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

**December 16, 2020**
**CDRPC Webinar Series**

Laura Heady
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Hudson River Estuary Program and Cornell University

Cornell University

NEW YORK STATE | Department of Environmental Conservation | Hudson River Estuary Program

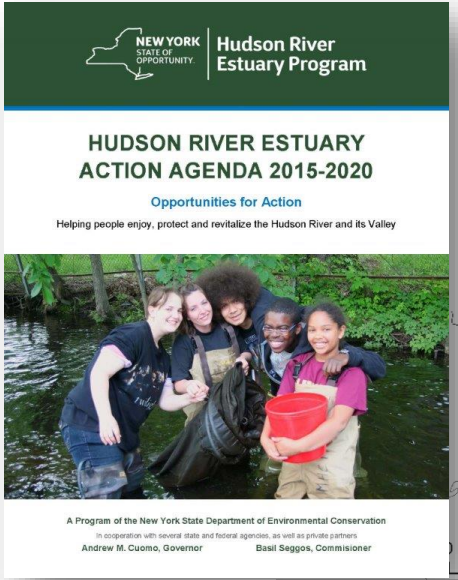
Photo by Laura Heady

# Hudson River Estuary Program

## Working to achieve six key benefits:

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

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


College of Agriculture and Life Sciences | Department of Natural Resources and the Environment

# Conservation Planning in the Hudson River Estuary Watershed

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## Conservation Planning

> ***"...a community should first understand its ecosystems and then place development where it will minimize ecological impact. By doing so, we will bring biodiversity conservation fully into the smart-growth equation, creating quality communities that sustain both humans and the ecosystems on which all life ultimately depends."*** *Nature in Fragments: The Legacy of Sprawl* (Johnson and Klemens 2005)

Conservation planning enables communities to proactively consider natural assets, set priorities, and plan for a future that sustains healthy ecosystems and quality of life for residents. By considering a broader scale and long-term goals, communities can shift their decision-making from *reactive* to *proactive*.

The basic steps of conservation planning include learning what natural assets your community has, through processes like natural resources inventory; identifying priorities through map

### Section Navigation



https://hudson.dnr.cals.cornell.edu/

# Today's Presentation

- What is a wetland?
- Diversity of Hudson Valley wetlands
- Value and function of wetlands
- Threats and wetland protection
- Local conservation strategies

Photo by Laura Heady

# What is a wetland?

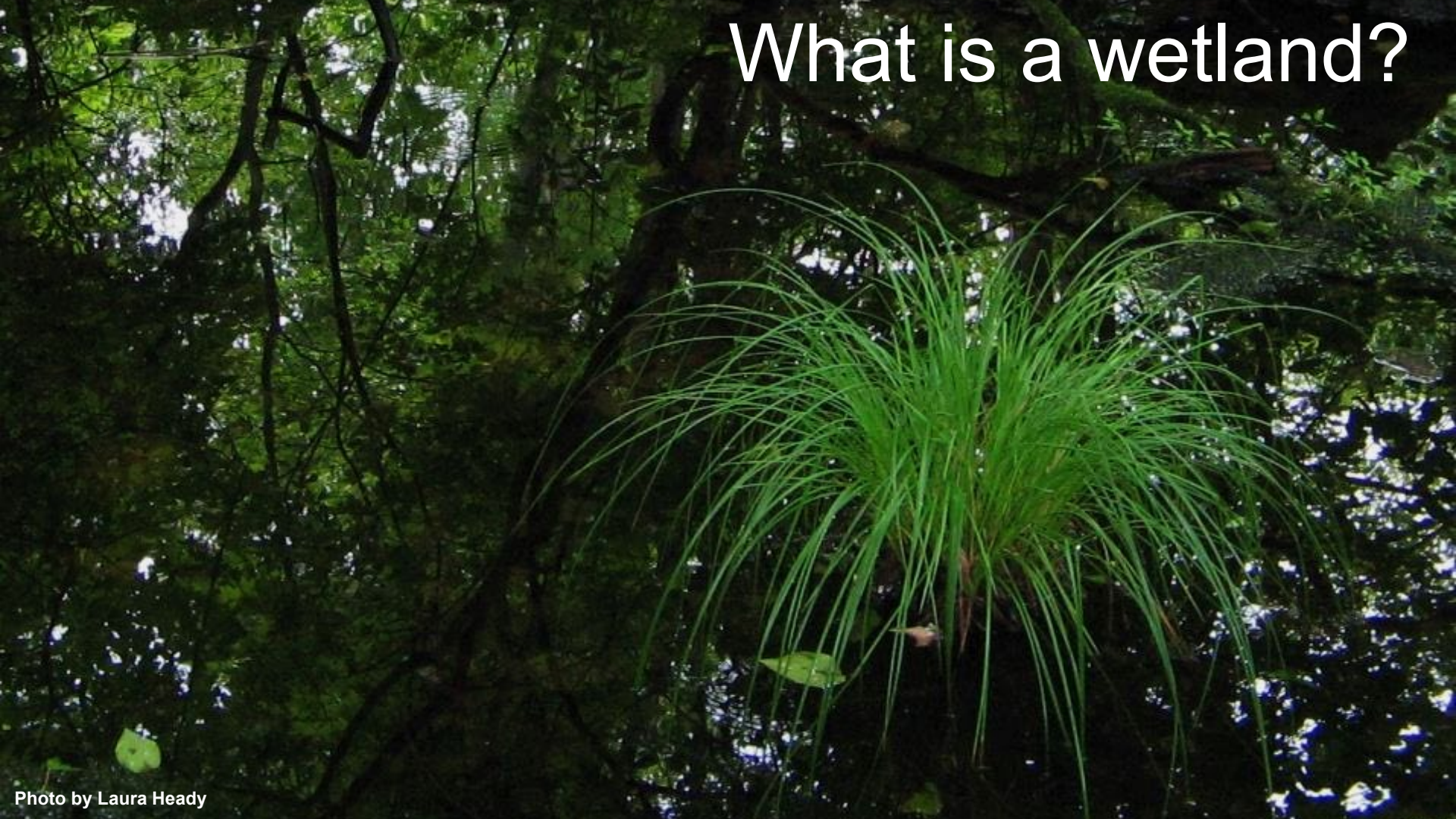
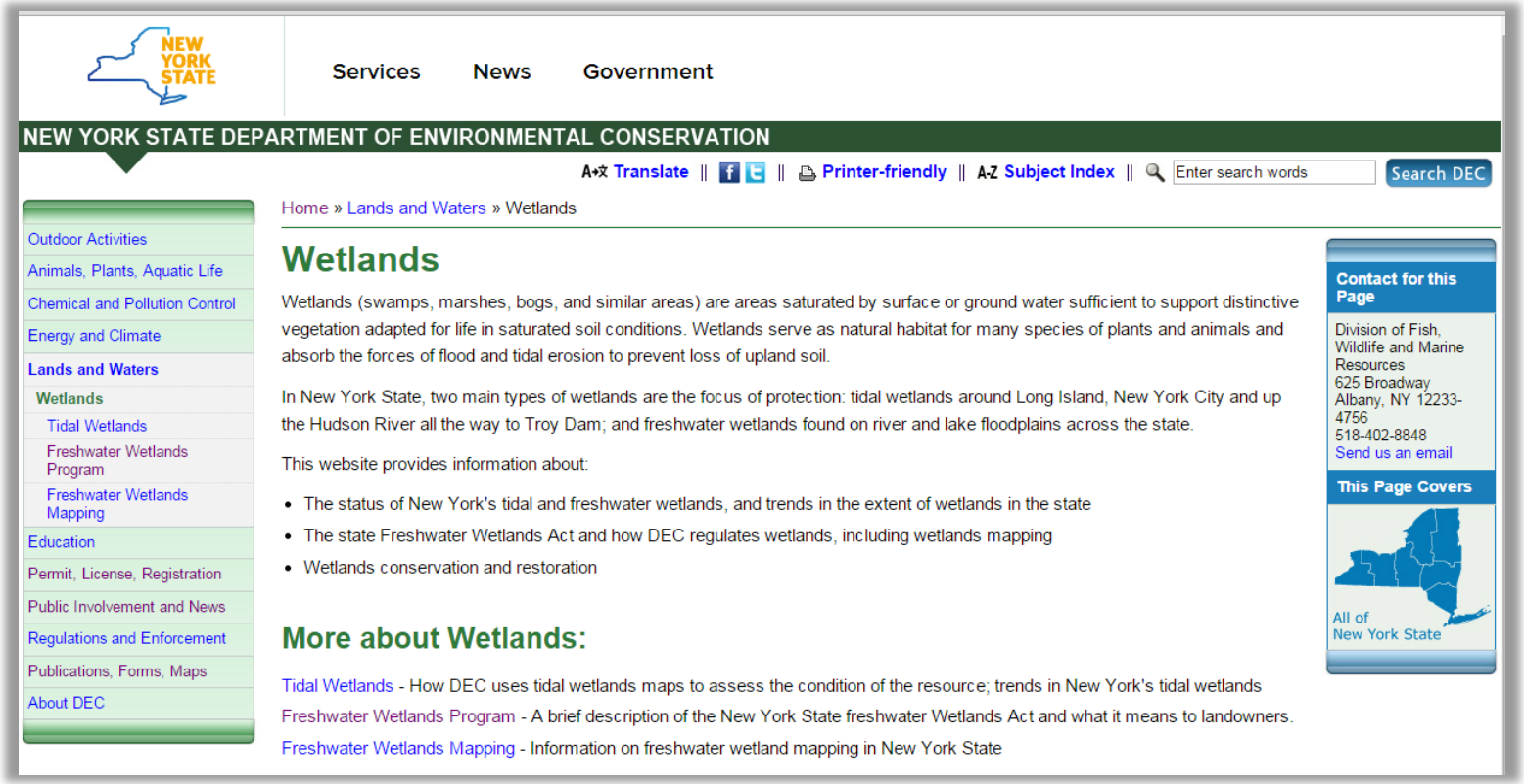


