

Wetland Conservation: *What Do We Have to Lose?*



Photo by L. Heady

Laura Heady, NYSDEC Hudson River Estuary Program and Cornell University
Columbia County, 24 February 2013



Cornell University

NYS Department of Environmental Conservation



Hudson River Estuary Program

Core Mission

- Ensure **clean water**
- Protect and restore fish, wildlife, and their **habitats**
- Provide water recreation and river **access**
- Adapt to **climate change**
- Conserve world-famous **scenery**

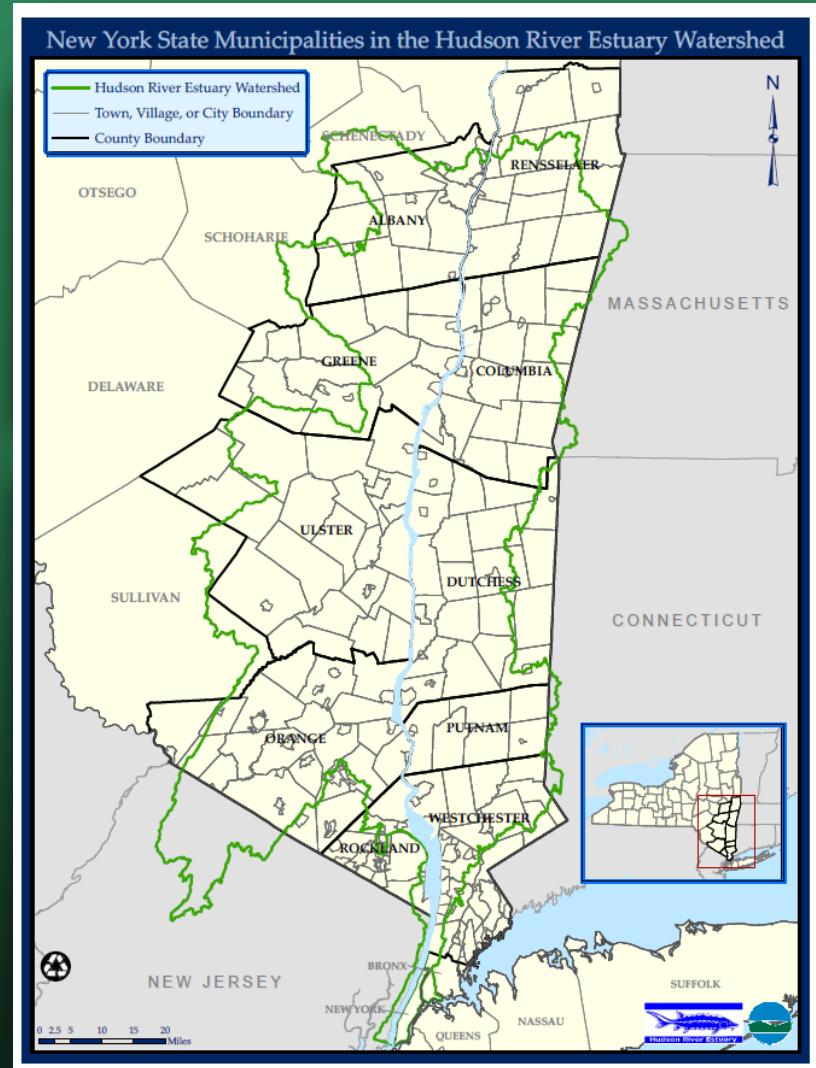




Photo by L. Heady

How many of you think
wetlands are important?

How many of you feel
confident about how
to conserve and protect
wetlands?





Presentation Outline

- What is a Wetland?
- Wetlands in the Hudson Valley
- Value and Function of Wetlands
- Wetland Conservation





Photo by L. Heady

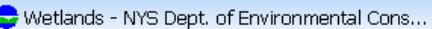


What is a wetland?

NYS Department of Environmental Conservation



“Wetlands are areas saturated by surface or ground water sufficient to support distinctive vegetation adapted for life in saturated soil conditions.”

 <http://www.dec.ny.gov/lands/305.html>       

New York State  State Agencies 

 DEPARTMENT OF ENVIRONMENTAL CONSERVATION 

 [Printer-friendly](#) || [A-Z Subject Index](#) ||  

[Home](#) » [Lands and Waters](#) » [Wetlands](#)

Wetlands

Wetlands (swamps, marshes, bogs, and similar areas) are areas saturated by surface or ground water sufficient to support distinctive vegetation adapted for life in saturated soil conditions. Wetlands serve as natural habitat for many species of plants and animals and absorb the forces of flood and tidal erosion to prevent loss of upland soil.

In New York State, two main types of wetlands are the focus of protection: tidal wetlands around Long Island, New York City and up the Hudson River all the way to Troy Dam; and freshwater wetlands found on river and lake floodplains across the state.

This website provides information about:

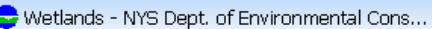
- The status of New York's tidal and freshwater wetlands, and trends in the extent of wetlands in the state
- The state Freshwater Wetlands Act and how DEC regulates wetlands, including wetlands mapping
- Wetlands conservation and restoration

Contact for this Page
Division of Fish, Wildlife and Marine Resources
625 Broadway
Albany, NY 12233-4756
518-402-8848
[Send us an email](#)

This Page Covers

All of

“Wetlands are areas saturated by surface or ground water sufficient to support distinctive vegetation adapted for life in saturated soil conditions.”

 <http://www.dec.ny.gov/lands/305.html>       

New York State  State Agencies 

 DEPARTMENT OF ENVIRONMENTAL CONSERVATION 

 [Printer-friendly](#) || [A-Z Subject Index](#) ||  

[Home](#) » [Lands and Waters](#) » [Wetlands](#)

Wetlands

Wetlands (swamps, marshes, bogs, and similar areas) are areas saturated by surface or ground water sufficient to support distinctive vegetation adapted for life in saturated soil conditions. Wetlands serve as natural habitat for many species of plants and animals and absorb the forces of flood and tidal erosion to prevent loss of upland soil.

In New York State, two main types of wetlands are the focus of protection: tidal wetlands around Long Island, New York City and up the Hudson River all the way to Troy Dam; and freshwater wetlands found on river and lake floodplains across the state.

This website provides information about:

- The status of New York's tidal and freshwater wetlands, and trends in the extent of wetlands in the state
- The state Freshwater Wetlands Act and how DEC regulates wetlands, including wetlands mapping
- Wetlands conservation and restoration

Contact for this Page
Division of Fish, Wildlife and Marine Resources
625 Broadway
Albany, NY 12233-4756
518-402-8848
[Send us an email](#)

This Page Covers

All of

Wetland definitions vary, but often include three main components:

1.) indicators of water
(inundation or saturation)

