



Department of  
Environmental  
Conservation

# Habitats and Wildlife in the Town of Hunter



**Ingrid Haeckel**, *Conservation & Land Use Specialist*  
Hudson River Estuary Program/Cornell University

July 25, 2017



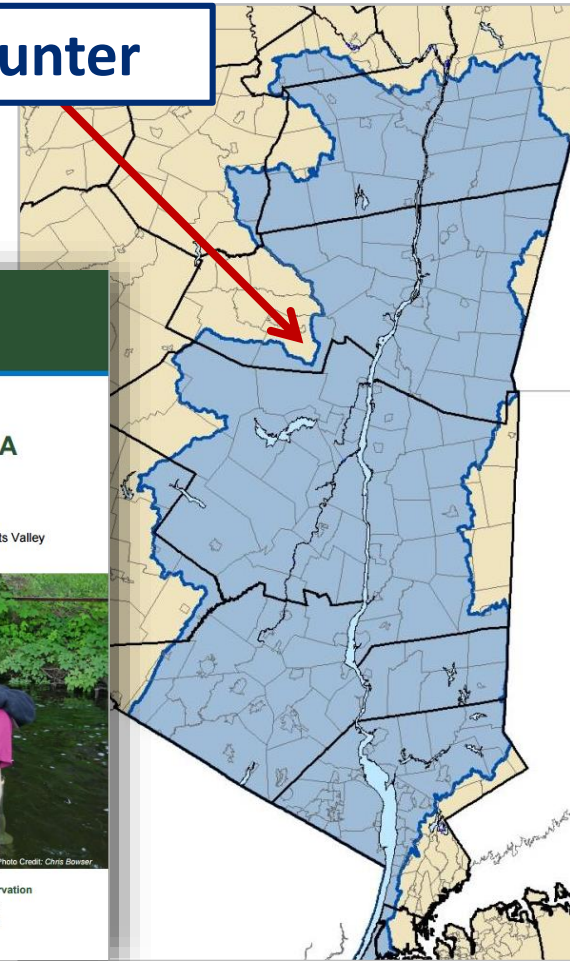
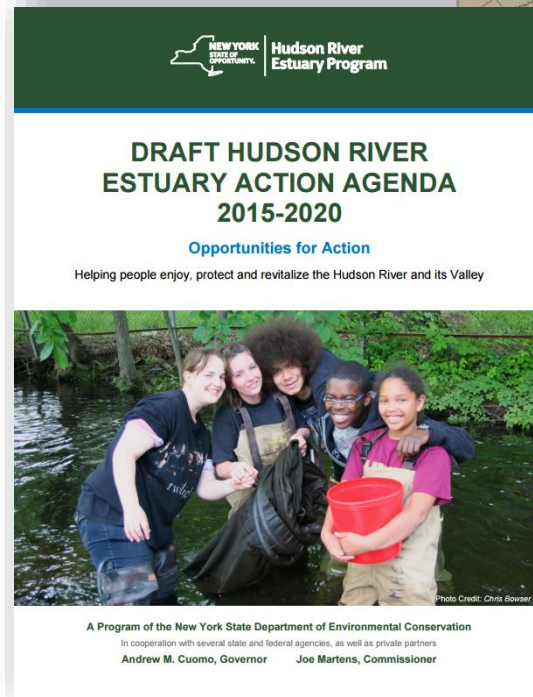
Cornell University

# Hudson River Estuary Program

## Working to achieve key benefits:

- clean water
- resilient communities
- vital estuary ecosystem
- fish, wildlife, and habitat
- natural scenery
- education, access, recreation, and inspiration

Hunter



# What's at stake if we don't plan proactively to conserve important natural areas?



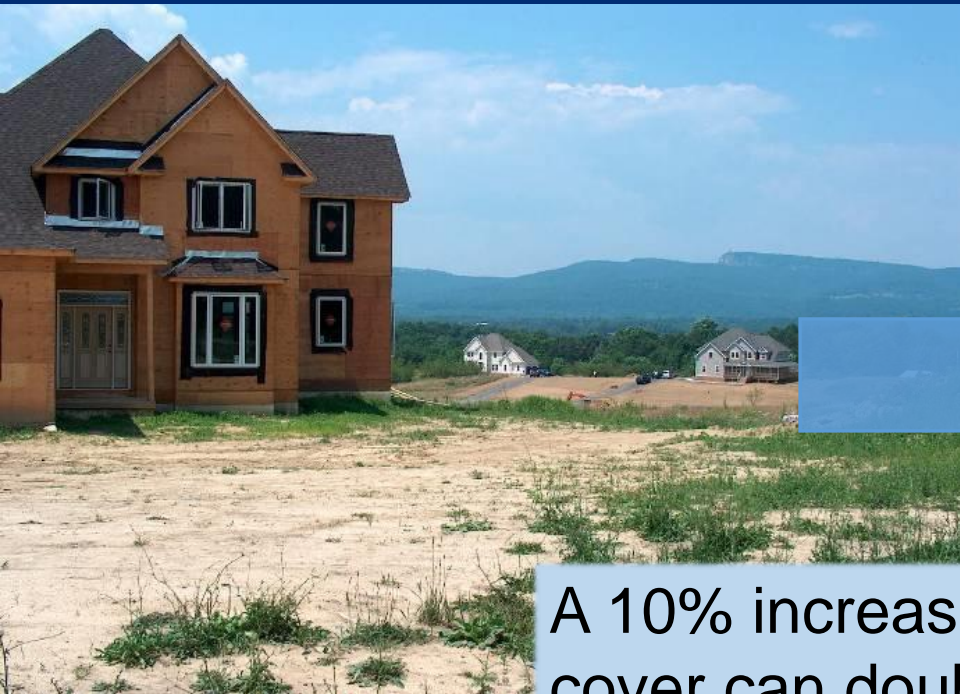
**natural areas**

- water quality and quantity
- flood control
- temperature moderation
- carbon storage
- clean air
- human health
- recreation and education
- scenery
- fisheries and forest products
- natural pollinators



→ **“ecosystem services”**

# Ecosystem Benefits: FLOOD CONTROL



A 10% increase in impervious cover can double runoff and increase flood risk by 28%

*(United States EPA)*



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# Ecosystem Benefits: CLEAN WATER

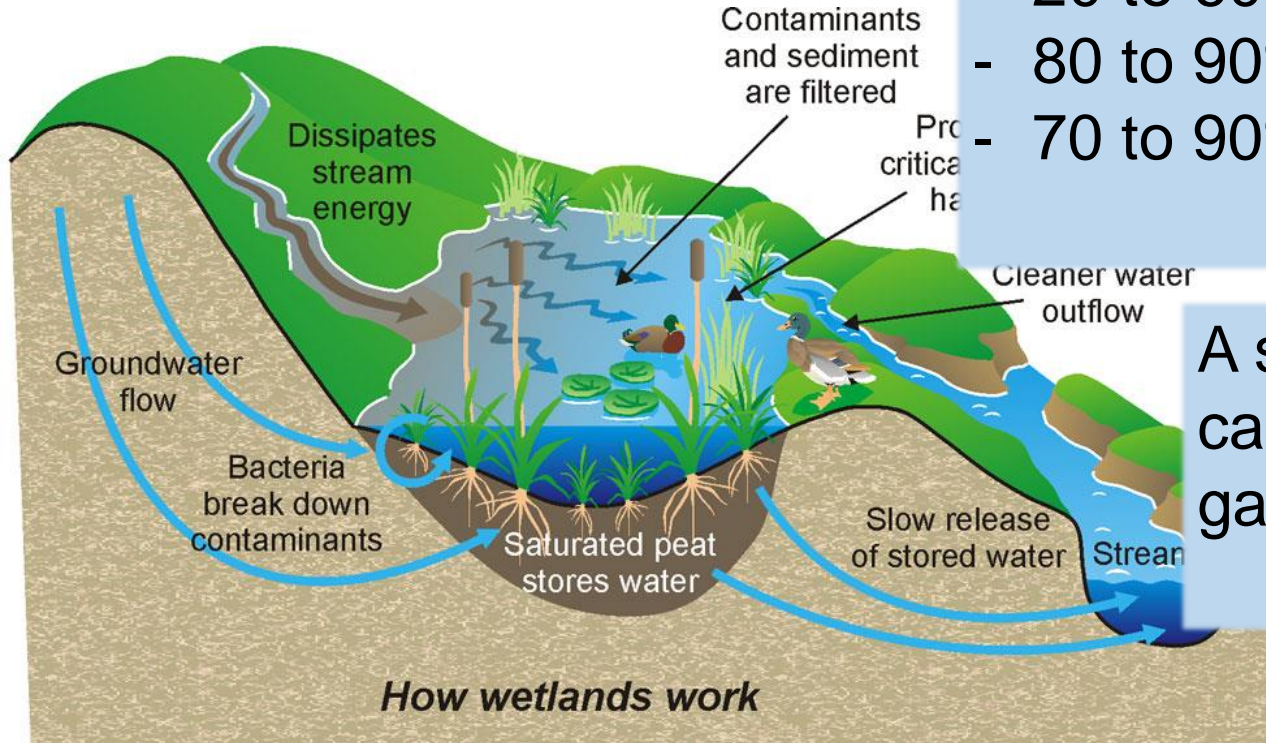
Wetlands can remove or trap:

- 20 to 60% of metals
- 80 to 90% of sediment
- 70 to 90% of entering nitrogen

*(Ecological Society of America)*

A single acre of wetland can store 1-1.5 million gallons of floodwater

*(United States EPA)*



# Ecosystem Benefits: RECREATION & TOURISM

In 2011, residents and nonresidents spent \$9.2 billion on wildlife-related recreation (hunting, fishing, and wildlife-watching) in New York.