Photo by Laura Heady

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



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- Outdoor Activities
- Animals, Plants, Aquatic Life
- Chemical and Pollution Control
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## 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

### More about Wetlands:

Tidal Wetlands - How DEC uses tidal wetlands maps to assess the condition of the resource; trends in New York's tidal wetlands

Freshwater Wetlands Program - A brief description of the New York State freshwater Wetlands Act and what it means to landowners.

Freshwater Wetlands Mapping - Information on freshwater wetland mapping in New York State

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All of New York State

# Water, soil, and vegetation are three defining wetland characteristics:

1.) **hydrology**: indicators of water (inundation or saturation)

# Water, soil, and vegetation are three defining wetland characteristics:

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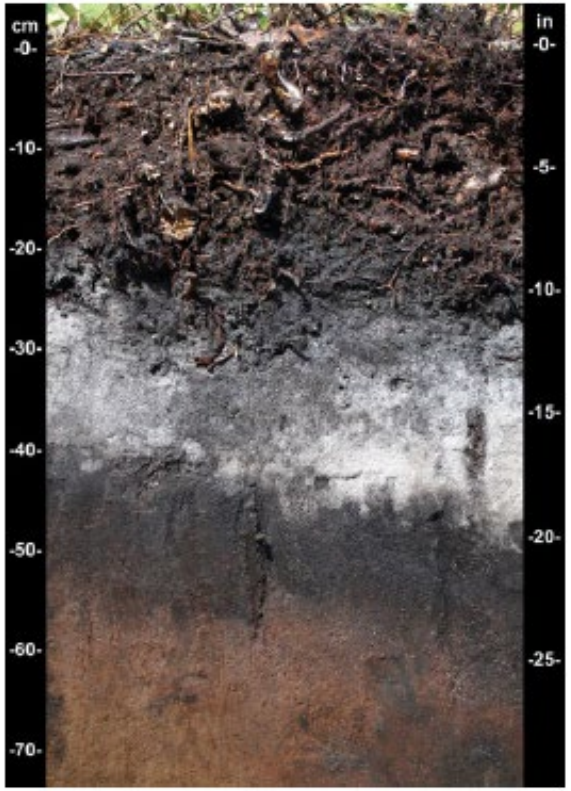
2.) **hydric soils**: soils with indicators of prolonged saturation



# Water, soil, and vegetation are three defining wetland characteristics:

1.) **hydrology**: indicators of water (inundation or saturation)

2.) **hydric soils**: soils with indicators of prolonged saturation

3.) **hydrophytic vegetation**: vegetation that is adapted to wet conditions

# Diversity of Hudson Valley Wetlands

Photo by Laura Heady

# “Aren’t all wetlands the same?”

*“The old perception that all wetlands are marshy and have open water has been placed in a new context. We now know that only about 14% of our wetlands fit this cattail-marsh-with-a-duck image. Most of our wetlands are shrub or forested swamps, and many lie along rivers and streams in the floodplain riparian zone. In the past, many of these critical wetlands were missed in the mapping process.”*

https://www.dec.ny.gov/lands/5124.html

# No two wetlands are alike!

The diversity of freshwater, non-tidal wetlands in the Hudson Valley includes:

wet meadow
wet clay meadow
fen
emergent marsh
vernal or woodland pool
bog
floodplain forest
hardwood swamp
shrub swamp
springs and seeps


Photo by Laura Heady

# The diversity of tidal wetlands in the Hudson River estuary includes:

salt marsh
estuarine rocky shore
tidal tributary mouth
brackish meadow
brackish tidal marsh
freshwater tidal swamp
freshwater intertidal mudflats
supratidal pool


