede crop production. Heat stress may also significantly reduce milk production from dairy herds (NECIA 2007), putting additional financial strain on farm operations whose profitability is already marginal.

Although many aspects of climate change—the causes and our responses—are beyond the scope of this Plan, certain individual and community actions will help to reduce our carbon emissions to the atmosphere, and improve the landscape's responses to the many effects of a warming climate.

Because the multiple effects of climate change and nonclimate stressors may force certain species to migrate in unaccustomed ways to new habitat areas as their former habitats become unsuitable, conservation, restoration, and maintenance of landscape corridors that provide linkages between important habitat areas could allow certain species to move safely across the landscape to new areas as needed. The effectiveness of such corridors will depend on many landscape factors and the particular needs and behaviors of the plants and animals of conservation concern. For broad-scale planning, however, (and in the absence of a detailed analysis of landscapes and species) it may be safest to assume that broad corridors—the broader the better—of intact habitats will serve the migration needs of a large variety of species. Large forests, habitat areas along stream corridors—especially those in a somewhat south-north orientation—and broad corridors of meadows and other intact habitats may all help to provide safe passage for migrating animals and plants.

Forests provide long-term storage of large amounts of carbon in above-ground and below-ground biomass, so maintaining and restoring forests can help to offset some of the carbon emissions of human activities. Forests help to moderate local and regional air temperatures and the water temperatures of streams and wetlands. Forests and other intact habitats in floodplains and adjacent areas will help to accommodate the increasing frequency and magnitude of flood events. Carbon sequestration, wildlife corridors, local temperature moderation, and flood resiliency, as well as biodiversity, should be among the factors considered when the town is assessing and prioritizing conservation actions.

The New York State Climate Smart Communities program (outlined in Appendix C) “supports local governments and communities as they work to balance the goals of confronting and adapting to climate change, reducing local tax burdens, and advancing other community priorities.”

THREATS TO WATER RESOURCES

New land development in Ancram poses multiple threats to streams, wetlands, and other water resources through changes in surface water runoff, soil erosion, reduced groundwater infiltration, and water contamination. Increasing impervious surfaces (roads, driveways, parking lots, and roofs) usually increases runoff and reduces groundwater infiltration, leading to erosion of stream banks and siltation of stream bottoms, degrading stream habitat quality and water quality, and reducing the base flows of streams.



Perennial stream near Poole's Hill Road (top) and vernal pool off Doodletown Road (bottom). Photos © Jamie Purinton 2014

Clearing vegetation and disturbing soils on steep slopes or in areas of shallow soils (Figure 5) (e.g., during road, driveway, or house construction) often leads to rapid runoff of precipitation and snowmelt, erosion of soils, and destabilization and siltation of nearby streams. The consequences are reduced groundwater recharge, loss of soils, and degradation of stream habitats for fish and other stream organisms. Stormwater management measures employed at development sites are usually inadequate to restore and maintain the patterns, volumes, and quality of surface runoff and groundwater recharge that occurred prior to development.

Roadside ditches often carry contaminants such as motor oil, heavy metals, road salt and other de-icing chemicals, sand, and silt into nearby streams and wetlands. Applications of fertilizers and pesticides to agricultural fields, golf courses, lawns, and gardens can degrade the water quality of groundwater and streams, and alter the biological communities of streams, wetlands, and ponds. Leachate from failing septic systems often introduce elevated levels of nutrients, especially phosphorus and nitrogen compounds, into streams, lakes, and ponds, leading to a cascade of effects on the water chemistry, biota, and whole pond ecosystem. Removal of shade-providing vegetation along a stream or lake-shore for landscaping or other purposes can lead to elevated

water temperatures and severely impact the aquatic invertebrate, amphibian, and fish communities that depend on cool environments. Vegetation clearing in the floodplain can also reduce the important exchange of nutrients and organic materials between the stream and the floodplain and diminish the capacity for flood attenuation.

Groundwater is vulnerable to point and non-point source pollution (e.g., from applications of polluting substances to the land), to over-extraction (e.g., from geographically concentrated wells) and to the expansion of impervious surfaces preventing groundwater infiltration and recharge. Significant potential sources of groundwater contamination in Ancram are wastewater discharges (e.g., from crowded, failing, or institutional septic systems), and agriculture. Unfortunately, a small volume of a harmful substance can contaminate a large volume of groundwater and, once contaminated, groundwater can be very difficult and costly to clean up (Winkley 2008). For these reasons, and because most Ancram residents and businesses obtain their drinking water from groundwater wells, the quality and quantity of Ancram's groundwater should be of paramount concern to the town.

Many of Ancram's small, isolated wetlands lack legal protection at the state and federal levels.

Many of Ancram's small, isolated wetlands without a stream connection lack legal protection from the state or federal government, and are subject to filling, draining, or excavation (e.g., for ponds). Wetlands are sensitive to many of the same threats as streams, such as changes in surface water runoff from the expansion of impervious surfaces, and contamination carried by runoff. Local legislation may be the best way to extend protection to these important and vulnerable habitats.

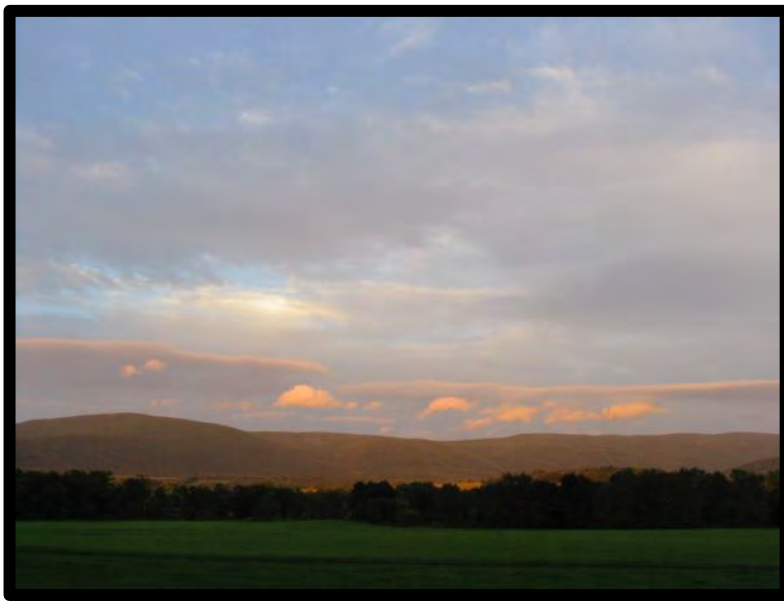


Punch Brook in the Drowned Lands. Photo © Jamie Purinton 2014

HABITAT LOSS, FRAGMENTATION, AND OTHER DEGRADATION

Land development in the form of “rural sprawl” (low density, large lot size) is an immediate threat to habitats in Ancram and in the region as a whole. New residential development fragments or eliminates former meadow or forest habitat, for example, and often leads to the degradation of nearby streams, and the draining, filling, or pollution of unprotected wetlands, or conversion to ornamental ponds.

Although local, state, and federal laws provide some limited protection to certain wetlands and streams, many smaller wetlands and streams and most upland habitats lack legal protection and are susceptible to loss or harm. The local or regional disappearance of a habitat can lead to the local or regional extirpation of species that depend on that habitat. We cannot predict the full consequences of the extinction of any particular species or habitat, but we do know that each organism plays a particular role in maintaining its biological community, and that the maintenance of such communities at the regional scale enables ecosystems to withstand normal stresses and adapt to changing environmental conditions.



View of Taconic Range. Photo © Jamie Purinton 2014

The subdivision of large forested tracts into building lots fragments the forests, especially when houses are set far apart from one another with long, separate driveways leading deep into the forest interior. This pattern of development divides forests into smaller blocks that are unsuitable for many “area-sensitive” wildlife species that require large habitat areas, and other species that are sensitive to human contact or disturbances. The latter include animals that do not tolerate for example, the noise and lights around human activity areas; highly fragmented habitats; mortality and disruption of movement patterns posed by roads, driveways, mowed lawns and fields, and

other such features; human-subsidized predators such as raccoons, skunks, and house cats; invasive plant species (often abundant near human-settled areas); and those that are otherwise affected adversely (directly or indirectly) by the proximity of humans. These “human-sensitive” plants and animals include many of the rare and declining species in the region, and many that have already disappeared from our settled landscapes.

Fragmentation of forests into smaller blocks increases the area of forest “edge” habitat with higher light and noise levels and often facilitates invasion by non-native plant species and by predators such as raccoons and domestic cats. Fragmentation makes the (formerly) deep interior forest areas newly

accessible to nest predators and to brood parasites (such as the brown-headed cowbird) whose activities are ordinarily confined to forest edges. The cowbird is a non-native blackbird that makes no nest of its own, but lays its eggs in the nests of other species. The eggs are early to hatch and the nestlings develop quickly, outcompeting the young of the host species for food. The cowbird has been implicated in the decline of many songbird species in the Northeast.

The “edge effects” of human disturbance can reach well over 300 ft into forests

Roads and other developed areas dividing forests can also act as significant barriers to wildlife movement, and many animals avoid breeding near human activities. The “edge effects” of human disturbance (from roads, residential areas, and other development) may reach well over 300 ft into forest patches (Findlay and Bourdages 2000, Forman and Deblinger 2000, Lampila et al. 1995, Murcia 2005, Trombulak and Frissell 2000). Fragmentation similarly reduces the habitat values of large meadows and many other habitat types.

Beyond fragmentation, habitats are sensitive to many sources of degradation, particularly from pollution and the introduction of non-native species. Agricultural chemicals (e.g., fertilizers and pesticides) applied to cropfields and to lawns and gardens can spread to adjacent habitats and can be highly toxic to many non-target plants and animals. These chemicals, together with motor oil, road salts, and other toxins are transported via stormwater runoff into waterways where they degrade water quality and habitat quality in wetland, stream, and floodplain habitats. Disturbances to soils, including forest clearing, mining, and construction of new homes and roadways, often result in the spread of non-native invasive species by the introduction of seeds and vegetative propagules carried by vehicles and machinery, and imported with soil materials from nurseries. Non-native species such as common reed, Japanese stiltgrass, Japanese knotweed, mile-a-minute weed, purple loosestrife, multiflora rose, garlic-mustard, water-chestnut, Bell’s honeysuckle, Japanese barberry, and tree-of-heaven are now widespread in the region, but are usually concentrated in areas in and near human development or human-disturbed land. Non-native invasive species often lack significant predators or diseases in their new environments and can out-compete native species for limited resources or space, resulting in the decline of native plant and animal populations. Land development often promotes the spread of these species into nearby high-quality habitats and reduces the



Reflections in pond between Lower Rhoda Pond and Long Lake.
Photo © Choral Eddie 2014

overall value of those habitats for native biodiversity.

Many species of wildlife require more than one habitat to fulfill their life history needs; others are far-ranging and have territories or home ranges spanning hundreds or thousands of acres. Some examples are

- the American woodcock, that nests and forages in shrub thickets and young woods, but requires open fields for courtship displays;
- pool-breeding amphibians that use woodland pools for breeding and nursery areas in the spring and early summer, and spend the rest of the year in upland forest areas, often moving long distances from the breeding pools;
- the wood turtle, that uses perennial streams for overwintering and foraging, but uses many other wetland and upland habitats for foraging, resting, nesting, and travel during the warm months of the year; and
- the bobcat, that uses den sites remote from human disturbance for resting and nursery areas, but hunts over large areas of upland forests, swamps, and meadows.

The fragmentation of habitats by roads, development, and other human disturbances inhibits the ability of wildlife to move safely across the landscape. Species that are able to cross human-created barriers (such as roads) face elevated mortality risk from vehicles and predators.

Habitat fragmentation hinders wildlife movements and increases the risk of mortality from vehicles and predators.

Other forms of fragmentation occur along streams, where dams, poorly designed culverts, or improperly installed culverts create barriers to upstream or downstream movement of stream organisms. Even a small dam on a small stream, or a culvert suspended just a few inches above the stream bottom can constitute an impermeable barrier for some organisms.

Many organisms use streams in much the same way that we use roads. Dragonfly nymphs, mussels, fish, salamanders, and turtles use streams and streamside areas as pathways between habitats. Barriers such as dams or suspended culverts can partially or completely obstruct their movements. In 2014 the NYSDEC Hudson River Estuary Program surveyed 135 road crossings (e.g., culverts and bridges) in Ancram to assess their passability and capacity; this was part of a larger project being conducted throughout the watershed of the Hudson River Estuary. They assessed each road crossing for the ease of passage for aquatic and riparian organisms, and also for its adequacy to accommodate predicted water volumes in storms of different sizes. Of the 135 crossings surveyed, 28 were found to constitute “significant” barriers to stream organisms, 70 were “moderate” barriers, and 37 posed only “minor” or “insignificant” barriers (Andrew Meyer, personal communication). The survey also identified culverts and bridges that were undersized for predicted storm volumes. (Undersized culverts and bridges create multiple upstream and downstream hazards to humans and infrastructure during flood events.) The report on Ancram’s road crossings, to be published in early 2015, will help town, county, and state highway departments identify

and prioritize the culverts and bridges in greatest need of replacement (or other measures) to reduce hazards to humans, infrastructure, and aquatic life.

Populations that become restricted to fragmented habitat patches may face local extirpation. Habitat connectivity is critical for maintaining genetic exchange among distant populations and facilitating the migration of species under deteriorating environmental conditions or climate change. Linking small or otherwise isolated habitat patches can help to ensure that the habitat, migration, and behavior requirements of native plant and animal species are conserved across a broad landscape.



Skunk-cabbage in flower (top), and post-flowering (bottom) in red maple swamp. Photos © Jamie Purinton and Choral Eddie 2014

THREATS TO AGRICULTURAL LAND

Agricultural land is often lost to developed uses both because of the financial needs of retiring farmers, and because the land is usually flat or gently sloped, well-drained, and cleared of woody vegetation, so there is great temptation to convert areas of good agricultural soils to non-agricultural uses. Approximately 4-5 percent of farmland acreage in Ancram was converted to non-farm uses in the last two decades and approximately 12 percent has been lost since the 1970s. These losses were due primarily to single parcels changing hands and to development of single residences, not to larger residential developments (Farmland Protection Plan Committee 2011).

The growth in demand for high quality local and organic food in the Hudson Valley and the greater New York metropolitan region during the last two decades comes at a time when escalating property values have made maintaining large farm properties unaffordable to many multi-generational farming families. New farmers likewise face a critical shortage of accessible and affordable farmland.

Even where conservation organizations have succeeded in acquiring conservation easements or development rights on important farmland parcels, keeping farms in active agriculture can be a major challenge. The short-term economic benefits of leased land arrangements are limited by farmers' needs for permanence and an equity stake in the land.

The town adopted the *Agriculture and Farmland Protection Plan* in 2011 (an addendum to the *Comprehensive Plan*) to help improve the viability and profitability of farming in the town, and help ensure that valuable

Twelve percent of Ancram's farmland acreage has been converted to non-farm uses since the 1970s.



Meadows viewed from East Ancram Road.
Photo © Jamie Purinton 2014

farmland remains available for agricultural uses. The plan recognizes that farmland protection must go beyond open space protection to address access to and affordability of farmland, opportunities for farming on protected agricultural lands, creation of local processing facilities and other services and infrastructure, and expansion of local and regional markets. The best way—and probably the only way—to protect farmland and all the benefits it provides to Ancram is to protect the best farmland soils, and promote the long-term success of agricultural enterprises and a thriving agricultural economy.

THREATS TO SCENIC RESOURCES

In the Town of Ancram, where most parts of the landscape would be considered “scenic” by most observers, threats to scenic resources can occur with any clearing, driveway, or building that interrupts a forest, a large meadow, a hillside or ridgeline, or the view of a stream from a publicly accessible place. Although Ancram’s Scenic Corridor Overlay Zone and the Ridgeline/Steep Slope Protection Overlay District address threats to scenic views in specific areas of the town, they do not address impacts to the many other scenic areas that are important to Ancram citizens. Pastures, hayfields, marshes, lakes, streams, and forested hillsides are all part of the town’s visual fabric that deserves some protection for its scenic values in addition to other significant contributions to biodiversity, agriculture, and water resources.

The main threat to Ancram’s scenic resources is residential sprawl.

The quiet beauty of Ancram’s landscapes can be a magnet for new residential development. While pressure has been slight in recent years due to the recent nationwide recession, economic recovery could bring new interest in development of second homes and retirement homes in Ancram and other parts of rural upstate New York. Although trends may change in unforeseen ways, the main near-term threat to Ancram’s scenic resources is residential sprawl—low-density residential development outside of hamlets. In Ancram this tends to occur not from large residential subdivision projects but from small subdivisions and development of single houses on single lots. The effects are incremental and easy to overlook on a case-by-case basis, but the cumulative impacts on the visual landscape and other natural resources can be large.

Current preferences for building houses in locations with large viewsheds, and for building long driveways to houses set far back from a road can have very adverse impacts on scenic landscapes, biodiversity, and water resources. Any house with a large viewshed is also visible from the entire area of the viewshed; the larger the view, the larger the visual impact of the house and associated disturbance. For this reason, houses at high elevations on hillsides and hilltops tend to have the largest impacts on the scenic landscape. But new houses and associated structures in the midst of farmland or on lake shores can also disturb large scenic landscapes.

Town policies that encourage new development in and near existing hamlets and other developed areas instead of in the countryside can reduce the potential for rural sprawl. Policies that discourage the siting of new houses at locations where they will blight a large viewshed will help prevent the transformation of Ancram from a rural landscape of fields and forests to one resembling a suburban town.

RESOURCES, PRINCIPLES, AND CONSERVATION MEASURES

This Plan considers a large array of factors associated with water, intact ecosystems, and recreational, scenic, and farmland resources. Many of these factors are closely interrelated. For example, Ancram’s forested hills are not only important for wildlife habitat, but are also key to maintaining clean and abundant groundwater and stream flows, for climate moderation, for recreation, for scenic vistas, and for providing a source of solace and inspiration for Ancram residents and visitors. The abundant farmland is not only central to Ancram’s agricultural economy, but also to local and regional food security, to regional biodiversity, to the town’s cultural heritage, and to the beauty of Ancram’s visual landscape.

Developing the Plan has involved a process of assessment and prioritization, and the conclusions are intended to help landowners, developers, town agencies, and others manage lands and locate and design new land uses in ways that both benefit their projects and help to sustain the town’s natural assets.

The following general ***conservation targets*** have been identified for the purposes of this Natural Resources Conservation Plan:

- Enduring features
- Water resources
- Biological resources
- Farmland resources
- Scenic and recreational resources

In the subsections below we briefly discuss the resources and features of concern in Ancram and some of the conservation principles that provide the underpinning for this Plan.

ENDURING FEATURES

The term “enduring features” refers to “the parts of the landscape that resist change” (Austin et al. 2013). These are the hills and valleys, the bedrock, and surficial glacial deposits—the features that are substantially unaffected by human land uses, wildfires, droughts, floods, hurricanes, climate change, and other significant events that alter the land surface. These constitute the foundation upon which everything else has developed, and they strongly influence all aspects of the biological and physical world. For the purposes of this Plan, we consider three kinds of enduring features to be significant for conservation:

- bedrock (the variety of bedrock types throughout Ancram)
- surficial materials (the gravel, sand, silt, clay, and peat that sits on top of the bedrock)
- landforms (mountaintops, hillsides, and valleys)

Why the concern about enduring features? They act as effective “surrogates” for the species, communities, and processes that sustain our ecosystems (Austin et al. 2013). Indeed, because of the profound influence of enduring features on biological and physical processes, biologists have long used them to help predict the occurrence of natural phenomena, environmental conditions, and species. Lose the intact habitats of a mountain—e.g., to mining or residential development—and you will lose untold species, natural communities, and ecological services. Preserve a mountain, and you will preserve a host of species, communities, and essential ecological processes, including those that may be yet unknown. Ancram’s enduring features—its bedrock, surficial geology, and topography—are depicted in Figures 1-3.

GENERAL MEASURES FOR CONSERVATION OF ENDURING FEATURES

- Protect lands representing the full range of elevations in the town.
- Protect areas representing all the types of bedrock and surficial geology in the town.
- Protect areas representing all the significant landforms in the town—mountains, hillsides, valleys.
- Protect broad landscape connections between all of the above protected areas wherever possible.

WATER RESOURCES

The importance of water to the human community and to the natural environment cannot be overstated. Water is essential to all living organisms and fundamental to all human endeavors and economies. For these reasons, a major goal of the Plan is the conservation of surface water and groundwater resources, including volumes, availability, accessibility, and quality of water in streams, wetlands, ponds, lakes, and groundwater.

The water quality, flow volumes, and flow patterns of a stream, as well as the types and quality of instream habitats depend to a large extent on characteristics of the stream’s watershed—the entire land area that drains into the stream. The depth and texture of the soils in the watershed, the depth and quality of organic duff at the soil surface, the kinds of vegetation, the extent of impervious surfaces (e.g., roads, parking lots, roofs), and the configuration of surface water channelization throughout the watershed all influence the volumes and patterns of surface runoff during precipitation and snowmelt events, the degree of water infiltration to the soils, and the water reaching to streams, wetlands, and ponds throughout the year.

One of the unfortunate consequences of land development with roads, driveways, parking lots, buildings, and other structures is that, unless carefully designed to promote onsite water infiltration to the soils, the movement of water overland and through the soils is dramatically altered. In conventional designs, precipitation is directed to run rapidly off the ground surface into the nearest ditch or stream. The typical consequences are that the infiltration of rainwater and snowmelt to the soils is reduced or eliminated, groundwater recharge is reduced, soil is eroded and lost, stream flooding is increased, base flows of streams are reduced, and water quality of streams, lakes, and ponds is degraded. Roadside ditches are large contributors to the degradation of streams and wetlands. Ditches intercept rainwater and snowmelt from road surfaces and often from much larger watersheds, and convey it rapidly into nearby streams and waterbodies. Road runoff is contaminated with petroleum hydrocarbons, heavy metals, salts, and other toxins, as well as sand from winter road treatments. Unvegetated ditches are especially susceptible to erosion, and carry additional sediments from the eroded banks.

Forests may be the best insurance for maintaining clean, ample water supplies.

We have experienced increasing frequency and intensity of extreme storm events in this region, and climate scientists predict that trend to continue in response to a changing climate. These conditions are likely to increase the severity of streambank erosion and siltation, reduce the volumes of groundwater available to feed Ancram's streams, wetlands, lakes, and drinking water wells, and degrade the instream habitat quality for sensitive species of fishes, amphibians, invertebrates, and other organisms. But maintaining suitable land cover, minimizing impervious surfaces, and carefully managing stormwater along roadways and on developed lots can help to minimize, prevent, or even reverse some of these trends.

The most effective means of sustaining groundwater supplies, clear lakes and ponds, and cool, clean streams with stable banks are to maintain substantially forested watersheds, and maintain riparian zones with undisturbed vegetation and soils. Forests with intact canopy, understory, and ground vegetation, and intact forest floors are extremely effective at promoting infiltration of



Long Lake looking south. Photo © Choral Eddie 2014

water to the soils, and may be the best insurance for maintaining flow volumes, temperatures, water quality, bank stability, and habitat quality in streams and ponds. Springs and seeps in the watershed are also key to maintaining the cool stream temperatures that are critical to sensitive stream invertebrates, fishes, and amphibians.

Because nearly all of Ancram residents and businesses obtain their drinking water from individual wells, the quality and quantity of groundwater throughout the town is of great conservation concern. Most of the wells draw from deep bedrock sources, and many of these wells are relatively low-yield (Winkley 2008). Many of the largest potential water sources for shallow wells—the “unconsolidated aquifers” described by Winkley (2008) (Figure 12)—are also the most vulnerable to contamination as they are overlain by permeable glacial deposits (sands and gravels) that can be efficient conduits for contaminants introduced by above-ground human activities. These are the areas of “high hydrogeologic sensitivity” identified by Winkley (Figure 13). Avoiding contamination in these most vulnerable land areas overlying the unconsolidated aquifers is of particular importance.

Watersheds and Streams

A “watershed” is the total land area that drains into a river, stream, pond, or wetland. Ancram encompasses parts of three major watersheds (Figure 6), and each of these is composed of smaller sub-basins drained by smaller streams. Most of the town lies in the watershed of the Roe Jan. Southeastern Ancram is in the Housatonic River watershed and drained locally by Webatuck Creek, a tributary to the Tenmile River. A small area in the extreme northwestern corner of Ancram drains to Loomis Creek in the Claverack Creek (and Hudson River) watershed.

Within each watershed a large network of perennial and intermittent streams drains the Ancram landscape, providing essential water for wildlife and supporting critical in-stream habitat for many plant, vertebrate, and invertebrate species. **Perennial streams** typically flow continuously throughout years with normal precipitation, but some may dry up during droughts. **Intermittent streams** flow for variable periods (e.g., a few days, a few weeks, or many months) but typically dry up at some time during the year.



Intermittent stream near Doodletown Road. Photo © Jamie Purinton 2014

Ancram is blessed with many high-quality streams, including many that have the clear, cool, water and coarse, clean substrates required by brown trout, brook trout, slimy sculpin, and other cool-water fishes, and that are classified by the DEC as trout streams or trout spawning streams. Such streams are a disappearing resource in the Hudson Valley due to water pollution, stream-bed siltation, removal of forest canopies in the stream corridors, altered stream flows, and other consequences of human activities.

Ancram has many cool, clear streams—a disappearing resource in the Hudson Valley.

Floodplains

Floodplains are low-lying areas adjacent to streams and rivers and subject to recurring floods. Deep, nutrient-rich sediments make floodplains some of the most fertile and biologically productive areas of the landscape. These areas are especially valuable to wildlife and water resources when they support intact native plant communities. Protecting intact floodplain habitats can maintain groundwater recharge, reduce the risk of downstream flooding and erosion, increase wildlife habitat resources and connectivity, maintain or improve stream water quality and habitat quality, and support human recreational activities.

The flood zones of major streams shown in Figure 6 are from existing floodplain data from the Federal Emergency Management Agency (FEMA), which have not been updated since 1985. In some areas floodplain extents have likely changed significantly since then, and will continue to change over the coming decades. In Ancram the largest floodplains are along the Roe Jan, and along Punch Brook in the vicinity of the Drowned Lands. Expansion of development into floodplain areas and the engineered

Climate change is likely to bring more frequent and more severe flood events.

features such as streamside bulkheads and berms that often accompany such development (to protect property from flood damage) has the effect of isolating streams from their natural floodplains. This loss of connectivity between streams and floodplains reduces the ability of floodwaters to spread out and tends to

exacerbate downstream flood damage to property and infrastructure. Both floodplains and wetlands in Ancram (and in the northeastern US as a whole) are predicted to be flooded more frequently and severely in the future because of climate change, and the horizontal extents of floodplains are predicted to expand. Conserving intact habitats in and near flood-prone areas, and removing engineered features, buildings, and other structures, can help reduce flood damage while promoting groundwater recharge, improving stream health, and providing valuable wildlife habitats.

The CAC recommends the establishment and maintenance of a vegetated streamside buffer of at least 100 ft, and recommends that the buffer zone be widened as needed at specific locations to accommodate the 100-year floodplain, steep slopes, erodible soils, areas of high hydrogeologic sensitivity, important groundwater recharge areas, and contiguous habitat areas of particular sensitivity. Such a buffer zone will help restore and maintain the chemical, physical, and biological integrity of the streams, attenuate downstream flooding, and maintain important wildlife habitats. The justification and specific recommended provisions are outlined in a CAC memo of 19 November 2010.

Extreme rainfall events have been occurring more frequently in the Northeast since the 1950s, and the trend is predicted to continue through this century. A storm of a severity that was once considered a 1 in 100 year event is now likely to occur almost twice as often—i.e., once every 50 years (NRCC and NRCS 2015). Likewise, storms of a severity that in the past occurred once in 25 years, on average, might now occur once in 12-13 years. The trajectory of storm severity and frequency suggests that flood projections may be revised upward in the coming decades. The Floodplain Management Regulations of the Federal Emergency Management and Assistance Law establishes minimum standards for flood protection but encourages communities to adopt more restrictive floodplain management regulations than those set forth in the federal law when warranted to better protect people and property from local flood hazards (44 CFR 60.1[d]).

For these reasons, the CAC recommends that the town prohibit construction of new buildings, roads, driveways, and other structures in the 200-year (or even 500-year) floodplains of Ancram streams, and encourages the removal of structures, equipment, and materials that could interfere with natural flood dynamics, or create local or downstream hazards if flooded. Stored materials in barns, sheds, garages, and residences in floodplains—including household cleansers, paints, solvents, fuel oil, gasoline, lubricants, antifreeze, pesticides, and fertilizers—can readily contaminate floodwaters and create toxic conditions downstream. Stored equipment and hardware can create dangerous battering and projectile hazards in floodwaters. Under the Community Rating System, insurance premium discounts are available to policy holders in communities that have enacted floodplain management programs that exceed FEMA Standards. The CAC recommends that Ancram explore improved standards for floodplain management. (Recently-adopted floodplain regulations in the Town of Rhinebeck [Dutchess County] could serve as a model.)



Beaver lodge near Wiltsie Bridge Road. Photo © Choral Eddie 2014

GENERAL MEASURES FOR WATER RESOURCE CONSERVATION

- Throughout the landscape, maintain forests with intact vegetation and undisturbed forest floors wherever possible.
- Protect wetlands and streams from disturbance, and establish and maintain broad buffer zones of undisturbed vegetation and soils along streams, and around wetlands, lakes, and ponds.
- Minimize applications of polluting substances, such as de-icing salts to roads, parking lots, and driveways, and pesticides and fertilizers to lawns, gardens, and agricultural fields.
- In areas of high hydrogeologic sensitivity, avoid siting land uses with potential for contaminating soils and water. Educate landowners in these areas about the vulnerability of groundwater resources.
- On development sites, minimize impervious surfaces and manage stormwater in ways that maintain pre-development patterns and volumes of surface runoff and infiltration to the soils.
- Redesign and retrofit roadside ditches and other stormwater systems to maximize water infiltration to the soils, and minimize rapid and direct runoff into streams, ponds, and wetlands.
- Direct runoff from agricultural fields into basins and well-vegetated swales instead of directly into streams or wetlands to prevent the introduction of excess nutrients and toxins.
- Design new culverts and bridges and retrofit existing ones to accommodate storms of 200-year or 500-year intensity in anticipation of more frequent and severe storms in coming decades.
- Design, install, and retrofit culverts to maintain the continuity of stream gradients and substrates.
- Consider the 200-year or 500-year floodplain when considering land management and land uses along streams.
- Keep floodplain meadows well-vegetated. Minimize tillage in floodplains; seed immediately after tilling; leave abundant thatch to cover exposed soils; use cover crops in winter.
- Remove structures, pavement, and hazardous materials from floodplains wherever possible.
- In floodplains, wherever possible shift to resilient land uses that can withstand moderate to severe flooding; for example, parks, ballfields, hiking trails, picnic areas, fishing access sites, pastures, and hayfields.
- Regulate and monitor extractive commercial uses to ensure that water withdrawals from groundwater or surface water sources are at sustainable levels.