*(USFWS 2014)*



# Ecosystem Benefits: HUMAN HEALTH

7

Forbidding forecast for Lyme Disease in the Northeast

*National Public Radio, March 6, 2017*

White-footed mouse



In forest patches less than 5 acres, risk of human exposure to Lyme disease was almost 5 times greater than in larger forested areas.

*(Allan et al., 2003)*

... but these benefits are vulnerable.

8

Individual land-use decisions can lead to death by 1000 cuts to natural systems.





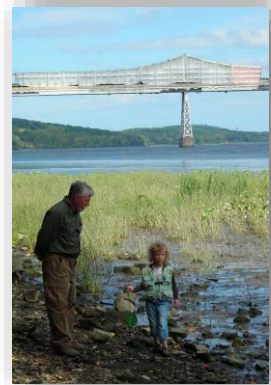
# LOCAL GOVERNMENT HAS A CRITICAL ROLE

- Comprehensive plan
- Zoning
- Subdivision regulations
- Local laws
- Project review
- SEQR
- Stormwater management



Photo by Laura Heady

# Recommended Planning Approach



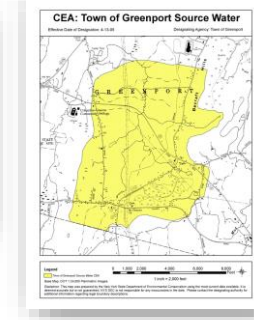
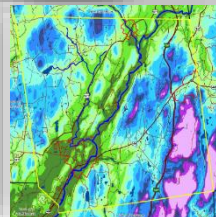
identify  
what you  
have



prioritize



plan,  
protect,  
manage



# What's in the Habitat Summary?

- Existing data (mostly from state sources) with interpretation for municipal decision-makers
- prepared for municipalities (on request) to support land-use and conservation planning efforts
- include maps, tables, and text, and sources for additional information  
(*PDF versions have hot links to websites*)



## NATURAL AREAS AND WILDLIFE IN YOUR COMMUNITY



Hudson River Estuary Program

### A Habitat Summary Prepared for the Town of Hunter

This summary was completed in July 2017 to provide information for land-use planning and decision-making as requested by the Town of Hunter. It identifies significant ecosystems in the town, including streams, forests, wetlands, and other natural areas with important biological values. This summary is based only on existing information available to the New York State Department of Environmental Conservation (DEC) and its partners, and, therefore should not be considered a complete inventory. Additional information about habitats in our region can be found in the *Wildlife and Habitat Conservation Framework* developed by the Hudson River Estuary Program (Pierthollow et al., 2006) and in the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* developed by Hudsonia and published by DEC (Kiviat and Stevens 2001).

Ecosystems of the estuary watershed—wetlands, forests, stream corridors, grasslands, and shrublands—are not only habitat for abundant fish and wildlife, but also support the estuary and provide many vital benefits to human communities. These ecosystems help to keep drinking water and air clean, moderate temperature, filter pollutants, and absorb floodwaters. They also provide opportunity for outdoor recreation and education, and create the scenery and sense of place that is unique to the Hudson Valley. Local land-use planning efforts are instrumental in balancing future development with protection of these resources. By conserving sufficient habitat to support the region's astonishing diversity of plants and animals, communities can ensure that healthy, resilient ecosystems—and the benefits they provide—are available to future generations. For more information on local conservation approaches, see *Conserving Natural Areas and Wildlife in Your Community: Smart Growth Strategies for Protecting the Biological Diversity of New York's Hudson River Valley* (Strong 2008).

The Estuary Program works to ensure the following benefits:

- Vital estuary ecosystem
- Resilient communities
- Clean water
- Fish, wildlife & habitats
- Scenic river landscape
- Education, access and recreation

This document was created by the New York State Department of Environmental Conservation's Hudson River Estuary Program and Cornell University's Department of Natural Resources. The Estuary Program (<http://www.dec.ny.gov/land/4520.html>) protects and improves the natural and scenic Hudson River watershed for all its residents. The program was created in 1987 and extends from the Troy dam to upper New York Harbor.

The Estuary Program is funded by the NY's Environmental Protection Fund. The Biodiversity Outreach Program was created in partnership with Cornell University to help Hudson Valley communities learn what plants, animals, and habitats are found locally, understand the value of these resources, and increase their capacity to identify, prioritize, and conserve important natural areas through informed decision-making. Additional information about habitats in the Hudson Valley can be found on DEC's webpages, starting with [www.dec.ny.gov/land/5044.html](http://www.dec.ny.gov/land/5044.html).

#### CONTACT INFORMATION

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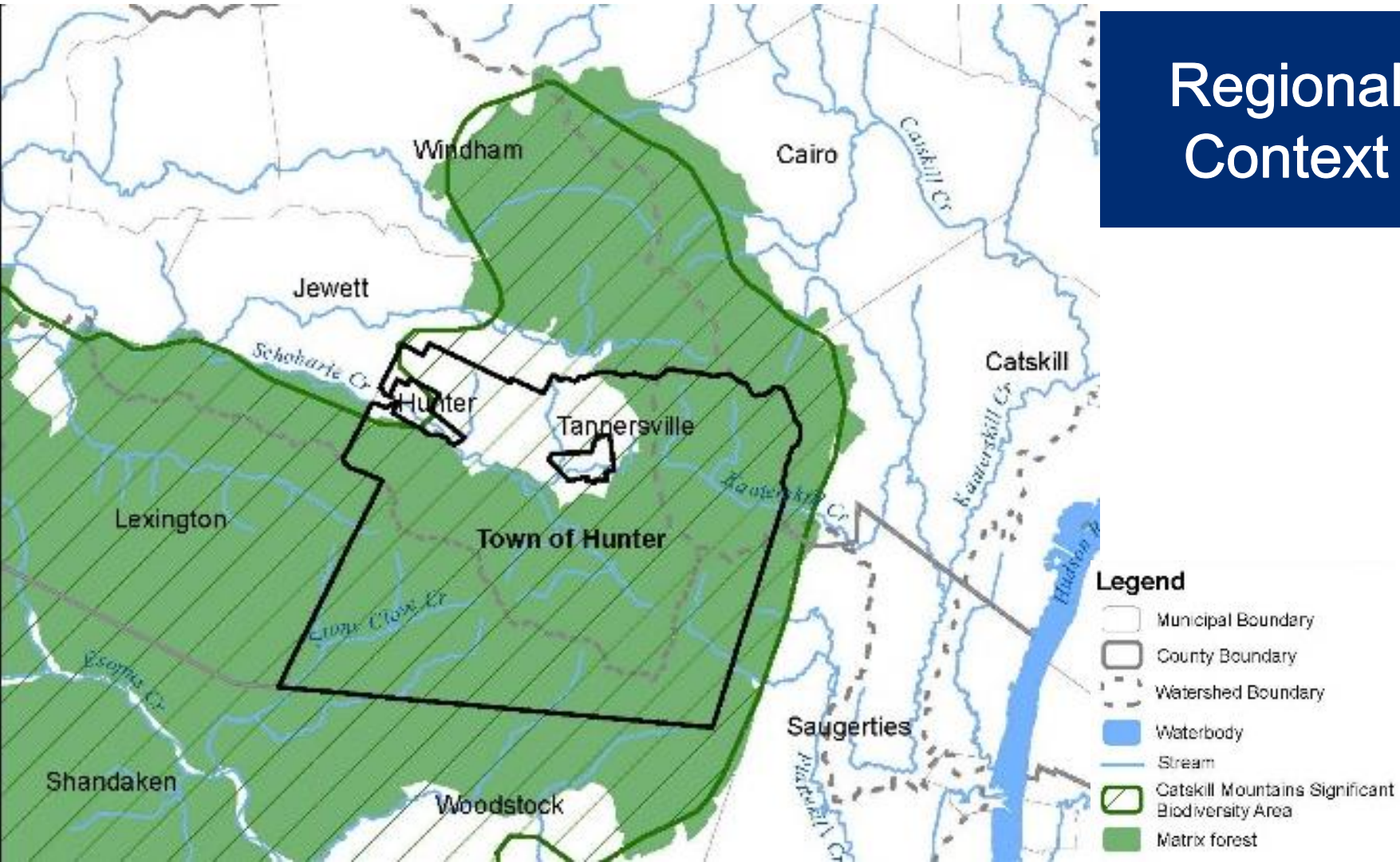
A Program of the New York State Department of Environmental Conservation

[www.dec.ny.gov](http://www.dec.ny.gov)