Photo by Laura Heady

# Examples of freshwater, non-tidal wetlands

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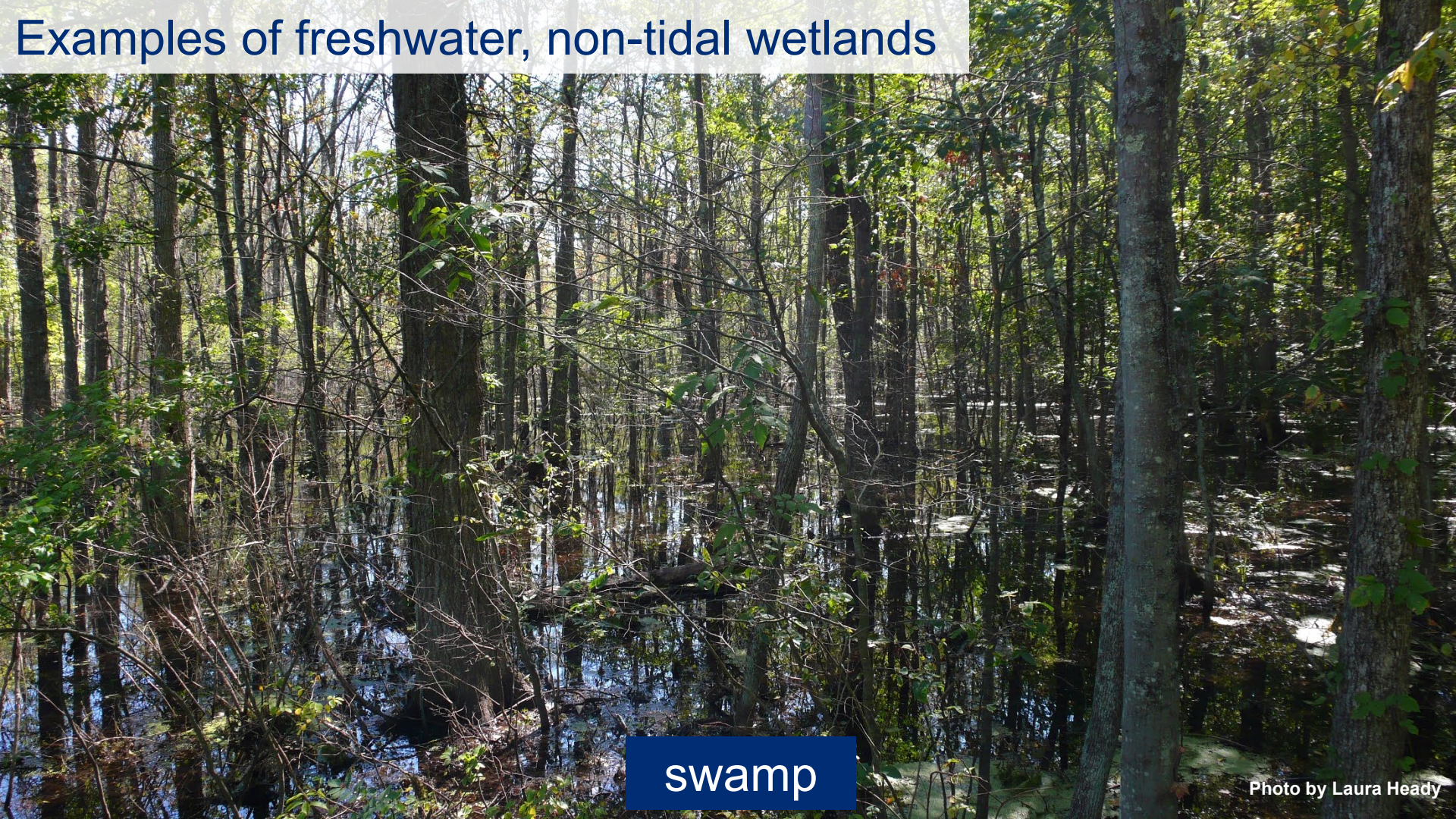
# Examples of freshwater, non-tidal wetlands



# Examples of freshwater, non-tidal wetlands

woodland pool

Photos by Laura Heady

# Learn more about wetland communities on the NY Natural Heritage Program's Conservation Guides website:

## NYNHP Online Conservation Guides https://guides.nynhp.org/

The New York Natural Heritage Program facilitates the conservation of New York State's biodiversity by providing comprehensive information and scientific expertise on rare species and natural ecosystems to resource managers and other conservation partners. The following conservation guides are designed to help land managers, decision-makers, planners, scientists, consultants, and the interested public better understand the rare species and natural communities that characterize New York.

For more information about the guides, including how to contribute data, see About.

| Lists of Guides | Count |
|---|---|
| Animal Guides | 230 |
| Community Guides | 151 |
| Plant Guides | 410 |
| All Guides | 791 |

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Additional Information

- Conservation Status Definitions
- Ecological Community System Descriptions
- Key to Ecological Community Systems and Subsystems

New York Natural Heritage Program

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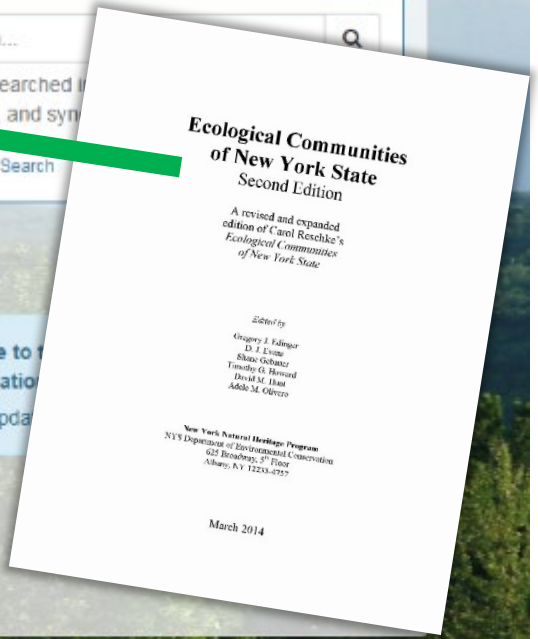
Ecological Communities of New York State
Second Edition

A revised and expanded edition of Carol Reschke's *Ecological Communities of New York State*

Edited by

Gregory J. Edinger
D. J. Evans
Shane Gebauer
Timothy G. Howard
David M. Hunt
Adele M. Olivero

New York Natural Heritage Program
NYS Department of Environmental Conservation
625 Broadway, 5th Floor
Albany, NY 12233-4757

March 2014

New York Natural Heritage Program

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Select multiple options or deselect options by pressing Ctrl + Click

If a field is omitted, all possible values are included in the search.

**Names**

Search...

Names searched include family, scientific, common, and synonyms.

**Guide Types**

Animals
Ecological Communities
Plants

**State Legal Status**

Endangered
Not listed
Protected - no open season
Protected Bird

**Counties**

Chenango
Clinton
Columbia
Cortland
Delaware

**Ecological Communities**

Acidic talus slope woodland
Acidified lake
Acidified stream
Allegheny oak forest

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# Using the “Advanced Search” page, select “Ecological Communities” and your county.

New York Natural Heritage Program

Search...

Guides

Abo

Guide types: A Animals C Ecological Communities P Plants

Show 10 entries

Filter records:

| Type | Common Name | Scientific Name |
|---|---|---|
| C | Acidic Talus Slope Woodland | *Acidic talus slope woodland* |
| C | Appalachian Oak-Hickory Forest | *Appalachian oak-hickory forest* |
| C | Beech-Maple Mesic Forest | *Beech-maple mesic forest* |
| C | Calcareous Cliff Community | *Calcareous cliff community* |
| C | Chestnut Oak Forest | *Chestnut oak forest* |
| | Floodplain Forest | *Floodplain forest* |
| | Freshwater Intertidal Mudflats | *Freshwater intertidal mudflats* |
| | Freshwater Intertidal Shore | *Freshwater intertidal shore* |
| | Freshwater Tidal Swamp | *Freshwater tidal swamp* |
| C | Hemlock-Northern Hardwood Forest | *Hemlock-northern hardwood forest* |

Showing 1 to 10 of 19 entries

Previous 1 2 Next

New York Natural Heritage Program

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Guide types: A Animals C Ecological Communities P Plants