Groundwater and Surface Water

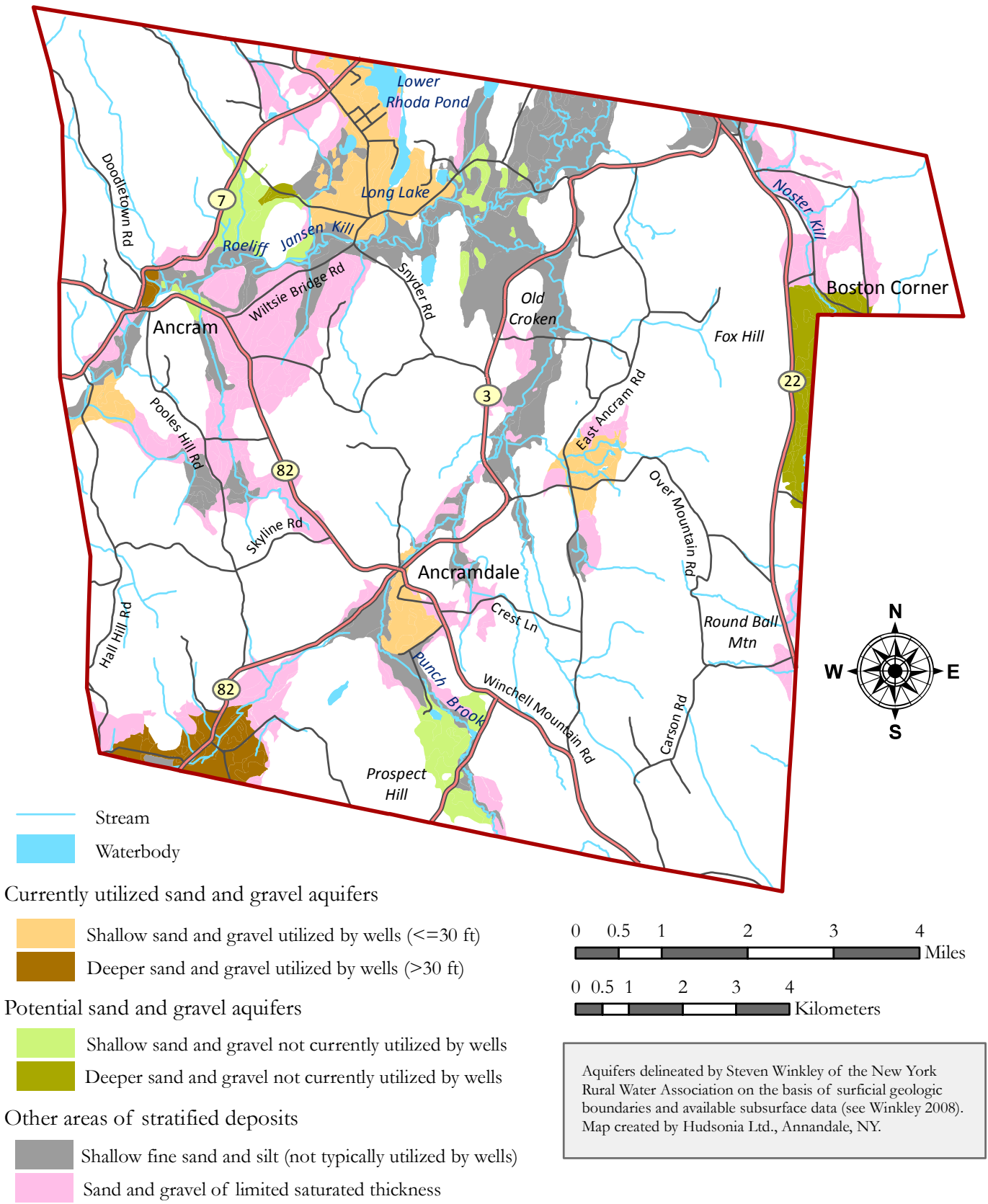


Figure 12. Unconsolidated aquifers in the Town of Ancram, Columbia County, New York. Data are from the Ancram Groundwater Protection Plan (Winkley 2008). Ancram Natural Resources Conservation Plan, 2015.

Hydrogeologic Sensitivity

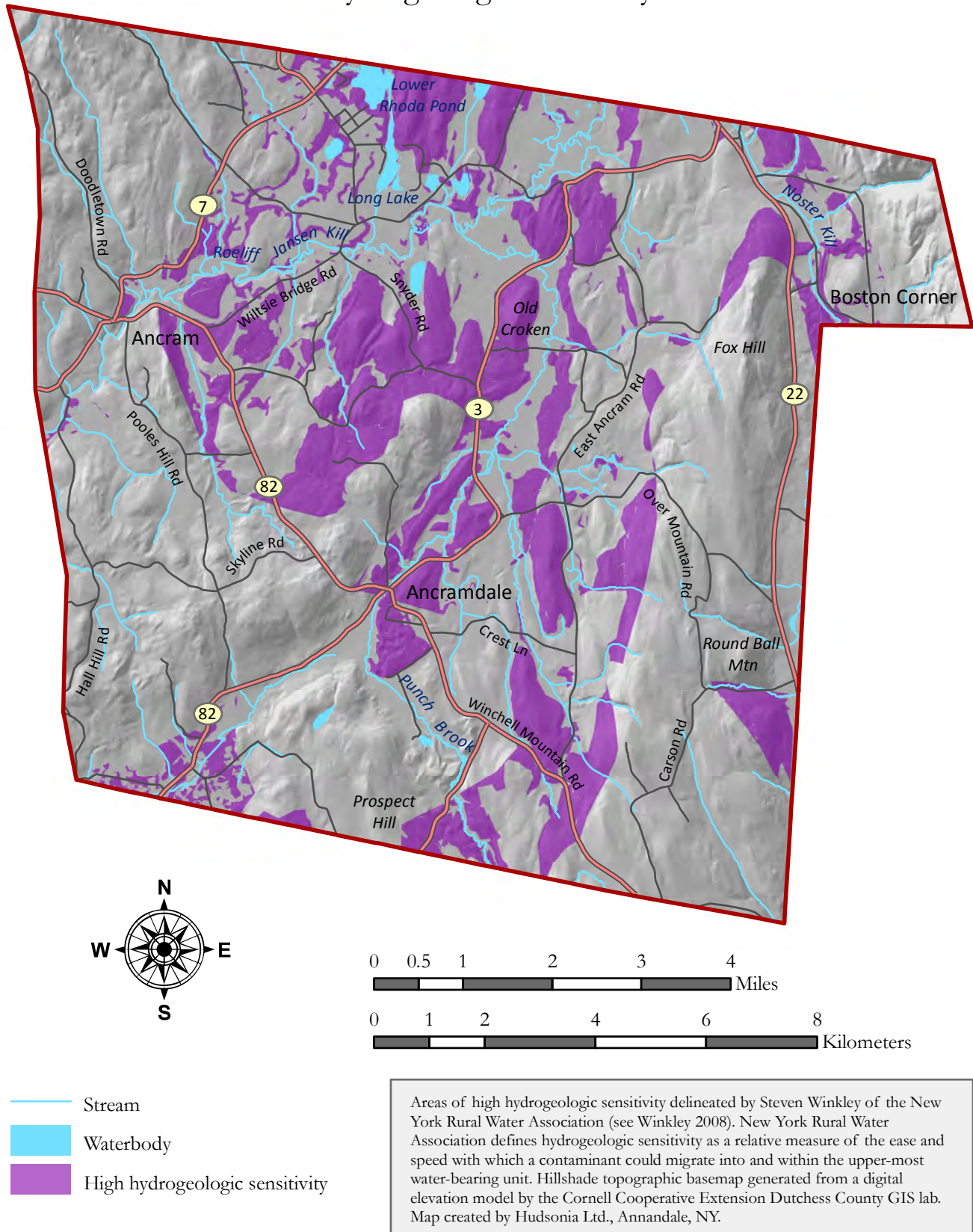


Figure 13. Areas with high hydrogeologic sensitivity in the Town of Ancram, Columbia County, New York. Data are from the Ancram Groundwater Protection Plan (Winkley 2008). Ancram Natural Resources Conservation Plan, 2015.

BIOLOGICAL RESOURCES

Ancram is concerned with the long-term protection of landscapes, ecosystems, habitats, and species of conservation concern, and in fostering resiliency of local ecosystems to existing and new environmental stresses brought on by climate change.

This Plan envisions the protection of large, broadly-connected areas representing all elevational gradients and significant landforms (such as mountain and hill summits, side slopes, ravines, high- and low-elevation valleys), bedrock types, soil types, and hydrological conditions, and seeks to maximize the connectivity of intact habitat areas. This approach will help to maintain and protect important biodiversity elements in the present, and will provide the greatest opportunities for future adaptation and safe migration of wildlife and plants to suitable habitats in a rapidly changing environment.

Protecting large contiguous areas will help to protect the habitats of area-sensitive wildlife species that require large habitat patches to fulfill their life history needs, and will also protect the array of natural communities in each area, including those of which we are yet unaware. The Plan encourages the protection of high-quality, broadly-connected representatives of all ecologically significant habitats or communities (such as rocky barrens, calcareous and acidic ledges, upland deciduous forests, conifer swamps, woodland pools, kettle wetlands, fens, intermittent streams) in the town. Prioritizing the protection of areas with concentrations of unusual and rare habitats will help ensure that the most imperiled biological communities will not disappear from our landscape.

Protecting large contiguous habitat areas will benefit area-sensitive wildlife species.



Red fox east of Lower Rhoda Pond. Photo © Jamie Purinton 2014

The Plan considers habitats and habitat complexes critical to individual plant and animal species of conservation concern whose protection will provide an umbrella for many other species using the same habitats and landscapes. For example, for the wood turtle, a broad (e.g., 1,600-ft wide) zone centered on low-gradient perennial streams with undeveloped riparian habitats would encompass most of the turtle's foraging and nesting migrations. For pool-breeding amphibians such as wood frog and mole salamanders, maintaining a 750-ft forested zone around each intermittent woodland pool and intact

forested connections between pools (within 1,500 ft of each other) would protect critical breeding, foraging, and overwintering habitat and the dispersal routes between pools that facilitate population dispersal and genetic exchange. For snakes of conservation concern, contiguous habitats within a 2-mile radius around rocky barrens habitats and other ledgy areas would encompass the snakes' denning and breeding areas, as well as critical areas for foraging and dispersal migrations. For mid-size and large mammals such as bobcat and black bear, maintaining large forested areas remote from human activities, and broad connections with other kinds of habitats (e.g., meadows, shrublands, wetlands, streams) will provide denning, nursery, and foraging habitat, and safe travelways between habitat areas.

The NRCP is guided in part by basic principles of biodiversity conservation, such as the following:

- **Broad landscape connectivity** allows safe movement between habitat areas for plants and animals.
- **Habitat patches in large, broad configurations** are preferable to small, narrow, or isolated patches.
- Roads, driveways, walls, fences, pitfalls (deep, steep-sided holes such as soil test-pits, window wells, abandoned swimming pools, etc.) create **barriers and hazards to wildlife movement**.
- **Broad zones of undisturbed soils and vegetation around sensitive natural areas** help to buffer those areas from effects of human activities (pollution, noise, lights, soil erosion, etc.).
- **Undisturbed vegetation and soils** are most effective at maintaining natural patterns and volumes of water movement overland and through the soil.
- **Ample groundwater recharge** through the soils is essential to maintaining quality and quantity of groundwater, as well as water quality, quantity, seasonal hydroperiods, and habitats of surface waters (streams, lakes, ponds).
- **Natural disturbance processes** (such as fires, floods, seasonal drawdowns of water, ice scour, wind forces) help to maintain habitat for important components of native biodiversity.



Snapping turtle laying eggs in field near Lower Rhoda Pond. Photo © Tad Higgins 2014

Ecologically Significant Habitats

Since 2001 a changing group of volunteers—the biodiversity assessment team—including members of the Ancram planning board, zoning board of appeals, conservation advisory council, and other interested citizens, have been developing a townwide map of ecologically significant habitats. Through 2013 the map was complete for approximately 50 percent of the town (Figure 14), and the team hopes to complete the rest of the map by 2016. A draft report on their initial findings (Clapp et al. 2002) describes the habitats, their importance for biodiversity, and the plants and animals of conservation concern that are known or likely to occur in those habitats, and provides conservation recommendations applicable to the study area and the town as a whole. Twenty-five habitat types have been identified and mapped to date (Table 1).

Table 1. Ecologically significant habitats identified by the Ancram biodiversity assessment team in northern Ancram.

| Upland Habitats | Wetland Habitats |
|------------------------|----------------------------|
| upland hardwood forest | hardwood & shrub swamp |
| upland mixed forest | mixed forested swamp |
| upland conifer forest | kettle pond |
| cool ravine | kettle shrub pool |
| crest/ledge/talus | intermittent woodland pool |
| oak-heath barren | wet meadow |
| red cedar woodland | calcareous wet meadow |
| upland shrubland | fen |
| upland meadow | marsh |
| orchard/plantation | beaver pond |
| waste ground | spring/seep |
| cultural | constructed pond |
| | open water |

These include both common habitats such as upland hardwood forests, upland meadows, and hardwood swamps, and less common habitats such as kettle shrub pools, fens, cool ravines, and oak-heath barrens. They also include habitats such as “waste ground” which refers to highly disturbed areas such as mines, where topsoil and vegetation have been removed, but there are no structures or pavement. Once the disturbance has ceased, these places can become very important for biodiversity, used, for example, by turtles and bank swallows for nesting, and by rare pioneer plants. “Cultural” habitats such as golf courses or ballfields have little habitat value while they are intensively managed, but once abandoned for a couple of years can develop into valuable meadow habitats. We identify them as “ecologically significant” more for their potential future value than their current value.

A few of these habitats and their significance for biodiversity are described below. Descriptions of others are in Habitat Fact Sheets available at hudsonia.org/programs/biodiversity-resources-center/habitat-mapping/habitat-fact-sheets, and in Kiviat and Stevens (2001). Rarity ranks are noted below by these abbreviations, and are explained in Appendix B.

E = NYS Endangered

T = NYS Threatened

SC = NYS Species of Special Concern

SGCN = NYS Species of Greatest Conservation Need

PB = Audubon NY Priority Bird Species (Hudson Valley)

Ecologically Significant Habitats

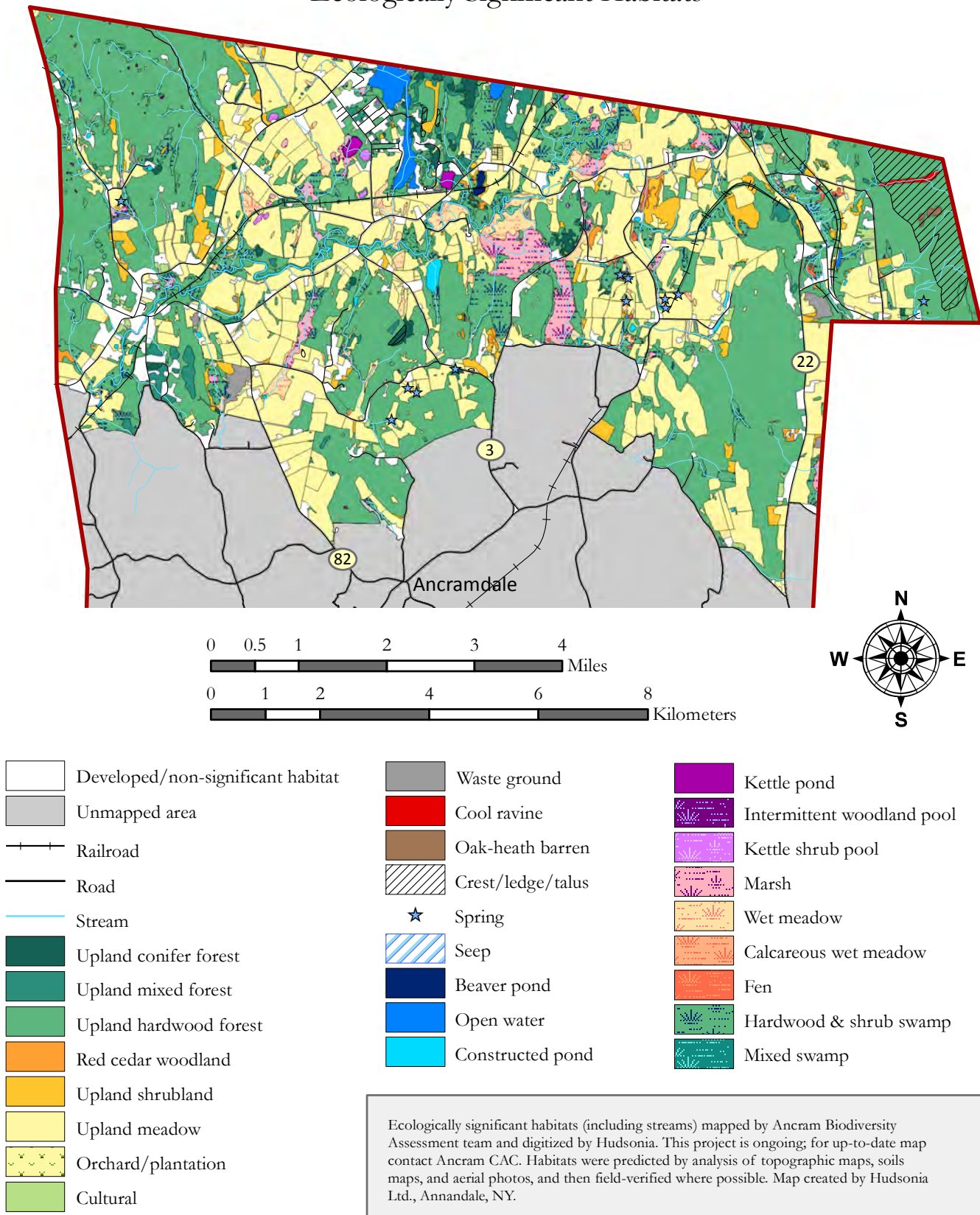


Figure 14. Ecologically significant habitats identified in the area mapped by the Ancram Biodiversity Assessment team in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

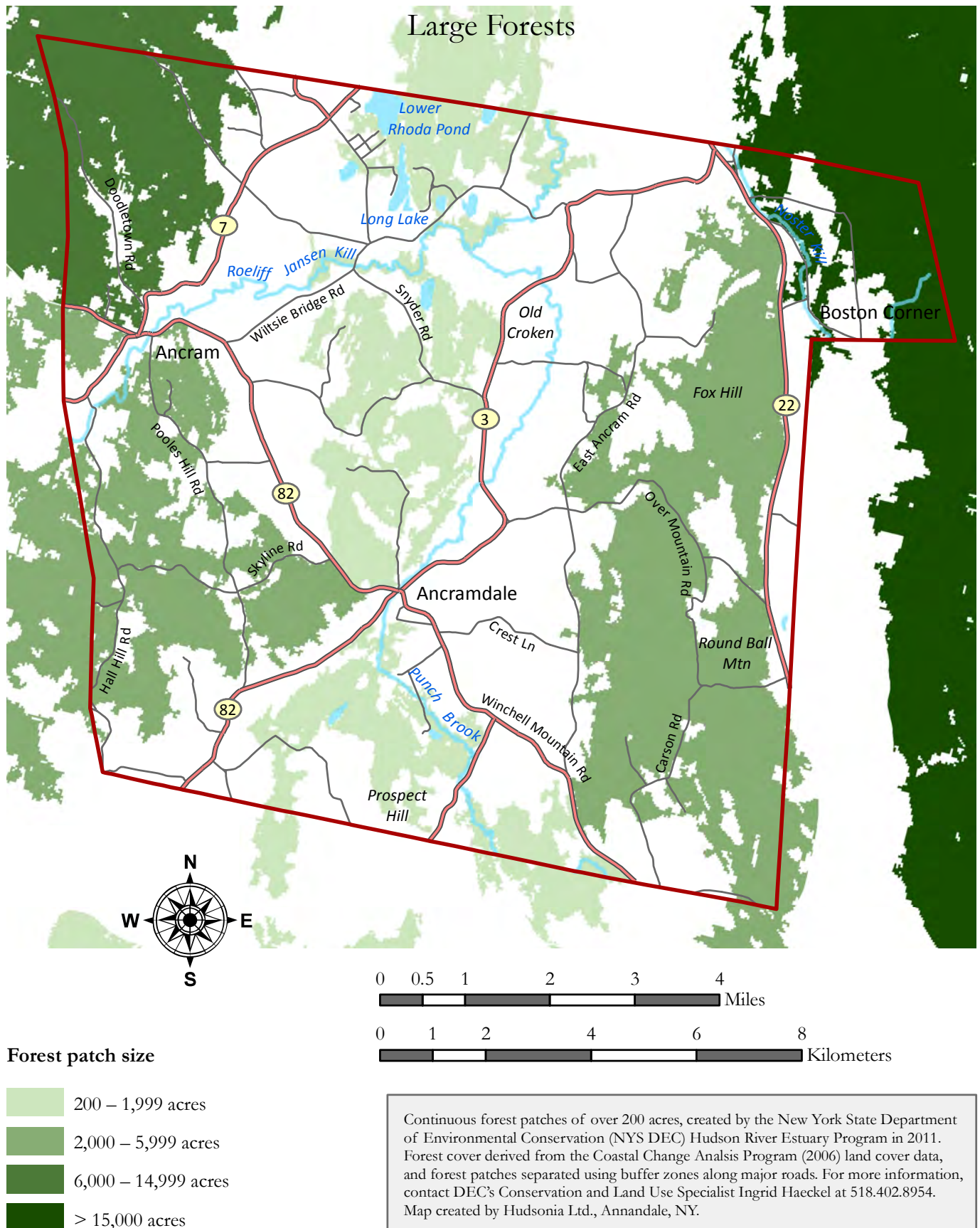


Figure 15. Large forests in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Forests are one of the most widespread habitats in Ancram (Figure 15), and one of the most valuable for biodiversity, for water resources, and for ecological services to the human community. The protection of forested areas thus helps the town address multiple targets of this Plan. By prioritizing the conservation of large forests, the town can protect habitat for many plants and animals of conservation concern, maintain habitat connectivity, facilitate plant and animal movement in a changing climate, protect groundwater and surface water resources, promote and maintain high levels of carbon sequestration, and preserve scenic viewsheds.

Ancram has contiguous forest areas of several thousand acres, some of which extend into neighboring towns (Figure 15). Those of the Taconic hills in Ancram are part of a very large and substantially unfragmented forest area extending north and south in New York and neighboring states. The forests of northwestern Ancram are part of a forest area of more than 6000 acres extending into Copake, Gallatin, and Taghkanic. Forests of the Fox Hill/Round Ball Mountain ridge are the largest contained within Ancram's boundaries.

Certain mammals and songbirds require the deep interior habitats of large forests.

Large forests have values for biodiversity that are not duplicated by smaller forest patches. Certain area-sensitive and disturbance-sensitive wildlife require large interior forest areas to maintain local populations in the long-term. These include mammals such as bobcat, black bear, and fisher, and many neotropical migratory songbirds, such as black-throated blue warbler and scarlet tanager (both SGCN), that tend to disappear from landscapes where only small forest patches remain. Large forests are a declining habitat in the region, so protection of large forested areas, and prevention of further forest fragmentation is a major goal of this Plan. Smaller forests also have conservation value, both as habitats in their own right and as “stepping stone” travelways for plants and wildlife between larger forest patches.

Forests also provide other ecological services and offer opportunities for recreation. Figure 15 shows the largest forest areas in and near Ancram.

Upland meadows are extensive and widespread in Ancram (Figures 9 and 14), and help to create the signature scenic landscapes of the town. The ecological values of upland meadows, including active cropland, hayfields, pastures, abandoned fields, and similar areas, can differ widely according to the size, types of vegetation present, and current and past disturbance history (e.g., tilling, mowing, grazing, pesticide applications) of the meadow. Large hayfields or pastures dominated by grasses, for example, may support grassland-breeding birds—depending on the mowing schedule or intensity of grazing—while intensively cultivated crop fields have comparatively little wildlife habitat value until after cultivation has ceased. It is for both present and potential ecological values that all types of meadow habitat are considered to be ecologically significant. Undisturbed meadows tend to develop diverse plant communities of grasses, forbs, and shrubs and support an array of wildlife, including invertebrates, reptiles, mammals, and birds. Several species of rare butterflies, such as Aphrodite fritillary, dusted skipper, Leonard's skipper, swarthy skipper, meadow fritillary, and striped hairstreak (all regionally rare or scarce) use upland meadows that support their particular host plants. Upland meadows can be used for nesting by wood turtle, spotted



Meadow in the Noster Kill Valley. Photo © Jamie Purinton 2014

turtle, box turtle (all SC), painted turtle, and snapping turtle. Grassland breeding birds such as grasshopper sparrow (SC), vesper sparrow (SGCN), savannah sparrow (PB), eastern meadowlark, and bobolink (both SGCN) use extensive meadow habitats for nesting and foraging. Wild turkeys forage on invertebrates and seeds in upland meadows. Upland meadows often have large populations of small mammals (e.g., meadow vole) and can be important hunting grounds for raptors, foxes, and eastern coyote.

The dramatic decline of grassland breeding birds in the Northeast has been attributed to the loss of large patches of suitable meadow habitat; many of these bird species need large (>25 ac) meadows that are not divided by fences or hedgerows which can harbor predators (Wiens 1969). Intensification of agriculture, regrowth of shrubland and forest after abandonment of agriculture, and residential development are principally responsible for the losses of high-quality meadow habitat in the Northeast. Mowing of upland meadows during the bird nesting season can cause extensive mortality of eggs, nestlings, and fledglings. Soil compaction and erosion caused by ATVs, other vehicles, and farm equipment, which can reduce the habitat value for invertebrates, small mammals, nesting birds, and nesting turtles, is another threat to the biodiversity values of upland meadow habitats. Farmland where pesticides (fungicides, herbicides, insecticides) are used may have a reduced capacity to support native biodiversity.

Grassland birds need large, unfragmented meadows.

Many farm practices can improve habitats for rare and vulnerable wildlife and native plants, while maintaining or improving farm productivity and efficiency. Some relate to grazing or mowing schedules, or mowing patterns and techniques, to improve habitat for butterflies, bees, nesting birds, and nesting turtles, for example; some relate to land management for water conservation and soil-building; some to management of field borders to improve pollination, reduce pest problems, and support wildlife (Travis 2013, 2014); and some to least-toxic or non-toxic pest management techniques.

A **cool ravine** is a rare type of ravine with very steep, high, rocky walls narrowly flanking a rocky stream. The rocky ravine walls are typically vegetated with eastern hemlock. The very cool, dark, moist environment of the cool ravine habitat often supports plant and animal communities typical of more northern latitudes or higher elevations; for example, plants such as Canada yew or mountain spleenwort. These cool areas of the landscape may play an important role as temporary refuges for species that are shifting their ranges northward in response to climate warming. Two “cool ravines” are known in Ancram—on Winchell Mountain and on the west-facing slope of the Taconics—and others may be discovered as habitat mapping continues.

Crest, ledge, and talus are habitats of exposed bedrock areas that in Ancram are most extensive in the Taconics and the Fox Hill ridge, but also occur at scattered other locations (Figure 14). The plants and animals of rocky habitats differ according to the rock and soil chemistry, the degree of exposure, and land use history, but these places are often hotspots for biodiversity. In some cases they might serve as refugia for plants and animals because of their (sometimes) relative inaccessibility to browsing or grazing animals, to predators, and to humans. Ledges with an open canopy tend to have a warmer microclimate than the surrounding forested habitat, and can have significant habitat value for timber rattlesnake (T), eastern racer (SGCN), eastern rat snake (SGCN), and other snakes of conservation concern. Deep rock fissures can provide overwintering sites for these species and the exposed ledges provide basking and breeding habitat. The snakes also travel long distances from these ledgy areas to forage in forests and meadows. Rare butterflies may use these areas if their larval host plants are present. Birds such as whip-poor-will (SC) or blackburnian warbler (PB) may nest at these sites, and ledges provide important denning habitat for porcupine and bobcat. Exposed ledges at high elevations are often scenic viewpoints and are valued as lookouts, and as picnic and resting sites along hiking trails.

Ledgy areas can be hotspots for biodiversity.

Oak-heath barrens, a special subset of crest and ledge habitats, typically occur on summits and shoulders in the Taconic hills with exposed bedrock, shallow, acidic soils, and sparse, stunted vegetation dominated by some combination of pitch pine, scrub oak, other oaks, and blueberry, huckleberry, and chokeberry shrubs (Figures 14 and 16). Several species of rare plants are known from these habitats in the region, and the larvae of several species of rare butterflies and moths feed on the unusual plants of oak-heath barrens. For example, Edward’s hairstreak larvae feed on scrub oak, and cobweb skipper and dusted skipper on little bluestem; both butterflies are regionally rare.