2.) unique soils that differ from adjacent upland soils

3.) vegetation that is adapted to wet conditions

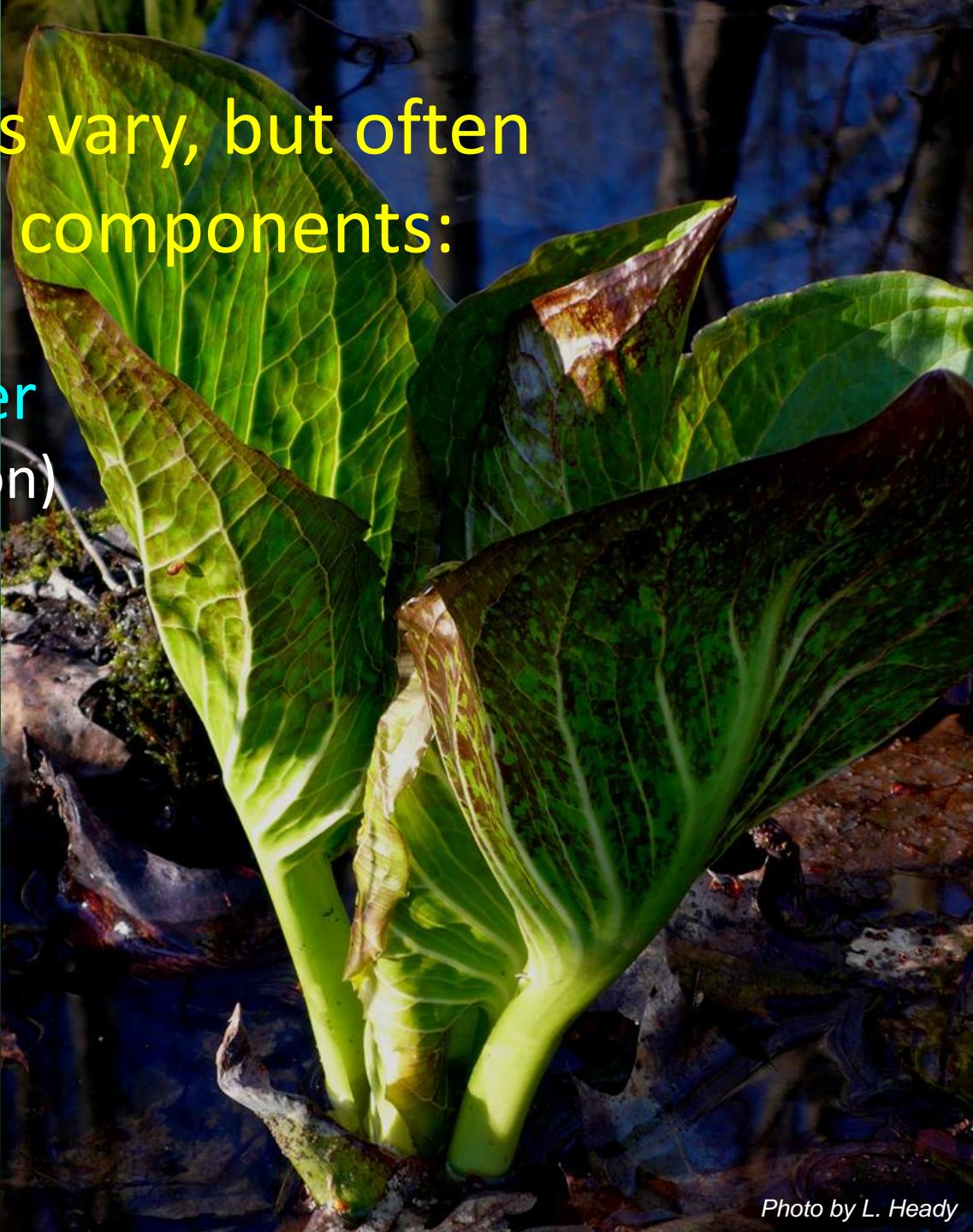


Photo by L. Heady

Wetlands in Columbia County



Photo by L. Heady

wet meadow
fen
emergent marsh
woodland pool
Wetlands in
Columbia County
riparian wetlands
hardwood swamp
kettle shrub pool
springs and seeps
beaver pond



Photo by L. Heady



emergent marsh

A photograph of a wet meadow. The foreground is filled with tall, green grasses and several purple flowering plants, likely purple loosestrife. In the background, there are rolling hills covered in dense green forests under a cloudy sky.

wet meadow

A photograph of a hardwood swamp. The foreground is filled with large, broad green leaves, likely skunk cabbage, growing in a wet area. Behind them, a dense stand of tall, thin trees, possibly birch or aspen, rises through the vegetation. The scene is overcast and shows a mix of dead and living tree stumps.

hardwood swamp

Photo courtesy of CLC

A photograph of a small, shallow pond nestled in a forest. The water is calm, reflecting the surrounding trees and the sky. The forest floor is covered in fallen leaves and moss-covered tree stumps. The trees are tall and thin, with many branches reaching down towards the water. The overall atmosphere is peaceful and natural.

woodland pool

Photo by L. Heady



woodland pool

Photos by L. Heady



riparian wetlands

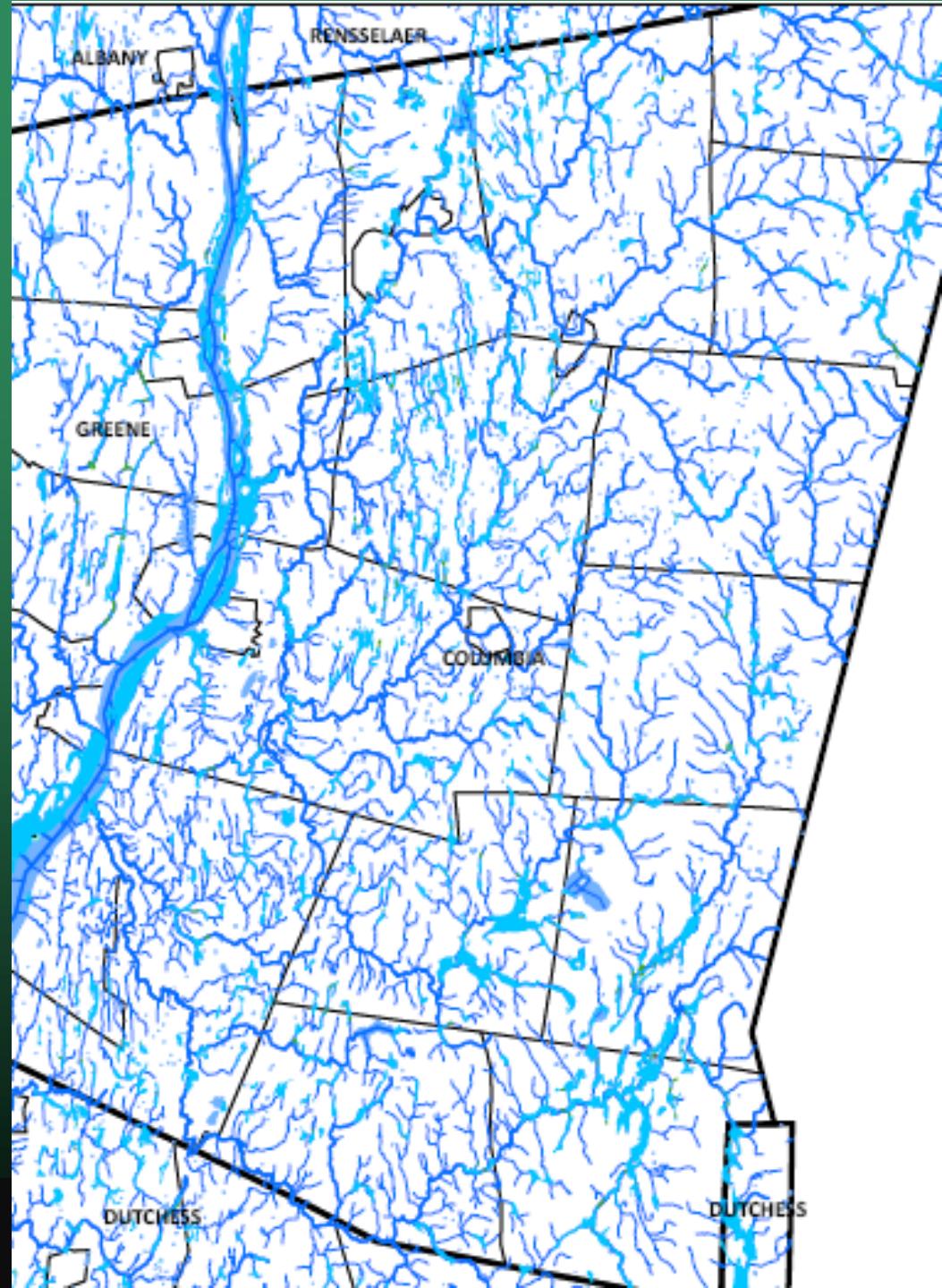
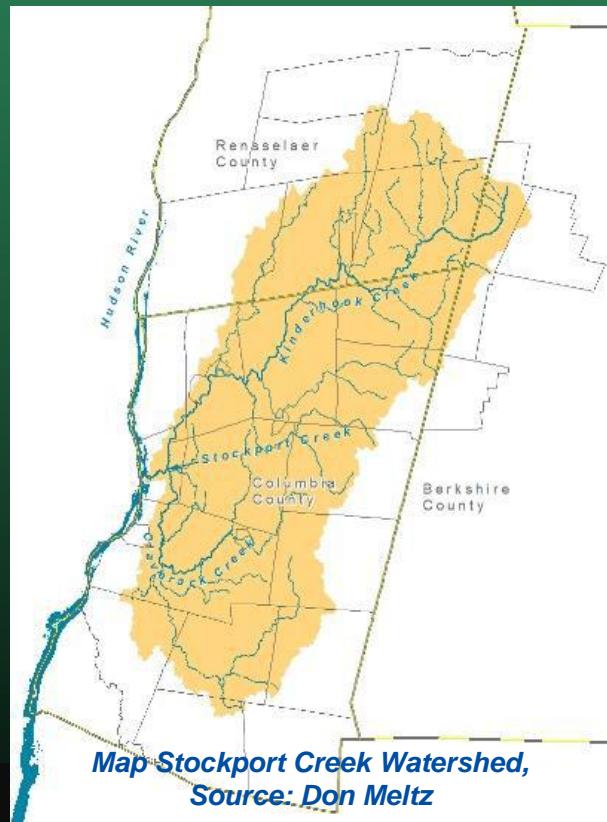
Photo by L. Heady



riparian wetlands

Photo by L. Heady

Wetlands and Streams in Columbia County



Value and Function of Wetlands



Photo by L. Heady

Value and Function of Wetlands

water availability
clean water
flood control
erosion control
human health
habitat
recreation
etc.