Show 10 entries

Filter records:

| Type | Common Name | Scientific Name |
|---|---|---|
| C | Inland Calcareous Lake Shore | *Inland calcareous lake shore* |
| C | Inland Poor Fen | *Inland poor fen* |
| C | Maple-Basswood Rich Mesic Forest | *Maple-basswood rich mesic forest* |
| C | Pitch Pine-Oak-Heath Rocky Summit | *Pitch pine-oak-heath rocky summit* |
| C | Red Maple-Tamarack Peat Swamp | *Red maple-tamarack peat swamp* |
| C | Rich Graminoid Fen | *Rich graminoid fen* |
| C | Rich Shrub Fen | *Rich shrub fen* |
| C | Shallow Emergent Marsh | *Shallow emergent marsh* |
| C | Tidal River | *Tidal river* |

Showing 11 to 19 of 19 entries

Previous 1 2

# Shallow Emergent Marsh

Shallow emergent marsh along the south shore of Newton Ponds.
Gregory J. Edinger

**System**
Palustrine
**Subsystem**
Open Mineral Soil Wetlands

**State Protection**
Not Listed
**Federal Protection**
Not Listed

**State Conservation Status Rank**
S3
**Global Conservation Status Rank**
G5

Contents



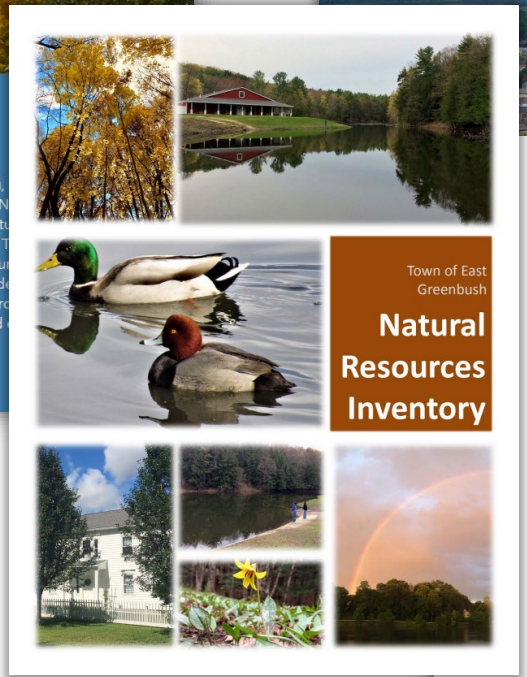
## Summary

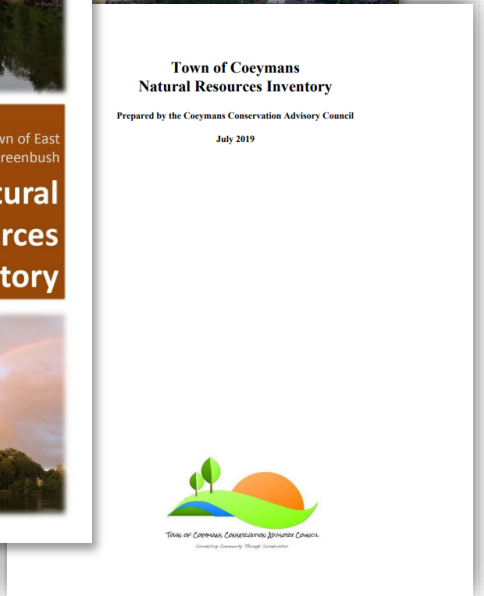
### Did you know?

One characteristic plant of shallow emergent marshes is the cardinal flower. The bright, scarlet red flower attracts its pollinator, the ruby-throated hummingbird. This hummingbird is the only hummingbird that breeds in eastern North America. It winters in Central America and the cardinal flower has timed its blooming season to correspond to the hummingbird's migration south. According to legend, the flower was named for the red

# Learn more about wetlands in your community.

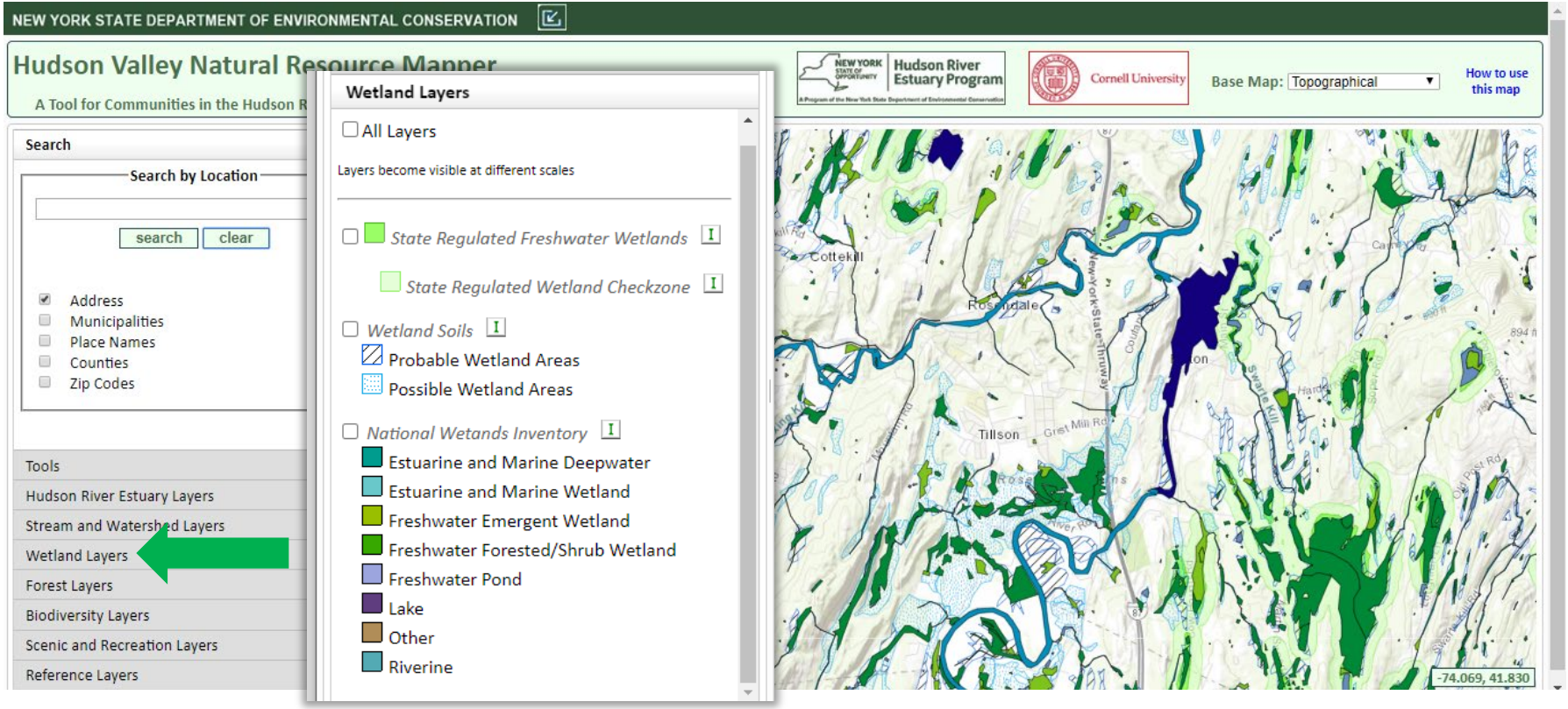





**Does your municipality or county have a Natural Resources Inventory?**

# Learn more about wetlands in your community.




**Hudson Valley Natural Resource Mapper**

https://www.dec.ny.gov/lands/112137.html

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

# Learn more about New York State's wetlands on the NYSDEC website.

**Department of Environmental Conservation**

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**Wetlands**
- Tidal Wetlands
- Freshwater Wetlands Program
- Freshwater Wetlands Mapping