Unusual Habitats

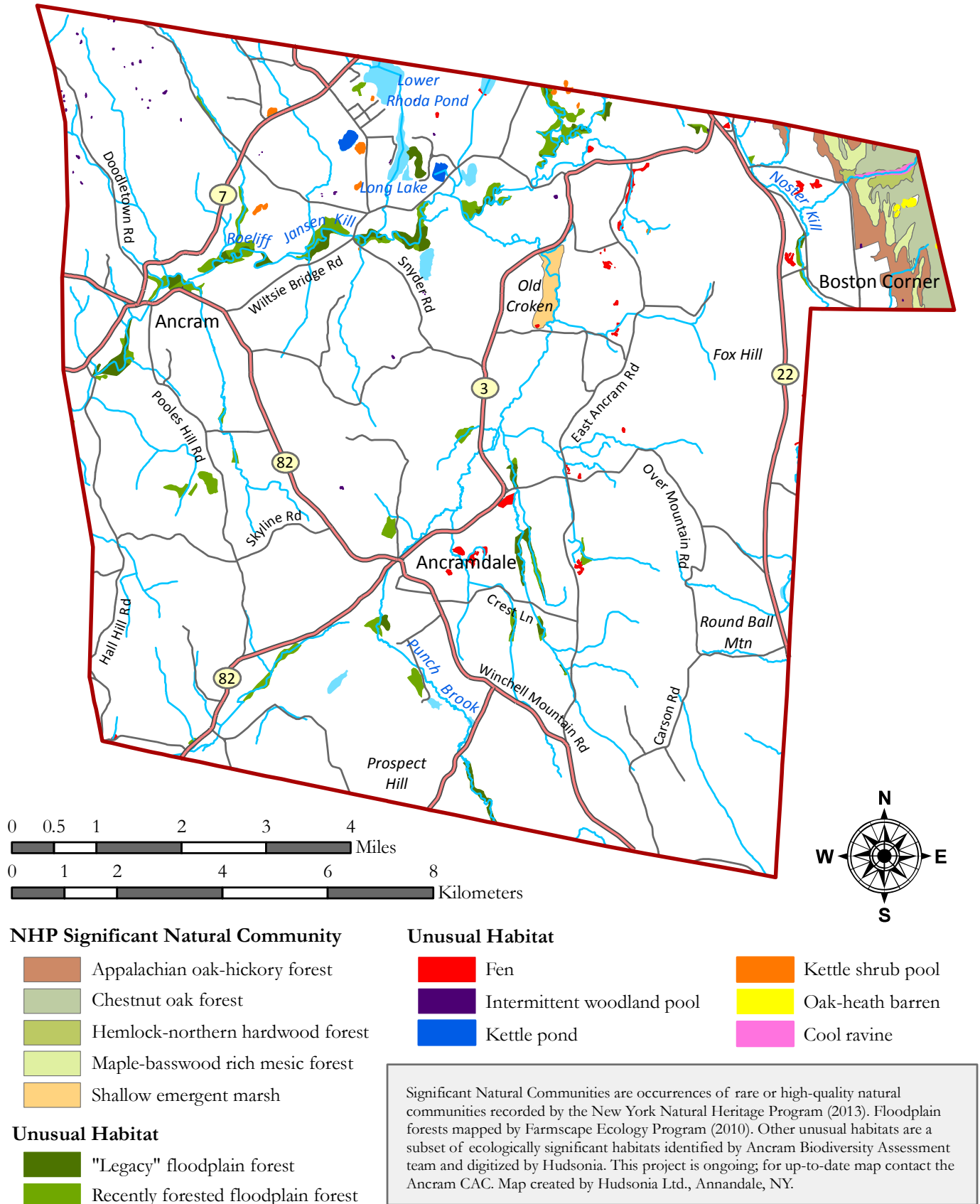


Figure 16. Unusual habitats in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

Upland shrubland is a common habitat on abandoned farmland, in utility corridors, in cleared forest areas, and in rocky areas with shallow soils; it is often (but not always) a transitional habitat stage between upland meadow and young forest. Many species of conservation concern are known to use shrubland habitats in the region, including butterflies such as dusted skipper, Leonard's skipper, and cobweb skipper (all regionally rare or scarce), nesting songbirds such as golden-winged warbler (SC), blue-winged warbler, and American woodcock (both SGCN), and mammals such as the New England cottontail (SC). The latter species—very similar in appearance to the eastern cottontail (non-native, common)—is our only native cottontail, but its populations have declined dramatically in the Northeast in recent decades. It seems to prefer large areas of shrubland with dense shrub thickets that provide protection from predators. The New England cottontail is known to occur in Ancram. The DEC is attempting to locate extant populations in the region and is working with interested landowners to maintain and restore suitable habitats in Ancram and elsewhere in southeastern New York.

A **fen** is an unusual kind of wetland that occurs, generally, in areas of limestone or marble bedrock. This is a wet meadow/low shrubby habitat fed by calcareous groundwater seepage that supports a distinctive plant community, including many species that are restricted (or nearly so) to fens in this region. Several state-listed rare plants and animals occur in fens, including those in Ancram, such as handsome sedge (T), marsh valerian (E), and bog turtle (E).

Fens are the core habitat of the bog turtle. The eastern tier of towns (including Ancram) in southeastern Columbia County and Dutchess County has the largest concentration of fens in southeastern New York, and contains most of the known occurrences of the bog turtle in the state. This turtle occurs in certain Ancram fens but, due to the potential for illegal collection, killing, or harassment, known locations of bog turtle occurrences are ordinarily not disclosed to the public unless there is a known and imminent threat to the turtles' welfare.



Bog turtle (left) and northern leopard frog (right) in an Ancram fen. Photos © Jamie Purinton 2014

An **intermittent woodland pool** is a small wetland partially or entirely surrounded by forest, typically with no surface water inlet or outlet (or an ephemeral one), and with standing water during winter and spring that dries up in the summer during a normal year. This habitat is a “**vernal pool**” in a forested setting. Despite the small size of intermittent woodland pools, those that hold water through early summer can support amphibian diversity equal to or higher than that of much larger wetlands (Semlitsch and Bodie 1998, Semlitsch 2000). Seasonal drying and lack of a stream connection ensure that these pools do not support fish, which are major predators on amphibian eggs and larvae. The absence of fish helps to make



Intermittent woodland pool (left) and spotted salamander (right). Photos © Jamie Purinton 2014

intermittent woodland pools the critical breeding and nursery habitat for wood frog, Jefferson salamander, marbled salamander (both SC), and spotted salamander. The surrounding forest supplies the pool with organic litter, the base of the pool’s food web, and is also essential habitat for these amphibians during the nonbreeding season. They often move long distances (1,500-2,500 ft and more) into the forest after breeding and metamorphosis, so large, surrounding forests are a critical component of woodland pool ecology. Reptiles such as spotted turtle use intermittent woodland pools for foraging, rehydrating, and resting. Wood duck, mallard, and American black duck (SGCN) use intermittent woodland pools for foraging, nesting, and brood-rearing, and a variety of other waterfowl and wading birds use these pools for foraging. The invertebrate communities of these pools can be rich, providing abundant food for songbirds such as yellow warbler, common yellowthroat, and northern waterthrush. Large and small mammals use these pools for foraging and as water sources.

Forty-five intermittent pools have been identified and mapped in Ancram, and we expect there are more in the yet-unmapped areas of town (Figures 14 and 16). The Ancram Comprehensive Plan calls for establishing a minimum buffer zone of 100 ft around intermittent woodland pools, and allows for a larger buffer zone where warranted due to local habitat attributes.

A **kettle wetland** is an uncommon type of wetland that develops in a glacial kettle—a shallow depression formed in glacial outwash where a block of ice stranded from the retreating glacier melted in place. These wetlands can be pools, marshes, or swamps, and can be sparsely or densely vegetated, but are usually partially spring-fed and somewhat calcareous. The plant community of these wetlands is often distinctive and usually includes some combination of buttonbush, highbush blueberry, and swamp azalea.



Kettle pond at Four Corners. Photo © Jamie Purinton 2014

Several kettle wetlands (kettle swamps, kettle ponds, and kettle shrub pools) have been identified in northern Ancram (Figures 14 and 16), and others may be present in areas of glacial outwash elsewhere in town (Figure 3). Kettle wetlands that dry up in the summer and are surrounded by forest will serve many of the same habitat functions as intermittent woodland pools for amphibians, turtles, and other wildlife. Several species of rare plants and animals are known to occur in kettles elsewhere in southeastern New York (Kiviat and Stevens 2001), but Ancram's kettles have not been surveyed for rare species.

Floodplain forests are uncommon in Ancram (Figure 16), and in Columbia County in general. These are habitats of unusual biological diversity (Knab-Vispo and Vispo 2010), and are important to many wildlife species of conservation concern. Floodplain forests support the stream habitat by helping to maintain cool streamwater temperatures, providing high-quality organic detritus important to stream habitat structure and the stream food web, and providing space and structural complexity that serve to dampen floodflows.

Some rare and uncommon bird species are especially associated with riparian forests, such as Louisiana waterthrush (SGCN), which uses the rocky banks of swift-running streams, and northern waterthrush which nests in thick vegetation near slow-moving streams, ponds, and wetlands. Wood duck nests in tree cavities, and uses nearby streams and wetlands as nursery areas. The Farmscape Ecology Program found two regionally rare butterflies in floodplain forests of Columbia and Dutchess counties—the hackberry emperor and the American snout—and other uncommon butterflies such as the question mark and the spicebush swallowtail. They also found three dragonflies listed as SGCN species in New York—brook

snaketail, spine-crowned clubtail, and arrow clubtail—and 59 species of native bees, some of which were also found pollinating agricultural crops nearby (Knab-Vispo and Vispo 2010).

Floodplain forests occur along significant lengths of the Roe Jan and the Noster Kill, and in smaller fragments along other Ancram streams (Figure 16). The Farmscape Ecology Program identified a few areas of “ancient” or “legacy” floodplain forests in Ancram that have remained uncleared since at least the 1940s and probably for much longer in some cases (some may never have been cleared), as well as others that were open in the 1940s and have since reforested (Figure 16). They observed that, because the legacy forests are ecologically distinct and possibly irreplaceable, they deserve a high priority for conservation (Knab-Vispo and Vispo 2010).

Riparian areas in general—the stream channel and floodplain—are important both as habitats in their own right, and as components of the stream ecosystem. All undeveloped areas (without pavement or structures) in a floodplain serve to temporarily store floodwaters, and thus help to protect downstream areas vulnerable to flooding. Areas with dense herbaceous or woody vegetation are especially effective at dampening floodflows and holding soils in place. Intact riparian habitats also facilitate the regular movement of nutrients, sediment, organic matter, and living organisms between the stream, floodplain, and upland areas.

Intact riparian areas allow the regular exchange of nutrients, organic matter, and organisms between the stream, floodplain, and upland areas.

Riparian zones serve wildlife in many ways—as travel corridors, as resting habitat, and as habitat for foraging, nesting, or overwintering. Intact stream corridors may be increasingly important in the face of climate change, as they can assist wildlife in their migrations to cooler habitats northward or at higher elevations.

The river otter (SGCN) spends much of its time in stream corridors, along lake shores, and in wetlands. This species was nearly wiped out early in the last century due to over-harvest, habitat destruction, and water pollution. It has since rebounded somewhat in eastern New York but is still uncommon in the region as a whole. The American mink also spends most of its time in areas associated with streams, ponds, and wetlands. Although secretive and seldom seen by humans, it seems to be more common in the region than the river otter. Several species of bats are likely to forage for insects over the Noster Kill, Roe Jan, Punch Brook, and other streams, as well as over large and small wetlands. The Farmscape Ecology Program found little brown bat, northern myotis, big brown bat, eastern red bat (SGCN), eastern small-footed bat (SC), and eastern pipestrelle foraging in riparian corridors in Columbia and Dutchess counties (Knab-Vispo and Vispo 2010), and all are likely to use these habitats in Ancram. There is an historic record of an active Indiana bat (E) hibernaculum in Ancram, but the present-day occurrence of the species is unknown. Long-eared bat, recently proposed for federal listing, could also use Ancram habitats in summer. Some of these bats may use riparian and nearby forests as summer roosting sites and/or

nursery areas. The wood turtle (SC) uses perennial streams and stream banks for foraging and overwintering, and uses many other upland and wetland habitats in the riparian zone and beyond for foraging, resting, and nesting.



Marsh near Doodletown Road. Photo © Choral Eddie 2014

In a “**Habitat Summary**” prepared for the Town of Ancram, Strong (2011) listed plants, animals, and ecological communities of conservation concern known to occur in the town, based on data obtained from the New York Natural Heritage Program, the New York Amphibian and Reptile Atlas, the New York Breeding Bird Atlas, and the Farmscape Ecology Program (Appendix D). These lists are not exhaustive; there have been no comprehensive surveys of the town, and we expect that other rare, uncommon, and declining species are also present. Strong (2011) listed two NYS Endangered animals species (Indian bat and bog turtle) in Ancram, two NYS Threatened species (timber rattlesnake, least bittern), several NYS Species of Special Concern (including spotted turtle, sharp-shinned hawk, and grasshopper sparrow), and several other NYS Species of Greatest Conservation Need (for example, four-toed salamander, New England cottontail, black-billed cuckoo, and willow flycatcher). (These and other rarity ranks are explained in Appendix B.) The Farmscape Ecology Program has documented at least 16 species of county-rare butterflies, dragonflies, and damselflies in surveys of specific properties in Ancram. In addition there are known occurrences of at least one NYS Endangered plant species (marsh valerian), and three NYS Threatened plants, in addition to many other plants believed to be regionally rare or scarce (Strong 2011). The Hudson River Estuary Program prepared a similar Habitat Summary for the Town of Copake (Haeckel 2014), and listed some Copake records of additional species of conservation concern; many of these are likely to occur in Ancram also; for example, eastern small-footed bat, red-shouldered hawk, whip-poor-will, wood turtle, blue-spotted salamander, and Jefferson salamander (all SC), and northern black racer (SGCN).

NYSDEC “Significant Biodiversity Areas”

In the *Hudson River Estuary Wildlife Habitat and Conservation Framework* (Penhollow et al. 2006), the DEC identified 22 “Significant Biodiversity Areas” (SBAs) throughout the ten counties of the Hudson River estuary corridor. Two of these occur partially in Ancram—the Harlem Valley Calcareous Wetlands, and the Taconic Ridge (Figure 17). These SBAs are by no means the only significant areas for biodiversity in Ancram, but have been recognized for especially high concentrations of important, unusual, and vulnerable biological features. The “Harlem Valley Calcareous Wetlands” SBA extends to large areas of valleys and adjacent ridges in eastern Columbia, Dutchess, and Putnam counties, and covers over half of the Town of Ancram. The Stockbridge Marble bedrock underlying valley areas of the SBA is responsible for the calcium-rich groundwater that feeds many of the wetlands, and the calcium-rich soils of both wetlands and uplands that support unusual ecological communities and many rare species of plants and animals. At least 13 fens have been identified and mapped within this Significant Biodiversity Area in Ancram so far, and an additional 13 have been mapped but not yet verified in the field; we expect there are more yet to be found.

The Taconic Ridge SBA runs along the eastern border of Rensselaer, Columbia, and Dutchess counties, and is notable for its large areas of contiguous, high-quality hardwood forests. These forests, which extend into Connecticut, Massachusetts, and Vermont, support numerous species of regionally rare and state-listed rare and uncommon plants and animals, and are a primary recharge area for the wetlands and streams of the Harlem Valley (Penhollow et al. 2006). Timber rattlesnake (T) has been found in the Ancram Taconics, and black-throated blue warbler, worm-eating warbler, and sharp-shinned hawk (all SGCN), for example, may nest here. The large forests provide wintering and breeding habitat for diverse songbirds and raptors and the ridge serves as an important bird migration corridor.



Bank swallow nest colony at Bryant gravel mine.
Photo © Jamie Purinton 2014

"Significant Biodiversity Areas" and Scenic and Ridgeline Overlay Zones

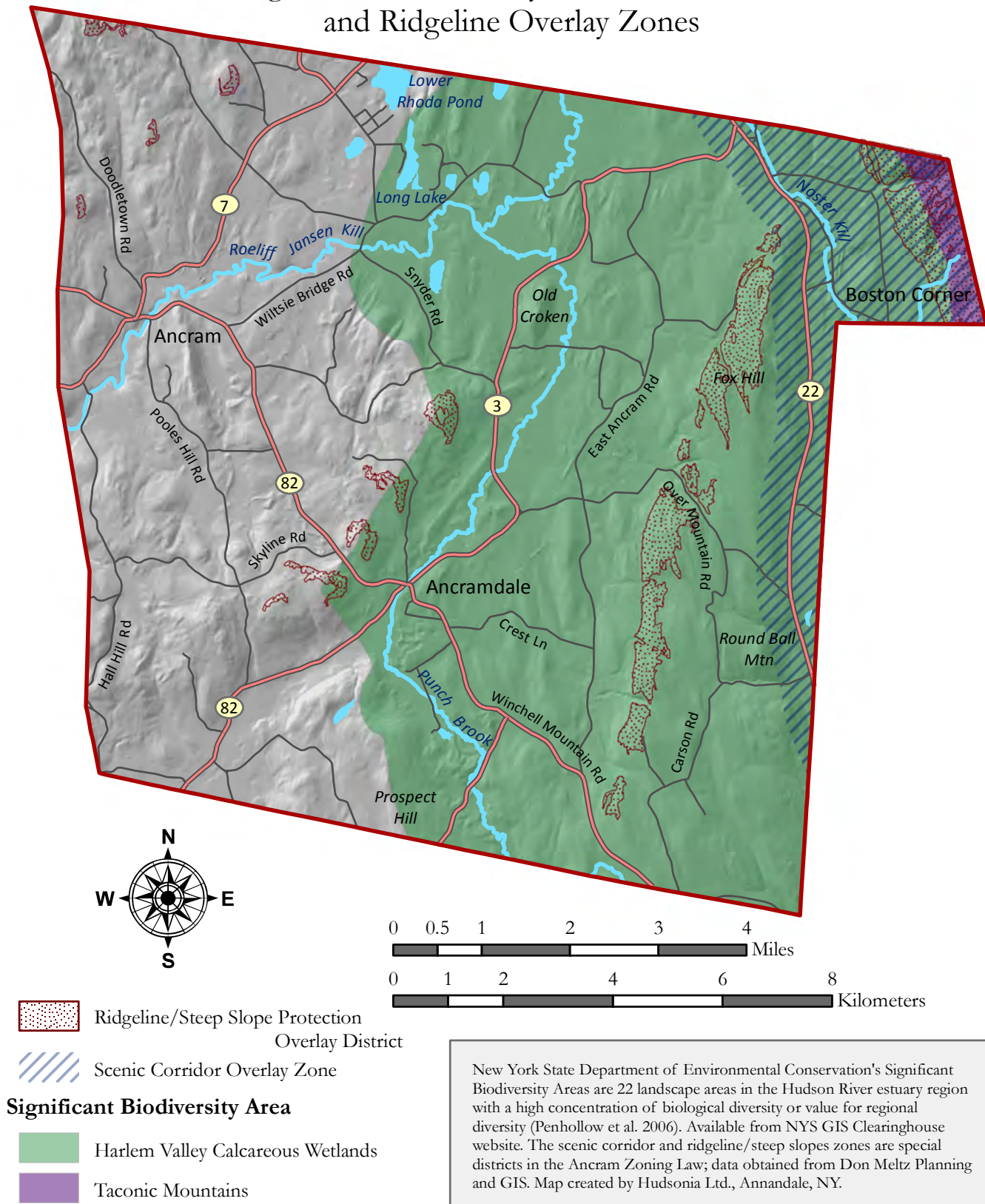


Figure 17. DEC "Significant Biodiversity Areas" (SBAs), Scenic Corridor Overlay Zone, and Ridgeline/Steep Slope Protection Overlay District in the Town of Ancram, Columbia County, New York. (Many areas outside these SBAs are also very important for local and regional biodiversity.) Ancram Natural Resources Conservation Plan, 2015.

Natural Heritage "Important Areas"

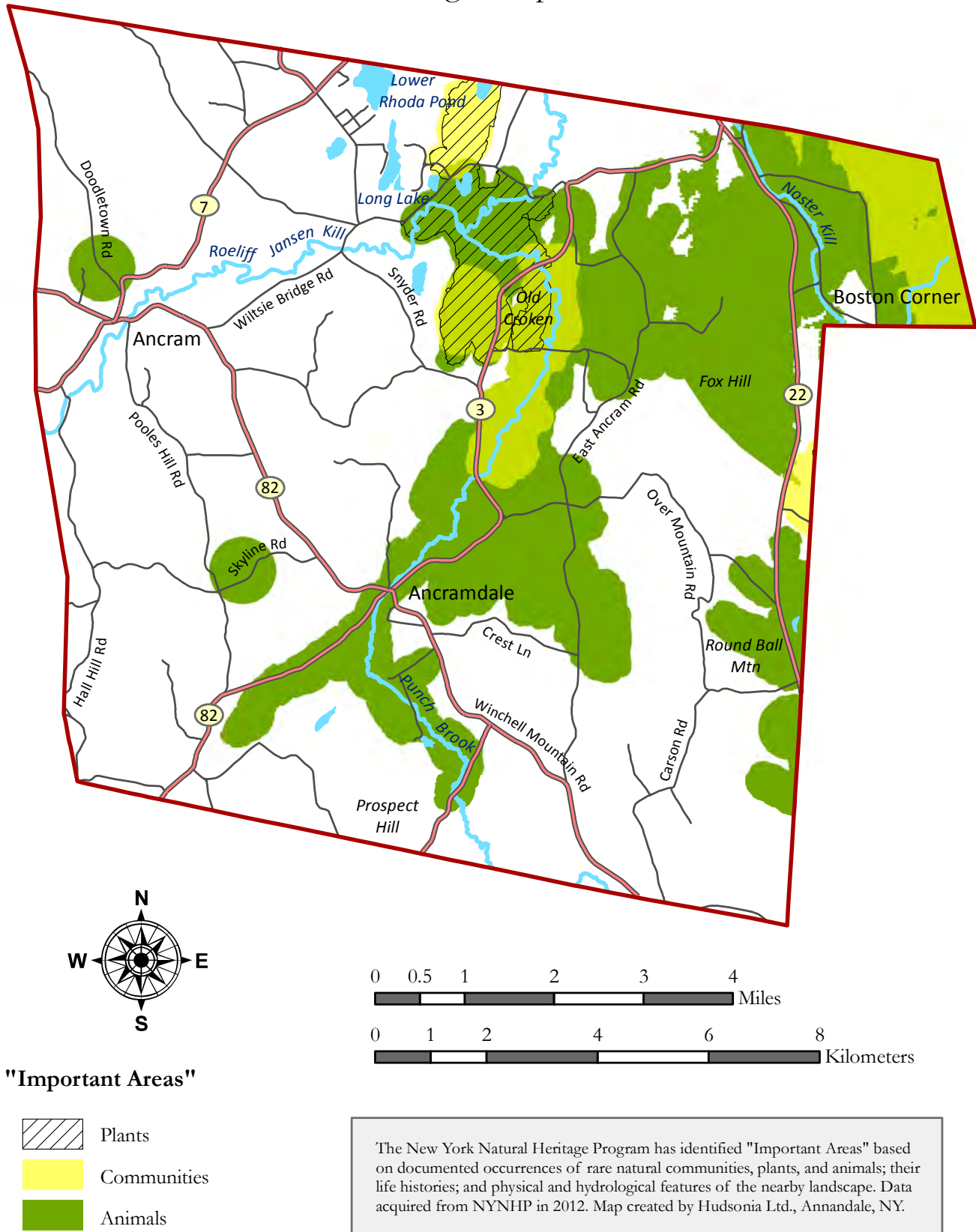


Figure 18. New York Natural Heritage Program "Important Areas" in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

New York Natural Heritage Program “Important Areas”

The New York Natural Heritage Program (NYNHP) has identified so-called “Important Areas” for biodiversity throughout the state. Some of these “areas important for the health of rare plants, rare animals, and significant ecosystems” occur in the Town of Ancram (Figure 18). The Important Areas were identified through analysis of known occurrences of rare plants and animals, their life histories and habitats, and the physical and hydrological features of the landscape.

Large parts of Ancram have been designated “Important Areas” for rare plants, rare animals, and significant natural communities.

The NYNHP *Important Areas* and DEC *Significant Biodiversity Areas* data are intended to guide conservation planning, environmental reviews of land development projects, and other land use decision-making, but neither of these designations has any regulatory power. The purpose of the designation is to alert landowners, developers, municipal agencies, and other land use decision-makers to the potential for impacts to rare species and rare communities, so that the most sensitive areas can be protected.

When new land uses are contemplated, the NYNHP encourages people to contact them to learn more about the particular elements of concern in the vicinity. (This inquiry is part of Ancram’s standard procedures for any project in the SEQR [State Environmental Quality Review] process.) The Important Areas are not to be interpreted, however, as the only areas of conservation concern, or the only areas where rare species may occur. Many parts of the landscape have never been surveyed for significant habitats or rare species, so no one knows the other places used by rare species. Moreover, the Important Areas maps were created several years ago so do not include the most up-to-date information on known rare species occurrences. For these reasons, the Important Areas maps should never be used as a substitute for onsite habitat assessments or rare species surveys where such studies are warranted. Nonetheless, the NYNHP Important Areas maps are a useful depiction of areas of known importance for rare plants and animals.

High-Elevation Areas

The Taconic Ridge is a defining landscape feature of southeastern New York and neighboring states that provides magnificent scenic vistas and valuable wildlife habitat and ecological services, and is a popular recreational destination. High-elevation areas of mountains, ridges, and hills, especially those that are remote from frequent human activity, often serve as important core habitats and travel corridors for area-sensitive wildlife such as black bear, bobcat, and fisher—animals with large home ranges that require large areas of substantially undisturbed forested habitat. Although these species will use farmland and other low-elevation habitats for foraging and hunting, they are generally intolerant of human activity near their dens and nursery sites, and tend to avoid and move away from developed areas. Ridges can also be important corridors for migrating birds that rely on thermal and deflection air currents above ridges for uplift and propulsion to minimize their own energy output during

Artificial lights and tall structures on ridgetops and hillsides cause injury to migrating birds, and disrupt their navigation.

their long migrations. Artificial lights on ridgetops and hillsides can disrupt bird navigation, and collisions with tall structures can cause injury to and death of migrating birds. The forested hills in Ancram have the largest expanses of contiguous (unfragmented) forests in the town. The high-elevation areas of the Taconics in Ancram are within an extensive forest core that features ecologically important habitats such as rocky barrens, headwater streams, and a cool ravine.

The three highest elevations in Ancram—in the Taconics (2,040 ft), on Fox Hill (1,346 ft) and on Round Ball Mountain (1,318 ft)—are all on conservation lands protected by the state or by the Columbia Land Conservancy (Figure 19). The summits of other hills—Prospect Hill, unnamed hills in southwestern and northwestern Ancram, and Old Croken (Figure 2) are also forested but, except for Old Croken (owned by the Columbia Land Conservancy), have no formal conservation status. This NRCP considers all the high-elevation areas (e.g., 1,000+ ft asl) in Ancram to be of high priority for conservation because of their ecological, scenic, and (in some cases) recreational values.



Birches and reflections. Photo © Choral Eddie Purinton 2014

GENERAL MEASURES FOR BIOLOGICAL RESOURCE CONSERVATION

- Protect areas representing all significant landforms and the full array of elevations, bedrock geology, and surficial geology that occur in Ancram.
- Protect habitat areas in large, broad configurations, with broad connections to other habitat areas.
- Direct human uses toward the least sensitive areas, and minimize alteration of natural features, including vegetation, soils, bedrock, and waterways.
- Avoid fragmentation of large forest patches by roads, driveways, clearings, and other disturbances that open the forest canopy.
- Avoid fragmentation of contiguous farmland by roads, driveways, or other non-farm uses.
- Promote wildlife-friendly agricultural practices, such as late mowing to accommodate ground-nesting grassland birds, leaving unmowed strips and fallow rotations to support pollinators and other beneficial invertebrates, and minimizing applications of pesticides and fertilizers.
- Maintain broad buffer zones of undisturbed vegetation and soils around ecologically sensitive areas.
- Protect habitat complexes for species of conservation concern wherever possible.
- Minimize impervious surfaces and design new land uses (and retrofit existing uses wherever possible) to ensure that surface runoff of precipitation and snowmelt does not exceed pre-development patterns and volumes of runoff.
- Concentrate new development along existing roads; discourage construction of new roads in undeveloped areas.
- Employ sustainable forestry practices in working forests, and sustainable agricultural practices that build living soils and conserve water.
- Maintain natural disturbances, such as fires, floods, seasonal drawdowns, ice scour, and wind exposure, which help to create and maintain habitat for important components of native biological diversity.
- Consider environmental concerns early in the planning process for new development projects, and incorporate conservation principles into the choice of development sites, the site design, the stormwater management, and the construction practices.
- Inform town agencies, landowners, and the general public about the DEC Significant Biodiversity Areas and the NYNHP Important Areas, to heighten awareness of their conservation importance.

FARMLAND RESOURCES

The Town of Ancram recognizes that local agriculture brings innumerable benefits to the local economy, to local food security, to the scenic character of the landscape, and to the culture of the human community. Maintaining our ability to produce food locally has obvious advantages in the face of unstable and unpredictable energy supplies, and the worldwide imperative to reduce carbon emissions. Active and abandoned farmland can also contribute significantly to native biodiversity, and intact habitats in the vicinity of farms can, in turn, provide critical and irreplaceable services and resources (such as climate moderation, high quality water, flood attenuation, and habitat for pollinators and insect predators on agricultural pests) to farm enterprises.

Promoting the economic success of local farms, and protecting the best farmland soils will help to ensure the future of agriculture in Ancram.

Ancram is fortunate to have large areas of good farmland soils, and many active farms (Figures 10 and 11). Farm operations include dairy, beef, poultry, goats, sheep, horses, vegetables, grains, fruit, flowers, and feed crops (Farmland Protection Plan Committee 2011). The viability of local agriculture in the Hudson Valley region is threatened by rising property values, a difficult agricultural economy, and competition for prime farmland from development interests, but the town is dedicated to supporting Ancram's working farms, and protecting the best farmland for current and future agricultural uses. The *Ancram Agriculture and Farmland Protection Plan* (Farmland Protection Plan Committee 2010) acknowledged the importance of agriculture to the economy, quality of life, and wildlife in Ancram, analyzed the current status of agriculture, and outlined goals to promote and support farming enterprises in the town.



Herefords and Brown Swiss in an Ancram pasture. Photo © Choral Eddie 2014

Active, fallow, and abandoned farmland can also provide habitats important to native plants and animals of conservation concern, such as the grassland birds and turtles that nest in meadows, raptors, mammals, and snakes that hunt in meadows, and insect pollinators that rely on cropland, hayfields, oldfields, and brushy edges to meet their needs for food, resting, pupation, and overwintering. Many of Ancram's fens are in livestock pastures, and

light to moderate grazing by livestock can actually help to maintain fens in suitable condition for the bog turtle and other rare and uncommon fen organisms (Tesauro 2001, Tesauro and Ehrenfeld 2007). Farmland that is adjacent to unmanaged habitats (e.g., forests, oldfields, marshes) can be especially valuable for wildlife that need a complex of different habitats to meet their life history needs. Intact adjacent habitats also support the diverse pollinators that are essential to certain agricultural crops.

While farmland can provide important habitat for native plants and animals, the kinds of farm practices on any site will help to determine the actual positive or negative impacts on biodiversity and on groundwater and surface water resources. For example, mowing schedules, grazing intensity, uses of fertilizers and pesticides, and treatment of soils will all influence the habitat quality of farmlands, the interchange of on-farm and off-farm organisms, and the effects on groundwater and nearby streams. Many kinds of farm practices help to support important habitats and water quality while improving soil health and farm productivity (Travis 2012, 2013). Farmers are among the largest landowners and the most important land stewards in Ancram, and are thus essential partners in natural resource conservation efforts.

This Natural Resource Conservation Plan places a high priority on support of active farms and conservation of the best farmland soils to maximize the current and future potential for farming in the town. The town can promote local food production and markets through strategic conservation of working lands and high-quality farmland soils, partnering with other organizations and government to build new infrastructure and services, and offering events and educational programming to foster production and consumption of local agricultural products. Protecting the best farmland soils, whether or not they are actively farmed at present, will help to ensure the future of viable agriculture in the town.