Photo by L. Heady



OFFICE OF THE STATE COMPTROLLER

Thomas P. DiNapoli, State Comptroller

Economic Benefits of Open Space Preservation

March 2010

“In many instances, it is less expensive for a community to maintain open space that naturally maintains water quality, reduces runoff, or controls flooding than to use tax dollars for costly engineered infrastructure projects such as water filtration plants and storm sewers.”



Wetland Functions

GROUNDWATER RECHARGE/DISCHARGE

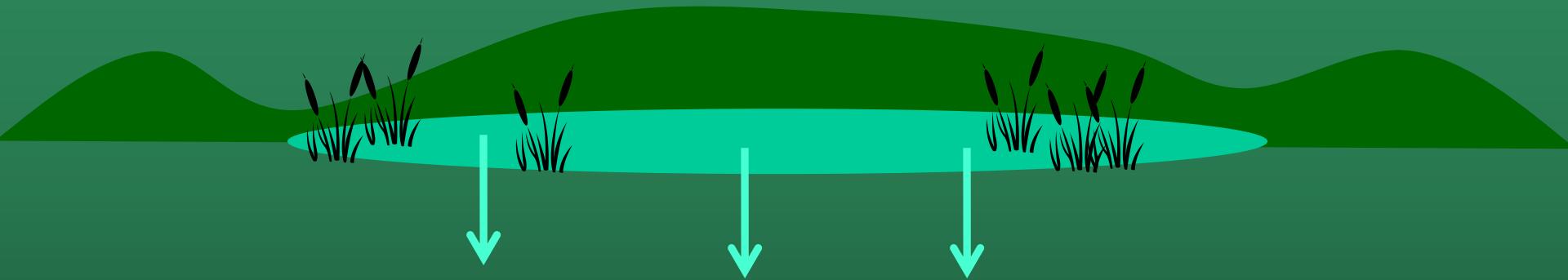


NYS Department of Environmental Conservation



Wetland Functions

GROUNDWATER RECHARGE/DISCHARGE



Some wetlands help maintain water table levels by recharging groundwater. This is especially important for communities that rely on drinking water wells.



Wetland Functions

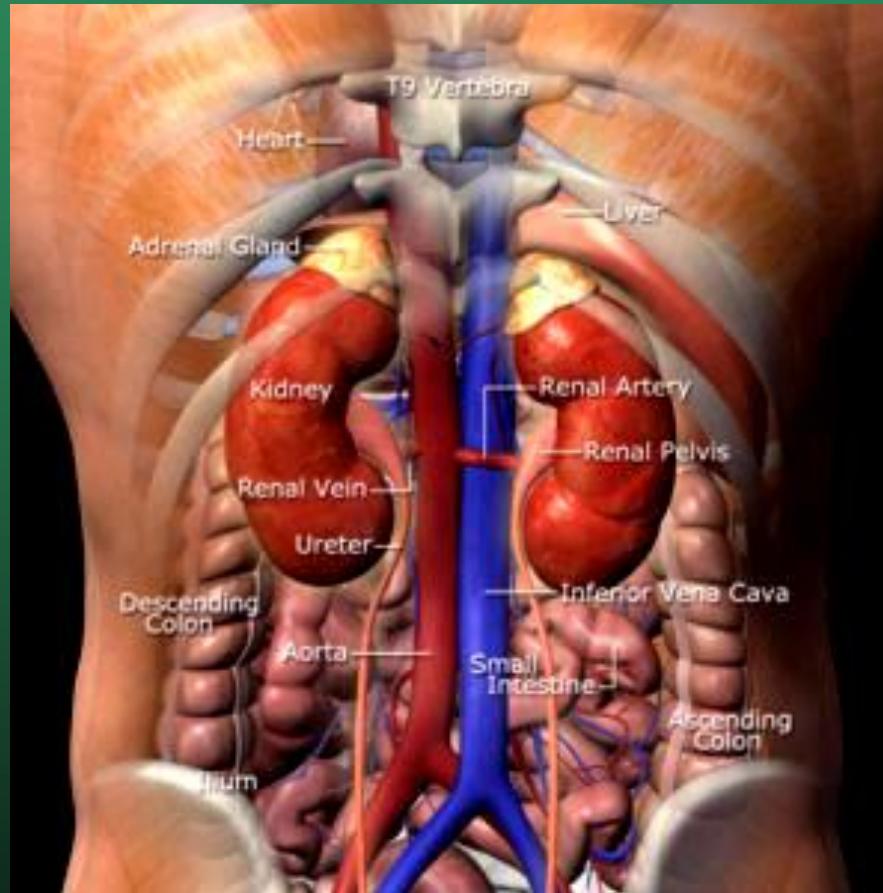
GROUNDWATER RECHARGE/DISCHARGE



Some wetlands discharge groundwater, thus providing source water for adjacent wetlands or streams.



Wetland Functions: WATER PURIFICATION



Wetland Functions: **WATER PURIFICATION**

Wetlands can:

- remove 20 to 60% of metals in water
- trap and retain 80 to 90% of sediment from runoff
- eliminate 70 to 90% of entering nitrogen.

Ecological Society of America



Wetland Functions: WATER PURIFICATION

Regional example

NYC Water Supply System:
providing clean drinking water
to nearly half of NY's residents

artificial filtration plant

\$6-8 billion

VS.

watershed protection

(conservation of forests and wetlands)

→ \$2 billion

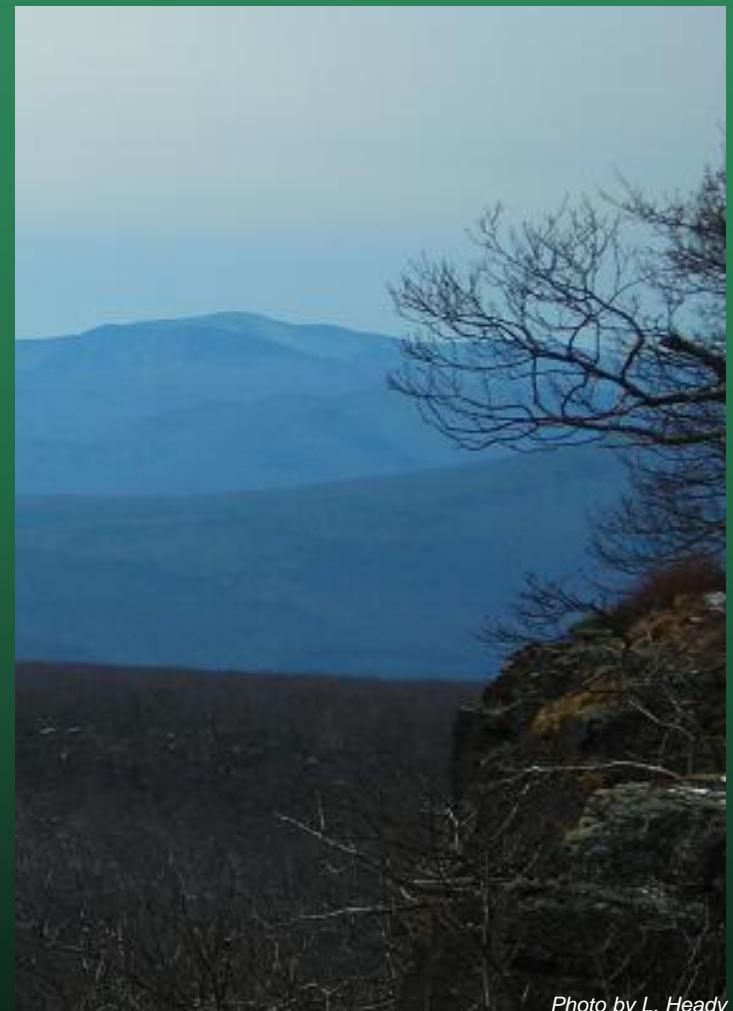


Photo by L. Heady



Wetland Functions: WATER PURIFICATION

Local example

Wetland restored
to filter storm
water from a
commercial strip
before it enters
Lake George.