Home » Lands and Waters » Wetlands

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

## Wetlands

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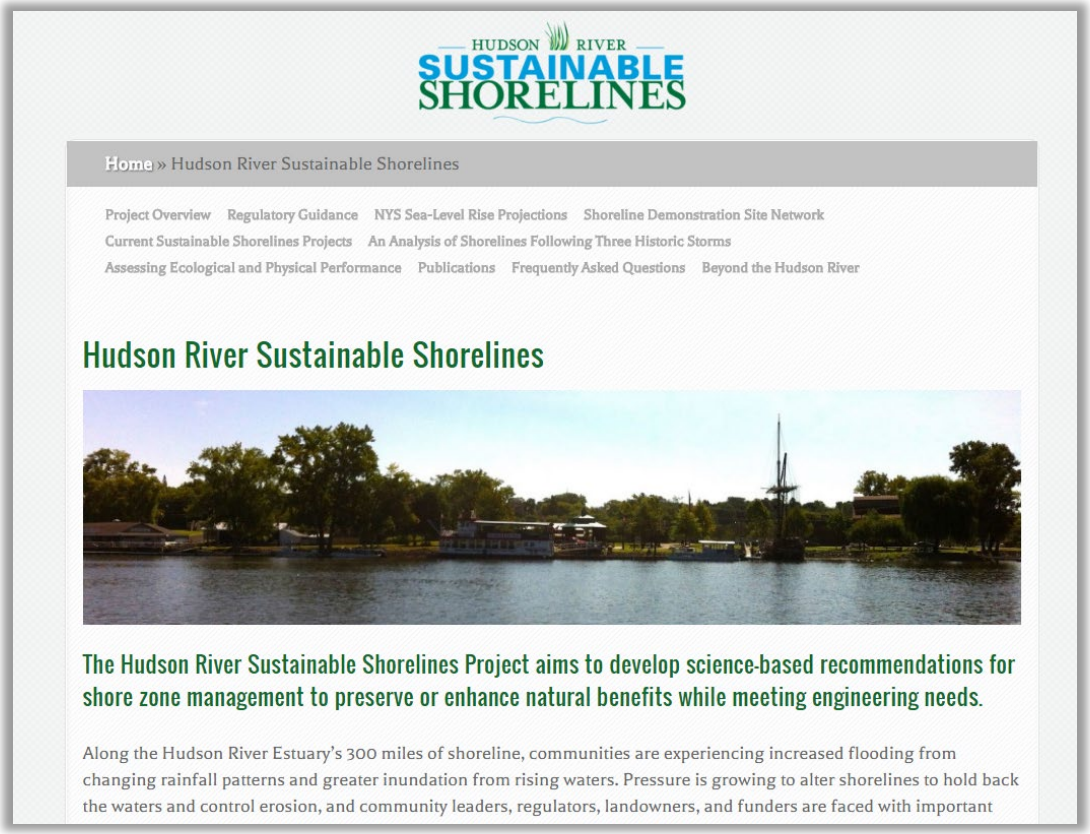
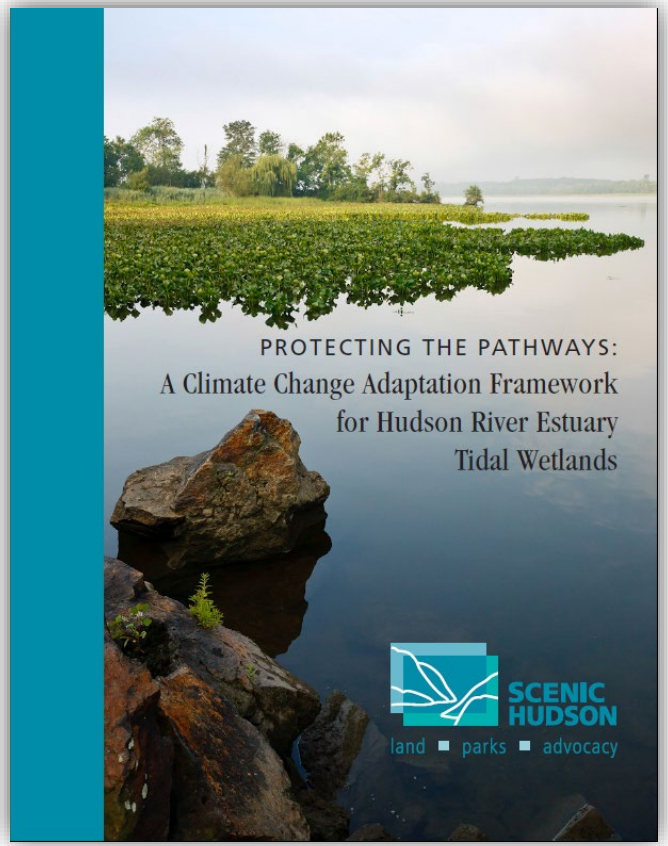
# Learn more about tidal wetlands.