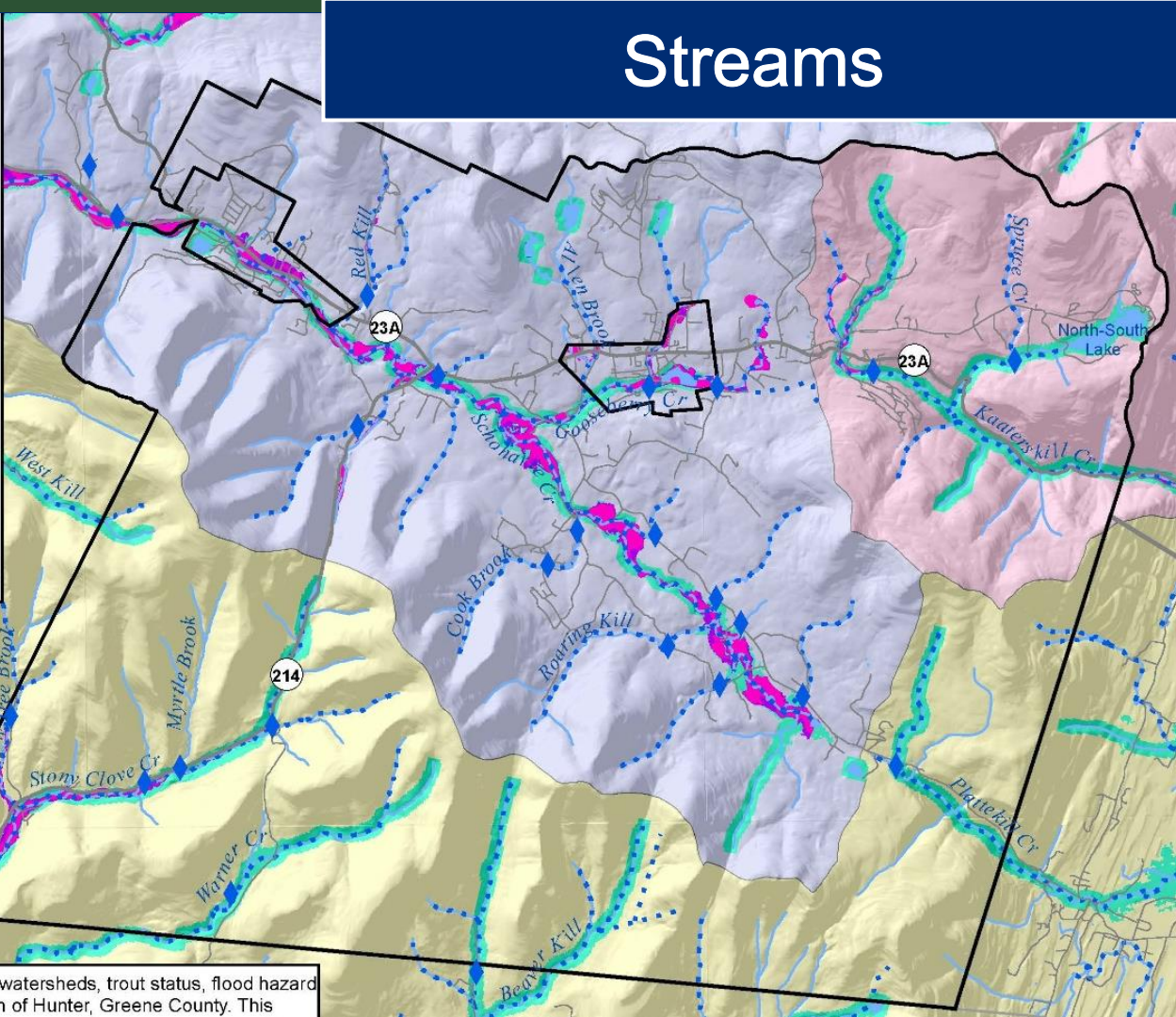
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# Regional Context



## Legend

- Road
  - Stream
  - Waterbody
  - Active River Area
  - - - Trout or trout-spawning stream
  - ◆ Brook Trout location (survey data since 2000)
- ### Watershed
- Kaaterskill-Catskill Creek
  - Esopus Creek
  - Schoharie Creek
- ### Flood Hazard Area
- 100-year (1%) flood zone
  - 500-year (0.2%) flood zone

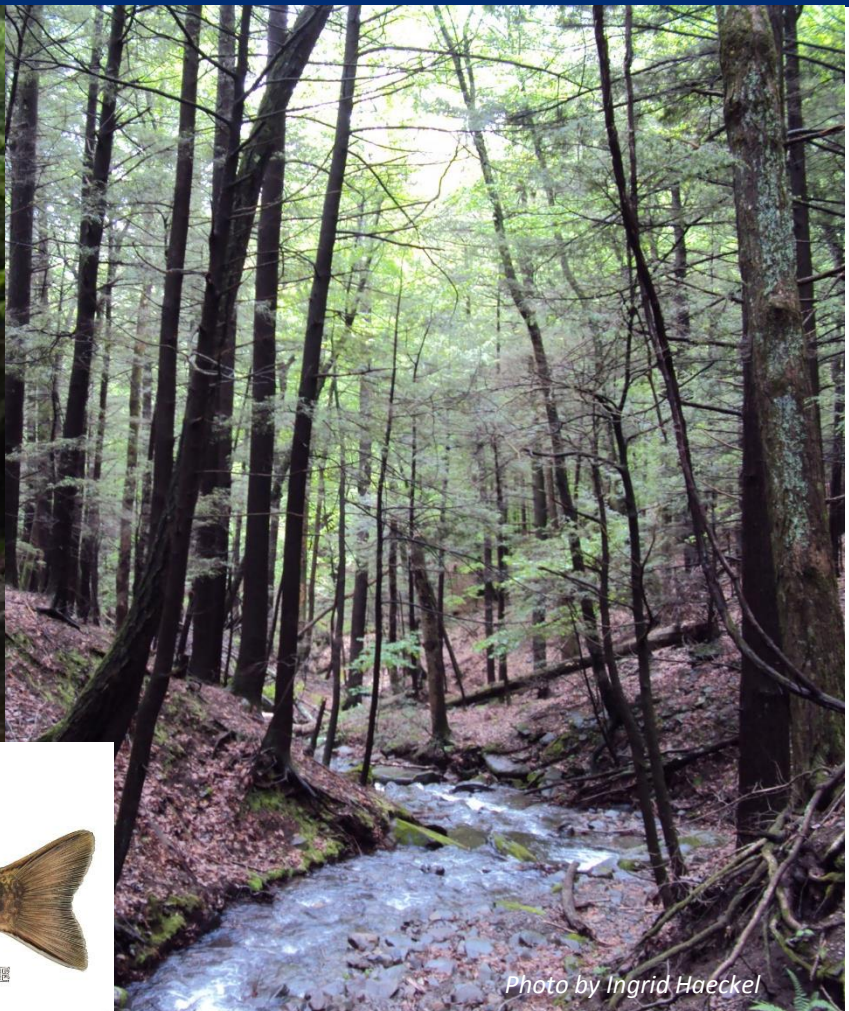


This map shows streams, waterbodies, watersheds, trout status, flood hazard areas, and active river areas in the Town of Hunter, Greene County. This