Restoring lake's natural filter

West Brook wetland will help clean water before it goes into Lake George

By Brian Nearing

Published 8:02 p.m., Thursday, September 27, 2012

[VIEW: LARGER](#) | [HIDE](#)

1 of 7

◀ PREV NEXT ▶



Walt Lender, Executive Director of the Lake George Association, walks through the West Brook Conservation Initiative under construction to help filter water and pollution that feeds into the nearby Lake George, and to help ease sediment buildup that forms a sand delta near the Million Dollar Beach, on Thursday Sept. 27, 2012 in Lake George, NY. The lake is visible through the trees in the

Wetland Functions: FLOOD CONTROL



Wetland Functions: **FLOOD CONTROL**

Wetlands can:

- slow down floodwaters
- store floodwaters



Photo by L. Heady

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

(United States EPA)



Wetland Functions: FLOOD CONTROL

What else does research show us?

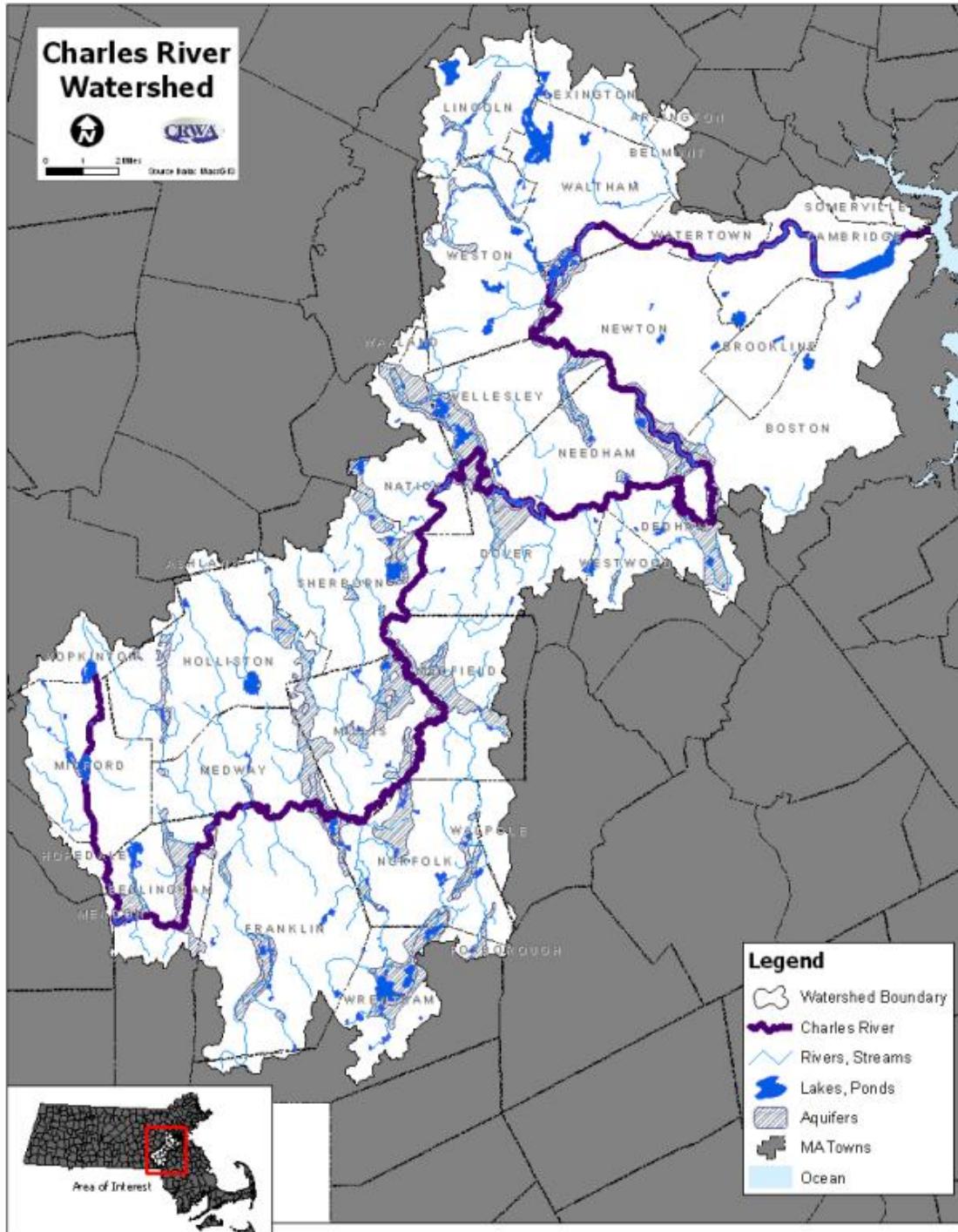
Cumulative loss of small wetlands may have profound regional impacts; a single $\frac{1}{4}$ acre wetland may not seem a significant loss, but a thousand such losses may be a very different story, e.g., increased offsite flooding.

(Leibowitz 2003, Plocher et al. 2003)



Wetland Functions: **FLOOD CONTROL**

The ACOE studied costs of losing all wetlands in the Charles River watershed in Massachusetts, and estimated loss of all wetlands would cost \$17 million a year in flood damages.



Wetland Functions: FLOOD CONTROL

On the Anniversary of Tropical Storm Irene: Stories of What Went Right

*Conservation Law Foundation
video on Vermont flooding*

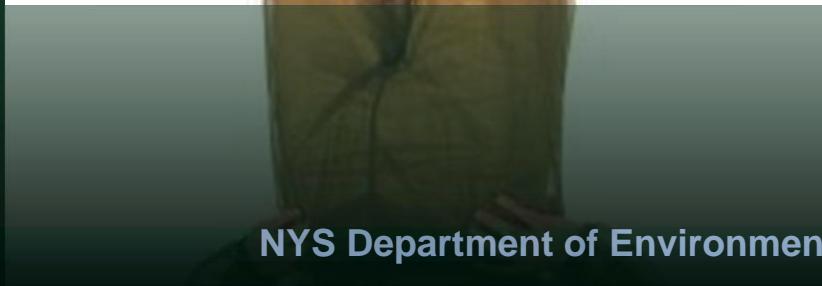
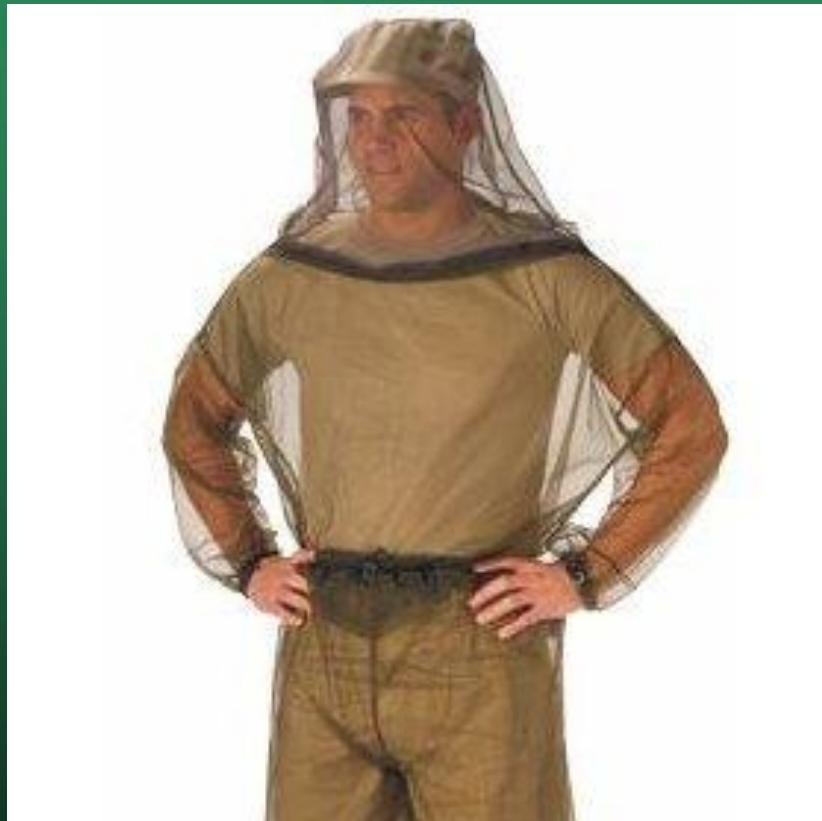
Over the last year, Vermonters have come together to rebuild, to cope and to understand the devastation and loss of life caused by the state's worst natural disaster in more than 80 years. [Louis Porter](#), former journalist and current Lake Champlain Lakekeeper with the Conservation Law Foundation (CLF), has been documenting the environmental and ecological damage from the tragedy over the last year. Listen to and read his work below, and sign up to keep in touch!