https://www.hrnerr.org/




https://www.scenichudson.org/

# Values and Functions of Wetlands

Photo by Laura Heady

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

**natural resources**
*(including wetlands!)*

- 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"**

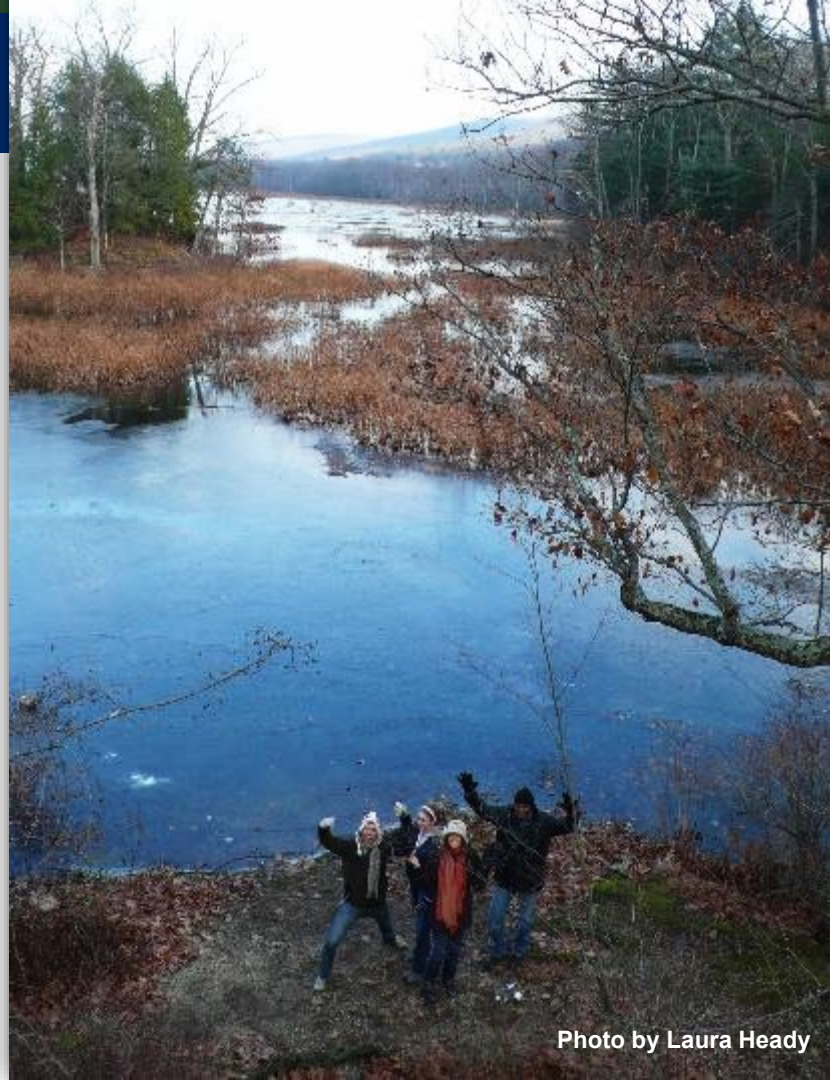
Photo by Laura Heady

# What’s at stake?

## Clean Water

Wetlands help keep water clean by:

- reducing runoff,
- preventing erosion,
- storing floodwater,
- filtering sediment, nutrients, and other contaminants.



# Wetlands are hydrologically connected to the surrounding landscape through surface water and groundwater.

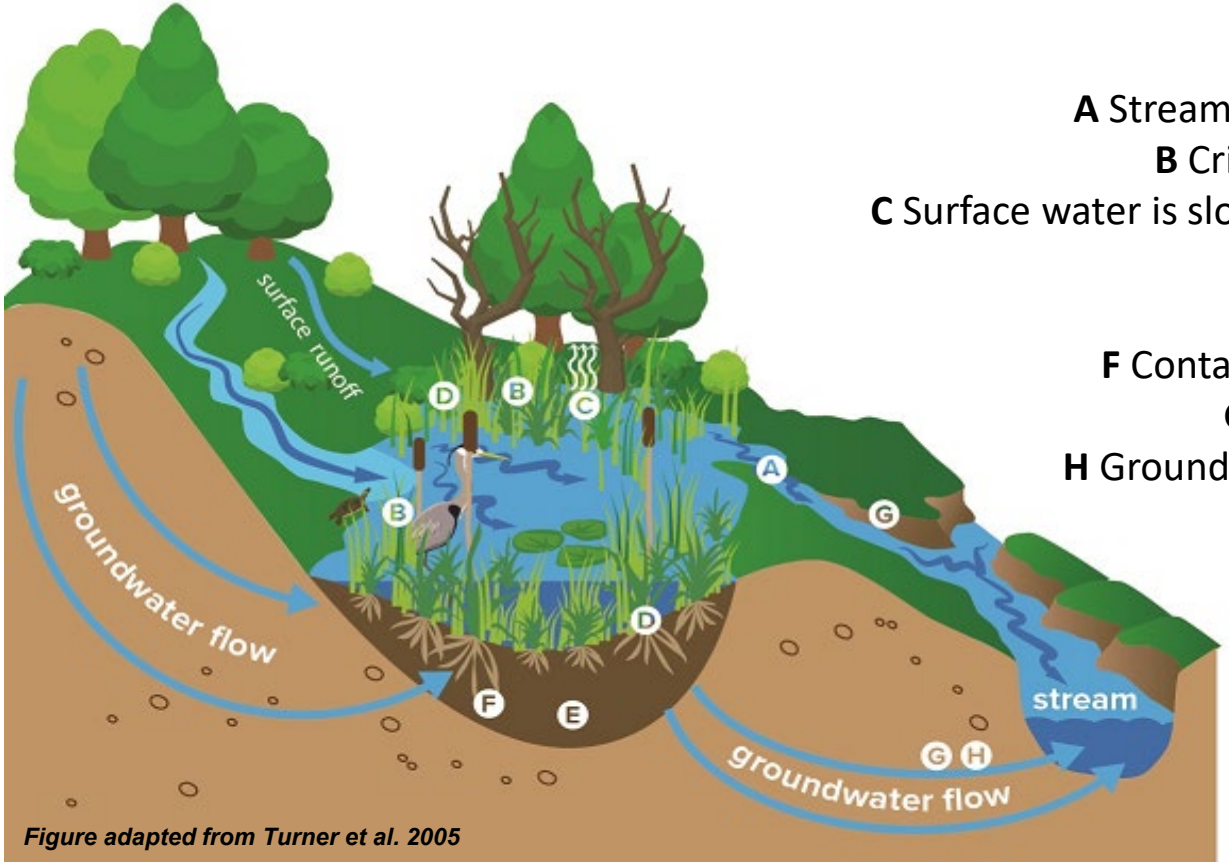



*Figure adapted from Turner et al. 2005*

**A** Stream energy dissipates through system.
**B** Critical habitat is available to wildlife.
**C** Surface water is slowly released through evaporation.
**D** Plants transpire stored water.
**E** Saturated soil stores water.
**F** Contaminants and sediment are filtered.
**G** Water leaving wetland is cleaner.
**H** Groundwater is slowly released to stream.

# What's at stake?

## Clean Water

The West Brook Conservation Initiative restored lost wetlands to filter stormwater from a commercial zone before it enters a popular swimming area in Lake George.

### West Brook Conservation Initiative: From Worst Threat to State-of-the-Art Water Treatment

*Posted on October 16, 2016*

One of the greatest threats to a clean Lake George has always been stormwater runoff – and one of the worst places in Lake George for stormwater runoff had been West Brook at the head of the Lake.

**Now, however, there is beautiful, walkable space on either side of West Brook and a natural system that cleans stormwater and protects Lake George water quality in the process.**

On one side of West Brook is the West Brook Conservation Initiative Environmental Park, which performs the hard work of cleaning stormwater before

The walking trails at the West Brook Conservation Initiative property in Lake George.

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The walking trails at the West Brook Conservation Initiative property in Lake George.

*"When the stormwater processes through the property and flows back into West Brook,* ***it no longer carries the pollutants, sediment and other contaminants, instead offering Lake George clean, fresh water*** *– just like nature intended!"*

www.lakegeorgeassociation.org

# What’s at stake?

## Habitat

Wetlands are among the most productive natural systems.

- EPA calls them “biological supermarkets.”
- USFWS estimates that 43% of threatened and endangered species rely directly or indirectly on wetlands for their survival.