Vegetables at Thompson-Finch Farm.
Photo © Choral Eddie 2014



Pasture and pond in the Punch Brook Valley. Photo © Jamie Purinton 2014



Gray sky over cornfield. Photo © Choral Eddie 2014

GENERAL MEASURES FOR FARMLAND CONSERVATION

- Protect active farmland, Prime Farmland Soils, and Farmland Soils of Statewide Importance from development as much as possible.
- Design new subdivisions and development sites in ways that preserve the areas of best farmland soils intact and unfragmented as much as possible.
- Maintain intact habitats in and near hayfields, cropland, orchards, and pastures to help support pollinators and wildlife.
- Promote farming practices that conserve water, prevent soil erosion and soil loss, build living soils, and minimize applications of toxic substances.
- Minimize applications of fertilizers and pesticides, and especially in the more sensitive areas such as floodplain fields, and maintain cover crops and thatch to minimize soil loss during heavy precipitation or flood events.
- Where possible, shift tilled land in floodplains to other uses (such as pastures, hayfields) more resilient to flooding.

SCENIC RESOURCES

Ancram’s visual landscape—the wooded hills, rocky hillside streams and meandering lowland streams, scenic lakes, and hayfields, pastures, cropland, and oldfields—is central to the history, economy, and culture of the town. Scenic resources help connect people to the land, foster appreciation of the natural landscape, and act as a magnet for residents and visitors who are drawn to and captivated by the area.

The scenic beauty of the town is intimately tied to the other natural resources addressed in this conservation plan—the physiography, water resources, biological communities, and farmland. Some scenic areas will be protected under those “umbrellas” in this Plan, but other areas deserve conservation attention in their own right.

Ancram’s scenic beauty is intimately tied to biodiversity, water, and farming.

Ancram has an existing Scenic Corridor Overlay District in the Route 22 corridor (Figure 17), and a recently-adopted Ridgeline/Steep Slope Overlay District that covers additional areas of high elevations and steep slopes. Both extend some protections to important scenic areas of the town. Ancram’s scenic assets are not limited, however, to the Route 22 corridor and high, steep areas with long views, but also include other forests and hills, lakes and ponds, wetlands, streams, farmland, and farmsteads that are widely distributed throughout the town. Land use decisions should consider impacts to these other scenic areas as well as the prominent areas within the two overlay districts.

Protection of scenic areas is often very compatible with and, indeed, dependent on protection of natural habitats, water resources, and farmland, but where they are incompatible, visual concerns should not necessarily take precedence over conservation of other resources. For example, it is often tempting to locate a new house deep inside a forest so that the house is invisible from public roadways. The adverse ecological effects of forest fragmentation, however, and the harm to water resources often caused by long driveways, may outweigh the visual harm of a house visible from a road. From a biodiversity standpoint, building a new house close to an existing road and close to other existing development is often the much better choice because it minimizes habitat fragmentation and confines the ecological “edge effects” of human uses (caused by lights, noise, pets, polluted runoff, etc.) to a smaller area.

Concerns for maintaining the “rural character” of Ancram were expressed by citizens surveyed during preparation of the Comprehensive Plan (2010). Ancram’s rural character, however, consists not only of the visible landscape from public roadways, but also the ecological condition of the land, and the land uses such as farming, logging, and mining that directly depend on the land and have shaped the culture and character of the town for 200 years. These land-dependent uses tie humans to the land, and make Ancram more than a mere bedroom and retirement community with “picture postcard” views. The NRCP seeks to promote the continuation of working landscapes and land-dependent uses that employ sustainable practices and protect sensitive biological, water, and scenic resources.

GENERAL MEASURES FOR SCENIC RESOURCE CONSERVATION

- Consider the impacts on the entire viewshed in the location and design of any new structure or new land use in the town.
- Maintain intact natural areas and farmland visible from public roads and public-access lands wherever possible.
- Maintain intact hilltops and sideslopes at elevations at and above 800 ft asl wherever possible.
- Minimize outdoor lighting, and design any necessary outdoor lighting to minimize visibility of lights in nearby habitat areas and offsite areas throughout the viewshed.
- Develop town policies that support working landscapes and land-dependent uses that employ sustainable practices.



Long Lake in autumn. Photo © Choral Eddie 2014

RECREATIONAL RESOURCES

The town recognizes that outdoor recreation is an important part of family and community life. Local recreation opportunities improve the daily lives of residents, attract visitors, and benefit local businesses, and can serve to strengthen people's connections to and appreciation for the land. The kinds of public outdoor recreation best suited to Ancram are those that take advantage of natural landscapes and cultural features while protecting intact the resources of conservation concern.

Existing public recreation features in Ancram include:

- Hiking trails in the Taconic State Park—the Robert Brook Trail and the Alander Brook Trail originating at Under Mountain Road.
- Deer hunting and turkey hunting in season in the Taconic State Park (NYS hunting license required).
- Harlem Valley Rail Trail, paved and open for use from Under Mountain Road north to Copake Falls Station. The trail is available for walking, running, cycling, wheel-chair use, and cross-country skiing.
- Hiking/biking trails at the Round Ball Mountain and Drowned Lands public conservation areas, owned and managed by the Columbia Land Conservancy.
- A public access site for fishing on the Roe Jan at Route 3.
- Unpaved public roads throughout the town for biking and walking (and skiing before they are plowed).

Public recreational opportunities tied to the natural landscape can help to spur economic development and, if designed carefully, have relatively low environmental impacts. Expansion of such opportunities will benefit town residents, visitors, and the businesses that serve visitors, such as restaurants, retailers, and hospitality services.

The Round Ball Mountain Public Conservation Area is the only public-accessible area in Ancram for mountain biking. It has approximately two miles of intermediate-level trails that are also used by hikers, skiers, and snow bikers.

Snowmobiling and ATV use are not permitted on public-access lands in Ancram. Because of their



Cornfield at Simons Road and Wiltsie Bridge Road.
Photo © Choral Eddie 2014

contributions to noise and air pollution, damage to soils, and disturbance to wildlife, their use is often discouraged in ecologically sensitive areas.

Most large land parcels and many smaller ones in Ancram are posted against trespassing, so most private lands are inaccessible for walking, hiking, biking, skiing, motor sports, hunting, or other recreational uses without landowner permission.

Public recreation possibilities:

- Planned hiking trail connecting Round Ball Mountain with Fox Hill (owned by the Columbia Land Conservancy).
- Potential trails and other recreational features on the 29-acre Ancram Town Hall property. (Trails and other features should be located to avoid disturbing the active heron rookery and other sensitive areas.)
- Potential additional walking trails within reach of the more densely populated areas such as those of Lower Rhoda Pond, the Long Lake community, and the three hamlets.
- Harlem Valley Rail Trail extension from Millerton through Boston Corners (in development).
- Potential rail trails along the Hartford and Connecticut Western railroad and other abandoned railroad beds in Ancram.
- Regional initiatives (e.g., Columbia County Trails Roundtable) to develop trails and to transition certain town roads to “Complete Streets” for safe walking, biking, and driving.

Complete Streets

One way to expand recreation opportunities in Ancram, while simultaneously making our roads and hamlets safer for all users, is to adopt a “Complete Streets” program for transportation projects. The New York State Complete Streets program, authorized under Chapter 398 of the Laws of New York, requires that any transportation projects receiving state and federal funding must be designed with consideration of the convenience, mobility, and safety of users of all ages and abilities, including bicyclists, pedestrians, people with disabilities, riders on public transportation, as well as motorists. Although the law applies only to projects using federal and state funds, local governments are also encouraged to consider these principles for locally funded projects. Street design features may include, but are not limited to: sidewalks, paved shoulders suitable for use by bicyclists, lane striping, bicycle lanes, “share the road” signage, crosswalks, pedestrian control signals, bus pull-outs, curb cuts, raised crosswalks and ramps and traffic calming measures.

The purpose of the Complete Streets program is to promote a “cleaner, greener transportation system,” promote the health benefits of non-motorized travel, create safer conditions for all users, relieve traffic congestion, and reduce auto-related air pollution. In the hamlets of Ancram, Ancramdale, and Boston Corner, sidewalks, well-marked pedestrian crossings, accessible curb cuts, and street trees can improve the safety and comfort of users. On Ancram’s rural roads, wide shoulders can improve the safety and comfort

of pedestrians and bicyclists, as well as motorists. More information on Complete Streets can be obtained at www.dot.ny.gov/programs/completestreets.

This Plan supports projects that protect, enhance, or expand opportunities to engage the public, especially children, in outdoor activities, and expand local and regional hiking, multi-purpose trails, and rail trail systems. All trails and other recreational features should be located and designed to minimize impacts on intact habitats, wildlife, and water resources.

MEASURES FOR CONSERVATION AND ENHANCEMENT OF OUTDOOR RECREATION RESOURCES

- Support the completion of the Millerton-to-Boston Corner segment of the Harlem Valley Rail Trail, and develop rail trails on other abandoned railroad beds in Ancram.
- Work with homeowners associations at Long Lake and Lower Rhoda Pond to develop additional public trails.
- Adopt the Complete Streets approach to enhancing the quality and safety of Ancram's roads for biking, walking, and other uses.
- Develop additional public access sites for fishing and non-motorized boating on Ancram's lakes and streams.
- Develop trails and other recreational features at the Town Hall property.



Eastern red cedar in a snow-covered field off Route 7. Photo © Jamie Purinton 2014

PROTECTED LANDS

The town is fortunate to have approximately 8,200 acres of land with some kind of conservation status, including lands in the Taconic State Park (1,300 acres), and lands in public conservation areas and private conservation easements held by the Columbia Land Conservancy (5,270 acres) and the Dutchess Land Conservancy (1,660 acres) (Figure 19).

The Taconic State Park is managed by the New York State Office of Parks, Recreation, and Historic Preservation to conserve natural resources and provide recreational and educational opportunities for the public. Two hiking trails—the Robert Brook Trail and the Alander Brook Trail—originate in Ancram and join other trails that traverse the slopes and ridgetops of the Taconics.

The Columbia Land Conservancy (CLC) owns properties at Round Ball Mountain/Fox Hill (520 acres) and at Old Croken/Drowned Lands (114 acres) and manages them as public conservation areas. There are hiking trails on Old Croken and on Round Ball Mountain, and additional trails are planned that will connect Round Ball with Fox Hill.

The CLC holds conservation easements on 4,756 acres, and the Dutchess Land Conservancy on 1,666 acres on properties throughout Ancram. A conservation easement is a voluntary legal agreement drawn up by the landowner and the land trust that ensures permanent protection of the land. The landowner retains ownership of the land, with all the rights and responsibilities of ownership (including property taxes), and can pass it on to heirs or sell it, but the easement remains attached to the land in perpetuity. The easement is designed to serve the conservation goals of the landowner and land trust, and describes permissible and impermissible land uses and sometimes other restrictions on land management.

Together these protected lands contain many of the conservation targets of this NRCP. For example, the Taconic Mountains, Round Ball Mountain, and Fox Hill have the three highest elevations in the town, are scenic landmarks, constitute three of Ancram’s important “enduring features,” and contain the largest forests in town. The state park also has oak-heath barrens and a cool ravine—two of the rarest habitats in Ancram. Many of the easement lands have active farms and large areas of good farmland soils (Figures 10 and 11). Several contain unusual habitats such as fen, kettle wetland, and floodplain forest (Figure 16), several contain parts of Ancram’s large forests (Figure 15), several are within the “Important Areas” for biodiversity designated by the New York Natural Heritage Program (Figure 18), and many are within the Harlem Valley Calcareous Wetlands Significant Biodiversity Area designated by the DEC (Figure 17).

Apart from those lands with formal conservation status, the Town of Ancram owns two parcels with some conservation value. The 29-acre property at the Town Hall has upland forest, hardwood swamp, emergent marsh, and several streams, and the 3.4-acre property in the Ancram hamlet has playing fields. These properties can be used for public recreation and education, but are not formally protected from further development.

Despite all of the above, there are many important resources in the town that have no formal conservation status. Most of the fens, kettle wetlands, intermittent woodland pools, floodplain forests, and many of the large forests, large meadows, other unusual habitat areas, and active farms, for example, are on privately-held lands without conservation easements, so are vulnerable to land development and other disturbances that could harm the plants and animals of conservation concern. Although many landowners recognize the value of their land for farming, timber production, soil mining, or other income-producing enterprises, they may be unaware of the important biodiversity resources. Educating landowners about the special natural features of their land, and recruiting landowners as long-term land stewards may be the most important means of conserving the ecologically significant features of Ancram's landscape.



Wet meadow in the Noster Kill Valley. Photo © Jamie Purinton 2014

Protected Lands

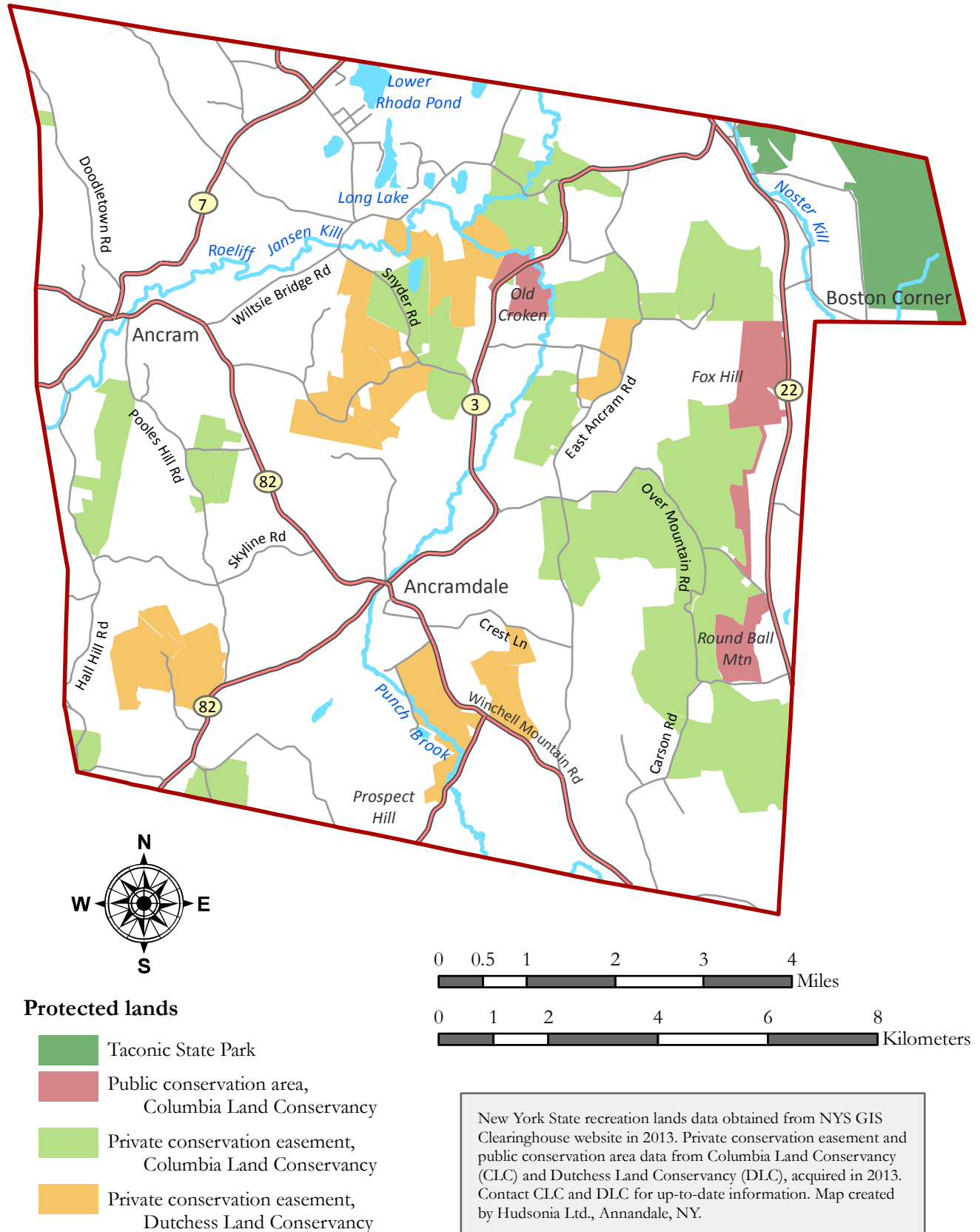


Figure 19. Protected lands in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

LEGISLATIVE PROTECTIONS

RARE SPECIES

The federal and New York State governments maintain lists of rare species, and have laws intended to prevent harm to individuals and populations of those species. Unfortunately, most places have never been surveyed for rare species, so no one knows all the locations where the rare species occur. Thus, most land development takes place without anyone knowing whether or not rare species occur in the vicinity and will be harmed by the project.

Most species, however, are associated with particular kinds of habitats, so information on habitats can help to determine where particular species are likely to occur. For example, certain whale species inhabit certain parts of the oceans, but we can safely assume that they will not occur in a terrestrial upland forest. Similarly, an eastern meadowlark is likely to nest in a large meadow, but not in a marsh; and a blue-spotted salamander is likely to spend most of the year in an upland forest but not in a meadow.

Ancram is lucky to possess a map of ecologically significant habitats for the northern half of the town, and hopes to have the map completed for the whole town by the end of 2016. The habitat map, used together with other documents such as the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* (Kiviat and Stevens 2001), the Harlem Valley Supplement to the Manual (Barbour and Kiviat 2008), and the *Significant Habitats in the Roeliff Jansen Kill Corridor* (Clapp et al. 2002), enables landowners, developers, and town agencies to ascertain the locations of habitats likely to support rare species and other species of conservation concern, and design new development projects in ways that protect those species and their habitats.

The habitat map can help identify likely locations for species of conservation concern.

Below are brief descriptions of some of the federal, state, and local laws, policies, and procedures that can help to protect rare species and their habitats.

Federal Endangered Species Act

The Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884) prohibits unauthorized taking, possession, sale, and transport of federally-listed endangered or threatened species of plants and animals. The US Fish and Wildlife Service establishes and revises the list of plant and animal species deemed to be rare nationwide, and assigns a rank of “Endangered” and “Threatened” to each. Only a few species in New York are on the federal list.

New York State Environmental Conservation Law

Animals ranked as Endangered, Threatened, and Special Concern are listed and regulated under 6 NYCRR Part 182 of the New York Environmental Conservation Law (ECL) 11-0535. The regulations prohibit the taking of (or engaging in any activity likely to result in the taking of) any species listed as endangered or

threatened in New York. The regulations also prohibit importing, transporting, possessing, or selling “any endangered or threatened species of fish or wildlife, or any hide or part thereof...”

Plants ranked as Endangered, Threatened, Rare, or Exploitably Vulnerable are listed and regulated under Environmental Conservation Law section 9-1503 Part (f): “It is a violation for any person, anywhere in the state to pick, pluck, sever, remove, damage by the application of herbicides or defoliant, or carry away, without the consent of the owner, any protected plant.” (“Exploitably Vulnerable” plants are not rare but are likely to be picked for commercial and personal purposes.) Thus, plants are considered the property of the landowner, and are protected only to the degree that the landowner wishes. Under NYS law, any landowner can lawfully remove, damage, or destroy (or grant permission to others to destroy) state-listed plants on their own property, but others are not permitted to harm those plants without the landowner’s permission.

WETLANDS

Federal Wetland Regulatory Program

Section 404 of the federal Clean Water Act is the basis for the federal wetland regulatory program, which is administered by the US Army Corps of Engineers (ACOE), sometimes in consultation with the US Environmental Protection Agency and other federal agencies. The federal government regulates activities in wetlands of any size as long as the wetland is functionally connected to “navigable waters.” The law prohibits certain kinds of activities (especially filling) in jurisdictional wetlands without a permit. It imposes no regulated buffer zone around a wetland, but federal agencies may specify such a zone in permit conditions if they so choose.

Jurisdictional decisions (that is, decisions about which wetlands come under the federal purview) are made by the ACOE on a case-by-case basis. The criteria for federal jurisdiction are somewhat vague after US Supreme Court decisions in 2000 and 2006. In most situations, however, a wetland adjacent to a perennial stream, or to a stream that ordinarily runs continuously for the duration of a season (e.g., all winter or all spring) and is tributary to a perennial stream, is considered jurisdictional under the federal program. An isolated wetland or a wetland adjacent to an intermittent stream that runs only a few days or a few weeks of the year is often non-jurisdictional. According to Kusler (2001), 30-60 percent of the nation’s wetlands are now excluded from federal jurisdiction; the percentages vary greatly by location and can be much higher in landscapes where small wetlands are concentrated.

New York State Wetland Regulatory Program

The New York State Freshwater Wetlands Act (Article 24 of the New York Conservation Law) regulates the kinds of activities that can occur in and near large wetlands (12.4 acres and larger), and in a few smaller wetlands “of unusual local importance.” The most typical instances of the latter are wetlands connected to a public drinking water supply, or wetlands known to support a state-listed threatened or endangered animal. The law also regulates activities in a 100-foot-wide “adjacent zone” around the perimeter of any jurisdictional wetland. Most wetlands in New York do not fall under state jurisdiction, however, because they do not meet the size criteria or the criteria for “unusual local importance.”

Thus, due to their small size or hydrologic isolation, most of our intermittent woodland pools, and isolated swamps and wet meadows receive no protection from the federal or state governments. Small, isolated wetlands can have great value for biodiversity and for water management, however. Indeed it is often those very characteristics that impart their special value to certain plants or animals. In the case of intermittent woodland pools, for example, it is their isolation from streams and other wetlands that helps to maintain the fish-free environment that is a critical characteristic for the pool-breeding amphibians of conservation concern (Jefferson salamander, spotted salamander, marbled salamander, wood frog). For the time being, local legislation is the only means of legal protection of the many wetlands that do not fall under state or federal jurisdiction.

Many wetlands are unprotected by New York State or the federal government.

OTHER RESOURCES

Many provisions in Ancram's local code are designed to protect the town's natural resources of conservation concern. Among the stated purposes of the **zoning law**, adopted in November 2014, are:

- To promote the profitability and productivity of our current farms, attracting new farms and farm-related businesses, protecting farmland, and preserving open space.
- To protect the Town's important scenic views.
- To protect all natural resources, including groundwater, watersheds, streams, wetlands, woodlands, ridgelines, steep slopes, wildlife habitats, and clean air, and to restrict and decrease noise, air, and light pollution.
- To provide flexibility in determining lot sizes, allowing small building lots while promoting open space and rural character.
- To promote Ancram's recreational needs to enhance a sense of community.
- To ensure new land uses conform to our community's desire to protect farmland, open space, the environment, and our rural character (Article I.D of Local Law No. 2 of 2014).

The list of purposes is intended to guide general land use planning and environmental reviews of development projects, and provide the underpinning for regulatory decisions around land use. To help carry out some of these purposes, the zoning ordinance also designates overlay zones—an Agricultural District, a Scenic Corridor, and a Ridgeline/Steep Slope District—to focus attention on certain resources and places of particular conservation concern.

The **Agricultural District** was established to “conserve, protect, and encourage the development and improvement of agricultural land for the production of food and other agricultural products, and also conserve, protect, and encourage open space for its natural, ecological, and scenic benefits;...prevent further fragmentation of the Town's existing farms and farmland;...encourage a development pattern that keeps farmland in productive use or available for future agricultural use; ...promote active agricultural land

uses;... encourage land uses that are compatible with agricultural uses;...and promote agriculture as a major component of the local economy” (Article II.B.1. of Ancram Local Law No. 2 of 2014).

The **Scenic Corridor Overlay Zone** was established to “protect important scenic areas along Route 22 and the Harlem Valley known to contribute to the beauty, rural character, and quality of life of Ancram residents....It is the intent of this District to protect views from public roads and to regulate land uses so that they will complement rather than detract from a scenic experience. It is further the purpose of this district to improve the Town of Ancram’s economic vitality by preserving one of the significant scenic resources within the Town, enhancing the Town’s attractiveness to its visitors as well as its citizens” (Article II.B.9 of Ancram Local Law No. 2 of 2014).

The **Ridgeline/Steep Slope Protection Overlay District** was established “to protect the environment in [the environmentally sensitive high-elevation areas] and to maintain the scenic rural character of the Town” (Article II.B. 10 of Ancram Local Law No. 2 of 2014). The ridgeline law seeks to minimize the visual impacts of new buildings and structures and reduce the potential for soil erosion within a zone encompassing areas of steep slopes (>15 percent) at and above 800 feet elevation asl, and visible from a large viewshed. The law regulates clearing of vegetation, cutting of trees, height and colors of structures, outdoor lighting, and road and driveway construction in the designated zone (Article II.B.10 of Ancram Local Law No. 2 of 2014).

The **Open Space Conservation Subdivisions** regulations in the zoning law were established to serve a number of public purposes, including: “[t]o conserve open land, including those areas containing unique and sensitive natural features such as but not limited to steep slopes, streams, stream sides, vernal pools, floodplains, and wetlands, by setting them aside from development,” and “[t]o protect agricultural areas by conserving blocks of land large enough for continued agricultural operations” (Article V.C.1). The regulations require that at least 60 percent of any major subdivision be reserved as “open space” lands, and that the development be designed to avoid the most sensitive areas and to minimize fragmentation.

All these provisions in the local code affirm the town’s strong interest in protecting biodiversity resources, water resources, farmland and farm viability, and scenic resources. Adherence to the code and enforcement of these provisions will go a long way toward sustaining the natural features that help to define the town and support its economy and culture. This Natural Resources Conservation Plan provides supporting information and recommendations to help achieve the purposes and goals of the town’s comprehensive plan and zoning ordinance.

The town has demonstrated a strong interest in protecting biodiversity, water, farmland, and scenic resources.

The town also requires that a **Biodiversity Assessment** be conducted at the earliest stages of planning for any major subdivision project, and recommends such an assessment for minor subdivisions. The purpose of the assessment is so that the most sensitive areas can be identified and accommodated in the project

design right from the start. Guidelines for the assessment are provided in a document prepared by the Ancram CAC (2010).

ENVIRONMENTAL REVIEWS

State Environmental Quality Review (SEQR)

The State Environmental Quality Review Act sets forth a formal procedure for assessing potential environmental impacts of proposed projects, and integrating environmental concerns into the planning and regulatory review processes at the state and local levels. Most projects proposed by a state agency or a municipality, and all permits from a state agency or unit of local government, require an environmental impact assessment (6 NYCRR Part 617 State Environmental Quality Review). The basic document for this assessment, to be completed in the early stages of a SEQR review, is the Environmental Assessment Form (EAF), designed to help the project applicant and the reviewing agencies gather and assess basic information about the proposed project, the natural and cultural features of the project site, and the potential impacts of the project on resources of concern. SEQR requires the sponsoring or permitting agency (such as a municipal planning board) to identify and mitigate the significant environmental impacts of the activity it is proposing or permitting.

As with many such bureaucratic forms, the EAF is often completed in a perfunctory way by the applicant and the “lead agency” in the environmental review, providing only scant and superficial information about resources at risk and potential impacts to those resources. But if the lead agency insists on thorough and informative answers to the EAF questions, the document can be a powerful instrument for assessing impacts and creating better projects. We encourage the Ancram planning board and town board (typical lead agencies for local projects) to use the EAF and the SEQR process to their fullest potential to identify resources of concern and to help applicants design their projects in ways that protect important resources and cause least harm to the most sensitive areas.



Meadow near Carson Road with a view of the Catskill Mountains.
Photo © Jonathan Meigs 2014

Conservation Areas

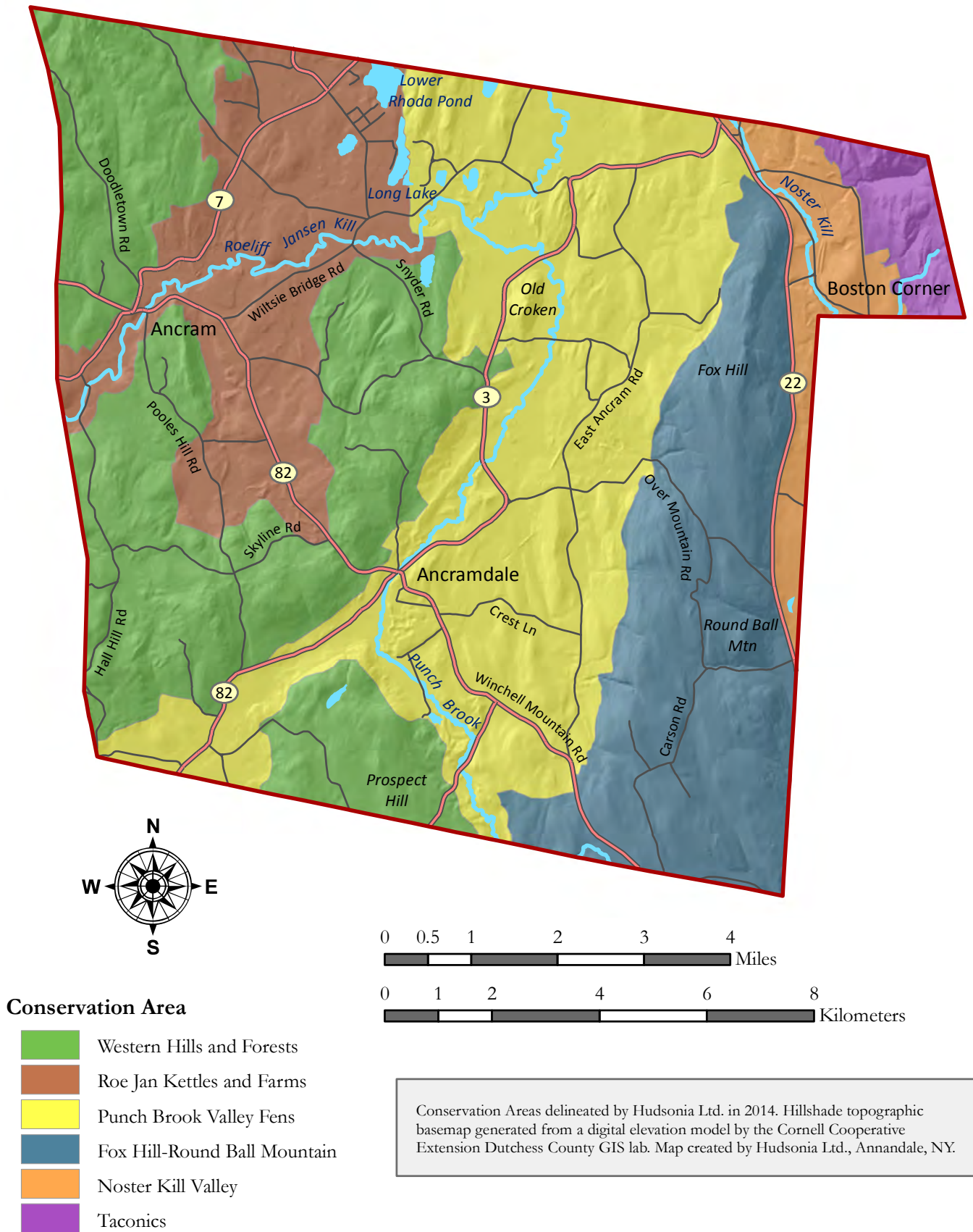


Figure 20. Conservation Areas in the Town of Ancram, Columbia County, New York. Ancram Natural Resources Conservation Plan, 2015.