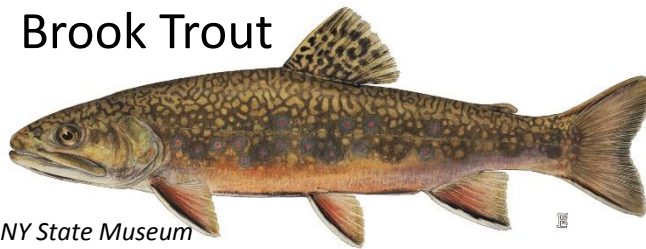


Wood turtle

*Photo by Ingrid Haeckel*



Brook Trout



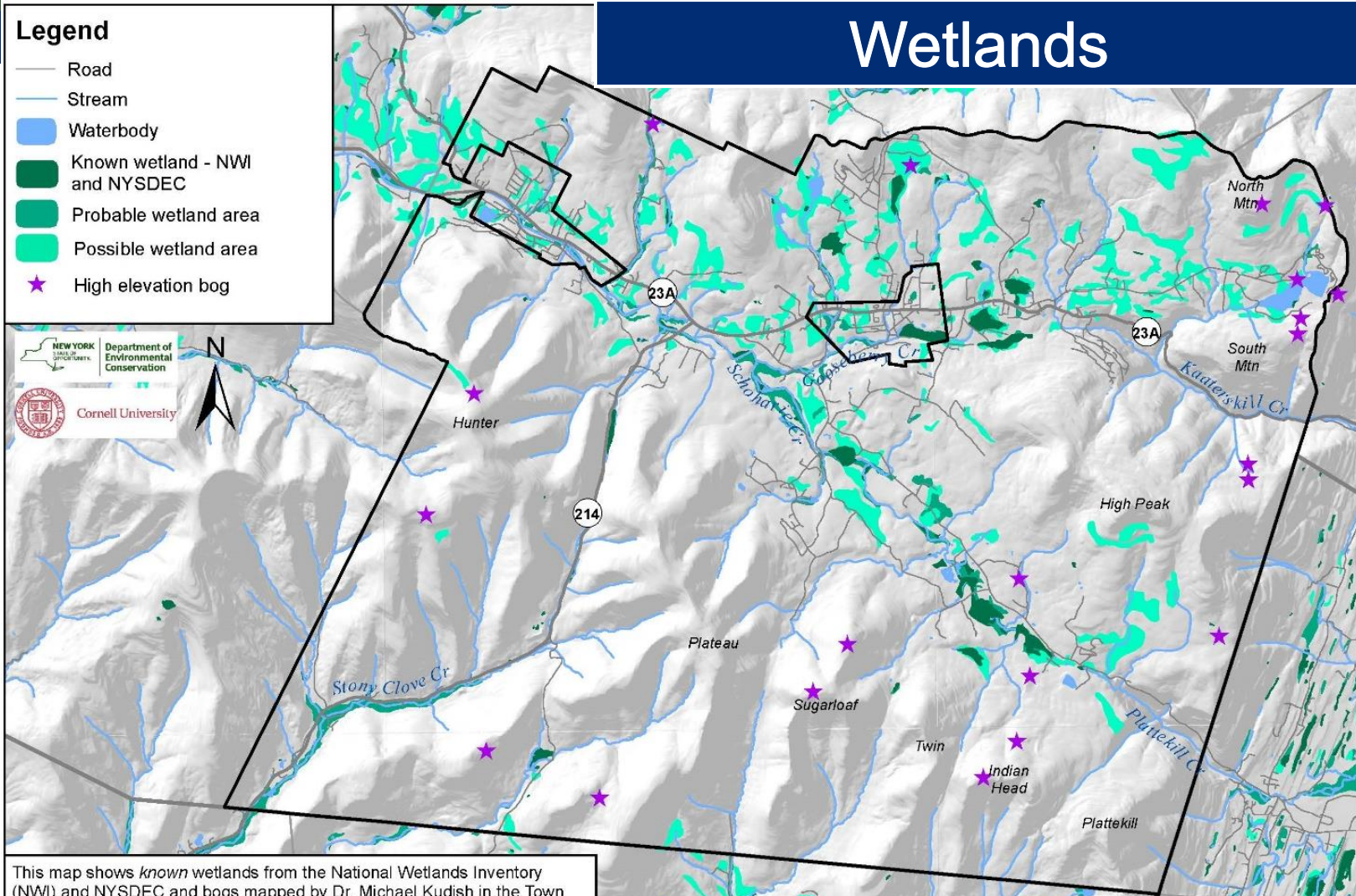
NY State Museum

*Photo: Catskillstreams.org*

*Photo by Ingrid Haeckel*

## Legend

- Road
- Stream
- Waterbody
- Known wetland - NWI and NYSDEC
- Probable wetland area
- Possible wetland area
- ★ High elevation bog



This map shows *known* wetlands from the National Wetlands Inventory (NWI) and NYSDEC and bogs mapped by Dr. Michael Kudish in the Town



Red-shouldered  
hawk

*Photo by Greg Lasley*

*Photo by Laura Heady*

American black duck



*Photo: USFWS*



*Photo by Ingrid Haeckel*



# Significant Ecological Features

## Legend

- Road
- Stream
- Waterbody
- Audubon Important Bird Area

### Areas of known importance for:

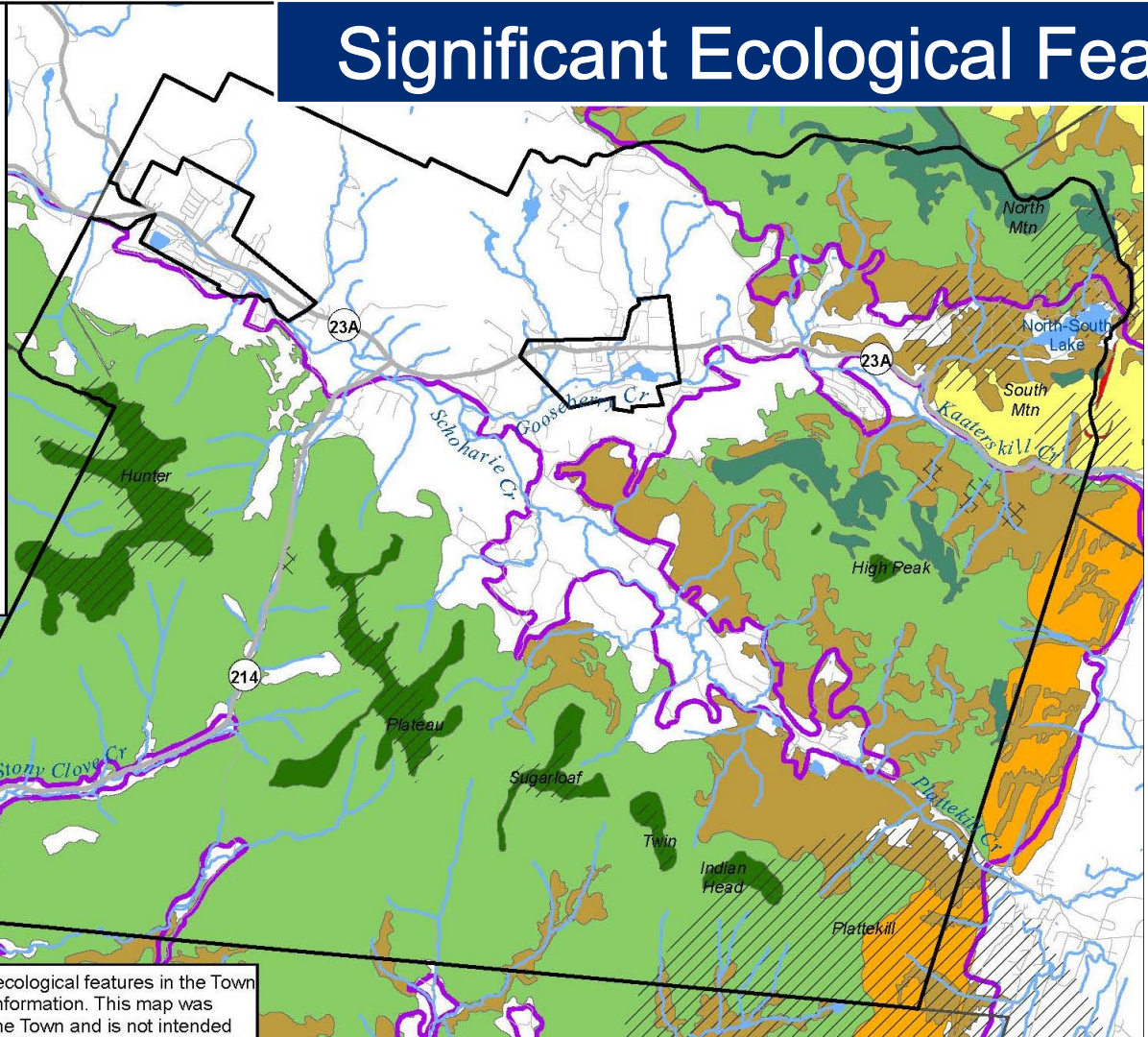
- rare plants
- rare animals

### Significant natural communities:

- Apalachian Oak-Pine Forest
- Beech-Maple Mesic Forest
- Chestnut Oak Forest
- Cliff Community
- Hemlock-Northern Hardwood Forest
- Mountain Spruce-Fir Forest
- Pitch Pine-Oak-Heath Rocky Summit
- Spruce-Fir Rocky Summit
- Spruce-Northern Hardwood Forest



This map shows the most significant *known* ecological features in the Town of Hunter, Greene County based on limited information. This map was produced as part of a Habitat Summary for the Town and is not intended



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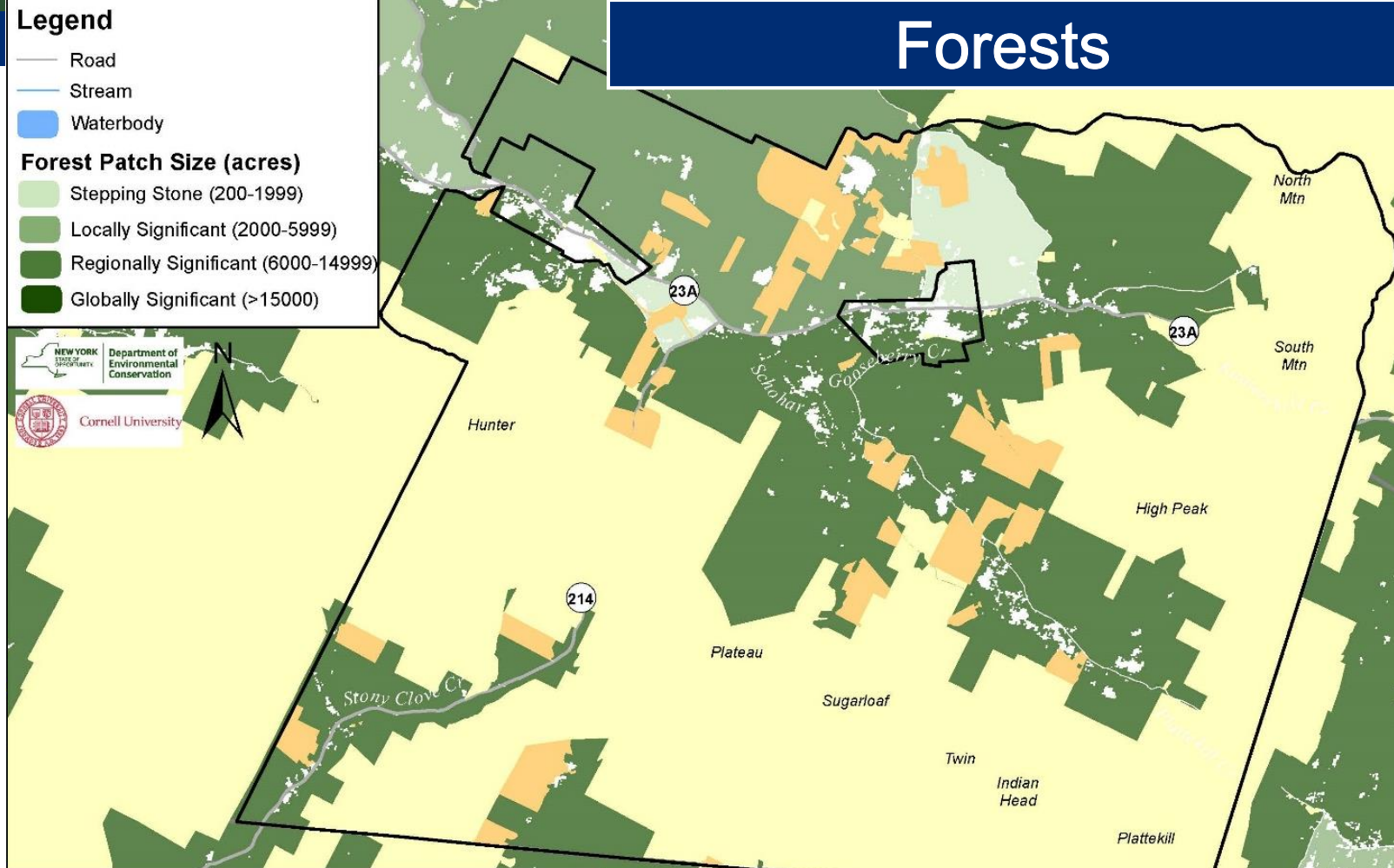
- Road
- Stream
- Waterbody