Photo by Chris Bowser

# What’s at stake?

## Climate Change Resilience

Wetlands and floodplains can help communities build resiliency to:

- increasing temperatures,
- sea level rise, and
- variability in precipitation (storms, floods, drought)

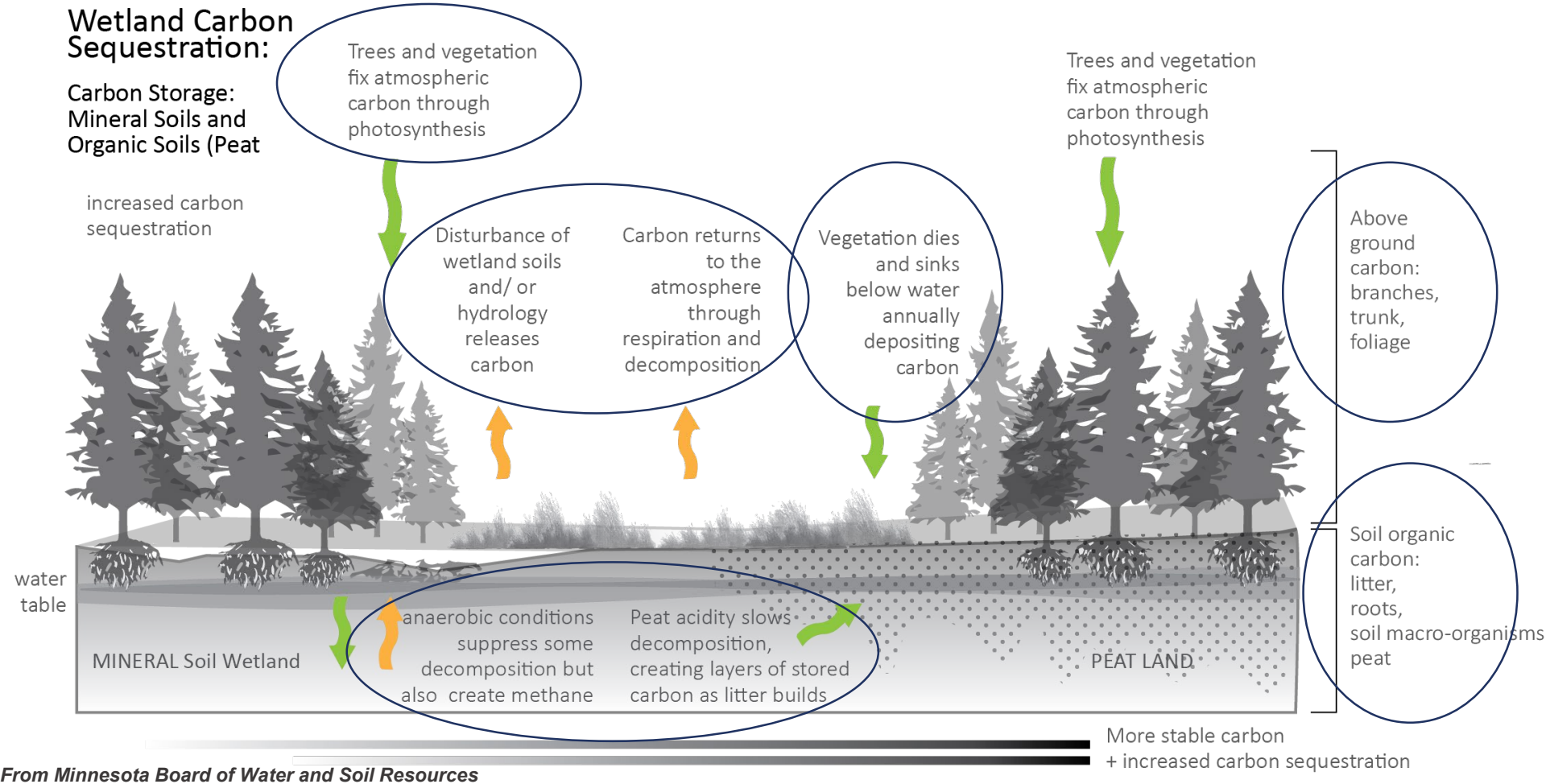
and store carbon.

Photo by Laura Heady


Photo by Ingrid Haeckel

# Wetland Carbon Sequestration:

## Carbon Storage: Mineral Soils and Organic Soils (Peat




*From Minnesota Board of Water and Soil Resources*

# What's at stake?

## Economic Benefits of Open Space:


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."

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

# What's at stake?

## Recreation, Enjoyment, and Associated Economic Benefits

In 2011, residents and nonresidents spent $9.2 billion on wildlife-related recreation (hunting, fishing, and wildlife-watching) in New York. *(USFWS 2014)*

In 2017, tourism spending in the Hudson Valley reached $5.5 billion, employed 88,000 people, and generated $682 million in taxes. *(Tourism Economics 2018)*

Photo by Laura Heady

# Threats and Wetland Protection

Photo by Laura Heady

# Wetland Threats: Loss, Degradation, Climate Change

hydrologic alterations
(fill, drainage, etc.)

pollutants
(leaky landfills, leaky septic tanks, runoff, etc.)

inadequate buffers

invasive species

climate change

lack of understanding


Photo by Laura Heady

# Wetland Loss

- USFWS estimates that more than half of New York State's wetlands have been lost in the last 200+ years.

- Between 1985 and 1995, the Hudson Valley had a net loss of wetlands of almost 3,000 acres.

- Overall in NYS, wetland gains were in rural areas and losses were in urbanized areas, where benefits of wetlands were also lost.


Photo by Laura Heady

# What's protected?



**Jurisdiction of New York State**

- **New York State** regulates activities in wetlands ≥12.4 acres, or wetlands with the designation of "Unusual Local Importance," and adjacent areas that extend 100 feet from the wetland boundary.
- The DEC requires permits for certain activities, such as construction or excavation, to prevent impairment to wetland functions.
- Regulated wetlands must be on the Freshwater Wetlands Map.
- Freshwater wetlands are regulated under NYS Article 24 of Environmental Conservation Law (http://www.dec.ny.gov/lands/5133.html).

# What's protected?



**Jurisdiction of United States**

- The **federal government** regulates activities in wetlands of any size that meet certain criteria (under Section 404 of the Clean Water Act). It does not generally regulate the adjacent area or buffer zone around each wetland.
- Recent (Jan 2020) rule revision changed definition of "waters of the United States" (WOTUS) under the federal CWA, leaving many hydrologically isolated wetlands unprotected.
- The Army Corps of Engineers (ACOE) is the agency responsible for federal wetlands protection. Determination of jurisdiction is made by ACOE.

# What's protected?

Some, not all, wetlands are protected by state and federal regulations.

| Agency | Jurisdiction |
|---|---|
| New York State DEC | Freshwater wetlands >12.4 acres with 100-foot adjacent area, plus certain wetlands of unusual local importance; must be on regulatory map |
| U.S. Army Corps of Engineers | Wetlands considered waters of the United States (WOTUS), any size with no buffer; recent changes to "WOTUS" definition limits protection of isolated wetlands. |

- Wetlands can also be protected through municipal efforts.

# What are the implications?

In the Hudson estuary watershed, 56% of non-lacustrine wetlands on the National Wetland Inventory (NWI) maps are "small" (<12.4 ac) and geographically isolated, and therefore likely vulnerable.


Photo by Scott Cuppett

From:
*An analysis of the size and distribution of geographically isolated, small wetlands in the Hudson River estuary watershed.* Zucker and Lau 2009.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

# Local Conservation Strategies

Photo by Laura Heady

# What can your community do?

Use the following approaches to proactively conserve wetlands, wetland complexes, and surrounding uplands.

- ✓ education
- ✓ stewardship
- ✓ local planning and policy


Photo by Laura Heady

# What can your community do?

- Enroll in trainings to gain knowledge about wetlands and natural areas.
- Educate residents about the value of wetlands (e.g., signs, news articles, public programs, field trips).
- Pursue stewardship projects to maintain and improve natural areas; partner with local land trusts and watershed alliances.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# What can your community do?

- Map natural resources like wetlands, forests, streams, and other natural areas as part of a municipal natural resources inventory.

- Identify and prioritize high-quality wetlands, wetland complexes, stream corridors, and large intact forests as part of a municipal open space inventory or plan.