Video looks at “why Otter Creek in Rutland leapt up...in flow by nearly 20 times in the space of a little more than a day...while downstream in Middlebury the river rose much more gradually, and more safely.”

The Connecticut River Watershed Council and The Conservation Law Foundation have joined together to step back to look at why Otter Creek in Rutland leapt up as Irene struck, increasing in flow by nearly 20 times in the space of a little more than a day, while downstream in Middlebury the river rose much more gradually, and more safely. The film is narrated by Gov. Howard Dean.

Wetland Functions: **MOSQUITO CONTROL**



NYS Department of Environmental Conservation



Wetland Functions: MOSQUITO CONTROL



Photo by L. Heady

Wetland Functions: MOSQUITO CONTROL

What else does research show us?

A study in North Dakota found many more mosquitoes in degraded wetlands than in higher quality wetlands. The authors conclude that *preservation of healthy wetlands, unpolluted by excessive urban storm water runoff and/or sedimentation should therefore be of vital concern to the public and to mosquito control agencies.*

(Chipp et al. 2002)

Photo by L. Heady

Wetland Functions: RECREATION



NYS Department of Environmental Conservation

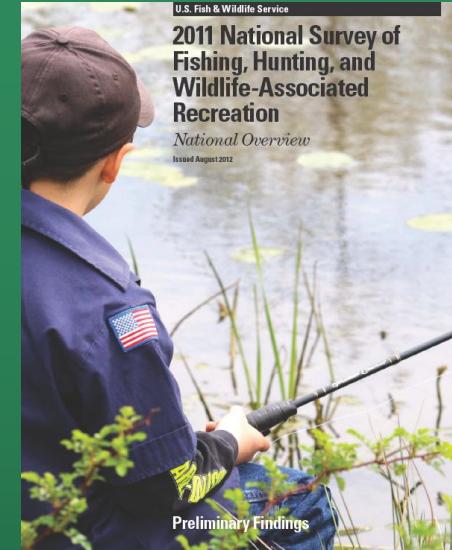


Wetland Functions: **RECREATION**

In 2006 in New York:

3.5 million wildlife watchers ages 16 and older
(2.5 million people were birdwatchers), resulting in:

- over \$1.4 billion in retail sales
(estimated total multiplier effect = \$2.7 billion)
- 25,500 jobs
- over \$250 million in state and local tax revenues.



(2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation)



Wetland Functions: **HABITAT**

Although wetlands cover only ~5% of the land in the lower 48, they are home to 31% of **plant species**.

Approximately one-half of all North American **bird species** nest or feed in wetlands.

(EPA, USFWS)



Photo by L. Heady

Wetland Functions: **HABITAT**

The U.S. Fish and Wildlife Service estimates that up to 43% of threatened and endangered species rely directly or indirectly on wetlands for their survival.

Photo by Lisa Masi



Bog Turtle

New York Status: Endangered
Federal Status: Threatened

Wetland Conservation



Photo by L. Heady

So what wetlands are actually protected in New York?

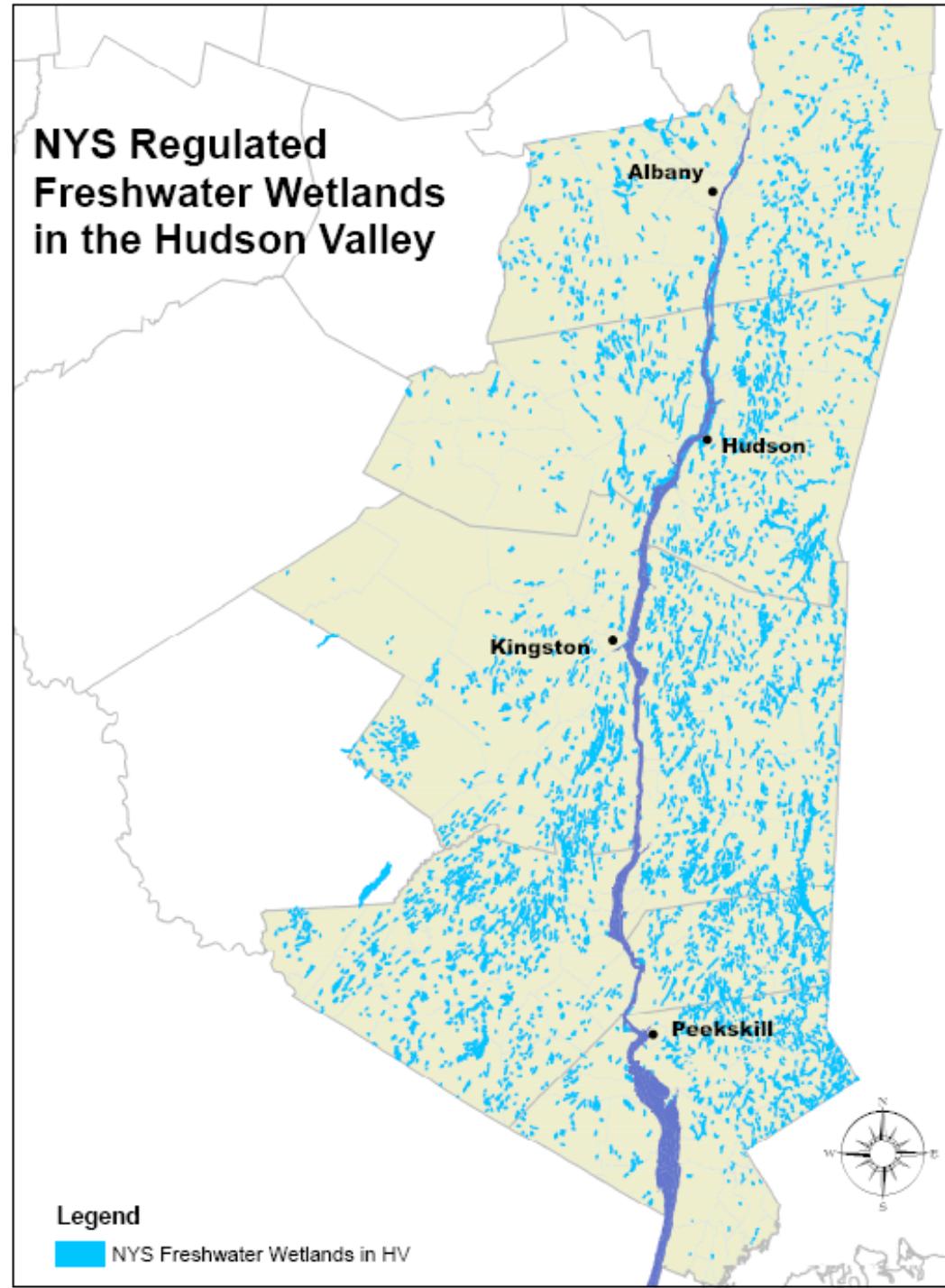
For the most part, New York State protects “larger” wetlands (>12.4 acres) with 100’ buffer.



Photo by L. Heady

A 1999 wetlands trends study suggested NYS regulatory maps were outdated and many wetlands >12.4 acres were not depicted on regulatory maps, and therefore not subject to jurisdiction.

(Huffman & Associates 1999)



NYS Freshwater Wetland Maps – On-line:

Environmental Resource Mapper - NYS Dept. of Environmental Conservation - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Environmental Resource Mapper - N... +

http://www.dec.ny.gov/animals/38801.html

Bing

New York State State Agencies Search all of NY.gov

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Printer-friendly || A-Z Subject Index || Enter search words Search DEC

Home » Animals, Plants, Aquatic Life » Biodiversity & Species Conservation » Biodiversity Mapping » Environmental Resource Mapper

Environmental Resource Mapper

The Environmental Resource Mapper is an interactive mapping application that can be used to identify some of New York State's natural resources and environmental features that are state protected, or of conservation concern.