CONSERVATION AREAS

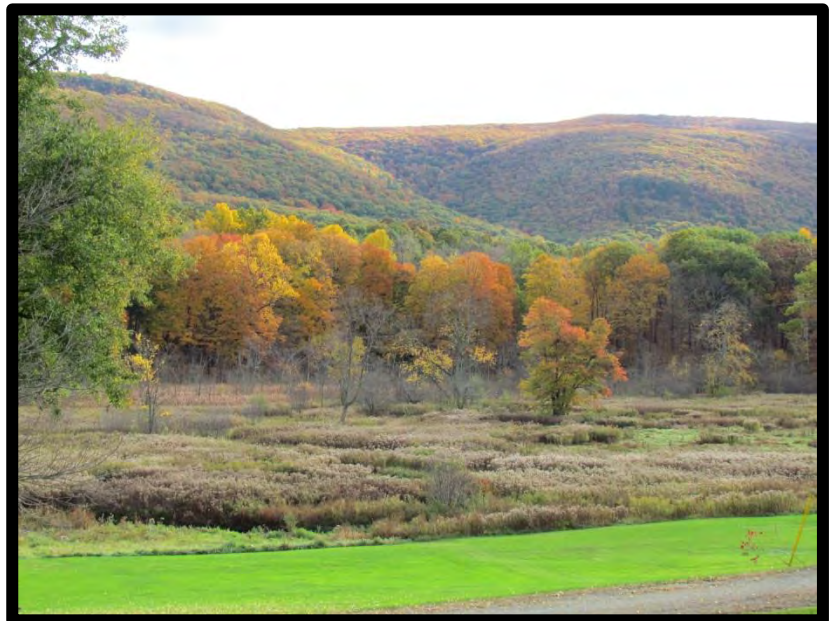
Significant habitats, farmland, water resources, and scenic areas are widely distributed throughout Ancram, and the general Conservation Measures listed in sections above are designed to be applied everywhere. To help draw attention to the places where certain features of concern are concentrated, we have divided the town into seven “Conservation Areas” (CAs) (Figure 20). Each is described below.

Taconic Mountains

The Taconic Range contains 40,000 acres of substantially **unfragmented forest** (Strong 2011), approximately 1,300 acres of which are in the Town of Ancram (Figure 15). Large forests have particular value for biodiversity, for regional climate moderation, for carbon sequestration, and for conservation of water resources. Because large forests are disappearing in this region, the populations of many of the plant and animal species of large forests are also declining. These include area-sensitive birds such as red-shouldered hawk (SC), Acadian flycatcher (PB), and black-throated blue warbler (SGCN), and mammals such as black bear, bobcat, and fisher that require deep interior forest habitats for certain of their life history stages.

The Taconics have been recognized by the DEC as a **Significant Biodiversity Area** (Figure 17), due to their large forests, species of conservation concern, and importance as a recharge area for the wetlands and streams of the Harlem Valley. The Taconics in Ancram are also recognized by the New York Natural Heritage Program as an **Important Area** for rare animals and significant natural communities (Figure 18).

The high-elevation areas of the Taconics in Ancram have extensive areas of rocky **crest, ledge, and talus** habitats, including patches of **oak-heath barrens**. The Taconic hills also have a “**cool ravine,**” a very rare habitat in Ancram (Figures 14 and 16). The Ancram Taconics are also known to support three high-quality **Significant Natural Communities** identified by the New York Natural Heritage Program: Appalachian oak-hickory forest, chestnut oak forest, hemlock-northern hardwood forest, and maple-basswood rich mesic forest (Figure 16). The Ancram



Taconic Range viewed from Boston Corner. Photo © Jamie Purinton 2014

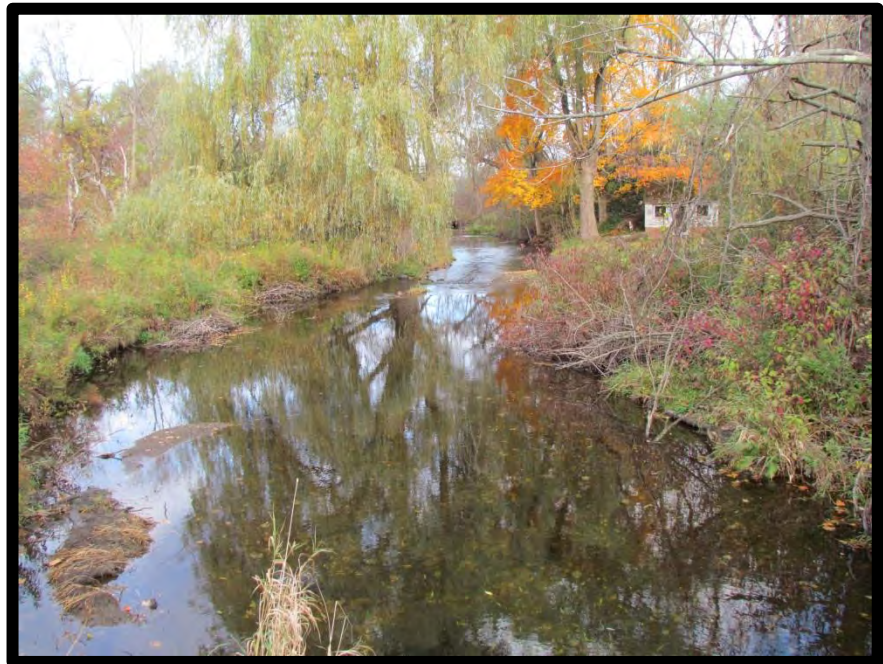
biodiversity assessment team has identified two **intermittent woodland pools** near the foot of the Taconic hills (Figures 14 and 16).

The Taconics are a prominent scenic feature along Route 22. They represent one of the “**enduring features**” deemed to be of fundamental conservation importance, and are within Ancram’s Scenic Corridor Overlay zone. Most of the Ancram portion of the Taconics is in the Taconic State Park (Figure 19) that encompasses a 16-mile-long corridor along the New York state boundary with Massachusetts and Connecticut. The conservation of adjacent and nearby areas will help protect and enhance the wildlife habitat and water resource values of the Taconics. Educating abutting landowners about wildlife needs and the value of ecological buffers adjacent to the park could inspire thoughtful stewardship of these privately-held lands.

Noster Kill Valley

The Noster Kill is a perennial stream that rises in the vicinity of Whitehouse Crossing in the Town of Northeast, and flows north through Boston Corner and Weed Mines in northeastern Ancram, and eventually joins Bash Bish Brook in Copake. It is classified by the DEC as a **trout spawning** (C[TS]) stream for its entire length in Ancram (Environmental Resource Mapper 2014). The classification indicates that the Noster Kill water is clear and cool, and the stream substrate is clean and coarse enough (i.e., unsilted, unpolluted) to support invertebrate food sources and spawning substrates for wild trout and other cool water fishes.

The biological communities of the Noster Kill Valley are strongly influenced by the underlying limestone and dolostone bedrock (Figure 1). The valley is within the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area** (Penhollow 2006) (Figure 17), recognized for the extensive complexes of calcareous wetlands, and known occurrences of rare species. Much of the Ancram portion of the Noster Kill Valley has been identified by the New York Natural Heritage Program as **Important Areas** for rare animals (Figure 18). The Ancram



The Noster Kill from Weed Mine Road. Photo © Jamie Purinton 2014

biodiversity assessment team has identified several **fens** in this corridor (Figures 14 and 16), and several more are known along the Noster Kill in the neighboring Town of North East. The Noster Kill Valley also contains **large meadows on active farms** that may provide important habitat for grassland breeding birds, and large areas of **Prime Farmland Soils**, and **Farmland Soils of Statewide Importance** (Figures 9, 10, 11 and 14). The valley is underlain by an **unconsolidated aquifer** and was identified by Winkley (2008) as an area of high **hydrogeological sensitivity** (Figures 12 and 13). The valley is also part of the spectacular **scenic vista** visible from Route 22, the Taconics and Fox Hill/Round Ball Mountain, and is within the town’s Scenic Corridor Overlay Zone (Figure 17).

Fox Hill – Round Ball Mountain



Fox Hill viewed from Boston Corner. Photo © Jamie Purinton 2014

The Fox Hill – Round Ball Mountain corridor has two of the three **highest elevations**, and the **largest contiguous forest area** within the Ancram town boundaries (Figures 2 and 15). Northern and eastern parts of the corridor have been identified by the NYNHP as **Important Areas** for rare animals (Figure 18). There are large areas of steep slopes and shallow soils (Figure 5), **extensive exposed ledges**, and numerous isolated and stream-associated **wetlands** throughout this corridor (Figures 7 and 8). These hills and the Taconics are the only representatives of Everett Schist bedrock—primarily schist with metagraywacke lenses (Figure 1)—in Ancram, an

example of one of the “**enduring features**” that should be part of any conservation plan. Although steep forested hills and ridge summits constitute much of this corridor, this CA also contains areas of **Prime Farmland Soils** and **Farmland Soils of Statewide Importance** (Figures 10 and 11).

These hills are within the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area** (Figure 17) and help to provide groundwater that feeds the fens, other wetlands, and streams in lowland areas to the east and west. Parts of the Fox Hill–Round Ball Mountain CA are within the Rt 22 Scenic Corridor and the Ridgeline Overlay zones. They are also part of the Route 22 scenic corridor (Figure 17), and an important **scenic asset** for areas to the west.

Approximately 5,000 acres of this corridor is either owned by or has conservation easements held by the Columbia Land Conservancy (Figure 19). The Round Ball Mountain Public Conservation Area is a CLC public access site, with trails and a summit lookout with magnificent views of the Taconic Mountains and the Harlem Valley. A new trail is being planned that will connect Round Ball to Fox Hill. The habitats and

species of conservation concern on the conserved lands would benefit greatly from additional conservation measures (as outlined in sections above) applied to adjacent undeveloped lands within this corridor.

Punch Brook Valley Fens

Punch Brook is a large perennial stream that rises in the Town of Pine Plains, runs north through the middle of the town, and joins the Roe Jan at the north end of the Drowned Lands. It is classified as a **trout stream** for most of its length in Ancram, and several of its tributaries are classified as **trout spawning streams** (Environmental Resource Mapper 2014). These classifications indicate that the Punch Brook water is clear and cool, and the stream substrate is clean and coarse enough (i.e., unsilted, unpolluted) to support invertebrate food sources for trout and other coldwater fishes. The spawning habitats in the tributaries meet an even higher standard.

The Punch Brook corridor encompasses two of Ancram's notable natural landmarks: **Old Croken** and the **Drowned Lands** wetlands, and touches the eastern edges of **Long Lake** and **Lower Rhoda Pond**. The Punch Brook corridor contains the largest concentration of **fens** in Ancram. The biodiversity assessment team and other biologists have identified at least 13 confirmed fens and as many other "possible" fens (identified remotely but not yet confirmed by field observations) (Figures 14 and 16). The corridor is underlain by significant areas of **unconsolidated aquifer** (Figure 12).

The entire corridor is within the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area** (Figure 17). Old Croken/Drowned Lands and the wetland area south of Miller Pond are designated by the NYNHP as **Important Areas** for rare plants, rare animals, and important palustrine communities (Figure 18). The NYNHP has also designated a portion of the shallow emergent marsh of the Drowned Lands wetland a **Significant Natural Community** (Figure 16).



A fen of the Punch Brook Valley Photo © Jamie Purinton 2014

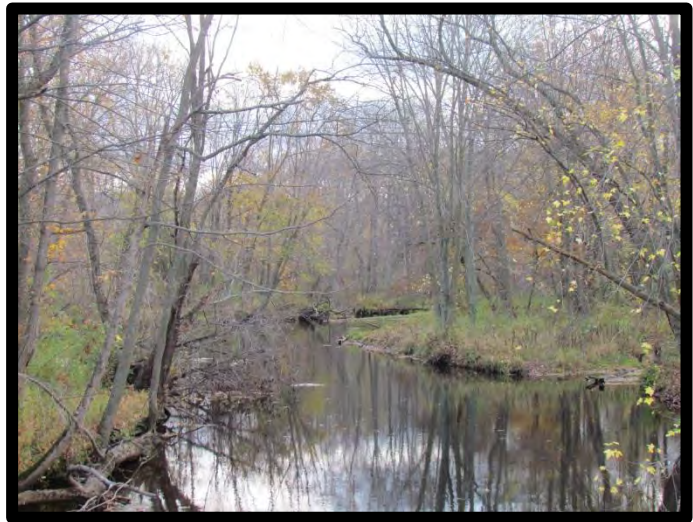
The area contains at least five **intermittent woodland pools** within **large forested areas**, and probably more in the southern part that is yet unmapped by the biodiversity assessment team. The team has identified a **kettle pond** (Figures 14 and 16), and there are other known **kettle wetlands** in the corridor (G. Stevens observations). Broad floodplains border Bash Bish Brook, Punch Brook, and the Roe Jan, and several significant **floodplain forests** occur along these streams (Figure 16). **Large and small wetlands** and **wetland complexes** abound in the Punch Brook corridor (Figures 7

and 8). Much of the corridor is **active farmland** underlain by **Prime Farmland Soils** and **Farmland Soils of Statewide Importance** (Figures 10 and 11). This CA also has the historic “Tri Lakes” iron ore pits east of East Ancram Road. The fields and forests of the Punch Brook corridor are important **scenic assets** associated with Routes 3 and 82, and Winchell Mountain Road.

Several large land parcels within the Punch Brook Valley CA have conservation easements (Figure 19). Establishing conserved connections in the gaps between those easement lands would help to conserve significant migration corridors for wildlife and plants.

Roe Jan Kettles and Farms

The Roeliff Jansen Kill is a perennial stream that drains a large part of southern Columbia County. It rises in the Town of Austerlitz ca 15 miles north of Ancram, flows south through Hillsdale and Copake, winds generally southwest through Ancram, flows west, then north, and ultimately drains into the Hudson in the Town of Livingston. Punch Brook, the Noster Kill, Bash Bish Brook, and many smaller streams carry water from most of Ancram into the Roe Jan. The Roe Jan is well known to anglers; it is classified by the DEC as a **trout stream** for its entire length in Ancram, and a **trout spawning stream** for the entire reach upstream of the Ancram hamlet (Environmental Resource Mapper 2014).



Roeliff Jansen Kill from Wiltsie Bridge Road.
Photo © Jamie Purinton 2014

This Conservation Area covers the western two-thirds of the Roe Jan corridor in Ancram, and a broad area north and south of the corridor. It is underlain primarily by limestone bedrock, with smaller areas of slate, phyllite, schist, and metagraywacke in the southern part, and a small band of marble (Figure 1). The CA contains **Lower Rhoda Pond** and **Long Lake**, at least five **kettle shrub pools** and a **kettle pond**, large areas of **floodplain forest** along the Roe Jan and tributaries, at least six **intermittent woodland pools**, and many other large and small wetlands (Figures 7, 8, 14, and 16).

Perhaps the most prominent feature is the very **extensive farmland**, including **large contiguous meadow areas on active farms**, and large areas of **Prime Farmland Soils** and **Farmland Soils of Statewide Importance** (Figures 9, 10, and 11). The CA overlaps the western edge of the **Harlem Valley Calcareous Wetlands Significant Biodiversity Area** (Figure 17). The CA has large areas of **glacial outwash** and **kame deposits** (Figure 3), an **unconsolidated aquifer** (Figure 12), and areas of **high hydrogeologic sensitivity** (Figure 13).

Western Hills and Forests

This Conservation Area encompasses **Prospect Hill, Poole's Hill**, and many of the **forested hills** (mostly unnamed) and intervening lowlands west of the Fox Hill/Round Ball Mountain ridge. The bedrock is mostly a formation with slate, phyllite, schist, and metagraywacke, with smaller areas of graywacke and shale (Figure 1). The Conservation Area includes two of the **Important Areas** for rare animals (Figure 17). It also includes the predominantly forested area in northwestern Ancram that is part of a much larger **forest (>6,000 acres)** extending north and west into the towns of Copake, Gallatin, and Taghkanic (Figure 15). Embedded in that northwestern forest are at least 24 **intermittent woodland pools**, small **isolated hardwood swamps**, and many **intermittent streams** (Figures 14 and 16). The large areas of steep slopes and shallow soils in that area and on Poole's Hill, Prospect Hill and many of the other forested hills have **ledges** and **talus slopes**. This CA has a large area of **high hydrogeologic sensitivity**, and contains two large land parcels with conservation easements held by the Columbia Land Conservancy and the Dutchess Land Conservancy (Figure 19).



A view of western hills from Snyder Road. Photo © Jamie Purinton 2014

ACTION ITEMS FOR CONSERVATION

Because important natural resources occur throughout Ancram, the general conservation measures listed in sections above should be applied everywhere as applicable.

This section sets forth additional concrete actions that will help to carry out the goals of the Ancram Comprehensive Plan, and can be carried out by landowners, citizens, and town government to help ensure that important natural resources and recreational features are maintained intact for present and future generations.

Landowner and Citizen Action

1. Apply the NRCP's general conservation measures on lands throughout the town, where applicable.
2. Shift to flood-resilient land uses in floodplains to minimize economic losses from flood damage, flood hazards to downstream areas, soil loss, and stream contamination.
3. Maintain floodplain forests intact wherever possible, and especially the "legacy" floodplain forests that may never have been cleared.
4. Adopt wildlife-friendly agricultural practices that protect water supplies, build living soils, support native pollinators, and accommodate ground-nesting birds while maintaining efficiency and profitability for farm operations.
5. Create watershed associations for small and large streams; include members from neighboring towns where watersheds cross town boundaries.
6. Collaborate with town, county, and state agencies and NGOs to expand hiking trails, bicycling trails, public access to streams and lakes, and other environmentally appropriate recreational opportunities in Ancram.
7. Collaborate with the Ancram Agricultural Advisory Council, the Ancram Heritage Resource Committee, the Ancram Conservation Advisory Council, historic and farmland preservation NGOs and public agencies to obtain protection for landscapes that encompass important natural, farmland, and historic resources.

Town Policy and Procedures

8. Apply the NRCP's general conservation measures on lands throughout the town, where applicable.
9. Adopt environmental review procedures for all land development projects (not just major subdivisions) that consider impacts to water resources, sensitive habitats, and important scenic and recreational resources at the earliest stages of project planning.

Town Policies and Procedures (cont.)

10. Closely scrutinize erosion control and stormwater management plans for any proposed disturbance of steep slopes.
11. Closely scrutinize any proposals to disturb floodplain forests, and especially the “legacy” (old) floodplain forests identified by the Farmscape Ecology Program.
12. Identify areas of overlap and mutual goals between the Farmland Protection Plan, the Heritage Resources Plan, and this Natural Resources Conservation Plan to strengthen conservation initiatives and help obtain funding and other assistance.
13. Develop educational programs and materials for town agencies, landowners, business owners, farmers, and residents on topics related to natural resource conservation.
14. Join the New York State Climate Smart Communities program (see Appendix C).
15. Join the Complete Streets program to make roads convenient, safe, and efficient for all users, including pedestrians, bicyclists, and motorists.
16. Develop a program to collaborate with farmers in their efforts to reduce pollution of surface water and groundwater, and to assist with obtaining grants and other support to defray the costs of those efforts.

Town Legislation

17. Adopt design standards for all land development projects to ensure that harm to sensitive areas is minimized. Standards should address, at a minimum, habitat fragmentation; design, sizing, and installation of culverts; exterior lighting; soil erosion; and stormwater management.
18. Adopt local legislation to extend protection to the small streams, and small, isolated wetlands that are of critical importance to ecosystems and water supplies but are not protected by state or federal laws. (See CAC memos of 19 November 2010 and 30 January 2013.)
19. Strengthen steep slope regulations in the local code to better address soil erosion, stormwater management, and protection of streams.
20. Establish an Aquifer Overlay District with regulations to protect the areas most important for aquifer recharge and most vulnerable to groundwater contamination.
21. Establish minimum standards for densities of residential and other development throughout the town based on groundwater yield and vulnerability.
22. Establish Critical Environmental Areas as needed to draw attention to areas of special concern for water resources, farmland, biodiversity, recreation, or scenic values.
23. Prohibit construction of new buildings, roads, driveways, and other structures in the 200-year or 500-year floodplains of Ancram streams, and encourage the removal of structures, equipment, and

materials that could interfere with natural flood dynamics, or create local or downstream hazards if flooded.

24. Explore the establishment of a Community Preservation Fund that would use a Real Estate Transfer Tax to help fund land acquisition, purchase of conservation easements, and other measures that the town deems important for natural resource conservation.

ACHIEVING CONSERVATION GOALS

Conservation Tools

Conservation of natural resources can happen on every land parcel in Ancram, whether it is a half-acre residential lot, or a 50-acre wood lot, or a 200-acre farm. It can happen through a variety of means, including voluntary land management efforts of individual landowners, acquisition of land from willing landowners, establishment of conservation easements, or restrictions imposed by local policy or legislation. The ambitious goals of this Plan can only be achieved by pursuing multiple courses of action, and exploiting many different regulatory and non-regulatory “tools” available to the town, such as 1) outreach to landowners and the general public on matters related to conservation and stewardship of important resources, 2) development of effective town policies, procedures, and legislation for natural resource conservation, and 3) collaboration with other agency and organization partners to accomplish goals that are beyond the capacity of the town to complete by itself.

LANDOWNER EDUCATION

Educating landowners about their potential stewardship roles will help raise awareness and support for conservation activities, and inspire voluntary action. Education can occur through outreach at community events, through lectures and workshops, through educational mailings, and through materials posted on the town’s website. For example, in 2012 and 2013, the Ancram Conservation Advisory Council held local workshops for landowners and others on the ecology and conservation of vernal pools and fens, and produced publications and memos on meadow management for grassland birds, environmental considerations associated with road salt applications, cautions about and alternatives to brush burning, and detection and management of invasive species. The CAC also responded to inquiries from the public about wildlife sightings, invasive species, and other issues.

LAND ACQUISITION

Although the Town of Ancram may rarely have funds available for acquiring lands for conservation purposes, it can nonetheless collaborate with other public and private entities to help with acquisition efforts for lands with special environmental, historic, agricultural, recreational, or scenic importance, or lands that are threatened by inappropriate development. A decision to purchase a property for conservation purposes requires assessing the conservation values of the property in relation to the town’s conservation goals and priorities and determining the town’s long-term capacity for stewardship of the property. Financial and other forms of collaboration with other agencies, organizations, and landowners can expand the opportunities for and success of land acquisition projects. Properties that have important conservation value but do not meet the town’s criteria for acquisition may be referred to a partner organization. The CAC will share this NRCP with the Columbia Land Conservancy, the Dutchess Land

Conservancy, and other organizations and agencies involved in land conservation to help them evaluate and prioritize potential conservation lands, and design conservation easements.

LAND DONATIONS

Land donation is simply a form of land acquisition whereby the town or another entity such as a land trust receives a gift of land and becomes the immediate owner. Both the Round Ball Mountain and the Drowned Lands Conservation Areas, for example, are lands donated to the CLC by private landowners. As with land purchases, the decision to accept a land donation must be based on an assessment of the property's conservation values and long-term stewardship costs.

CONSERVATION EASEMENTS

A conservation easement is a legal agreement between a landowner and an entity such as a municipality or a land trust. The easement is developed by the landowner and the receiving agency (such as land trust), and it permanently restricts the type, location, and amount of development and types of land uses that can occur on the property so that conservation values recognized by both entities—such as wildlife habitat, scenic views, agricultural value, and water resources—are protected forever. An easement may be donated by the landowner to the receiving agency, or may be purchased from the landowner by the receiving agency.

Easement lands remain in private ownership and on local tax rolls. The landowner retains full title to the land and is free to sell, lease, or mortgage the property, or pass it on to heirs. An easement “runs with the land;” that is, the restrictions and responsibilities are conveyed to all future owners of the property. Thus a conservation easement allows the current landowner to maintain ownership and use of the property, and secure a conservation legacy for future generations. Conservation agreements with, e.g., the Columbia Land Conservancy are completely voluntary, are developed on the landowner's initiative, and are designed to meet the wishes and long-term needs of landowners while adhering to the conservation principles of the land trust. Easements require regular (annual) monitoring to ensure that the terms of the land use agreement continue to be met. Over 6,400 acres in Ancram are in conservation easements held by the Columbia Land Conservancy and the Dutchess Land Conservancy.

LAND USE LEGISLATION & OTHER LOCAL MEASURES

The Town of Ancram regulates land use through zoning and other land use ordinances that provide legal standards for reviewing development proposals and balancing private property rights with community environmental, health, and safety concerns. Carefully designed legislation and project reviews can ensure that any land use restrictions are applied consistently and fairly, and that resources important to town interests in the public welfare are protected.

Ancram adopted an *Agriculture and Farmland Protection Plan* in 2010 (Farmland Protection Plan Committee 2010) that lays out strategies and specific actions related to the local zoning code and other aspects of town policy and practices to help improve the viability and profitability of agriculture in Ancram, and to help prevent the loss of good farmland to non-agricultural uses.

The town established a **Ridgeline and Steep Slope Protection Overlay District** “to protect topographically prominent and scenically important ridgelines and steep slopes as part of the larger Comprehensive Plan objective to maintain and protect the rural, scenic character of the Town.” (Sect. H.1.a. Intent). The ordinance imposes restrictions on clearing of vegetation, height and color of structures, exterior lighting, and road or driveway design, to minimize visual impacts and soil erosion in the target areas.

Other regulatory means of protecting important natural resources include 1) establishing or increasing required setbacks or **buffer zones around sensitive areas** such as wetlands, streams, ponds, rare habitats, or habitats known to be used by rare species; 2) restricting certain activities in or near other sensitive areas such as fens or kettle wetlands; 3) adopting regulations to ensure that exterior lighting has minimal impacts on nearby habitats and the larger viewshed; and 4) establishing a **Conservation Overlay District** to establish special standards for environmental reviews and land development in areas of unusual conservation importance (Metropolitan Conservation Alliance 2002).

With authorization from the State of New York, the town could establish a **Community Preservation Fund** by imposing a Real Estate Transfer Tax on properties whose sale price exceeds a certain minimum (e.g., the median sale price in town). The funds could be earmarked for establishment of parks or preserves, purchase of recreation lands, aquifer recharge areas, important habitat areas, scenic areas, or historic sites, purchase of conservation easements, and other purposes related to conservation of natural or cultural resources. Ancram could learn from the experience of other municipalities in the Hudson Valley (e.g., the towns of Red Hook and Warwick) that have established such funds.

Non-regulatory measures include:

- educating the public and land use applicants about techniques for protecting sensitive areas;
- establishing Best Management Practices for specific activities such as logging, mining, and farming;
- providing incentives to land use applicants willing to set aside certain important areas of development sites;
- developing environmental review procedures that foster a collaborative process between town agencies and applicants to design land development projects in ways that minimize harm to sensitive resources.

Requiring a habitat assessment in the early stages of planning land development projects helps the landowner, developer, and town agencies understand the biological resources and sensitivities of a site, and enables them to design the new project in ways that accommodate those features. In 2010 the town adopted a requirement for a “**biodiversity assessment**” to be conducted before any major subdivision proposal is presented to the town; such an assessment is also recommended for minor subdivisions.

Guidelines for that assessment and procedures for review are provided on the Ancram website. Extending the requirement for that assessment to all land development projects affecting areas of a certain minimum size would further help the town agencies understand and protect resources important to the public welfare. Construction of even a single house and driveway on a single lot can have large impacts on habitat fragmentation; on loss and fragmentation of farmland; on quality, volume, and patterns of surface water runoff and groundwater recharge; and on the scenic viewshed.

Another means of drawing attention to significant natural resources is by establishing one or more **Critical Environmental Areas (CEA)** in Ancram. A CEA is a geographical area with exceptional character with respect to one or more of the following:

- a benefit or threat to human health;
- a natural setting (e.g., fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality);
- agricultural, social, cultural, historic, archaeological, recreational, or educational values; or
- inherent ecological, geological or hydrological sensitivity that may be adversely affected by any change in land use (<http://www.dec.ny.gov/permits/45500.html>).

The purpose of establishing a CEA is to raise awareness of the unusual resource values (or hazards) that deserve special attention during environmental reviews and land use decisions. “Once a CEA has been designated, potential impacts on the characteristics of that CEA become relevant areas of concern that warrant specific, articulated consideration in determining the significance of any Type I or Unlisted actions [in the SEQR process] that may affect the CEA” (from the DEC website at <http://www.dec.ny.gov/permits/45500.html>, accessed February 2014). The town can adopt procedural or regulatory requirements to ensure that the important attributes of the CEA are considered in the siting and design of land development projects in those areas.



Pond and meadows near Carson Road. Photo © Jonathan Meigs 2014

Conservation Partners

The effectiveness and breadth of the town's conservation efforts can be greatly extended by collaboration with other entities with shared conservation goals. The success of this Plan depends on marshalling the efforts of active volunteers, willing landowners, and partner organizations and agencies in the town, county, region, and state. Potential partners include:

- State and county agencies
- Statewide and regional conservation organizations
- Regional land trusts
- Regional recreation organizations
- Large and small landowners
- Local businesses

STATE AND COUNTY AGENCIES

New York State Department of Environmental Conservation (DEC)

The regional DEC office conducts ongoing reviews of potential land protection projects based on priorities identified in the State Open Space Conservation Plan (2014 draft). Projects that fit the scope of a listed priority conservation project and pass a thorough review process are eligible for funding from the State's Environmental Protection Fund and other state, federal and local funding sources. The state-identified open space priorities in Ancram include areas along the Taconic ridge, areas along Route 22, the Harlem Valley wetlands, and areas in the Drowned Lands watershed:

"Taconic Ridge / Harlem Valley

An area comprising the Taconic Mountain Ridge and its viewsheds, where it straddles the New York, Connecticut, Massachusetts, and Vermont borders in Putnam, Dutchess, Columbia and Rensselaer Counties, and the Harlem Valley and its viewsheds....The viewshed includes the Taconic Ridge, Harlem Valley, Route 22 corridor,....

Protection of this area continues to be a high priority due to the region's high biodiversity, presence of threatened and endangered species, scenic views, substantial recreational value, thousands of acres of intact/unfragmented forestland, steeply sloping hillsides, unique geologic segments, historic architecture, working farm landscapes, and multiple connection opportunities to land currently protected by the State, federal government, counties, towns and private land conservation organizations. The Taconic Ridge is a Forest Legacy Area and qualified to apply for land acquisition grants through the federal Forest Legacy Program....