# What can your community do?

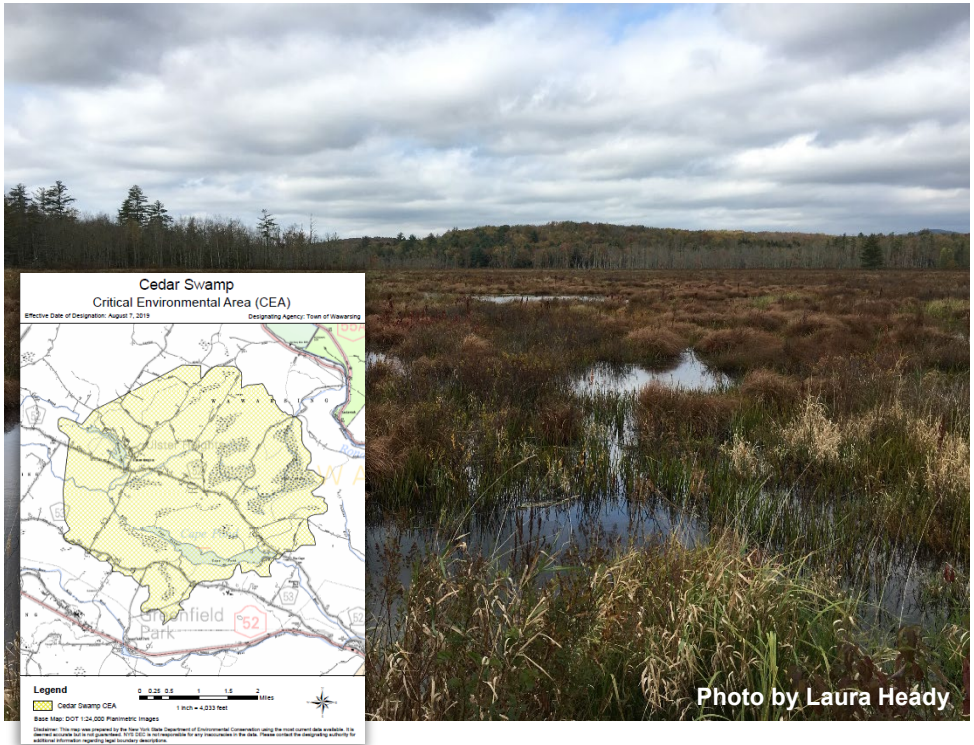
- Ensure that wetlands are considered early during the planning review process and conserved to the greatest extent possible.

➢ Conduct map analysis and site visits to identify wetland resources.

➢ Recommend voluntary wetland protection to land use applicants.

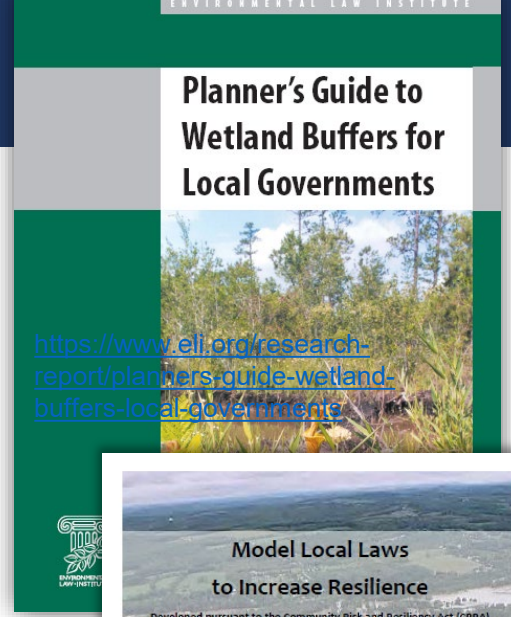
➢ Designate Critical Environmental Areas to enhance recognition and conservation of the community's vulnerable wetlands.

https://www.dec.ny.gov/permits/91771.html



# What can your community do?

- Consider local protection laws.




https://www.eli.org/research-report/planners-guide-wetland-buffers-local-governments

**Example: Town of Woodstock Wetland and Watercourse Law**

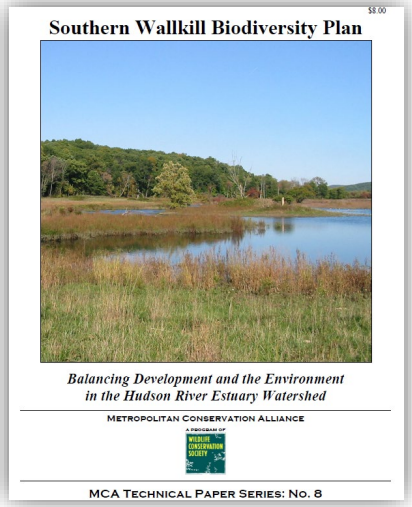
- Protects **all streams and wetlands**, including **small streams**, and **small, isolated wetlands**
- Protects adjacent buffer areas of variable width (30-100 ft) based on drainage area or wetland size
- Wetland inspector and planning board refer to townwide habitat map.

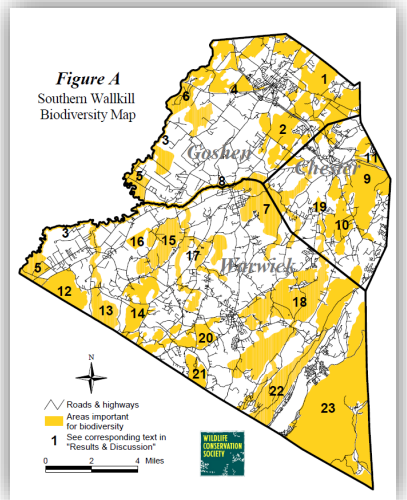

https://www.dos.ny.gov/opd/programs/resilience/Model_Local_Laws_to_Increase_Resilience.pdf

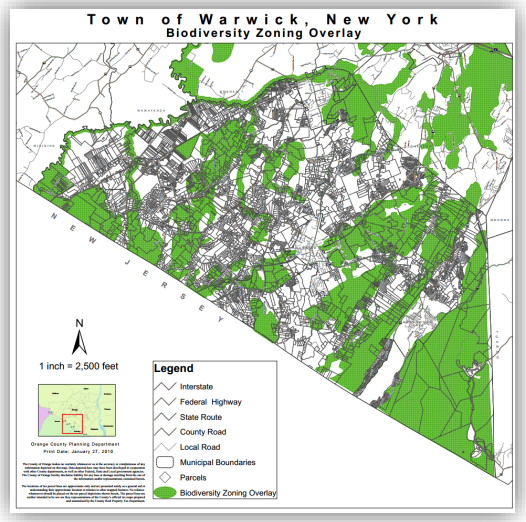
# What can your community do?

- Develop conservation overlay zones with added protection.

**<u>Example: Town of Warwick Biodiversity Zoning Overlay</u>**
requires detailed habitat assessments to evaluate potential impacts.



# Take Home Messages

1.) Hudson Valley wetlands are diverse!

2.) Wetlands have tremendous value and provide important services that support human and natural communities.

3.) Many wetlands are not protected by existing State and Federal regulations.

4.) Communities and landowners have opportunities to conserve vulnerable wetlands and the benefits they provide.


Photo by Laura Heady

# For more information:

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Photo by Nava Tabak

***Thank you!***

Cornell University

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