

DUTCHESS COUNTY BIODIVERSITY

FORUM

22 May 2019
Farm and Home Center
Millbrook

Hudsonia

Ltd



Cornell Cooperative Extension
Dutchess County



**Hudson River
Estuary Program**

DUTCHESS COUNTY BIODIVERSITY FORUM

- Biodiversity & ecosystem services
- Dutchess County biodiversity
- Threats to biodiversity
- How to protect biodiversity

BIODIVERSITY

All the variety of life at all levels:

- genes
- species
- communities
- habitats
- ecosystems and landscapes

AND

- the interactions and processes that sustain this variety

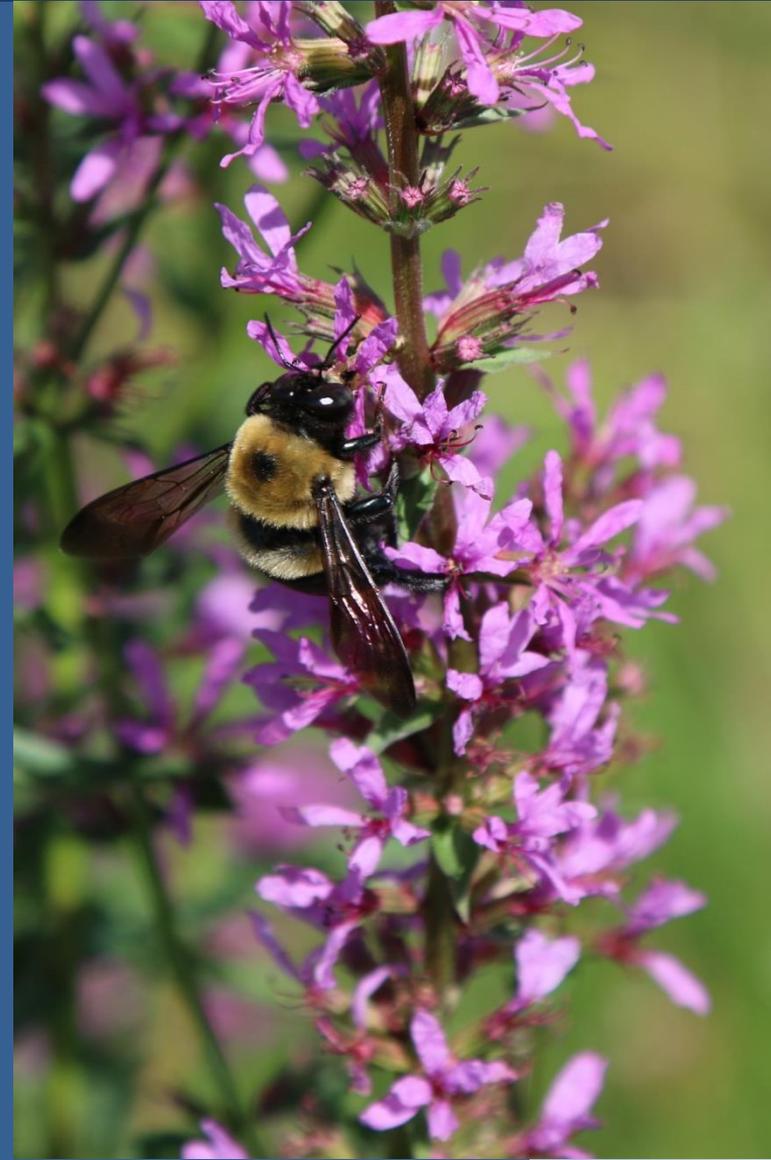
ECOSYSTEM SERVICES

- regulation of atmospheric gases
- decomposition of organic waste
- soil building
- nutrient cycling
- maintenance of water quality & quantity
- carbon storage

...