**Forest Patch Size (acres)**

- Stepping Stone (200-1999)
- Locally Significant (2000-5999)
- Regionally Significant (6000-14999)
- Globally Significant (>15000)



# Forests



This map shows contiguous forested patches for the Town of Hunter, Greene County, NY. The patches were developed using forest cover data from the Coastal Change Analysis Program and buffered roads. This map

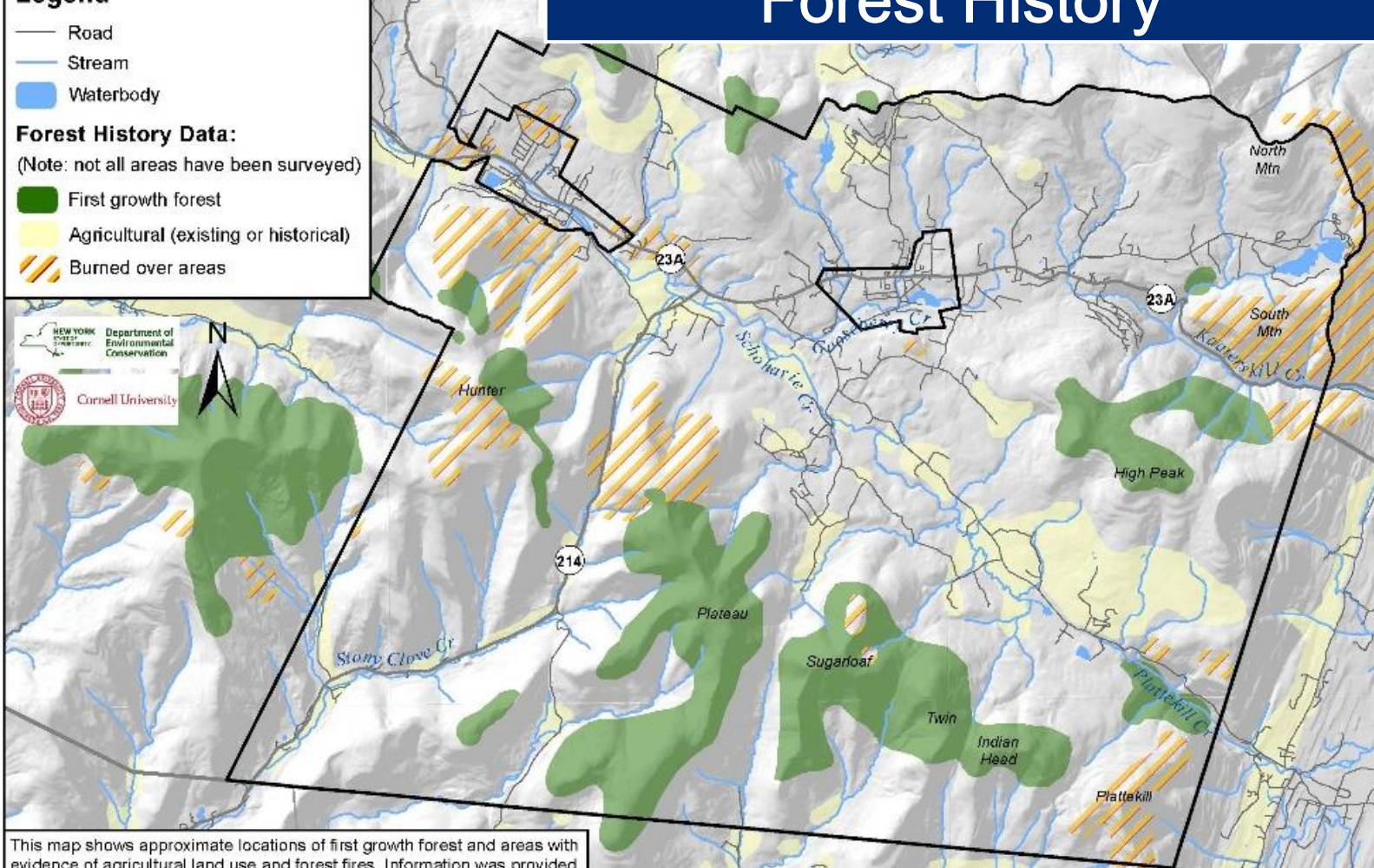
## Legend

- Road
- Stream
- Waterbody

## Forest History Data:

(Note: not all areas have been surveyed)

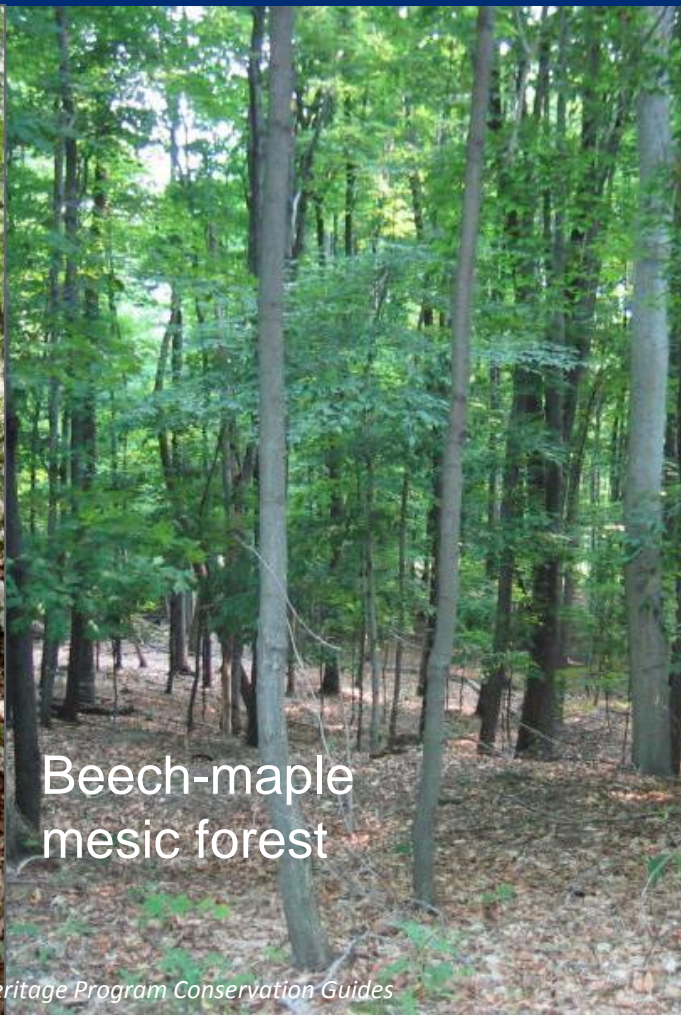
- First growth forest
- Agricultural (existing or historical)
- Burned over areas



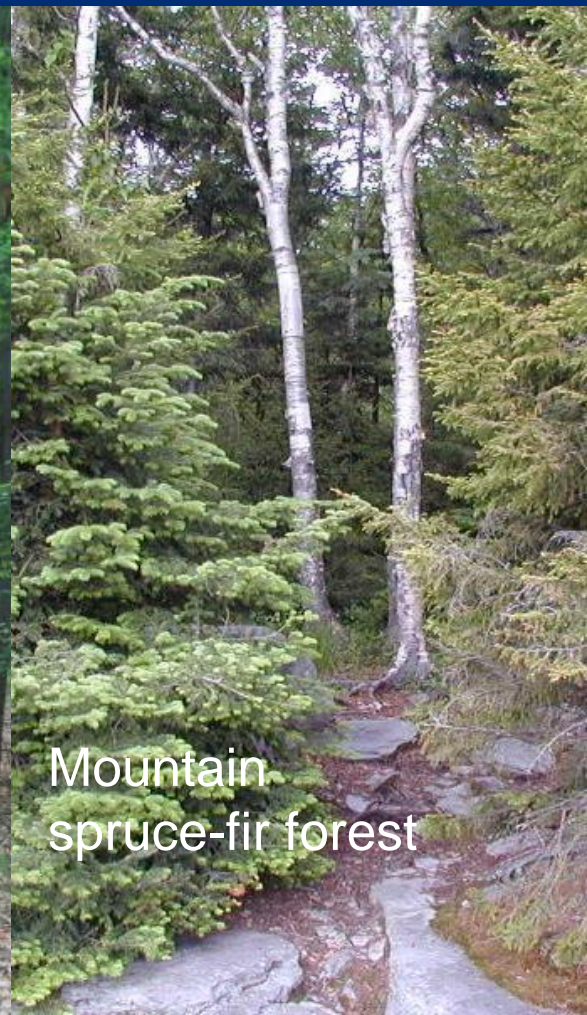
This map shows approximate locations of first growth forest and areas with evidence of agricultural land use and forest fires. Information was provided by Dr. Michael Kudish based on field studies in the Town of Hunter, Greene