Currently included on the maps are locations of:

- Freshwater wetlands regulated by the State of New York (outside the Adirondack Park). Contact the Adirondack Park Agency for wetlands within the Adirondack Park.
- New York's streams, rivers, lakes, and ponds; water quality classifications are also displayed.
- Animals and plants that are rare in New York, including those listed as Endangered or Threatened (generalized locations). [Updated May 2008]
- Significant natural communities, such as rare or high-quality forests, wetlands, and other habitat types. [Updated May 2008]

These maps are intended as one source of information for landowners, land managers, citizens, local officials, and project sponsors engaged in land use decision making, conservation, or environmental assessment.

Pop-up blocker must be disabled for this web application to work.

Enter Environmental Resource Mapper

If you are considering a project or activity in or near any of the areas shown on these maps, contact your regional DEC office for more information about

Links Leaving DEC's Website
Adirondack Park Agency
Contact for this Page
NYSDEC Division of Fish, Wildlife and Marine Resources
625 Broadway Albany, New York 12233-4756
518-402-8848
Send us an email
This Page Covers
All of New York State



Search	Layers & Legend	Tell Me More...
--------	-----------------	-----------------

Need a Permit?	Contacts	Help
----------------	----------	------

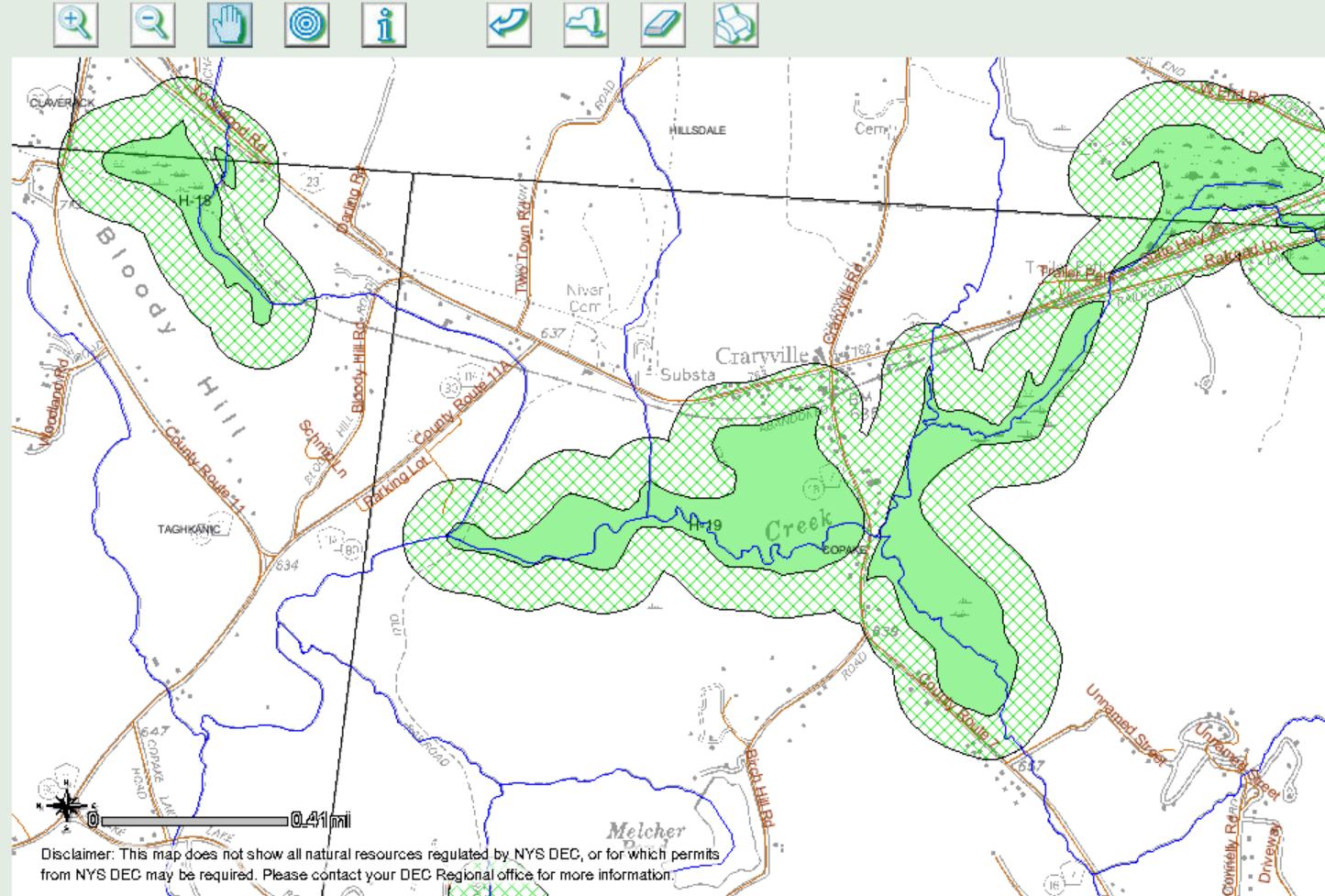
Map Layers & Legend

More layers appear as you zoom in.

- Classified Water Bodies
- Unique Geological Features
- Classified Water Bodies
- State-Regulated Freshwater Wetlands
- Wetland Checkzone ?
- Rare Plants and Rare Animals
- Significant Natural Communities
- Natural Communities Vicinity ?
- Background Map
- Adirondack Park Boundary
- Counties

Click "Refresh Layers" to activate and deactivate layers.

[Refresh Layers](#)



Towns

No Features found.

So what wetlands are actually protected in New York?

For the most part, New York State protects large wetlands (>12.4 acres) with 100' buffer.



For the most part, Federal jurisdiction protects wetlands connected to permanent waterways, but leaves many “isolated” wetlands unprotected.



**U.S. Fish and Wildlife Service
National Wetlands Inventory**

Tools Print Map Streets Imagery/Labels Topo USGS Topo

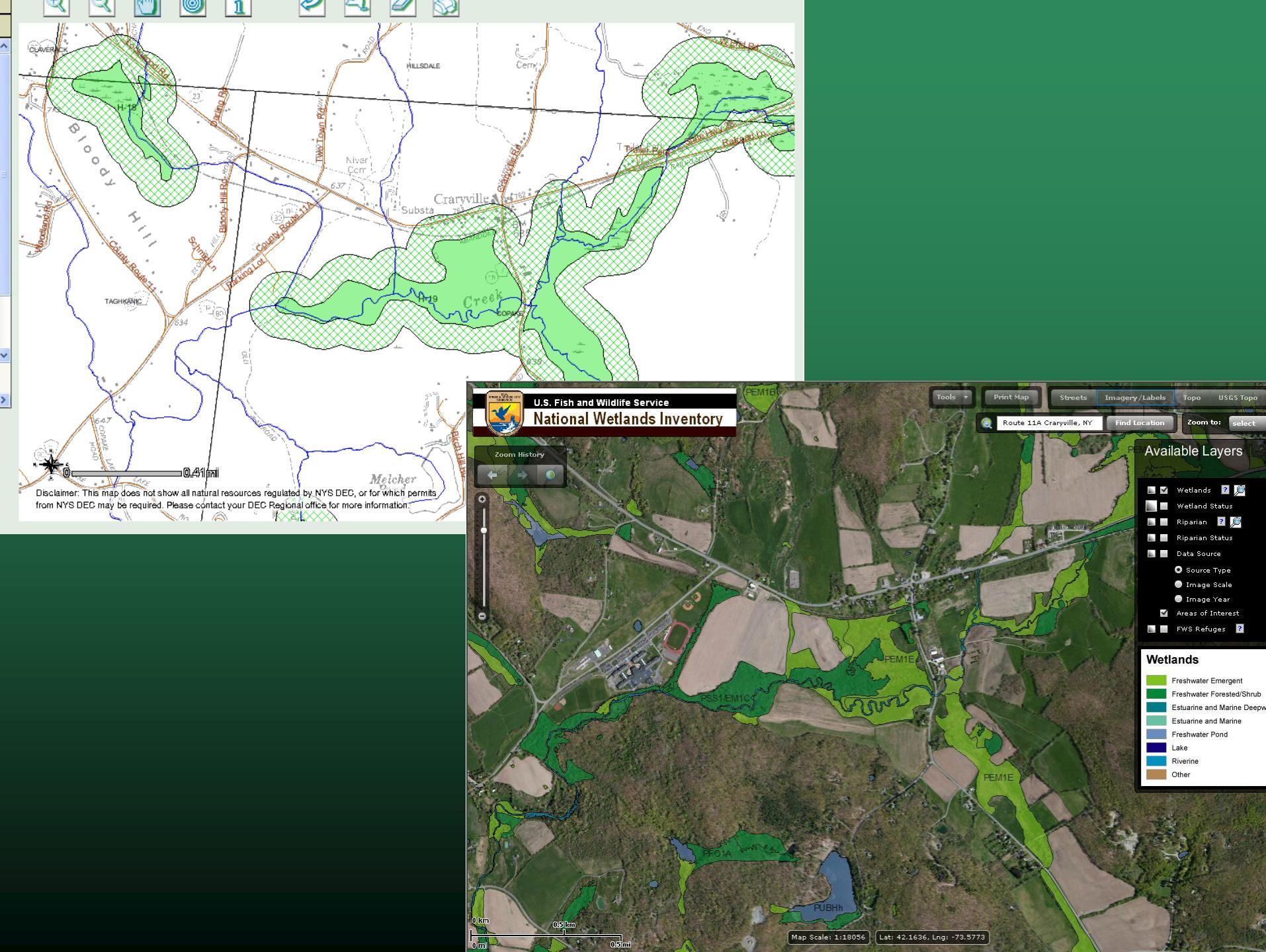
Route 11A Craryville, NY Find Location Zoom to: select