Numerous trail systems including...the Appalachian Trail, Taconic Crest Trail, and South Taconic Trail extending beyond the New York border, and the Harlem Valley Rail Trail continue to be important projects for this area and will increase recreational opportunities for the public and provide permanent public use and access of the Taconic Ridge area. In addition, acquisition of properties in the Taconic Ridge/Harlem Valley and Route 22 corridor will protect important open space, scenic viewsheds, working farm landscapes, watersheds and water quality, and preserve critical wildlife habitat for several threatened and endangered species.

Specific projects include....Harlem Valley Rail Trail connectors and viewshed protection;...Route 22 corridor viewshed protection; prime farmland soils and designated wetlands along the Webatuck

Creek...; and exceptional plant and wildlife habitat areas ranked on the State Natural Heritage Inventory such as rattlesnake and bog turtle habitat, limestone wet meadows, graminoid fens and sedge meadows.” (p. 110-111)

Drowned Lands Swamp Watershed

This significant area of Columbia County, which constitutes one of the largest wetland complexes in southeastern New York, is surrounded by high quality farmland and striking scenic vistas. To date, 1,425 acres of wetlands and adjacent farmlands and forests have been protected through the concerted efforts of state agencies and private conservation organizations. Continuation of land acquisition and/or conservation easements remains a high priority for safeguarding the ecological diversity of the wetlands, as well as the agricultural viability and pastoral views of the surrounding countryside.” (p. 114)

The DEC’s **Climate Smart Communities** program is a “state-local partnership to meet the economic, social and environmental challenges that climate change poses for New York's local governments.” The program supports local governments and communities as they work to balance the goals of confronting and adapting to climate change, reducing local tax burdens, and advancing other community priorities. Participating communities will be alerted to the availability of state and federal grants, will have privileged access to certain state grants, and will be part of a network of governments working to achieve “climate smart” practices and policies. (See Appendix C for a fuller explanation of the program.)

The **Hudson River Estuary Program** of the DEC has a strong interest in developing the capabilities of municipalities for conserving important resources. They offer education opportunities for municipal officials, and grants to municipalities and nonprofit organizations for projects that advance local biodiversity conservation efforts. The Estuary Program prepared a “Habitat Summary” for the town (Appendix D), and past Estuary Program grants and other funding have helped to train the Ancram biodiversity assessment team, to digitize their habitat map, and to provide other technical assistance in identifying biodiversity resources. Members of Ancram town agencies have benefited from numerous educational programs on natural resource conservation sponsored by the Estuary Program. In 2014 the Hudson River Estuary program conducted a survey of Ancram’s culverts to identify where undersized, suspended, or otherwise inadequate culverts occur throughout the town, and recommend measures that will reduce floods and infrastructure damage and restore stream habitat continuity for aquatic organisms.

Other offices of the DEC can provide information and technical assistance with stream and lake monitoring, groundwater protection, and floodplain mapping.

New York State Department of State (DOS)

The DOS offers training opportunities, educational publications, and technical assistance for municipal agencies on a variety of topics including the State Environmental Quality Review (SEQR) process and developing local legislation. SEQR and local legislation can be powerful tools in the protection and stewardship of local resources.

New York State Office of Parks, Recreation, and Historic Preservation (OPRHP)

The OPRHP manages the Taconic State Park for purposes of conserving natural resources and providing recreational and educational opportunities for the public. The agency could be a willing partner providing information, technical assistance, and other support for projects related to biodiversity conservation, water conservation, publicly-accessible trails, and public education on land on and near the state park lands.

Hudson River Valley Greenway

The Greenway offers technical assistance and small grants to local municipalities and nonprofit organizations for projects related to community planning, economic development, and protection of open space and of natural, cultural, and scenic resources. A grant from the Greenway helped to fund the preparation of this Natural Resources Conservation Plan.

Cornell Cooperative Extension—Columbia and Greene Counties

The Cooperative Extension is part of a statewide program that aims to put “knowledge to work in pursuit of economic vitality, ecological sustainability and social well-being,” serving local families, farms, and communities. Their agricultural education programs provide research-based information on production and marketing of agricultural and horticultural products, through workshops, publications, and consultations. Their natural resource programs provide information, workshops, and assistance on such topics as woodland stewardship, water resource protection, invasive species, and agroforestry.

Natural Resource Conservation Service

The NRCS (of the US Department of Agriculture) collaborates with farmers, communities, and other individuals and groups to protect natural resources on private lands. They identify natural resource concerns related to water quality and quantity, soil erosion, air quality, wetlands, and wildlife habitat, develop conservation plans for restoring and protecting resources, and help to direct federal funding to local conservation projects.

Columbia County Soil and Water Conservation District

The District office provides technical assistance and education on matters related to water, soils, and other natural resources to municipalities, farmers, landowners, and residents, and promotes resource conservation and environmental stewardship. They host educational programs and provide consultations and other services, and assist with obtaining funding for projects that enhance environmental quality or economic viability of farm-related enterprises.

Columbia County Agriculture and Farmland Protection Board

The Agriculture and Farmland Protection Board, a committee of active farmers and representatives of several county agencies, advises the Columbia County Board of Supervisors on matters related to state-certified agricultural districts, and acts as a liaison between county agencies, landowners, and state agencies on matters affecting agricultural district lands. The Board was the lead agency in preparing the Columbia County Farmland Protection Plan (2013).

MUNICIPAL AGENCIES

Neighboring towns can be valuable partners in land conservation and can help achieve Ancram's goals, especially where shared natural resources straddle municipal boundaries. Adjoining towns can collaborate on developing conservation funding, supportive land use ordinances and other regulatory measures, strong open space plans, and ownership and management of conservation lands.

The towns of North East and Pine Plains have townwide maps of ecologically significant habitats created by Hudsonia, so are well-equipped to collaborate with Ancram on intermunicipal planning for habitat conservation. The "Habitat Summaries" (similar to Ancram's [see Appendix D]) prepared by the Hudson River Estuary Program for Copake and Gallatin also illustrate some of the natural resources of mutual interest—such as large forests, streams, and aquifers—that cross town boundaries. Copake's "Climate Summary" and "Water Resource Summary" (both prepared by the Hudson River Estuary Program) and their Groundwater Protection Plan also contain information relevant to Ancram.

STATEWIDE AND REGIONAL CONSERVATION ORGANIZATIONS

Columbia Land Conservancy

The Columbia Land Conservancy's mission is to conserve the farmland, forests, wildlife habitat, and the rural character of the county, and to strengthen connections between people and the land. They own and manage ten Columbia County properties as public conservation areas—including three in Ancram—and they hold conservation easements on over 23,000 acres of privately-owned land in the county—including over 4,700 acres in Ancram. (Both the easement lands and the properties owned outright by the CLC remain on the local tax rolls.) The CLC also sponsors education programs for residents on natural history and conservation, workshops on development of public trails, and workshops for town agencies on incorporating natural resource conservation into land use planning, environmental reviews, and decision-making. The CLC also hosts regular "roundtable" meetings that bring together the county's Conservation Advisory Councils to discuss shared issues. The CLC is an energetic and willing partner in local conservation.

Dutchess Land Conservancy

The Dutchess Land Conservancy seeks to protect scenic resources, agricultural land, historic settlement patterns, and diverse natural ecosystems through land conservation and stewardship, and public education. They have protected over 37,000 acres, mostly in Dutchess County, but they also hold conservation easements on over 1,600 acres in Ancram. The DLC also sponsors education programs for landowners and residents about caring for natural resources.

The Nature Conservancy

The Nature Conservancy (TNC) is an international land conservation organization that has worked extensively throughout the state to further land protection (including conservation easements) through

partnerships with other organizations and agencies (e.g., DEC, Open Space Institute) and private landowners to prevent further fragmentation of important ecosystems. TNC's conservation targets include protecting matrix forest blocks, wetlands and vernal pools, drinking water sources, rare and endangered plants, the timber rattlesnake, and the bog turtle, and they have a particular interest in helping communities adapt to climate change (www.nature.org/media/newyork/rw_070509_exec.pdf). TNC has designated the Berkshire-Taconic region as one of the world's "Last Great Places" and has joined with other organizations and public agencies to develop a recovery plan for the bog turtle.

Open Space Institute

The Open Space Institute (OSI) works in the eastern U.S. to protect scenic, natural, and historic landscapes through direct acquisition and conservation easements, and partners with local and state government to expand parklands. OSI's conservation strategy focuses on permanent protection at the landscape-level scale. OSI has protected over 46,000 acres in the Hudson Valley, creating connecting corridors that benefit both recreationists and wildlife, and protecting prime farmland.

Preservation League of New York State

The Preservation League of New York State seeks to protect New York's heritage of historic buildings, districts, and landscapes. It leads advocacy, economic development, and education programs, and provides grants, loans, and technical assistance to individuals, organizations, and communities. Most of the historic landscapes in Ancram include farmland and/or forests, so may fall under agricultural and scenic as well as historic classifications from the perspectives of potential funders of conservation projects.

Trout Unlimited

Trout Unlimited (TU) is a national organization whose mission is to conserve, protect and restore the cold-water streams and fisheries of North America through habitat restoration, land conservation, public education, and legislative advocacy. They have a long history of collaborating with local, county, state and federal government agencies as well as other conservation organizations to achieve shared goals. The local chapter of TU is the Columbia-Greene Chapter #569 (Hudson). TU has an extensive network of volunteers that work on local conservation projects and issues. The New York State Council Trout Unlimited Conservation Fund provides small grants to local TU chapters for coldwater fisheries conservation projects. Due to the presence of many small and large trout streams, the local TU chapter (Columbia-Greene, Hudson) might be well-positioned to obtain funding for projects to restore, enhance, or protect the habitat quality of Ancram's streams.

Trust for Public Land

The Trust for Public Land (TPL) is a nationwide conservation organization working from inner cities to wilderness areas. In the ten-county area of the Hudson Valley below the Troy dam, TPL has assisted the state, counties, and municipalities in protecting more than 51,000 acres.

RECREATION ORGANIZATIONS

Columbia County Mountain Bike Association

The Columbia County Mountain Bike Association and the International Mountain Bike Association are non-profit trails advocacy groups that conduct research and help to build and maintain sustainable multi-use trails. Both organizations could be partners with Ancram in building and maintaining biking trails should other properties become available for these uses.

Harlem Valley Rail Trail Association

The Harlem Valley Rail Trail Association (HVRTA) is a joint effort between HVRTA, the New York State Office of Parks, Recreation & Historic Preservation (OPRHP), the New York State Department of Transportation, Dutchess County, the municipalities along the Harlem Valley Rail Line, from its northern terminus at Wassaic (Dutchess County) to Chatham (Columbia County). The HVRT advocates for, promotes community support for, and raises funds for completing sections of the rail trail, cooperates with local, county, and state agencies in establishing and maintaining the trail, and helps to educate the public about safe use of the trail. In Columbia County, the developed portion of the rail trail is part of Taconic State Park and is maintained by the OPRHP and HVRT volunteers. The HVRT could assist Ancram with developing rail trails along other abandoned lines in the town, should those opportunities arise.

New York–New Jersey Trail Conference

The New York–New Jersey Trail Conference is “a federation of member clubs and individuals dedicated to providing recreational hiking opportunities in the region and representing the interests and concerns of the hiking community. It is a volunteer-directed public service organization” that develops, builds, and maintains hiking trails, protects hiking trail lands through support and advocacy, and educates the public in the responsible use of trails and the natural environment (www.nynjtc.org). The NY-NJTC maintains the South Taconic Trail, which runs from Boston Corner (in Ancram) to just north of Catamount (in Egremont, MA) and is currently being extended south to Rudd Pond (in North East).

RESEARCH AND EDUCATION ORGANIZATIONS

Farmscape Ecology Program

The Farmscape Ecology Program (FEP) is a research and outreach branch of the Hawthorne Valley Association at the Hawthorne Valley Farm in Ghent and Hillsdale. The FEP studies the ecology of agricultural and natural landscapes of the county and the region, and the interactions of people with the land, both historically and in the present. They explore the natural and social ecology of the region, inform people of their findings, and seek to deepen everyone’s connections to the land. The FEP has conducted biological field studies of many properties in Ancram—looking especially at farmland, floodplain forests, and the CLC public access lands—and, in an ongoing study of the plants and animals of important ecological communities throughout Columbia County, FEP and Hudsonia (see below) have explored

many other sites in Ancram. The FEP also leads field workshops to educate the public about habitats, plants and animals, and the ecology of farmland and wildlands here and elsewhere in the county.

Hudsonia Ltd.

Hudsonia is an environmental research institute that studies the plants, animals, and habitats of the region, their ecology and conservation. Hudsonia biologists conduct pure and applied research throughout the Hudson Valley and elsewhere in the Northeast, produce educational and scientific publications, and conduct training and other educational programs for scientists, environmental practitioners, and land use decision-makers to help participants better understand how to recognize, assess, and protect important biological resources. In 2001 Hudsonia trained the Ancram Biodiversity Assessment Team in techniques for recognizing and mapping ecologically significant habitats, has since helped the team with creating a townwide habitat map (in progress), and has provided other technical assistance related to biodiversity assessment and conservation. Hudsonia also collaborated with the CAC to prepare this Natural Resources Conservation Plan.

LOCAL BUSINESSES

Many local business owners have a deep personal appreciation for and commitment to the town and the region, and also recognize that their business success is closely tied to the town's natural and cultural environment. Contributing to conservation efforts can offer business owners the personal satisfaction that comes with taking care of the places they love, can serve as an investment in the landscape that supports their livelihood, can demonstrate their commitment to conservation and the community as a prominent aspect of their business profile, and can help build positive relationships with the community. For all these reasons businesses are often enthusiastic partners in conservation initiatives and should not be overlooked in the quest for funding, publicity, and in-kind assistance.

LANDOWNERS AND OTHERS

Private owners of large land parcels or of smaller parcels containing important resources play a critical role in the future of land conservation and can be essential partners in conservation action and funding. Landowners can take specific measures to protect habitats and water resources on their own land, can collaborate with their neighbors to protect and manage resources in nearby areas, and can assist the town with larger conservation efforts. Landowners in Ancram are diverse and represent a broad spectrum of views on conservation. Town-sponsored conservation efforts can benefit from reaching out to landowners on a regular basis to build partnerships and to understand owners' relationships to their land, and their interests, goals, and concerns. Education programs can help landowners understand the role they play in shaping their community's future landscape and the available options for land management and land conservation.

Local professionals, such as biologists, ecologists, teachers, environmental engineers, landscape architects, and LEED-certified architects, as well as amateur naturalists, often have a wealth of knowledge and expertise related to natural resources. Many have a strong personal interest in resource conservation and some can offer their volunteer services to the town for technical assistance, grant-writing, or public education. The town should remember to call on such local expertise when appropriate.

Long Lake Association, Friends of Long Lake, Lower Rhoda Lake Association

These homeowners associations have supported sustainable land management practices in and near the lakes. The Lower Rhoda Association is an intermunicipal organization that has been working together around a shared resource to prevent and solve environmental problems. Recently they have been studying ways to address aquatic weed problems without using herbicides. The town should continue to collaborate with these associations in efforts to maintain the health of these important water bodies.

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Jamie Purinton (CAC member) assessing marsh habitat. Photo © Choral Eddie 2014

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Trout-lilies near Wiltsie Bridge Road.

Photo © Jamie Purinton 2014

APPENDICES

Appendix A Glossary

Appendix B Explanation of Rarity Ranks

Appendix C Climate Smart Communities

Appendix D Ancram Habitat Summary



Cedar waxwings in shrub thicket on Shepherd Road. Photo © Jamie Purinton 2014

APPENDIX A. GLOSSARY

asl Above sea level.

alluvium Material, such as sand, silt, clay, and gravel, deposited on land by moving water.

biodiversity All the variety of plants, animals, and other living things. The term encompasses diversity at all scales, including landscapes, ecosystems, ecological communities, species, and their genes. From a conservation standpoint, ecologists are mainly concerned about native biodiversity—the biota that have established and developed in the region over millennia, but not the recent introductions since European settlement.

calcareous Calcium-rich; containing high concentrations of calcium salts. The term is generally applied to water, soils, and bedrock. The source of calcium in this region is usually calcium carbonate (e.g., limestone), and thus calcareous environments are generally circumneutral or alkaline.

carbon sequestration Capture and long-term storage of atmospheric carbon dioxide or other forms of carbon. Carbon sequestration, whether occurring artificially or by natural biological, chemical, and physical processes (such as the growth of a tree, or the accumulation of peat in a wetland), is a means of mitigating or deferring global warming.

circumneutral Having a pH at or near 7.0 (approximately 6.6–7.3).

DEC New York State Department of Environmental Conservation

drumlin A low, elongated hill of compact glacial till, with the long axis parallel to the path of the glacier (Case 1989)

ecological community A group of plants and animals occupying a habitat and interacting with each other and with the non-biological components (such as sunlight, air, water, and bedrock) of the habitat.

ecosystem services The resources and services provided by the natural environment that benefit the human community, such as purification of water and air, cycling of nutrients, mitigation of floods, dispersal of seeds, pollination of agricultural crops, control of agricultural pests and human disease organisms, production of timber, fish, wild game, and other wild foods.

edge effects The influences of habitat edges on interior habitats and species. These may include the effects of noise, light (natural or artificial), wandering pets, accessibility to predators and nest parasites, and pollution introduced from human activities at the habitat edges. Certain edge effects occur at the edges between natural habitats as well as those between natural habitats and human-disturbed areas.

enduring features The hills, valleys, bedrock, glacial deposits, and other parts of the landscape that resist change; these are the foundational features that are substantially unaffected by human land uses, wildfires, droughts, floods, hurricanes, climate change, and other significant events that alter the land surface.

Farmland Soils of Statewide Importance A designation of the Natural Resource Conservation Service for soils that are nearly as productive as “prime farmland soils” and that produce high yields of crops when properly managed.

fen As used in the NRCP, the term “fen” refers to an open, herb- and low shrub-dominated wetland fed by calcareous groundwater seepage. This habitat has a distinctive plant community that, in this region, often includes such species as shrubby cinquefoil (*Dasiphora fruticosa*), grass-of-parnassus (*Parnassia glauca*), bog goldenrod (*Solidago uliginosa*), and woolly-fruit sedge (*Carex lasiocarpa*).

floodplain The area bordering a stream that is subject to flooding.

glacial outwash Mineral material (gravel, sand, and silt) deposited by the melting ice of a glacier.

glacial till Mixed mineral material (clay, silt, sand, rocks) transported and deposited by glacial ice, or by streams flowing from a melting glacier.

habitat The place or environment where an organism normally spends all or part of its life. A habitat is defined by both the biological (e.g., plants and animals) and the non-biological (soil, bedrock, water, sunlight, temperatures, etc.) components.

hydric soils Soils formed under conditions of saturation for long enough during the growing season to develop anaerobic (oxygen-free) conditions near the ground surface. The presence of hydric soils is one of the three features necessary (along with wetland hydrology and hydrophytic vegetation) for identifying an area as wetland.

hydrogeological sensitivity “...a relative measure of the ease and speed with which a contaminant could migrate into and within the upper-most water-bearing [geologic] unit. High to very high hydrogeologic sensitivity ratings indicate that, in general, groundwater could be easily and quickly impacted by surface activities” (Winkley 2008). Hydrogeologic sensitivity at any location is controlled by the geologic materials and the topographic position of the site (Winkley 2008).

invertebrate An animal that lacks a spinal column. Invertebrates include insects, mollusks, crustaceans, nematodes, spiders, centipedes, protozoans, and a host of other macroscopic and microscopic organisms.

kettle A depression in the ground surface formed by the melting of a stranded block of glacial ice that was buried or partially buried by outwash drift.

natural community As used in this document, a natural community is a group of plant and animal species typically found in a particular kind of physical environment. The community is defined by the plant

species composition, the vegetation structure (e.g., forest, shrubland, meadow), and the physical conditions (e.g., hydrology, soil chemistry, climate, light).

NGO Non-governmental organization.

NYNHP New York Natural Heritage Program, an agency that serves as a repository and clearinghouse for information on the occurrence, distribution, and status of plants, animals, and natural communities in the state.

palustrine The term applied to nontidal wetlands, and tidal wetlands with salinity less than 0.5 parts per thousand.

Prime Farmland Soils A designation of the Natural Resources Conservation Service for soils that have the best combination of physical and chemical characteristics for producing crops.

resiliency As used in this document, the capacity to withstand, recover from, and adapt to stresses such as those imposed by floods or climate change.

riparian Within or adjacent to a stream or river.

SGCN Species of Greatest Conservation Need: a list drawn up by the DEC that includes 1) species on the federal list of endangered or threatened species that occur in New York; 2) species listed as NYS endangered, threatened, or special concern; 3) species with 20 or fewer elemental occurrences in the New York Natural Heritage Program database, and 4) other species deemed by the DEC to be of greatest conservation need due to their status, distribution, and vulnerability.

surficial deposits Loose material transported and deposited over bedrock. Material may be transported by glaciers (glacial till, glacial outwash) or by moving water (alluvium).

thatch Undecomposed, dead plant material that accumulates on the soil surface of a meadow or lawn.

viewshed The entire area visible from a specified location and, conversely, the entire area from which that location is visible.

watershed The entire land area that drains to a particular place such as a stream, wetland, or pond.

APPENDIX B.

EXPLANATION OF RARITY RANKS

This section explains the federal, state, and regional rarity ranks used in the Natural Resources Conservation Plan. The New York legal status information was obtained from the New York Natural Heritage Program website at <http://www.acris.nynhp.org/ranks.php>, accessed in April 2014. The SGCN information was obtained from the New York State Comprehensive Wildlife Conservation Strategy (2005). The regional status information was obtained from Kiviat and Stevens (2001).

NY LEGAL STATUS - Animals:

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E - Endangered Species: any species which meet one of the following criteria:

- Any native species in imminent danger of extirpation or extinction in New York.
- Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T - Threatened Species: any species which meet one of the following criteria:

- Any native species likely to become an endangered species within the foreseeable future in NY.
- Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC - Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York.

NY LEGAL STATUS - Plants:

The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9- 1503.

E - Endangered Species: listed species are those with:

- 5 or fewer extant sites, or
- fewer than 1,000 individuals, or
- restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
- species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T - Threatened: listed species are those with:

- 6 to fewer than 20 extant sites, or
- 1,000 to fewer than 3,000 individuals, or
- restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or

- listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R - Rare: listed species have:

- 20 to 35 extant sites, or
- 3,000 to 5,000 individuals statewide.

SPECIES OF GREATEST CONSERVATION NEED (SGCN) IN NEW YORK - ANIMALS

Species that meet one or more of the following criteria (New York State Department of Environmental Conservation 2005):

- Species on the current federal list of endangered or threatened species that occur in New York.
- Species that are currently state-listed as endangered, threatened, or of special concern.
- Species with 20 or fewer elemental occurrences in the New York Natural Heritage Program database.
- Estuarine and marine species of greatest conservation need as determined by the DEC Bureau of Marine Resources staff.
- Other species determined by the DEC to be in great conservation need due to status, distribution, vulnerability, or disease.

REGIONAL STATUS (HUDSON VALLEY) – ANIMALS AND PLANTS

Hudsonia has compiled lists of native plants and animals that are rare in the Hudson Valley but do not appear on statewide or federal lists of rarities (Kiviat and Stevens 2001). We use ranking criteria similar to those used by the NYNHP, but we apply those criteria to the Hudson Valley below the Troy Dam. Our regional lists are based on the extensive field experience of biologists associated with Hudsonia and communications with other biologists working in the Hudson Valley. These lists are subject to change as we gather more information about species occurrences in the region. Natural Heritage Program ranks are presumed to also be regionally rare, but are not assigned a regional rank. For birds, the regional rank sometimes refers specifically to their breeding status in the region.



American elm on Winchell Mountain. Photo © Choral Eddie 2014

APPENDIX C.

CLIMATE SMART COMMUNITIES

The following is excerpted from the DEC website at <http://www.dec.ny.gov/energy/50845.html>

Climate Smart Communities

Local Action to Combat Climate Change



The Climate Smart Communities logo identifies member communities and Climate Smart Communities materials.

Climate Smart Communities is an unprecedented state-local partnership to meet the economic, social and environmental challenges that climate change poses for New York's local governments.

Local governments are the closest protectors of public health and safety and the first line of response in emergencies. They operate critical infrastructure and provide vital services.

So it's natural that people look to their local governments to confront climate change -- while continuing to conserve taxpayer dollars and advance other community priorities. The Climate Smart Communities program supports local governments and communities as they work to balance these goals.

Benefits for Climate Smart Communities

Towns, villages, cities and counties that join Climate Smart Communities benefit by:

Enjoying statewide recognition for their climate leadership and successful actions.

Saving taxpayer dollars through lower operating costs, improved efficiency and resource-conserving land use policies.

Receiving notification when state or federal assistance becomes available (plus advantaged access to some state programs).

Participating in a network of governments working to achieve climate smart practices and policies.

Improving facility operations and infrastructure to not only reduce greenhouse gas emissions but also clean up local air pollution.

Increasing energy independence and security against price volatility and supply shortages.

Positioning for economic growth as energy savings and "green" businesses support local jobs and economic recovery.

Joining Climate Smart Communities

Any town, city, village or county can join Climate Smart Communities, without cost--just pass a resolution adopting the CSC Pledge and submit a certified copy to DEC. [Adopt the Climate Smart Communities Pledge](#) includes a model pledge and details on how to join. The ten elements of the pledge are as follows:

1. Pledge to Combat Climate Change by Becoming a Climate Smart Community
2. Set Goals, Inventory Emissions, Move to Action
3. Decrease Energy Demand for Local Government Operations
4. Encourage Renewable Energy for Local Government Operations
5. Realize Benefits of Recycling and Other Climate Smart Solid Waste Management Practices
6. Promote Climate Protection Through Community Land Use Tools
7. Plan for Adaptation to Unavoidable Climate Change
8. Support a Green Innovation Economy
9. Inform and Inspire the Public Commit to an Evolving Process
10. Commit to an Evolving Process

Climate Smart Communities Program Services

To help local governments reduce greenhouse gas emissions and increase community resiliency to climate change, the program provides community coordinators, a listserv, webinars, and a local action guide.

APPENDIX D.

TOWN OF ANCARAM HABITAT SUMMARY

New York State Department of Environmental Conservation

Hudson River Estuary Program Biodiversity Outreach

Central Office, 5th Floor

625 Broadway, Albany, NY 12233-4750

Phone: (518) 402-8942 • Fax: (518) 402-8925

Website: www.dec.ny.gov



Joe Martens
Commissioner

To: Town of Ancram Conservation Advisory Council

From: Karen Strong, Hudson River Estuary Biodiversity Outreach Coordinator, 518-402-8942,
klstrong@gw.dec.state.ny.us

Re: Town of Ancram Habitat Summary

Date: October 2011

Background

This summary was completed upon request to provide information for the Town of Ancram for land use planning and decision-making. It identifies major natural features, as well as significant ecosystems and valuable stream, forest, wetland, and other habitats with important biological resources based on information available to the NYSDEC. It should not be considered a complete biological inventory because it is based only on existing information gleaned from various complementary, but not comprehensive, sources. In the case of Ancram, a large amount of information is available. However, there are areas for which we had no information, particularly in the western part of town. Additional general information about habitats can be found in the *Wildlife and Habitat Conservation Framework* developed by the Hudson River Estuary Program (Penhollow et al. 2006). If you have any questions about this summary, or want to know if it needs to be updated, please contact Karen Strong, Biodiversity Outreach Coordinator.

NYSDEC's Hudson River Estuary Program protects and improves the historic and scenic Hudson River watershed for all its residents. The program was created in 1987 and extends from the Troy dam to the Verrazano Narrows. Its core mission is to:

- Ensure clean water;
- Protect and restore fish and wildlife habitats;
- Provide recreation in and on the water;
- Adapt to climate change; and
- Conserve the scenic landscape.

Upland watershed ecosystems—wetlands, forests, stream corridors, grasslands and shrublands—are not only habitats for abundant fish and wildlife, but also support the estuary and provide many vital benefits to human communities. These ecosystems help clean drinking water, clean air, moderate temperature, clean up pollution, and absorb floodwaters. Conserving a diversity of plants and animals maintains these healthy and resilient ecosystems. The Biodiversity Outreach Program was created in partnership with Cornell University to help communities understand what plants, animals, and habitat are found locally; appreciate the value of these resources; and identify local tools to conserve them.

How to use this summary

Maps and written descriptions are provided for the landscape context, major natural features and each habitat type: streams, forests, and wetlands. There are only written descriptions of grassland and shrubland habitats. Each habitat type is briefly described, including how the map was made (if applicable). Significant plants, animals, and habitats are noted. Major natural features are the most ecologically significant resources in your town based on the information available. The species lists that follow the habitat descriptions list the species

known to occur in your town that are of state-wide conservation concern. You will find links throughout this document that will direct you to the internet for more information, including websites, publications, and fact sheets. There are references listed at the end that identify the sources of the information in this document.

While this summary is limited to existing information and is therefore not a substitute for on-the-ground survey and assessment, it provides a starting point for recognizing important natural areas in your town and in the surrounding areas. Effective conservation occurs across property and political boundaries and therefore necessitates a broader view of natural landscapes. By identifying areas of high-quality resources, this summary will be especially useful for setting priorities that support town planning. Habitat summaries like this one have been used by other communities for open space plans, comprehensive plans, natural resource inventories, and developing critical environmental areas. One Hudson Valley town used the species lists in its comprehensive plan's generic environmental impact statement. Some communities have incorporated their summaries directly into plans, while others use the information to write their own documents.

Though this summary does not contain the detail needed for site planning, it is useful for environmental review. First, a good inventory makes it easier to review projects. By identifying high quality habitats at the town-wide scale, it helps land use decision-makers and applicants understand how a proposed site plan might relate to important areas off-site. Second, the summary informs environmental review by highlighting areas that might need a more detailed assessment. Third, the species lists identify species of conservation concern you may want to address during your reviews.

Please note that some of the habitats and species identified in this document may be protected by state or federal programs. Continue to work with the DEC Region 4 office in Schenectady and other appropriate agencies on those issues.

Conservation

Once you understand the kinds of habitats in your town, you may want to identify conservation actions that protect the resources in order to protect the benefits they provide to the community. Included with this summary are General Conservation Measures for Protecting Natural Areas and Wildlife that can help guide Ancram's plans and land-use decisions. More detailed information on the how and why of local habitat conservation is available in [*Conserving Natural Areas in Your Community: Smart Growth Strategies for Protecting the Biological Diversity of New York's Hudson River Valley*](#) (Strong 2008). The handbook was published by NYSDEC to support the Hudson River Estuary Biodiversity Outreach Program. It describes in more detail why towns should conserve their biological resources, as well as the tools and techniques that local governments can use to conserve natural areas and wildlife. Chapter 5 covers habitat conservation. The document is also available in CD or hard copy upon request.