Chestnut  
oak forest



Beech-maple  
mesic forest



Mountain  
spruce-fir forest

# Sensitive forest wildlife

Scarlet Tanager • *Piranga olivacea* • male • 15May03 Queens Co. NY • © Ed Lam



Scarlet tanager



Eastern box turtle



West Virginia White



Bicknell's  
Thrush



Cerulean Warbler



Timber rattlesnake

# Rare species table and conservation guidance

Reptiles		
Common Snapping Turtle	<i>Chelydra serpentina</i>	wetlands
Eastern Box Turtle	<i>Terrapene carolina</i>	forest
<a href="#">Timber Rattlesnake</a>	<i>Crotalus horridus</i>	forest
Wood Turtle	<i>Clemmys insculpta</i>	stream

Fish		
Brook Trout	<i>Salvelinus fontinalis</i>	stream

Butterflies		
<a href="#">West Virginia White</a>	<i>Pieris virginiensis</i>	forest

Plants		
<a href="#">Appalachian Sandwort</a>	<i>Minuartia glabra</i>	rock, forest
Clubmoss lantern moss	<i>Mnium lycopodioides</i>	rock/cliff
Drooping Thread Moss	<i>Bryum algovicum</i>	rock/cliff
<a href="#">Fragrant Cliff Fern</a>	<i>Dryopteris fragrans</i>	rock/cliff, stream

## New York Natural Heritage Program

- HOME
- ANIMAL GUIDES
- PLANT GUIDES
- COMMUNITY GUIDES
- ADVANCED SEARCH

- Summary
- Conservation and Management
- Habitat
- Range
- Identification Comments
- Taxonomy
- Additional Resources

### Timber Rattlesnake

*Crotalus horridus* Linnaeus, 1758

Family: Vipers and Pit Vipers (Viperidae)

State Protection: Threatened  
Federal Protection: Not Listed

State Rarity Rank: S3  
Global Rarity Rank: G4

**Did you know?**  
Newborn timber rattlesnakes, often born well away from the overwintering den, follow the scent trails of adult snakes back to the den for hibernation (Brown and MacLean 1983, Reinert and Zappalorti 1988).

Reptiles [Printer Friendly Version \(PDF\)](#)



Timber Rattlesnake (Yellow Phase) Jesse W. Jaycox

#### State Ranking Justification

There are approximately 205 extant dens known in the state, but when interacting and potentially interacting populations are taken into consideration, the number of occurrences will be in the range of 35 to 60. Indiscriminate killing and unregulated collecting, including a past bounty system in some portions of the range, has resulted in many populations becoming extirpated or depleted in numbers in most areas where the species was once numerous. Bounties on timber rattlesnakes were outlawed in New York State in 1971, but even in areas without bounties, rattlesnakes were collected or severely persecuted by local residents in many areas. These factors, combined with a low reproductive potential, and current threats such as development, illegal collecting, and other disturbance factors will likely prevent or slow population recovery.

# Recommendations for Comprehensive Planning

- Identify significant environmental resources
- Recognize the benefits natural areas provide the community
- Establish priorities
- Explicitly state the attributes you wish to protect and preserve
- Include specific policy statements and recommendations



# Conservation Principles

- Avoid or minimize forest fragmentation
- Preserve *broad* connections between large forest blocks.
- Maintain or restore broad buffer zones of around sensitive resources (e.g. streams, wetlands).
- Minimize impervious surfaces.
- Concentrate new development near existing centers.





# Establish a Conservation Advisory Council (CAC)<sup>25</sup>

CACs conduct research and advise municipal agencies on matters related to the environment, including:

- Natural resource inventories and open space planning
- Assistance with project reviews
- Policy research and planning
- Public education and outreach
- Stewardship activities

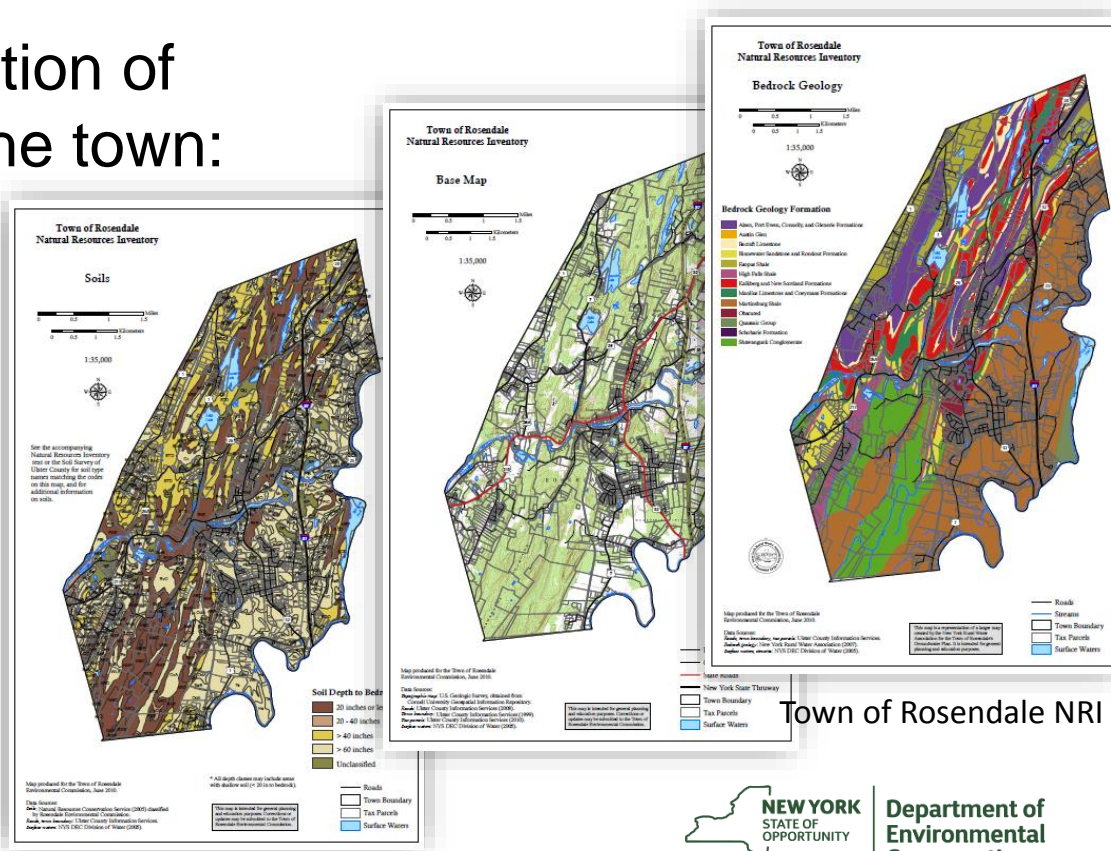


Photo: Laura Heady

# Develop a Natural Resources Inventory

A compilation and description of natural resources within the town:

- Topography
- Geology
- Soils
- Water resources
- Habitats and wildlife
- Climate
- Land use
- (Cultural)