Available Layers

- Wetlands
- Wetland Status
- Riparian
- Riparian Status
- Data Source
- Source Type
- Image Scale
- Image Year
- Areas of Interest
- FWS Refuges

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other



In Columbia County, 55% of palustrine and riverine wetlands on National Wetland Inventory (NWI) maps are “small” (<12.4 ac) and geographically isolated.

(Zucker & Lau 2009)



Photos by L. Heady



Center for Watershed Protection:

“Development in urban and rural areas now is the cause of more than 60% of national wetland loss. Several national assessments have noted deficiencies in current federal and state regulatory programs...**These regulatory gaps can best be closed by increased local management and regulation of wetlands.**”



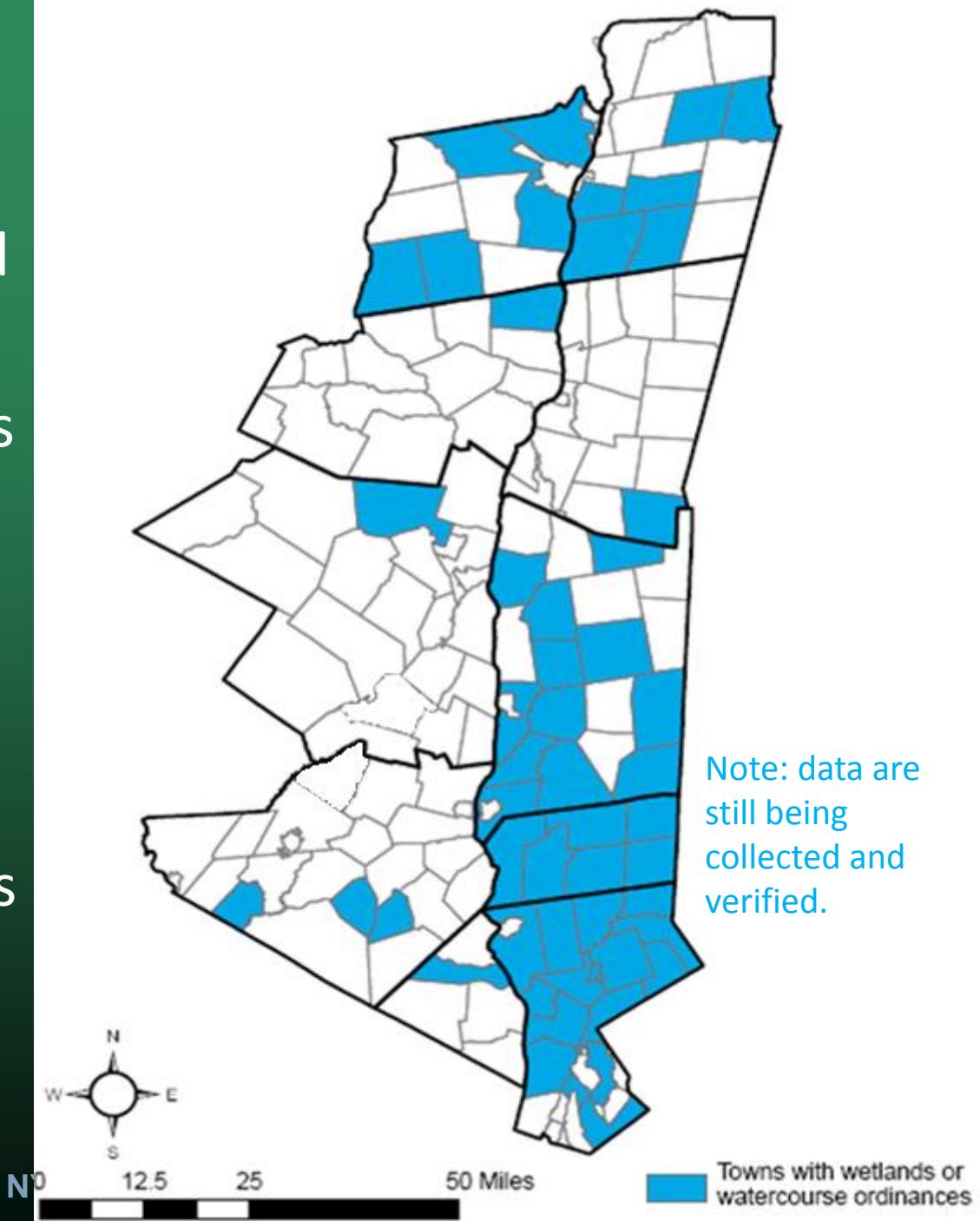
Photo by S. Cuppett



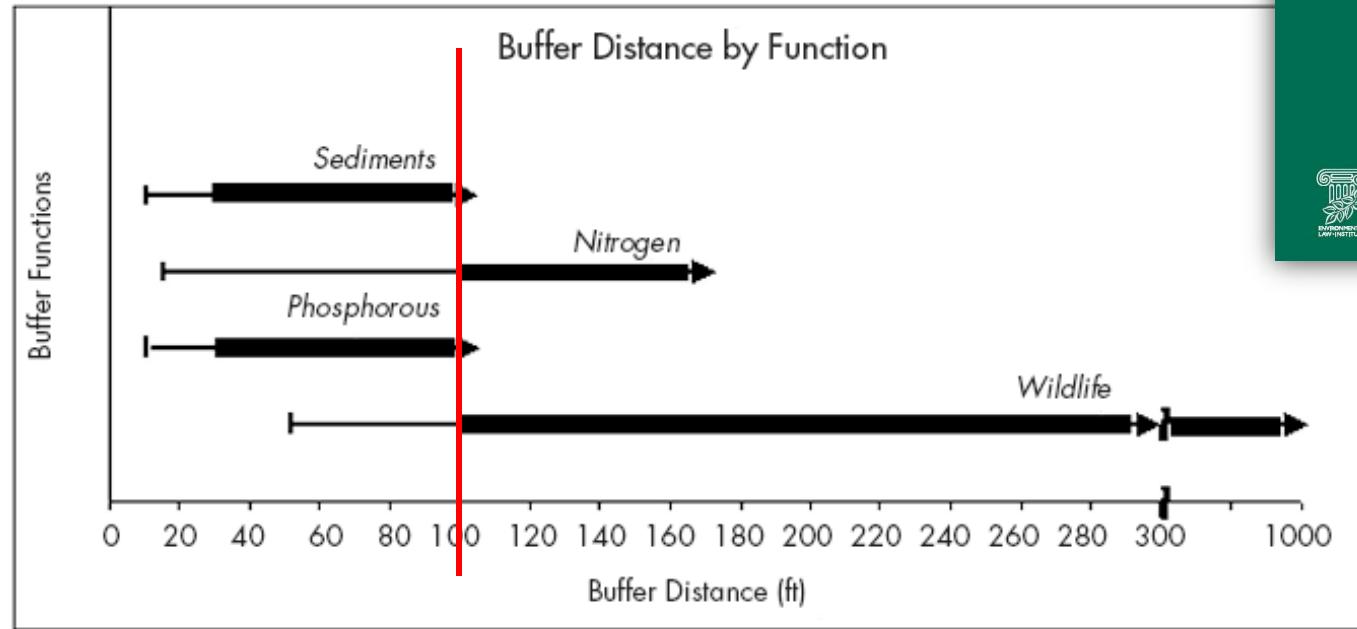
Some municipalities in the Hudson Valley have passed their own wetland and stream ordinances to protect their community's wetland assets.