Species and Habitats of Conservation Concern

Following the general descriptions of habitat, you will find lists of species of state-wide conservation concern that have been recorded for the town to date. There are likely other state-rare species in Ancram that are not yet documented. Species on the lists come from the NY Natural Heritage Program, the New York Amphibian and Reptile Atlas, and the NYS Breeding Bird Atlas. Species are included if they are on the state or federal endangered and threatened species list, listed as a Species of Greatest Conservation Need in New York's Wildlife Action Plan, recognized as a "responsibility species" for the Hudson Valley by Audubon New York, or are other indicators of high quality habitat.

We have some information about species and habitats of regional conservation concern, primarily from the [*Farmscape Ecology Program at Hawthorne Valley Farm*](#) (FEP). FEP has been working in Columbia County to understand the relationship between agriculture, natural areas, and socio-economics. The extensive fieldwork of FEP researchers throughout the county makes them an especially useful source for this summary. Information from the program is distributed throughout.

Tables 3 and 4 are lists of species of regional conservation concern, compiled from information provided by the Farmscape Ecology Program. Regional conservation concern means the species or habitat is rare or uncommon at the Hudson Valley, county, or town scale, more detailed definitions are provided in the tables themselves.

How to find more information

The information in this summary can be enhanced by local knowledge. Local studies, maps, plans, and knowledgeable local people can add to detail to these areas, and may reveal unknown, high- quality ecosystems. Biological information in environmental impact statements may be useful, especially when a town has standards for environmental review. In Ancram, the habitat map created by town residents in 2001 looked at the north central part of town, including areas for which we have little data. As town volunteers continue mapping habitat in the town, this habitat summary will be useful in identifying mapping priorities.

If you want help with incorporating additional information into the summary, please contact Karen Strong, Biodiversity Outreach Coordinator.

Important habitats of the Town of Ancram

Major Natural Features

The first step to understanding the major natural features of Ancram is to consider the town's place in relation to the regional features that extend beyond its borders. Figure 1 shows where Ancram lies in the Roeliff Jansen Kill and Stockport Creek watersheds, as well as regionally significant landscapes identified by the NYSDEC Hudson River Estuary Program in Penhollow et al. (2006). Ancram has two of those landscapes, known as significant biodiversity areas: the Harlem Valley Calcareous Wetlands and the Taconic Ridge. The major natural features map (Figure 2) shows where the significant biodiversity areas are in Ancram as well as areas important for the health of known state-rare plants and animals and significant ecosystems.

Harlem Valley Calcareous Wetlands

The Harlem Valley wetlands run along the eastern-most New York State in Columbia, Dutchess, and Putnam Counties (Figure 1), and cover a large portion of Ancram (Figure 2). This regionally significant landscape is identified as a significant biodiversity area by the NYSDEC Hudson River Estuary Program for the many uncommon plants, animals, and habitats associated with its calcium-rich bedrock and dynamic geologic history (Penhollow et al., 2006):

"The Harlem Valley Calcareous Wetlands are composed of the valleys and adjacent ridges... The majority of the Harlem Valley Calcareous Wetlands biodiversity area consists of Stockbridge Marble, a metamorphic rock composed of the minerals calcite or dolomite. It is formed when limestone is treated to very high temperature and pressure, such as the [formation of the Taconic mountains]... The result is a preponderance of communities dependent on freshwater upwellings of high pH [calcium-rich] water, namely fens.... Wetland matrix communities consist of red maple-hardwood swamp and floodplain forest. The upland matrix community tends to be Appalachian oak-hickory forest."

Areas with calcium rich bedrock generally have more rare species than other areas (Anderson and Ferree 2010). Many natural areas and species of conservation concern are reported from the Harlem Valley portion of Ancram, including wetland and upland areas.

Calcium-rich Wetlands

Large, high-quality wetlands and wetland complexes are found throughout the Harlem Valley in Ancram, including the wetlands associated with Miller Pond and Drowned Lands Swamp that have two red maple-tamarack peat swamps (50 and 70 acres), a 69 acre shallow emergent marsh with good diversity, and several small fens. Additional small fens are located along the border with the Town of Northeast. Many other state and regionally rare plants and animals are found in Ancram's Harlem Valley wetlands. The only known Columbia County populations of state-listed swamp birch, handsome sedge, and marsh valerian are in Drowned Lands Swamp and the wetlands south of Miller Pond. Known wildlife of conservation concern include the spotted turtle (in abundance), bog turtle, marsh fern moth, the harvester butterfly (rare in Columbia County), and spotted salamander, a vernal pool indicator that is regionally vulnerable (Kiviat and Stevens 2001). Timber rattlesnakes are associated with the Taconic Ridge, but use habitat in the Harlem Valley seasonally for foraging on rodents.

Calcium-rich Uplands

The Farmscape Ecology Program has explored several examples of calcium-rich uplands in Ancram. Several regionally-rare plants are found in the limestone woodland at Drowned Lands Swamp, including round-leaved dogwood, four-leaved milkweed, and upland boneset (Table 3). A calcareous talus slope woodland south of Route 82, has a diverse plant community rich in rare and uncommon native species, including a number of regionally-rare ferns, and four-toed salamander. Finally, red cedar woodlands can be botanically interesting

because they tend to develop on abandoned agricultural lands on thin, calcium-rich soils and are often associated with uncommon native plants. One such example was found south of Drowned Lands Swamp and had the regionally-rare shrubby cinquefoil, showy goldenrod, and pale beardtongue.

The complete list of state-rare species and significant ecosystems known from this area in Ancram is shown in Table 1. Table 3 lists known local and regional rarities. Calcareous, or calcium-rich areas have the potential to support many unique plants and plant communities. This description of the calcium-rich areas in Ancram is not exhaustive and other significant species and habitats will probably be found with further investigation. Look for examples of calcareous wet meadow, [fens](#), [carbonate crest ledge and talus habitats](#), calcareous swamps (e.g., [red-maple tamarack swamp](#)), [limestone woodland](#), and [calcareous talus slope woodland](#). [The Biodiversity Assessment Manual for the Hudson River Estuary Corridor](#) (Kiviat and Stevens 2001) describes some of these habitats and provides a list of calcium-loving plants in Appendix 5.

Taconic Ridge

The Taconic Ridge runs along New York's border with Massachusetts in Rensselaer and Columbia Counties (Figure 1). This regionally significant landscape is identified as a significant biodiversity area by the NYSDEC Hudson River Estuary Program for its large forests and associated wildlife (Penhollow et al., 2006):

“The Taconic Ridge encompasses large areas of contiguous, high quality, northern hardwood forest underlain by complex metamorphic bedrock. It serves as a principle watershed and recharge area for numerous rich fens and associated rare plant and animal species. The Taconic Ridge extends nearly 60 miles along the eastern edge of New York State, [along Rensselaer, Columbia, and Dutchess Counties] and is about 12 miles wide at its widest point.”

The portion of the Taconic Ridge in Ancram is within Taconic State Park (Figure 2). Four high quality forest types are found here: hemlock-northern hardwood forest, maple-basswood mesic forest, Appalachian oak hickory forest, and chestnut-oak forest. Timber rattlesnakes (state-threatened) and several rare plants are known from the Ridge as well. The complete list of rare species and significant ecosystems known from this area in Ancram is shown in Table 1.

Other Habitats

Streams

Stream corridors, including the stream channel itself, wetlands, floodplains, and shoreline vegetation bordering the channel provide important ecosystem services to people of the town, including clean water, fishing opportunities, and flood management. Hudson River tributary streams and their associated shoreline and floodplain areas provide some of the most productive wildlife habitat in the region.

Most of the land in the Town of Ancram drains to the Hudson River, though the far eastern part drains to Long Island Sound via Ten Mile Creek and the Housatonic River (Figures 1 and 3). Most of the Town of Ancram drains to the Roeliff- Jansen Kill, which drains to the Hudson River at Linlithgo. A tiny portion of northwest Ancram drains to the Claverack Creek, part of the Greater Stockport Creek watershed. For more information on the Stockport creek, visit the [Greater Stockport Creek Watershed Alliance online](#) or contact Watershed Coordinator Fran Martino at riverhaggie@peoplepc.com or 518-828-1330.

The Streams map (Figure 3) shows streams from digitized USGS topographic maps, and general stream habitat information, and floodplain forest information from the Farmscape Ecology Program at Hawthorne Valley Farm (Knab-Vispo and Vispo 2010). The USGS stream data may be inaccurate or incomplete and will not show many of the intermittent streams in the town. The stream habitat information was determined based on the NYS

Department of Environmental Conservation water quality classifications. Streams known to have trout (T) or trout spawning (TS) were identified as coldwater habitats. Streams without that designation are identified as warmwater habitats. These data show that there are only warmwater streams known in the Town of Ancram. Keep in mind these are generalized stream habitat types, and they do not reflect site-specific habitat quality.

The Farmscape Ecology Program at Hawthorne Valley Farm has shown that floodplain forests are home to a unique suite of plants and animals that tolerate occasional flooding (Knab-Vispo and Vispo 2010). Floodplain forests in Ancram tend to be characterized by a canopy of silver maple and green ash. Uncommon plants found in these forests included the regionally-rare green dragon. . Of particular ecological interest are “ancient” floodplain forests, which have been forested at least since the 1940s, and likely much longer. Forests that have not been completely cleared during that period, although they might have been used as woodlots for selective timber harvest, have significantly less invasive shrubs and more native forest herbs than recently reforested floodplains. Figure 3 shows the distribution of ancient, as well as reforested floodplains in Ancram. Most of the forested floodplain in Ancram is a mosaic of ancient and recently reforested patches along the Roeliff Jansen Kill.

Forests

The ability of forests to provide wildlife habitat, clean water, and economically viable forest products depends in part on our ability to maintain sizeable tracts of forest. The Large Forests map (Figure 4) shows forests 200 acres and larger in Ancram. The map was created from land cover data developed for the Coastal Change Analysis Program (National Oceanic and Atmospheric Administration 2006). Land cover categories considered 'forest' for this analysis include deciduous forest, evergreen forest, mixed forest, and palustrine forested wetland. Roads were removed from the map to identify unfragmented forest patches. Interstate roads were buffered by a total of 300 feet, state and county roads by 66 feet. Forest patch size classifications follow the Orange County Open Space Plan (Orange County Planning Department 2004) and cited in Strong (2008).

In general, larger forests will provide more ecosystem services and higher quality forest habitat than smaller ones. However, keep in mind that the value of each forest is relative to the values of other forests in your community, watershed, or natural landscape. Even small patches of forest can be extremely valuable, depending on their landscape context. For example, the series of forest patches along a stream (e.g, those shown in Figure 3, rather than Figure 4) can create a riparian corridor that help maintain water quality, provide wildlife habitat, and serve as a travel route for forest plants and animals. Similarly, wooded hedgerows in an agricultural matrix often provide valuable breeding habitat, food sources, and travel routes for animals that would not otherwise use the agricultural landscape.

Ancram's forest is fragmented, although there are several large forests. The largest forest is on the Taconic Ridge, of which only a small portion of which is in Ancram. It is more than 40,000 acres as it extends north, south, and east into neighboring municipalities (and Massachusetts). The largest forest located entirely within the town is just west of Route 22. It is more than 4,500 contiguous acres, and includes the Round Ball Public Conservation Area owned by the Columbia Land Conservancy and Fox Hill. Another large forests is shared with Copake, Gallatin, and Taghkanic (7500 acres).

Overall, we know very little about the habitat quality of most forests in Ancram. However, the fact that records from the Breeding Bird Atlas show three blocks with Worm-eating warbler (two confirmed breeding records, one probable) is one clue that these forests do provide high quality habitat. This bird is considered area-sensitive and requires at least 700 acres of continuous forest to breed most successfully. The botanical composition of these forests depends largely on the underlying soils/bedrock and their management history. Forests that have re-grown on former agricultural fields tend to have more invasive plants and are less likely to provide good habitat for rare or uncommon native plants. Parts of Fox Hill and Round Ball have been forested since at least 1940, and were probably not completely cleared for agriculture. Round Ball harbors some regional rarities, such as leatherwood, mayapple, and the native bush honeysuckle. This public conservation area is a wonderful showcase for the patchwork of soil conditions which is to be expected in the forests of Ancram. Within a

predominantly acidic matrix there are pockets of calcium-rich areas that support their own unique set of plants. Fox Hill has historic records of rocky summit indicators, the regionally-rare dwarf chestnut oak and small-flower bittercress (McVaugh 1957), but it is not known if they are still present.

Wetlands

Wetlands not only provide quality habitat for unique plants and animals, but provide important services for human communities, including pollutant removal, flood storage, and carbon sequestration. The Wetlands map (Figure 5) shows wetlands as mapped by the US Fish and Wildlife Service for the National Wetlands Inventory (NWI) as well as some information on potential wetlands based on county soil maps. “Probable wetlands” are those classified in the soil survey as very poorly drained or poorly drained, and “possible wetlands” are those classified as somewhat poorly drained soils (after Kiviat and Stevens 2001). The National Wetland Inventory data are available for you to view at the US Fish and Wildlife Service [website](#). You will note that the probable and potential wetlands cover a greater area than the NWI wetland layer. NWI maps are known to be inaccurate, generally underestimating wetland area both because on-the-ground wetlands are larger than those shown on the map and because smaller and drier wetlands tend to be missed (Zucker and Lau, unpublished report). Nothing can replace the on-the-ground delineation for understanding wetlands. NYSDEC Freshwater wetlands (12.4 acres and larger) were purposefully not identified on the map. If you want more information on these wetlands, please contact the DEC Region 4 office.

Though we have a good sense of where wetlands might be, we do not know which of these are most important for wildlife. The most recent NYS Breeding Bird Atlas has a probable breeding record for the NYS threatened species, [Least Bittern](#), which depends on large wetlands with dense vegetation. The bird was found somewhere within the block shown on Figure 5. One high quality [vernal pool](#) that has been documented at Chaseholm Farm in the south-western part of the town, and records of spotted salamander in the [NY Amphibian and Reptile Atlas](#) reveal there are probably more of them. Vernal pools are small wetlands in forests (forested vernal pools are often called woodland pools) that hold water for only part of the year, when they serve as important breeding habitat for a group of forest salamanders. They are usually isolated from surface water flows and unprotected by state or federal programs, however, local governments can fill the gap. Consider identifying these features in a town natural resource inventory or during environmental review. To learn more about vernal pool conservation, visit the [woodland pool conservation](#) page on the NYSDEC website.

Shrubland (not mapped)

The presence of shrubland-dependent birds and New England Cottontail indicate that Ancram has important shrubland habitat. In eastern Ancram, there are two records of the New England Cottontail, which is a [candidate for listing under the federal Endangered Species Act](#) and a NYS Species of Special Concern. New England Cottontails live in young, shrubby forest and look similar to the common Eastern cottontail. Another indication of important shrubland is that seven shrubland bird species of conservation concern were found in the Breeding Bird Atlas blocks in the town (Table 2).

Grasslands (not mapped)

We know that grassland, or meadow habitat, is also significant in town from several sources: the Farmscape Ecology Program, the Ancram habitat map, and the NYS Breeding Bird Atlas. Table 2 shows six grassland bird species of conservation concern in the state that are known to breed in Ancram. This is not uncommon for a Hudson Valley town with active farmland. Grassland breeding birds respond to vegetation structure rather than the mix of grass species, so hayfields dominated by non-native plants can provide suitable habitat for species of conservation concern as long as they are managed appropriately.

Last year, Farmscape Ecology Program biologists documented a little bluestem meadow in the south-west corner of the Town of Ancram. Little bluestem tends to occur in meadows on shallow soils, usually on hillsides (and is sometimes accompanied by other unusual plants). The biologists found the regionally-rare cobweb

skipper and county-rare Indian skipper. Both are native grassland butterflies whose caterpillars feed only on little bluestem.

Historic Records

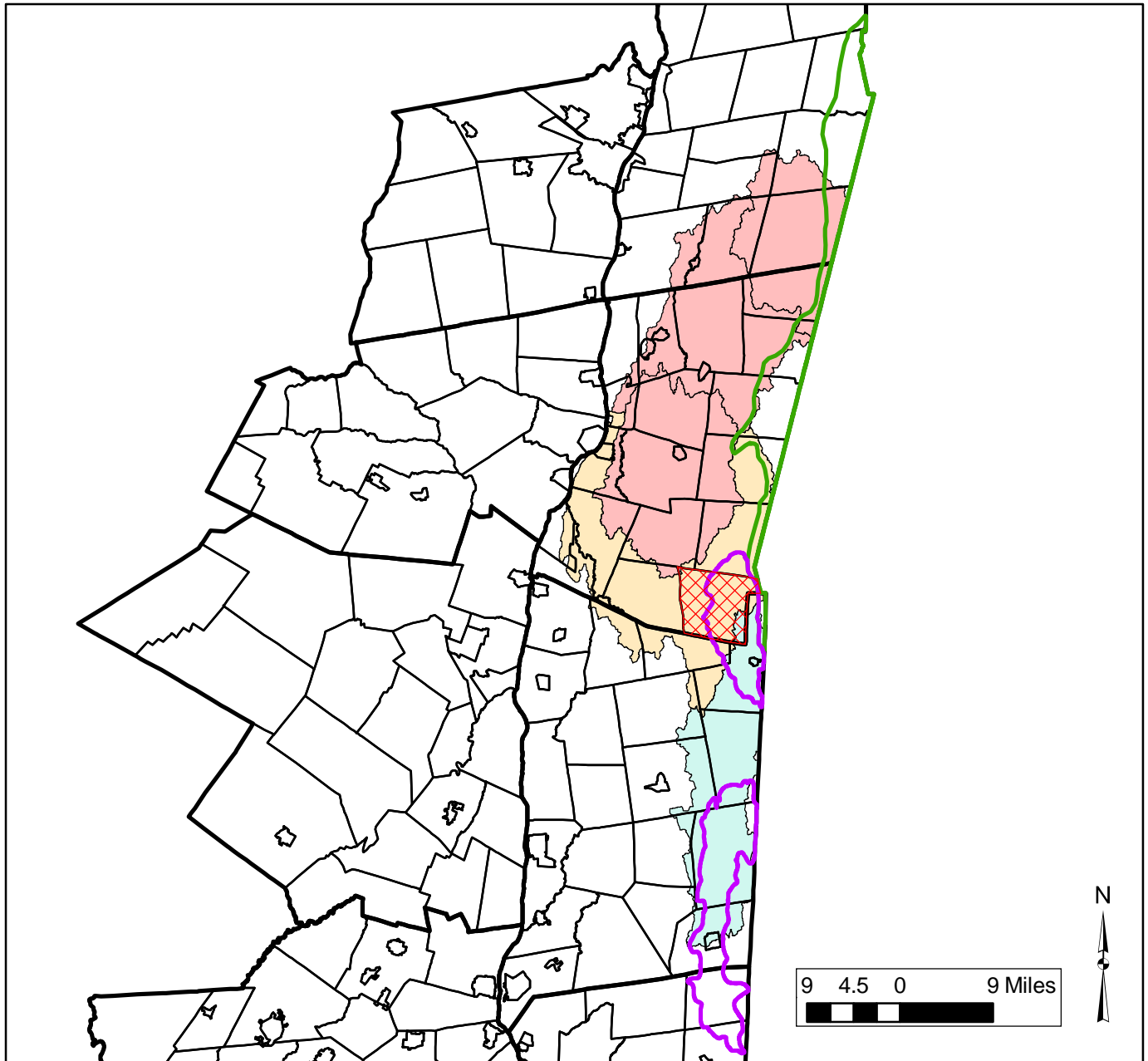
Historic records are reports of species of state-wide conservation concern that were present in the past, but haven't been found at the respective locations in recent years. It is useful to be aware of these lost populations, because they make efforts to safeguard extant species of conservation concern all the more important. The sites are already known to be lost to the town. The NY endangered awned sedge (1936) was found in a pond south of Miller Pond. The handsome sedge (state threatened) was found near the Ancram Lead Mine, now Ancramdale. And an Indiana bat (federally endangered) hibernaculum was known from a limestone cave near the border with the Town of Northeast (1939).

Approximately 50 additional plant species of now regional or County-wide conservation concern had been documented by McVaugh in Ancram in the 1930s, mostly in the calcium-rich wetlands and in the Taconics. That list can be requested from FEP, who is continuing inventories to determine which of these species are still present in the town.









Habitat Mapping by Ancram residents

Representatives from the Town of Ancram took Biodiversity Assessment Training in 2001-2002. They produced a map of ecologically significant habitats using the process outlined by the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* (Kiviat and Stevens 2001). The map they produced is complementary to the information provided in this summary, and includes some areas of town for which this summary has no information. If you need help understanding how they relate, feel free to contact Karen Strong.

Figure 1: Landscape context of the Town of Ancram



Legend

-  Town of Ancram
-  Greater Stockport Creek watershed
-  Roeliff-Jansen Kill watershed
-  Ten Mile River watershed
- Significant biodiversity areas**
-  Harlem Valley Calcareous Wetlands
-  Taconic Mountains
-  Municipal Boundaries
-  County Boundaries

This map shows the location of the Town of Ancram, Columbia County in relation to its watersheds and other major natural areas. This map was produced as part of a Habitat Summary for the Town. For more information, please contact NYSDEC's Hudson River Estuary Biodiversity Outreach Coordinator Karen Strong at (518) 402-8942.

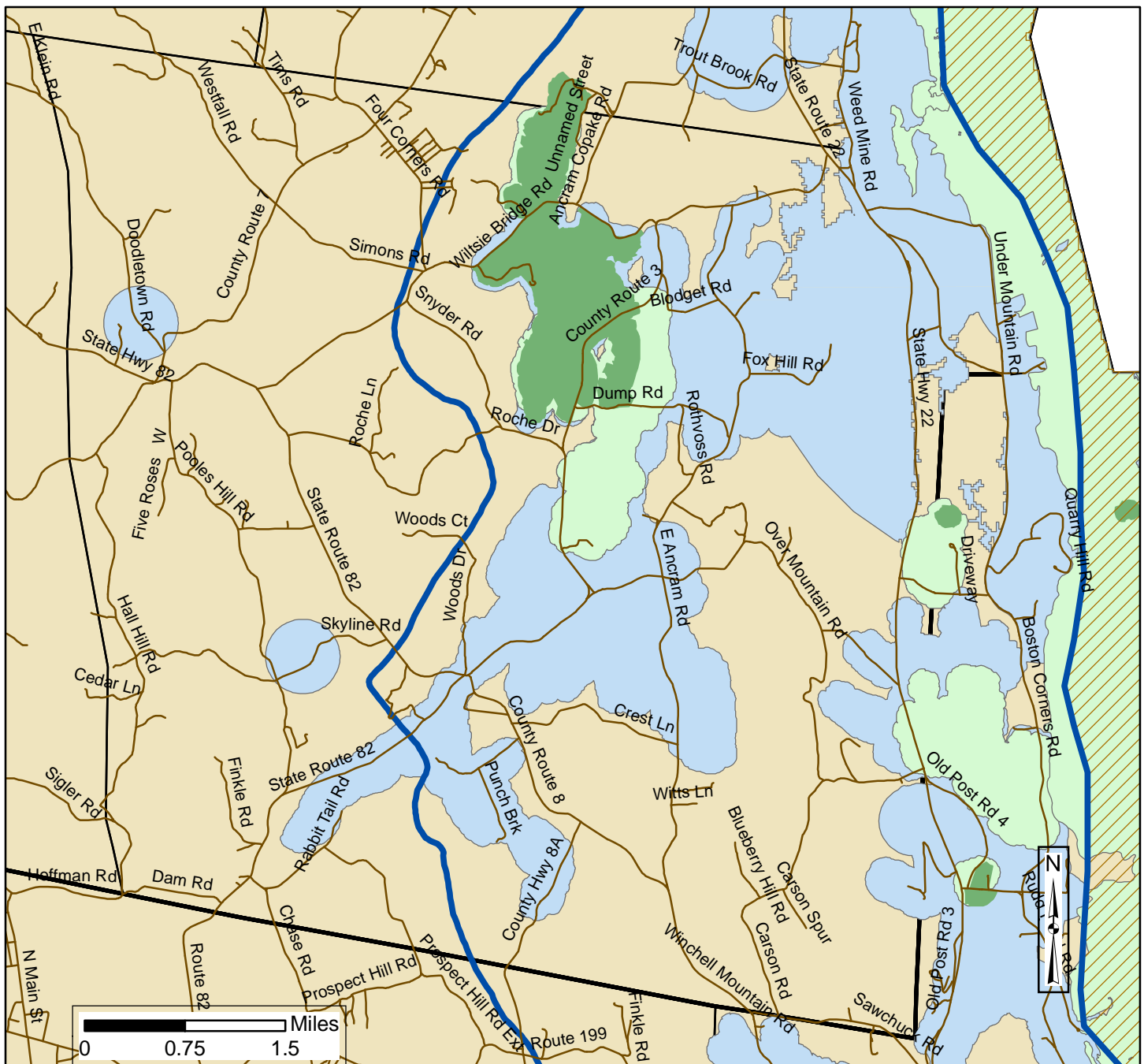
Data Sources:

US Geological Survey
 New York State Department of Environmental Conservation
 National Resources Conservation Service
 New York State Office of Cyber Security and Critical Infrastructure Coordination









Map Created 20 June 2011



Figure 2: Major Natural Features in the Town of Ancram, Columbia County, NY



Legend

-  Harlem Valley Calcareous Wetlands
-  Taconic Mountains
-  Areas important for significant ecosystems
-  Areas important for rare plants
-  Areas important for rare animals
-  Municipal Boundaries
-  County Boundaries
-  Roads

This map shows the most significant *known* natural features in the Town of Ancram, Columbia County based on currently available information. This map was produced as part of a Habitat Summary for the Town. For more information, please contact NYSDEC's Hudson River Estuary Biodiversity Outreach Coordinator Karen Strong at (518) 402-8942.

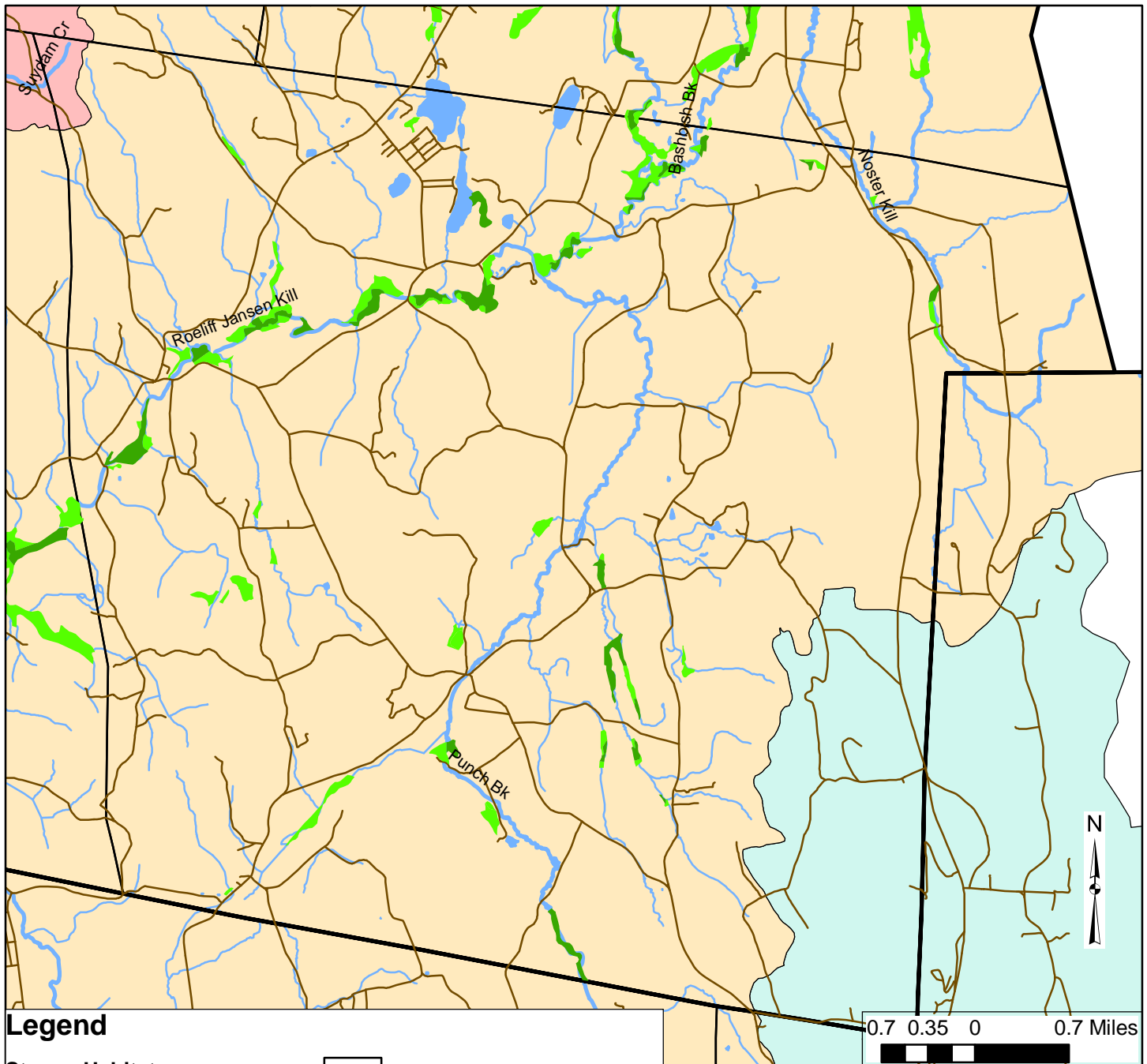
Data Sources:

New York State Department of Environmental Conservation
New York Natural Heritage Program
New York State Geological Survey
NYS Department of Transportation

Map Created 30 June 2011



Figure 3: Streams and Watersheds in the Town of Ancram, Columbia County, NY



Legend

Stream Habitat

— Coldwater

— Warmwater

■ "Ancient" floodplain forest

■ Reforested Floodplain

— Roads

□ Municipal Boundaries

□ County Boundaries

□ Roeliff-Jansen Kill watershed

□ Ten Mile River watershed

□ Stockport Creek watershed

This map shows streams, waterbodies, and watersheds, floodplain forests and aquatic habitat data for the Town of Ancram, Columbia County. This map was produced as part of a Habitat Summary for the Town. For more information, please contact NYSDEC's Hudson River Estuary Biodiversity Outreach Coordinator Karen Strong at (518) 402-8942.