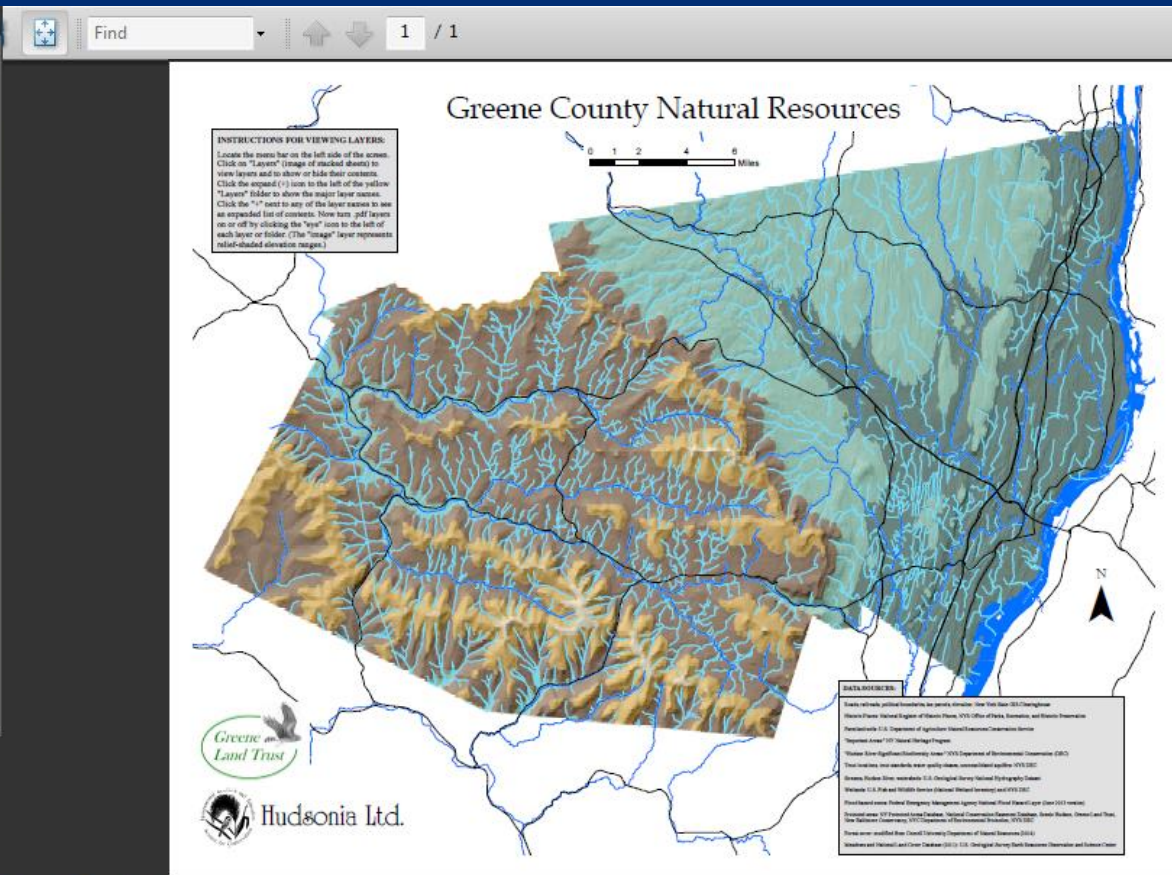


Town of Rosendale NRI

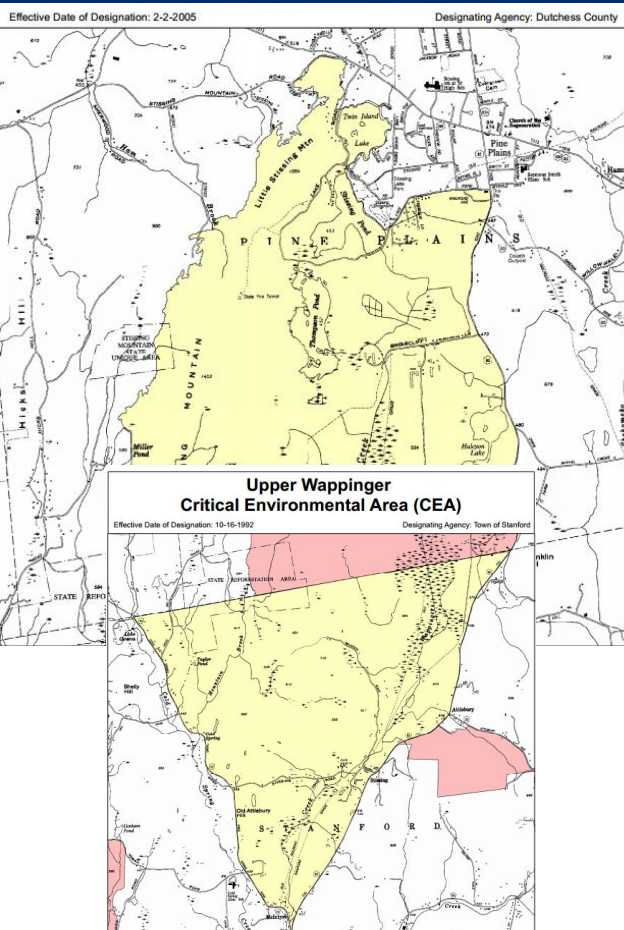
# Greene County Natural Resources Inventory

Layers

- Other
  - Layers
  - Labels
  - Class exercise
  - Major road
  - Road
  - Railroad
  - Greene County
  - Municipalities
  - Neighboring county
  - Tax parcels
  - Catskill Park
  - Historic and cultura
    - National Register-I
    - Other cultural/hist
    - National Register-I
  - Farmland soils
    - Prime Farmland So
    - Farmland Soil of St
    - Prime Farmland So



# Designate Critical Environmental Areas



A specific area having **exceptional or unique environmental or cultural characteristics.**

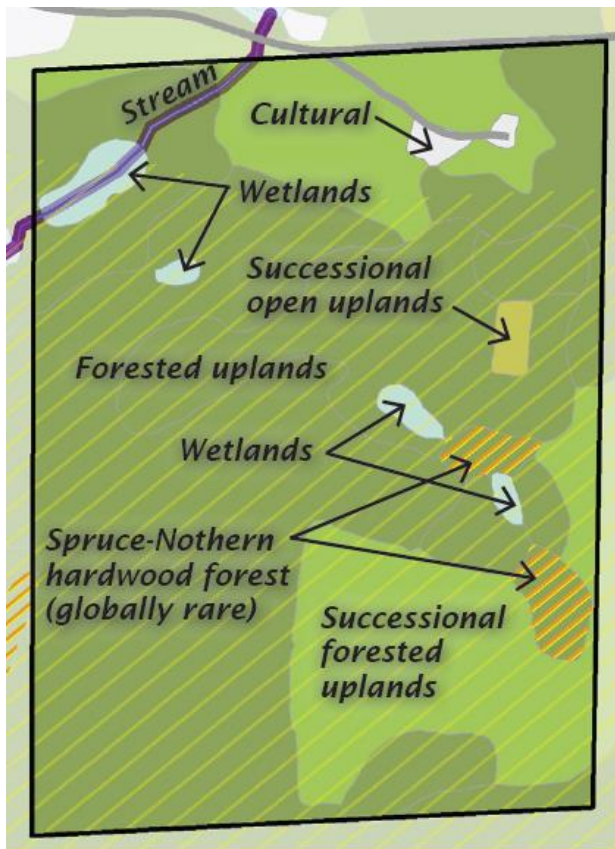
- Brings attention to high priority resources during SEQR



Photo: the Nature Conservancy

View from Stissing Mountain fire tower

# Create a site resource analysis checklist



## Example from Town of Rhinebeck

### Resource Analysis determines:

- What resources are present?
  - Interior forest? Wetlands? Streams? Buffer areas?
- How are they configured?
- How do they relate to resources on adjacent properties?

# Adopt Habitat Assessment Guidelines



Photo: Laura Heady

## Example from Town of New Paltz

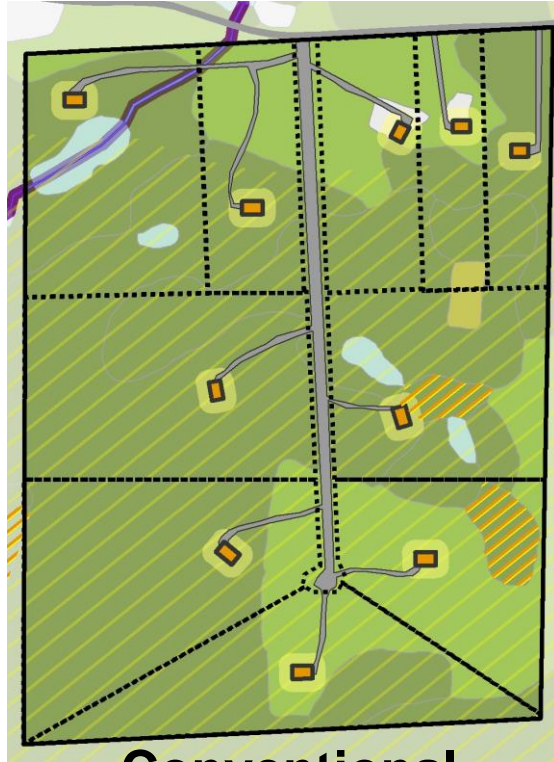
Checklist used for initial screening.

Guidelines provide clear instructions to:

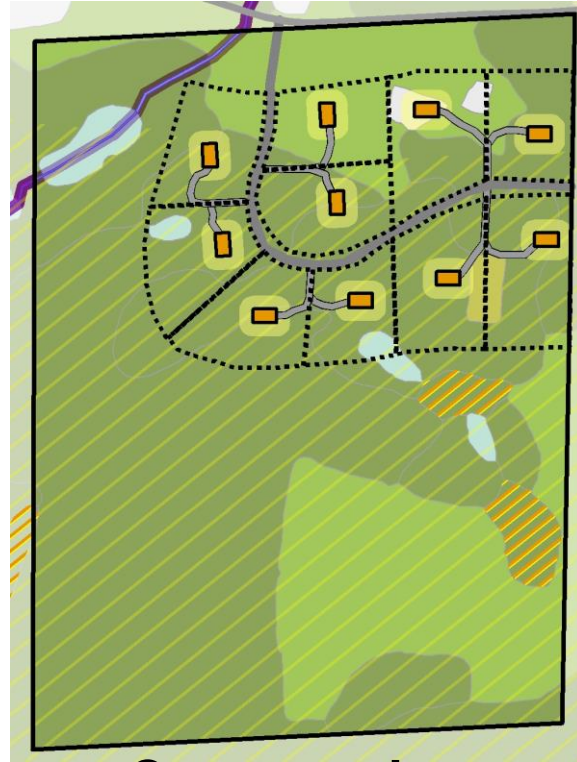
- identify significant habitats,
- evaluate habitat quality,
- prepare and submit report,

prior to initiating SEQR and enable town agencies to work with applicants to conserve valuable resources on site.