These can:

- include smaller wetlands
- include more buffer protection

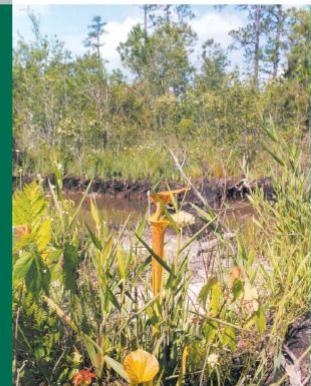


Effective Buffer Distances for Water Quality and Habitat



Effective buffer distance for water quality and wildlife protection functions. The thin arrow represents the range of potentially effective buffer distances for each function as suggested in the science literature. The thick bar represents the buffer distances that may most effectively accomplish each function (30 - > 100 feet for sediment and phosphorous removal; 100 - > 160 feet for nitrogen removal; and 100 - >300 feet for wildlife protection. Depending on the species and the habitat characteristics, effective buffer distances for wildlife protection may be either small or large.

Planner's Guide to
Wetland Buffers for
Local Governments

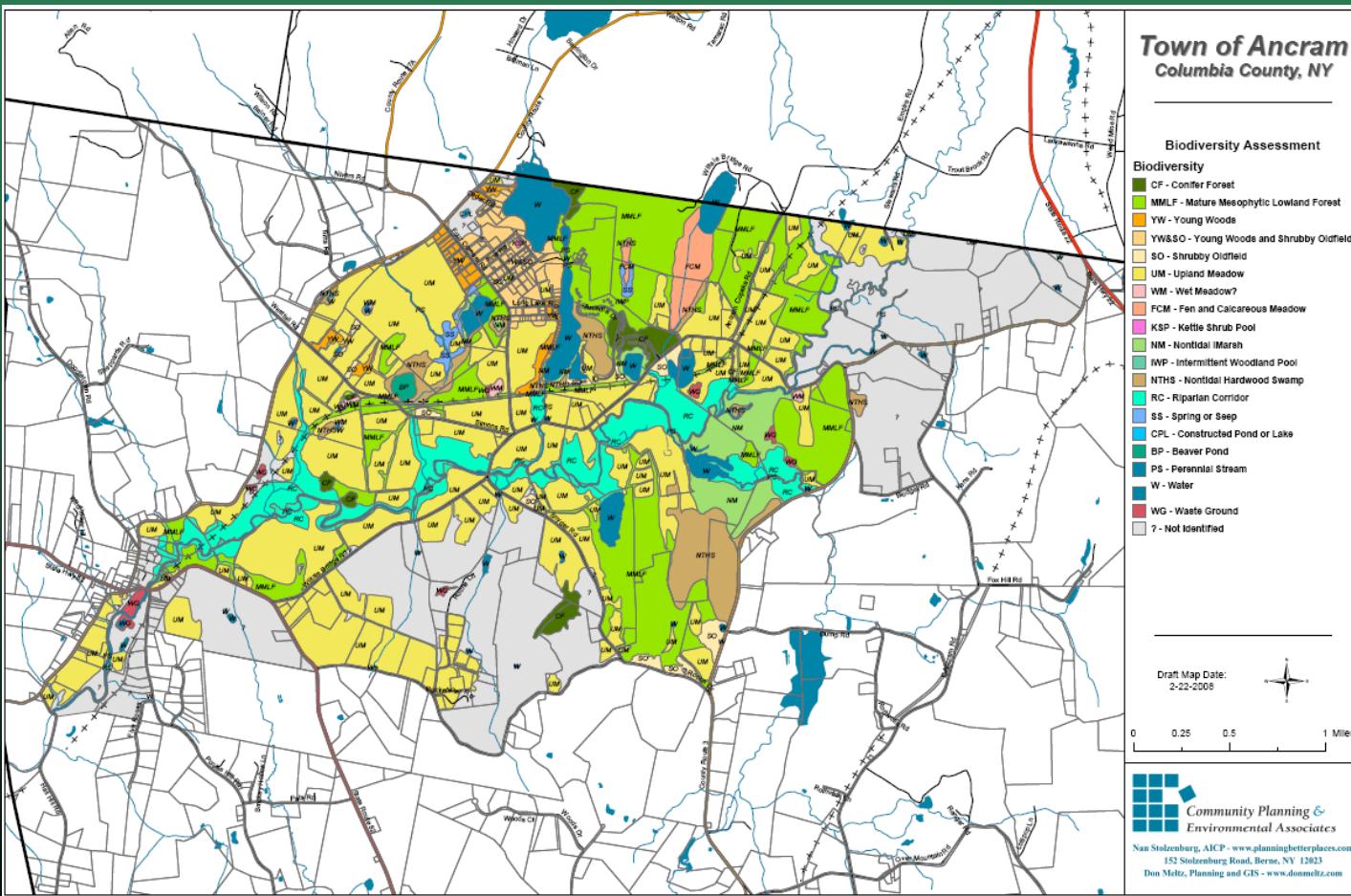


ELI, 2008



Some municipalities are creating detailed habitat maps to inform planning. Thinking about natural areas early in the process helps everyone involved.

Using multiple map resources is more effective at locating wetlands.



Local Approaches to Wetland Conservation

- create, update, and use plans and procedures to guide land-use decisions and meet community conservation goals
- preserve and restore generous buffers along streams and wetlands
- ask questions during environmental reviews (SEQR)
- educate decision-makers
- educate the community

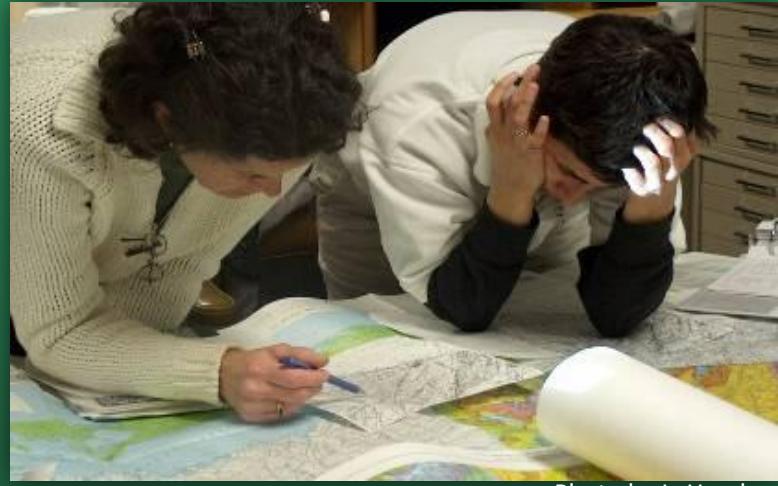


Photo by L. Heady



Photo by M. Fitzsimmons



Take Home Messages



- 1.) There are a variety of wetland types in the region.
- 2.) Wetlands have tremendous value and provide important services that support human and natural communities.
- 3.) Wetland maps often have inaccuracies.
- 4.) Many wetlands are not protected by State and Federal regulations.
- 5.) Local communities have opportunities to conserve vulnerable wetlands and the services and economic benefits they provide to residents.

Photo courtesy of CLC

Laura Heady

Biodiversity Outreach Coordinator

Hudson River Estuary Program and
Cornell University



Hudson River Estuary



Cornell University

NYS DEC

21 South Putt Corners Road

New Paltz, NY 12561-1696

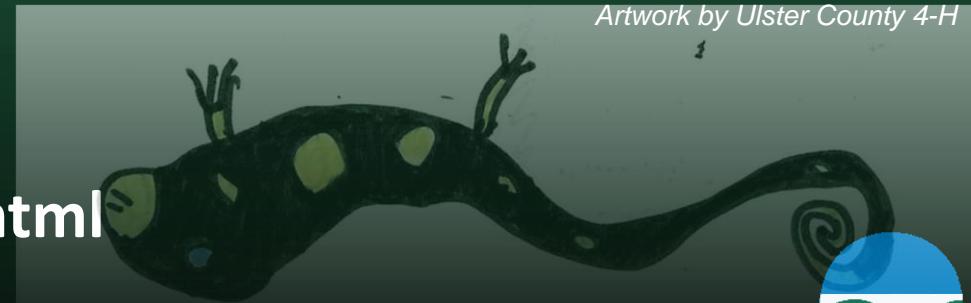
845-256-3061

ltheady@gw.dec.state.ny.us

www.dec.ny.gov/lands/4920.html



Artwork by Ulster County 4-H



NYS Department of Environmental Conservation