Data Sources:

US Geological Survey

New York State Department of Environmental Conservation

National Resources Conservation Service

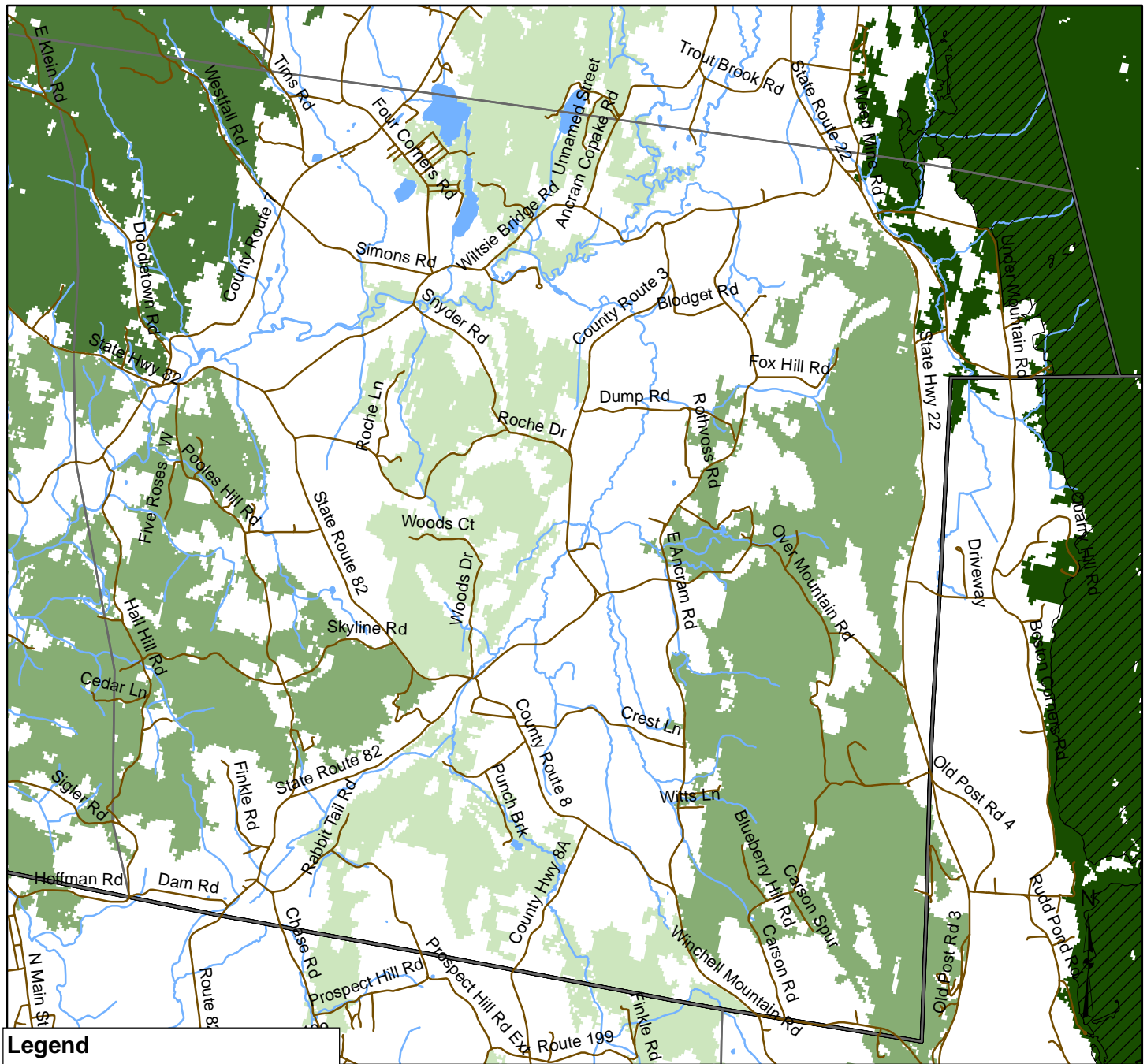
Hawthorne Valley Association Farmscape Ecology Program

New York State Office of Cyber Security and Critical Infrastructure Coordination

Map Created 20 June 2011



Figure 4: Large Forests (200 acres and larger) in the
Town of Ancram, Columbia County, NY



Legend

- Roads
- Municipal Boundaries
- County Boundaries
- Significant forest types
- Streams

Forest Patch Size (acres)

acres

- 200 - 1999: Stepping Stone
- 2000 - 4999: Locally Significant
- 5000 - 14999: Regionally Significant
- 15000+: Globally Significant
- Waterbodies

0 0.9 1.8 Miles

This map shows continuous forested patches of New York State by acreage for the Town of Ancram, Columbia County. It was created using land cover data developed for the Coastal Change Analysis Program to identify forest cover and buffered roads were used to identify forest patches. This map was produced as part of a habitat summary for the town. For more information, please contact NYSDEC's Hudson River Estuary Biodiversity Outreach Coordinator Karen Strong at (518) 402-8942.

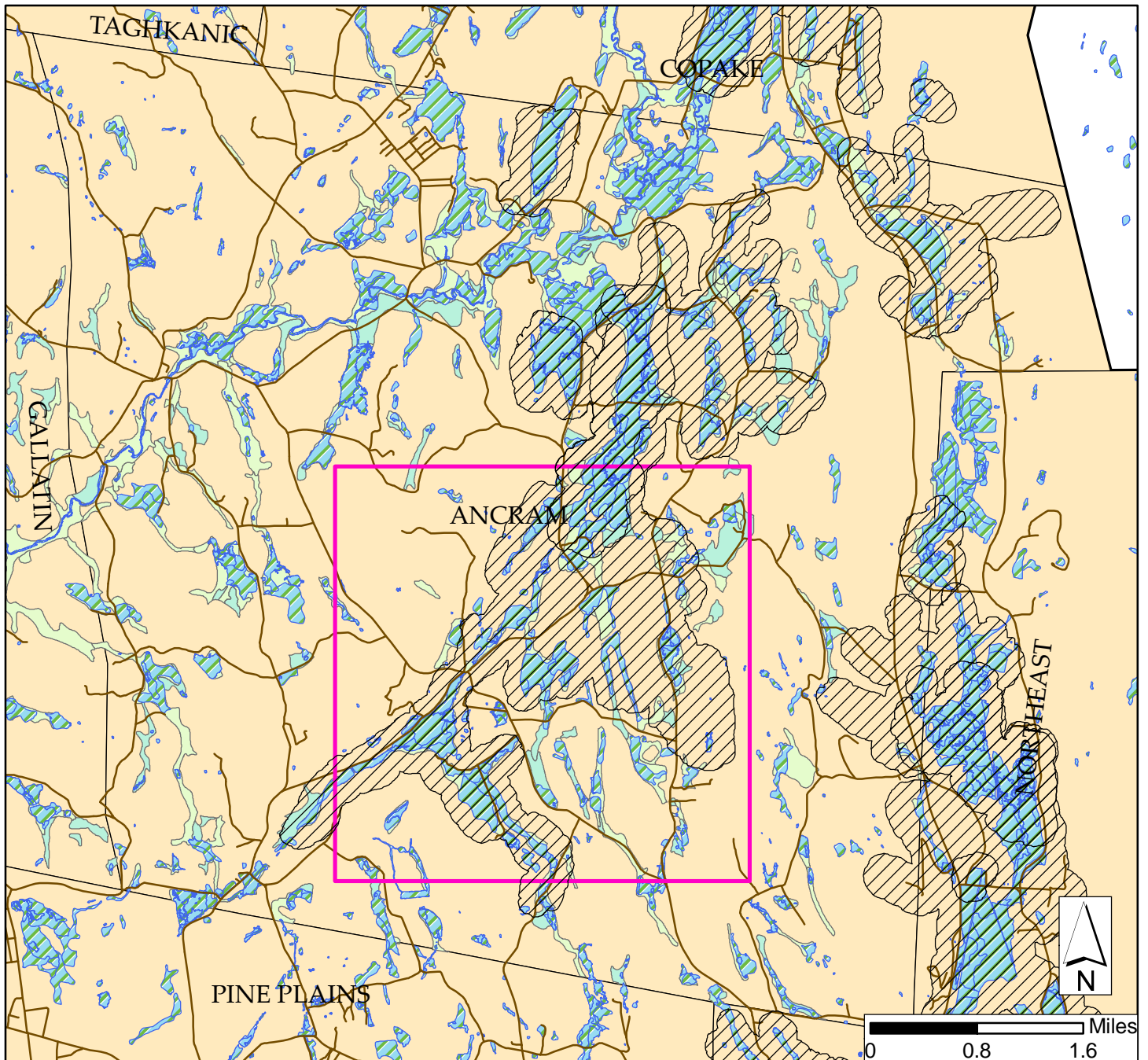
Data Sources: NOAA 2006 Coastal Change Analysis Program
New York State Department of Environmental Conservation
New York State Office of Cyber Security and Critical Infrastructure Coordination

Map Created 4 October 2011



Cornell University

Figure 5: Wetlands in the Town of Ancram, Columbia County, NY



Legend

-  Significant wetland habitats
-  Least Bittern
-  Roads
-  Wetlands (National Wetland Inventory)
-  Columbia County Possible wetland
-  Columbia County Probable wetland
-  Municipal Boundaries
-  County Boundaries

This map shows wetlands for the Town of Ancram, Columbia County, NY. Probable and possible wetlands were identified by drainage class on the Columbia County Soil Survey. See the habitat summary text for details. This map was produced as part of a Habitat Summary for the Town. For more information, please contact NYSDEC's Hudson River Estuary Biodiversity Outreach Coordinator Karen Strong at (518) 402-8942.

Data Sources: NYS Geological Survey
Columbia County Soil and Water Conservation District
New York State Department of Environmental Conservation
NYS Department of Transportation

Map Created 5 August 2011



Species and Ecosystems of Conservation Concern

Table 1. Plants, Animals and Ecosystems by Major Natural Area in the Town of Ancram. This information comes from the [New York Natural Heritage Program](#) biodiversity databases (NYNHP), the [NY Amphibian and Reptile Atlas](#) (NYARA), and the Farmscape Ecology Program at Hawthorne Valley Farm (FEP). Data from the NY Natural Heritage Program here is publically available from the [New York Nature Explorer](#). More information can be found at <http://guides.nynhp.org>. Other species have been reported from Ancram in the NY Amphibian and Reptile Atlas, but only those that indicate high quality habitat are included.

| Common Name | Description | Scientific Name | Stream-associated Species | Source |
|---|--|--|---------------------------|--------------|
| Harlem Valley Calcareous Wetlands Plants, Animals, and Ecosystems | | | | |
| Bog turtle ^{1,5,7} | Rare animal | <i>Glyptemys muhlenbergii</i> | | NYNHP, NYARA |
| Calcareous talus slope woodland | Rare ecosystem | | | FEP |
| Culver's root ⁴ | Rare plant | <i>Veronicastrum virginicum</i> | | FEP |
| Four-toed salamander ¹ | Salamander species of concern | <i>Hemidactylium scutatum</i> | | FEP |
| Handsome sedge ⁴ | Rare plant | <i>Carex formosa</i> | | NYNHP |
| Limestone woodland | Rare ecosystem | | | FEP |
| Marsh valerian ⁵ | Rare plant | <i>Valeriana uglinsosa</i> | | NYNHP |
| Marsh fern moth ¹ | Rare animal | <i>Fagitana littera</i> | | NYNHP |
| Red maple-tamarack peat swamp | Rare ecosystem | | | NYNHP |
| Rich graminoid fen | Rare ecosystem | | | NYNHP |
| Rich shrub fen | Rare ecosystem | | | NYNHP |
| Shallow emergent marsh | High quality common ecosystem | | | NYNHP |
| Spotted salamander | Vernal pool indicator | <i>Ambystoma maculatum</i> | | NYARA |
| Spotted turtle ^{1,2} | Turtle species of concern | <i>Clemmys guttata</i> | Y | NYARA |
| Swamp birch ⁴ | Rare plant | <i>Betula pumila</i> | | NYNHP, FEP |
| Timber rattlesnake ^{1,4} | Rare animal | <i>Crotalus horridus</i> | | NYNHP, NYARA |
| Upland boneset | Regionally rare calcicole, on NYNHP review list. | <i>Eupatorium sessilifolium</i> var. <i>brittonianum</i> | | FEP |
| Taconic Ridge Plants, Animals, and Ecosystems | | | | |
| Appalachian oak- hickory forest | High quality common ecosystem | | | NYNHP |
| Chestnut-oak forest | High quality common ecosystem | | | NYNHP |
| Hemlock-northern hardwood forest | High quality common ecosystem | | | NYNHP |
| Maple-basswood mesic forest | High quality common ecosystem | | | NYNHP |
| Timber rattlesnake ^{1,4} | Rare animal | <i>Crotalus horridus</i> | | NYNHP, NYARA |
| Wild pink ³ | Rare plant | <i>Silene caroliniana</i> spp. <i>pennsylvanica</i> | | NYNHP |
| Plants, Animals, and Ecosystems in other Areas | | | | |
| Davis' sedge ⁴ | Rare plant | <i>Carex davisii</i> | Y | FEP |
| New England cottontail ^{1,6} | Rare animal | <i>Sylvilagus transitionalis</i> | | NYNHP |
| Nodding trillium | Potentially rare plant, on NYNHP review list. | <i>Trillium cernuum</i> | Y | FEP |
| Spotted turtle ^{1,2} | Turtle species of concern | <i>Clemmys guttata</i> | Y | NYARA |
| Historic Records | | | | |
| Handsome sedge ⁴ | Rare plant | <i>Carex formosa</i> | | NYNHP |

| | | | | |
|---|-------------|---------------------------|--|-------|
| Indiana bat ^{1,8} | Rare animal | <i>Myotis sodalis</i> | | NYNHP |
| Marsh valerian ⁵ | Rare plant | <i>Valeriana uglinosa</i> | | NYNHP |

¹NYS Species of Greatest Conservation Need (SGCN)

²NYS Species of Special Concern

³NYS Vulnerable Species

⁴NYS Threatened Species

⁵NYS Endangered Species

⁶Candidate for Federal Endangered Species Listing

⁷Federally Threatened Species

⁸Federally Endangered Species

Table 2. Known Significant Birds of the Town of Ancram. Data from New York Breeding Bird Atlas 2000 [[Internet](#)]. 2000 - 2005. Release 1.0. Albany (New York): New York State Department of Environmental Conservation. [updated 2007 Jun 11; cited 2011 June 16]. Conservation Priority, habitat type, and links from [Audubon NY](#) (2009)UH Data are from blocks that are more than 50% in Ancram, Shown here is a subset of that list, we selected birds identified as a “special conservation responsibility” for the Hudson Valley by Audubon NY.

| Common Name | Scientific Name | Stream-Associated Species ¹ | More information from... |
|------------------------------|----------------------------------|--|--------------------------|
| Forest Birds | | | |
| Baltimore Oriole | <i>Icterus galbula</i> | | |
| Black-and-white Warbler | <i>Mniotilta varia</i> | | Audubon |
| Black-billed Cuckoo* | <i>Coccyzus erythrophthalmus</i> | | Audubon |
| Black-throated Blue Warbler* | <i>Dendroica caerulescens</i> | | Audubon |
| Broad-winged Hawk | <i>Buteo platypterus</i> | | Audubon |
| Cooper’s Hawk** | <i>Accipiter cooperii</i> | | Audubon |
| Downy Woodpecker | <i>Picoides pubescens</i> | | Audubon |
| Eastern Wood-Pewee | <i>Contopus virens</i> | | Audubon |
| Louisiana Waterthrush* | <i>Seiurus motacilla</i> | Y | Audubon |
| Northern Flicker | <i>Colaptes auratus</i> | | Audubon |
| Rose-breasted Grosbeak | <i>Pheucticus ludovicianus</i> | | Audubon |
| Ruffed Grouse* | <i>Bonasa umbellus</i> | | Audubon |
| Scarlet Tanager* | <i>Piranga olivacea</i> | | Audubon |
| Sharp-shinned Hawk** | <i>Accipter striatus</i> | | Audubon |
| Veery | <i>Catharus fuscescens</i> | | Audubon |
| Wood Thrush* | <i>Hylocichla mustelina</i> | | Audubon |
| Worm-eating warbler* | <i>Helmitheros vermivorum</i> | | Audubon |
| Yellow-throated Vireo | <i>Vireo flavifrons</i> | Y | Audubon |
| Grassland Birds | | | |
| American Kestrel | <i>Falco sparverius</i> | | Audubon |
| Bobolink* | <i>Dolichonyx oryzivorus</i> | | Audubon |
| Eastern Kingbird | <i>Tyrannus tyrannus</i> | | Audubon |
| Eastern Meadowlark* | <i>Sturnella magna</i> | | Audubon |
| Grasshopper Sparrow** | <i>Ammodramus savannarum</i> | | Audubon |
| Savannah Sparrow | <i>Passerculus sandwichensis</i> | | Audubon |
| Shrubland Birds | | | |
| Blue-Winged Warbler* | <i>Vermivora pinus</i> | | Audubon |
| Brown Thrasher* | <i>Toxostoma rufum</i> | | Audubon |
| Eastern Towhee | <i>Pipilo erythrophthalmus</i> | | Audubon |
| Field Sparrow | <i>Spizella pusilla</i> | | Audubon |
| Indigo Bunting | <i>Passerina cyanea</i> | | Audubon |
| Prairie Warbler* | <i>Dendroica discolor</i> | | Audubon |

| Common Name | Scientific Name | Stream-Associated Species ¹ | More information from... |
|-------------------------|------------------------------|--|---|
| Willow Flycatcher* | <i>Empidonax traillii</i> | Y | Audubon |
| Wetland Birds | | | |
| Least Bittern*** | <i>Ixobrychus exilis</i> | | Audubon , DEC |
| Marsh Wren | <i>Cistothorus palustris</i> | | Audubon |
| Birds of Other Habitats | | | |
| Belted Kingfisher | <i>Megaceryle alcyon</i> | Y | Audubon |
| Osprey** | <i>Pandion haliaetus</i> | Y | Audubon |
| Chimney Swift | <i>Chaetura pelagica</i> | | |

* denotes [NYS Species of Greatest Conservation Need](#) (SGCN)

** denotes [NYS Species of Special Concern](#) and SGCN

*** denotes [NYS Threatened Species](#) and SGCN

¹based on HRV-GAP species models. Smith et al. 2001.

Table 3. Plants of conservation concern in the Hudson Valley or Columbia County. Documented in Ancram by the Farmscape Ecology Program since 2003 (these observations are not based on an exhaustive Town-wide inventory and more rare species will likely be added with additional fieldwork).

| Common Name | Habitat in Summary | Scientific Name | State Status ¹ | Regionally Status ² | County Status ³ |
|---|--|--|---------------------------|--------------------------------|----------------------------|
| alderleaf buckthorn | calcium-rich wetlands | <i>Rhamnus alnifolia</i> | S4 | R | CCu |
| American woollyfruit sedge | calcium-rich wetlands | <i>Carex lasiocarpa</i> ssp. <i>americana</i> | S5 | | CCr |
| bloodroot | streams, calcium-rich uplands | <i>Sanguinaria canadensis</i> | S4 | | CCu |
| blue cohosh, squaw-root, papoose-root | streams, calcium-rich uplands, forests | <i>Caulophyllum thalictroides</i> | S5 | S | CCu |
| bog bedstraw | calcium-rich wetlands | <i>Galium labradoricum</i> | S4 | | CCu |
| bog goldenrod | calcium-rich wetlands | <i>Solidago uliginosa</i> | S3S4 | | CCr |
| Canada lily, yellow Canada lily | streams, calcium-rich uplands | <i>Lilium canadense</i> ssp. <i>canadense</i> | S5 | S | CCu |
| Canada moonseed | forests | <i>Menispermum canadense</i> | S5 | S | CCu |
| cardinal flower | streams | <i>Lobelia cardinalis</i> | S4S5 | | CCu |
| climbing hempweed | calcium-rich wetlands | <i>Mikania scandens</i> | S4 | S | CCu |
| common Solomon's-seal, giant Solomon's seal | streams, calcium-rich uplands | <i>Polygonatum biflorum</i> (= <i>Polygonatum commutatum</i>) | S5 | S | CCu |
| cutleaf coneflower | streams | <i>Rudbeckia laciniata</i> var. <i>laciniata</i> | S5 | S | CCu |
| downy false-foxglove | calcium-rich uplands | <i>Aureolaria virginica</i> | S5 | | CCr |
| dwarf juniper | calcium-rich uplands | <i>Juniperus communis</i> var. <i>depressa</i> | S4 | | CCu |
| eastern leatherwood | calcium-rich uplands | <i>Dirca palustris</i> | S5 | R | CCu |
| eastern white water-crowfoot | wetlands | <i>Ranunculus longirostris</i> | S5 | | CCr |
| four-leaved milkweed, whorled milkweed | calcium-rich uplands | <i>Asclepias quadrifolia</i> | S5 | R? | CCu |
| glade fern | calcium-rich uplands | <i>Diplazium pycnocarpon</i> (= <i>Athyrium pycnocarpon</i>) | S4 | | CCr |
| Goldie's woodfern | calcium-rich uplands | <i>Dryopteris goldiana</i> | S4 | | CCr |
| grass-of-Parnassus | calcium-rich wetlands | <i>Parnassia glauca</i> | S4 | S | CCr |
| green dragon | streams | <i>Arisaema dracontium</i> | S4 | R | CCr |
| hairy rock-cress, creamflower rockcress | calcium-rich uplands | <i>Arabis hirsuta</i> var. <i>pycnocarpa</i> | S5? | S | CCu |
| halberd-leaf tearthumb, tear-thumb | wetlands | <i>Persicaria arifolia</i> (= <i>Polygonum arifolium</i>) | S5 | S | CCu |

| Common Name | Habitat in Summary | Scientific Name | State Status ¹ | Regionally Status ² | County Status ³ |
|--|--|---|---------------------------|--------------------------------|----------------------------|
| hard-stemmed bulrush | calcium-rich wetlands | <i>Schoenoplectus acutus</i> var. <i>acutus</i> (= <i>Scirpus acutus</i>) | S5 | | CCr |
| limber honeysuckle | calcium-rich uplands | <i>Lonicera dioica</i> var. <i>dioica</i> | S5 | S? | CCu |
| longleaf ground-cherry | grasslands | <i>Physalis longifolia</i> var. <i>subglabrata</i> | S4 | | CCu |
| maidenhair spleenwort | calcium-rich uplands | <i>Asplenium trichomanes</i> ssp. <i>trichomanes</i> | S4? | | CCu |
| marsh mermaidweed | calcium-rich wetlands | <i>Proserpinaca palustris</i> var. <i>crebra</i> | S4 | | CCu |
| May-apple, Indian-apple, wild-mandrake | calcium-rich uplands | <i>Podophyllum peltatum</i> | S5 | S | CCu |
| New Jersey tea | calcium-rich uplands | <i>Ceanothus americanus</i> | S5 | R | CCu |
| northern maidenhair-fern | calcium-rich uplands | <i>Adiantum pedatum</i> | S4 | | CCu |
| oblong-leaf serviceberry | calcium-rich wetlands | <i>Amelanchier canadensis</i> | S5 | | CCr |
| pale beardtongue | calcium-rich uplands | <i>Penstemon pallidus</i> | S5 | | CCr |
| pale jewel-weed | streams, calcium-rich uplands | <i>Impatiens pallida</i> | S4 | | CCu |
| poison sumac | calcium-rich wetlands | <i>Toxicodendron vernix</i> | S4 | | CCu |
| prostrate tick-trefoil | calcium-rich uplands | <i>Desmodium rotundifolium</i> | S4 | | CCu |
| roundleaf dogwood | calcium-rich uplands | <i>Cornus rugosa</i> | S5 | R? | CCu |
| sage willow, hoary willow | calcium-rich wetlands | <i>Salix candida</i> | S5 | S | CCu |
| showy goldenrod | calcium-rich uplands | <i>Solidago speciosa</i> var. <i>speciosa</i> | S4 | | CCr |
| shrubby cinquefoil | calcium-rich wetlands and uplands | <i>Dasiphora fruticosa</i> ssp. <i>floribunda</i> (<i>Potentilla fruticosa</i>) | S4 | | CCu |
| silky willow | calcium-rich wetlands | <i>Salix sericea</i> | S5 | S | CCu |
| silvery spleenwort | calcium-rich uplands | <i>Deparia acrostichoides</i> (= <i>Athyrium thelypteroides</i>) | S5 | R | CCr |
| smooth gooseberry | calcium-rich wetlands | <i>Ribes hirtellum</i> | S5 | S | CCu |
| swamp dock, water dock | calcium-rich wetlands | <i>Rumex verticillatus</i> | S5 | | CCr |
| tamarack, American larch | calcium-rich wetlands | <i>Larix laricina</i> | S5 | S | CCu |
| Virginia bugleweed | streams | <i>Lycopus virginicus</i> | S4 | | CCu |
| Virginia springbeauty, eastern spring beauty | streams | <i>Claytonia virginica</i> var. <i>virginica</i> | S5 | S? | CCu |
| walking-fern spleenwort | calcium-rich uplands | <i>Asplenium rhizophyllum</i> | S4S5 | S | CCu |
| water loosestrife | calcium-rich wetlands | <i>Lysimachia thyrsiflora</i> | S4 | | CCu |
| winged loosestrife | calcium-rich wetlands | <i>Lythrum alatum</i> | S5 | | CCr |
| alderleaf buckthorn | calcium-rich wetlands | <i>Rhamnus alnifolia</i> | S4 | R | CCu |
| American woollyfruit sedge | calcium-rich wetlands | <i>Carex lasiocarpa</i> ssp. <i>americana</i> | S5 | | CCr |
| bloodroot | streams, calcium-rich uplands | <i>Sanguinaria canadensis</i> | S4 | | CCu |
| blue cohosh, squaw-root, papoose-root | streams, calcium-rich uplands, forests | <i>Caulophyllum thalictroides</i> | S5 | S | CCu |
| bog bedstraw | calcium-rich wetlands | <i>Galium labradoricum</i> | S4 | | CCu |

¹ S1=extremely rare in NYS, S2=very rare in NYS, S3=rare to uncommon in NYS, S4=common in NYS, S5=very common in NYS, as determined by the NY Natural Heritage Program www.nynhp.org

² R=rare in Hudson Valley, S=scarce in Hudson Valley, as determined in Kiviat and Stevens (2001)

³ CCr=rare in Columbia County, CCu=uncommon in Columbia County, determined by FEP as of July 2011, subject to change as fieldwork continues

Table 4. County-rare Butterflies and Odonates in Ancram. Documented by FEP from Ancram since 2003 (these observations are not the result of an exhaustive Town-wide survey, more fieldwork will certainly document additional rare species). Status as of July 2011.

| Common Name | Habitat in Summary | Scientific Name | County Status ¹ | Larval habitat/food | Description |
|---------------------------|-----------------------|-----------------------------------|----------------------------|----------------------------------|-------------|
| ashy clubtail | streams | <i>Gomphus lividus</i> | rare | Running-water | Dragonfly |
| black-shouldered spinyleg | streams | <i>Dromogomphus spinosa</i> | rare | Running-water | Dragonfly |
| black-tipped darner | grasslands | <i>Aeshna tubiculifera</i> | rare | Still-water | Dragonfly |
| dusky clubtail | streams | <i>Gomphus spicatus</i> | rare | Still-water | Dragonfly |
| Fritillary, Meadow | grasslands | <i>Boloria bellona</i> | common, but declining | violets | Butterfly |
| harpoon clubtail | streams | <i>Gomphus descriptus</i> | rare | Running-water | Dragonfly |
| Harvester | calcium-rich wetlands | <i>Feniseca tarquinius</i> | rare | alder aphids | Butterfly |
| lance-tipped darner | grasslands | <i>Aeshna constricta</i> | rare | Still-water | Dragonfly |
| lilypad clubtail | calcium-rich wetlands | <i>Arigomphus furcifer</i> | rare | Both still- and running-water | Dragonfly |
| river jewelwing | streams | <i>Calopteryx aequabilis</i> | rare | Running-water | Damselfly |
| rusty snaketail | streams | <i>Ophiogomphus rupensulensis</i> | rare | Running-water | Dragonfly |
| shadow darner | wetlands | <i>Aeshna umbrosa</i> | rare | Still-water | Dragonfly |
| Skipper, Cobweb | grasslands | <i>Hesperia metea</i> | rare | bluestem | Butterfly |
| Skipper, Indian | grasslands | <i>Hesperia sassacus</i> | rare | grasses, inc. bluestem | Butterfly |
| Swallowtail, Black | grasslands | <i>Papilio polyxenes</i> | common, but declining | parsley, carrot and other umbels | Butterfly |
| zebra clubtail | streams | <i>Stylurus scudderi</i> | rare | Running-water | Dragonfly |
| ashy clubtail | streams | <i>Gomphus lividus</i> | rare | Running-water | Dragonfly |
| black-shouldered spinyleg | streams | <i>Dromogomphus spinosa</i> | rare | Running-water | Dragonfly |

¹Assessment as of July 2011 based on field work and historic and current regional literature

General Conservation Measures for Protecting Natural Areas and Wildlife



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- **Protect large, contiguous, unaltered tracts** wherever possible.
- **Preserve links** between natural habitats on adjacent properties.
- **Preserve natural disturbance processes**, such as fires, floods, tidal flushing, seasonal drawdowns, landslides, and wind exposures wherever possible. Discourage development that would interfere with these processes.
- **Restore and maintain broad buffer zones** of natural vegetation along streams, along shores of other water bodies and wetlands, and at the perimeter of other sensitive habitats.
- In general, **encourage development of altered land** instead of unaltered land wherever possible.
- **Promote redevelopment of brownfields**, other post-industrial sites, and other previously-altered sites (such as mined lands), “infill” development, and “adaptive re-use” of existing structures wherever possible, instead of breaking new ground in unaltered areas.
- **Encourage pedestrian-centered developments** that enhance existing neighborhoods, instead of isolated developments requiring new roads or expanded vehicle use.
- **Concentrate development along existing roads**; discourage construction of new roads in undeveloped areas. Promote clustered development wherever appropriate, to maximize extent of unaltered land.
- **Direct human uses toward the least sensitive areas**, and minimize alteration of natural features, including vegetation, soils, bedrock, and waterways.
- **Preserve farmland potential** wherever possible.
- **Minimize area of impervious surfaces** (roads, parking lots, sidewalks, driveways, roof surfaces) and maximize onsite runoff retention and infiltration to help protect groundwater recharge, and surface water quality and flows.
- **Restore degraded habitats wherever possible**, but do not use restoration projects as a “license” to destroy existing habitats.

Source: Kiviat, E. & G. Stevens. 2001. Biodiversity Assessment Manual for the Hudson River Estuary Corridor. NYS Department of Environmental Conservation, Albany, NY.

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