# Encourage Conservation Subdivision Design



**Conventional  
Subdivision**



**Conservation  
Subdivision**

- Maximize natural areas and connections
- Minimize road construction and development footprint
- Conserve areas with highest habitat value
- Can set open space requirement percentage (20-60%)



Investigate a timber-harvest ordinance to promote sustainable forest management

Encourage landowners to:

- Use the CCE Agroforestry Resource Center
- Take advantage of financial assistance programs (480-A, EQIP)



# Strengthen stormwater management practices

33

- Model Green Infrastructure and Runoff Reduction Amendments
- New DEC model law available with enhanced resilience elements

## NYS Stormwater Management Design Manual guidelines:

- Preserve existing natural areas
- Minimize impervious surfaces
- Use green infrastructure practices to reduce additional runoff





Dutchess County Greenway Guide

- Remove sensitive areas from density calculations
- Require wetland and stream setbacks/ buffers
- Adopt performance standards
- Identify forestry as a use for appropriate districts
- Forestry zoning district (10-20 ac density, clustering allowed)

## Overlay Zoning examples:

- Steep slopes
- Ridgelines
- Floodplains
- Stream Corridors
- Aquifers
- Forest
- Biodiversity Areas
- Scenic Resources

## **Lexington Stream Corridor Overlay District:**

*“The purpose of this Overlay District is to protect the scenic character and water resource values of Schoharie Creek, West Kill Creek, Broadstreet Hollow Creek, Timberlake Creek, and Peck Hollow Creek and the tributaries thereto.”*



## Example from Town of Woodstock:

- Extends protection to **small streams**, and **small, isolated wetlands** of critical importance to ecosystems and water supplies
- Protects **all wetlands and streams** in a municipality (or those above a size threshold), not just on new development sites
- Protects adjacent buffer areas



Raising public awareness is a vital step toward building a local conservation program. Outreach strategies include:

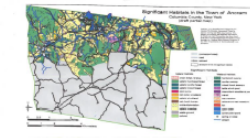
- Public events
- Landowner programs
- Website, social media
- Newsletter
- Local media stories




Jen Rubbo © 2014

**Biodiversity Assessment Mapping: An Occasional Series – Introduction**  
February 2014

**Ancram Conservation Advisory Council**



Since 2001, residents of Ancram, now members of the Conservation Advisory Council (Ancram CAC), have been mapping the natural habitats of Ancram. This effort has been done by volunteers but would otherwise have cost up to \$100,000 for a town of this size. The mapping process involves analyzing natural resource maps and information and then making field visits to confirm findings and answer questions. Field visits rely on the cooperation of landowners, many of whom have also expressed an interest in the project.



*Cool Hemlock Ravine*<sup>1</sup>

In fact, several Ancram CAC members have also expressed an interest in the project. In fact, several Ancram CAC members have also expressed an interest in the project.

To start off with, a definition of biodiversity: Generally, biodiversity is the variety of life: "...the diversity of ecosystems, natural communities and habitats. In essence, it's the variety of ways that species interact with each other and their environment."<sup>2</sup> To discover the state of biodiversity in Ancram, a process called biodiversity assessment, we are following the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. Developed by Hudsonia, the manual provides guidance to: "identify, assess, and protect habitats and species of special conservation importance."

We begin by reviewing and analyzing maps showing the rock formations underlying Ancram

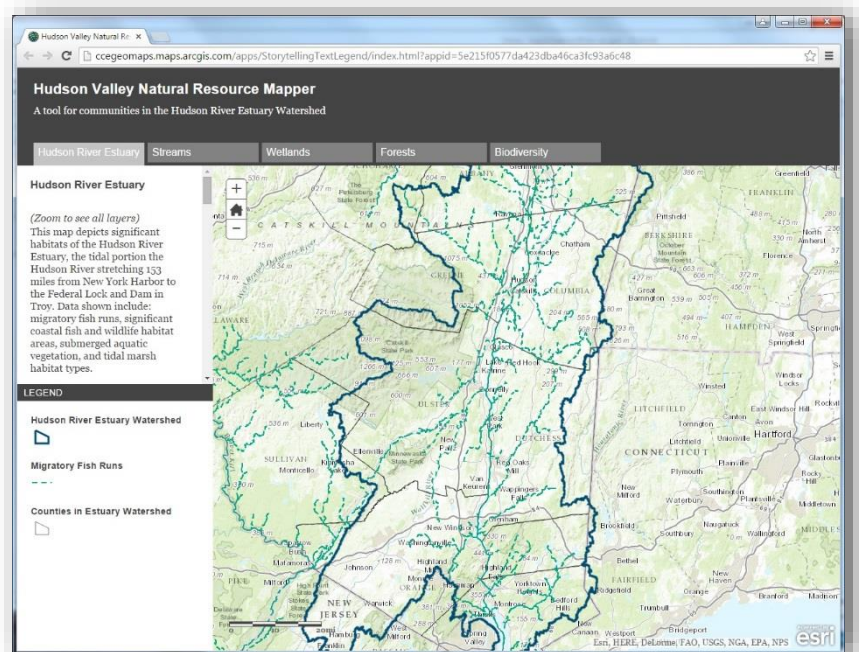
<sup>1</sup> Photos of Ancram habitats, courtesy of Jamie Purinton.  
<sup>2</sup> World Wildlife Federation, "What is Biodiversity?" available at: <http://www.nwf.org/Wildlife/Wildlife-Conservation/Biodiversity.aspx>.

# Where can I get more information?

## Hudson Valley Natural Resource Mapper

### Interactive web maps:

- Estuary
- Streams
- Wetlands
- Forests
- Biodiversity







[www.hudson.dnr.cals.cornell.edu/mapper](http://www.hudson.dnr.cals.cornell.edu/mapper)

# Where can I get more information?

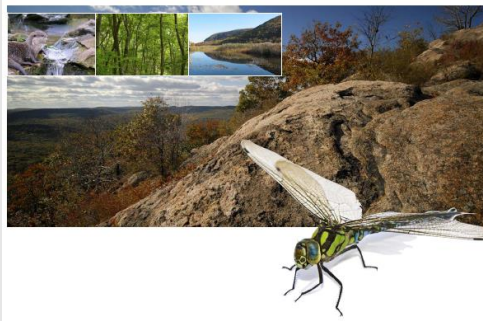
## Publications - [www.dec.ny.gov/lands/5094.html](http://www.dec.ny.gov/lands/5094.html)



**Creating a Natural Resources Inventory**  
A Guide for Communities in the Hudson River Estuary Watershed





Cornell University   Hudson River Estuary Program  
A Program of the New York State Department of Environmental Conservation

**Conserving Natural Areas and Wildlife in Your Community:**  
Smart Growth Strategies for Protecting the Biological Diversity of New York's Hudson River Valley



New York State Department of Environmental Conservation  

**CONSERVING NATURE IN YOUR COMMUNITY**  Hudson River Estuary Program

**Tools and Resources from the Estuary Program and Partners**


The New York State Department of Environmental Conservation's NYSECO Hudson River Estuary Program and Cornell University are partnering with communities to encourage habitat conservation at the local level to sustain the health and resiliency of the entire estuary watershed. By providing technical assistance, information, and training, the Conservation and Land Use Program offers strategies for "smart planning" that support economic growth and quality of life, while keeping nature in mind. Visit [www.dec.ny.gov/lands/5094.html](http://www.dec.ny.gov/lands/5094.html) for more information.

**STEPS FOR CONSERVING HABITAT AND NATURAL AREAS**

- assess resources (What do you have?)
- prioritize resources (What's most important?)
- plan, protect, manage (How are you going to preserve it?)

**LOCAL CONSERVATION STRATEGIES**

- consider habitat conservation early in the planning process
- use town or regional conservation plans to guide land-use decisions
- take a broad perspective to preserve habitat, connections and ecosystem services



Hundreds of communities have been trained to identify important habitats in planning and project review. Conservation priorities for the estuary watershed include Hudson River shorelines, stream corridors, wetlands, and edge forests. Photo: Laura Neely

**Publications**

**Hudson River Estuary Wildlife and Habitat Conservation Framework**  
The Framework provides a regional overview of biodiversity resources in the Hudson River estuary corridor, describes key plant and animal habitats, includes a map and descriptions of significant fishery, forest, and riparian areas, and proposes various strategies for their conservation. Available at [www.dec.ny.gov/lands/5096.htm](http://www.dec.ny.gov/lands/5096.htm) and on CD-ROM upon request.

**Conserving Natural Areas and Wildlife in Your Community**  
This handbook offers conservation guidance and smart growth strategies to local governments in the Hudson River Valley. Available in print or on CD-ROM and on the NYSECO website at [www.dec.ny.gov/lands/5093.htm](http://www.dec.ny.gov/lands/5093.htm).

**Creating a Natural Resources Inventory**  
This guidebook outlines how to inventory natural and cultural assets and presents case studies and strategies for using an NRI in local planning. Available in print and on the NYSECO website at [www.dec.ny.gov/lands/5095.htm](http://www.dec.ny.gov/lands/5095.htm).

**Biodiversity Assessment Manual for the Hudson River Estuary Corridor**  
The Manual was written by Hudsonia and published by the NYSECO to offer guidance in identification, assessment, and protection of habitats, plants, and animals of conservation importance. See [www.hudsonia.org](http://www.hudsonia.org).

A Program of the New York State Department of Environmental Conservation [www.dec.ny.gov](http://www.dec.ny.gov)

## Sign up for RiverNet Newsletter



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STATE OF  
OPPORTUNITY

**Department of  
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# Questions?

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[www.dec.ny.gov/lands/4920.html](http://www.dec.ny.gov/lands/4920.html)



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