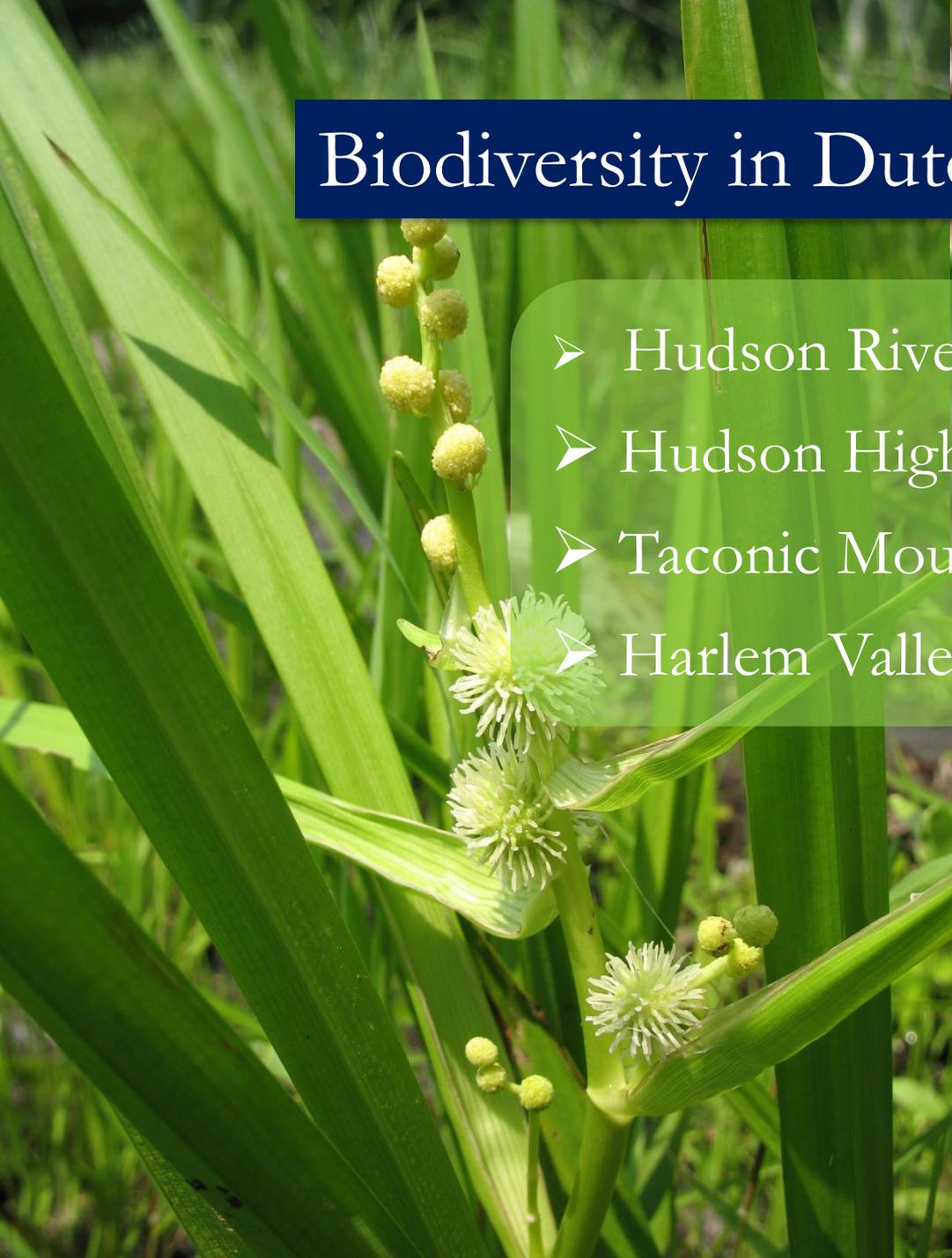
ECOSYSTEM SERVICES

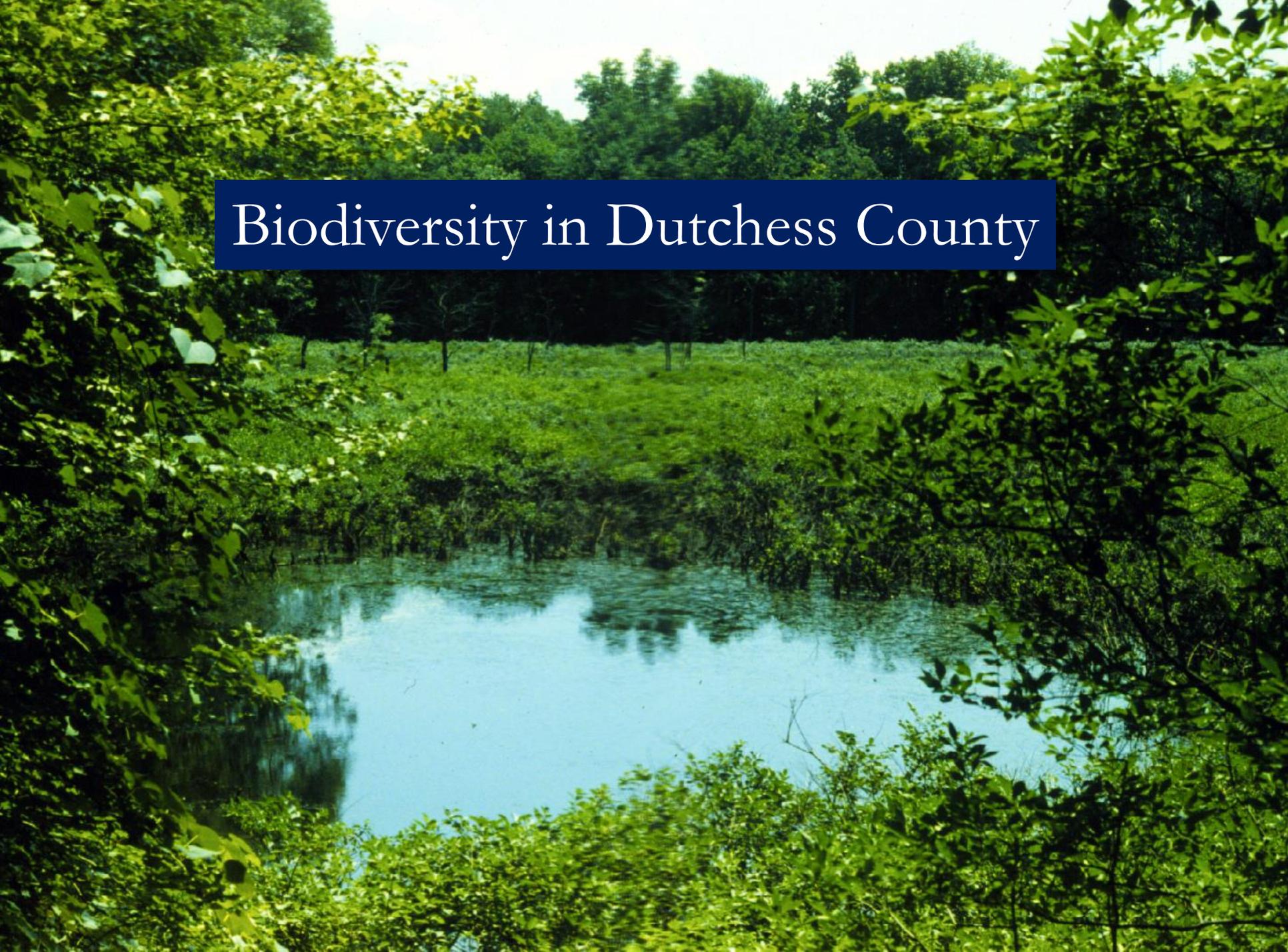
- pollination
- seed dispersal
- pest and disease control
- food
- building materials
- fiber
- fuel
- medicinal substances
- ...and so on...



Biodiversity in Dutchess County

- Hudson River
- Hudson Highlands
- Taconic Mountains
- Harlem Valley

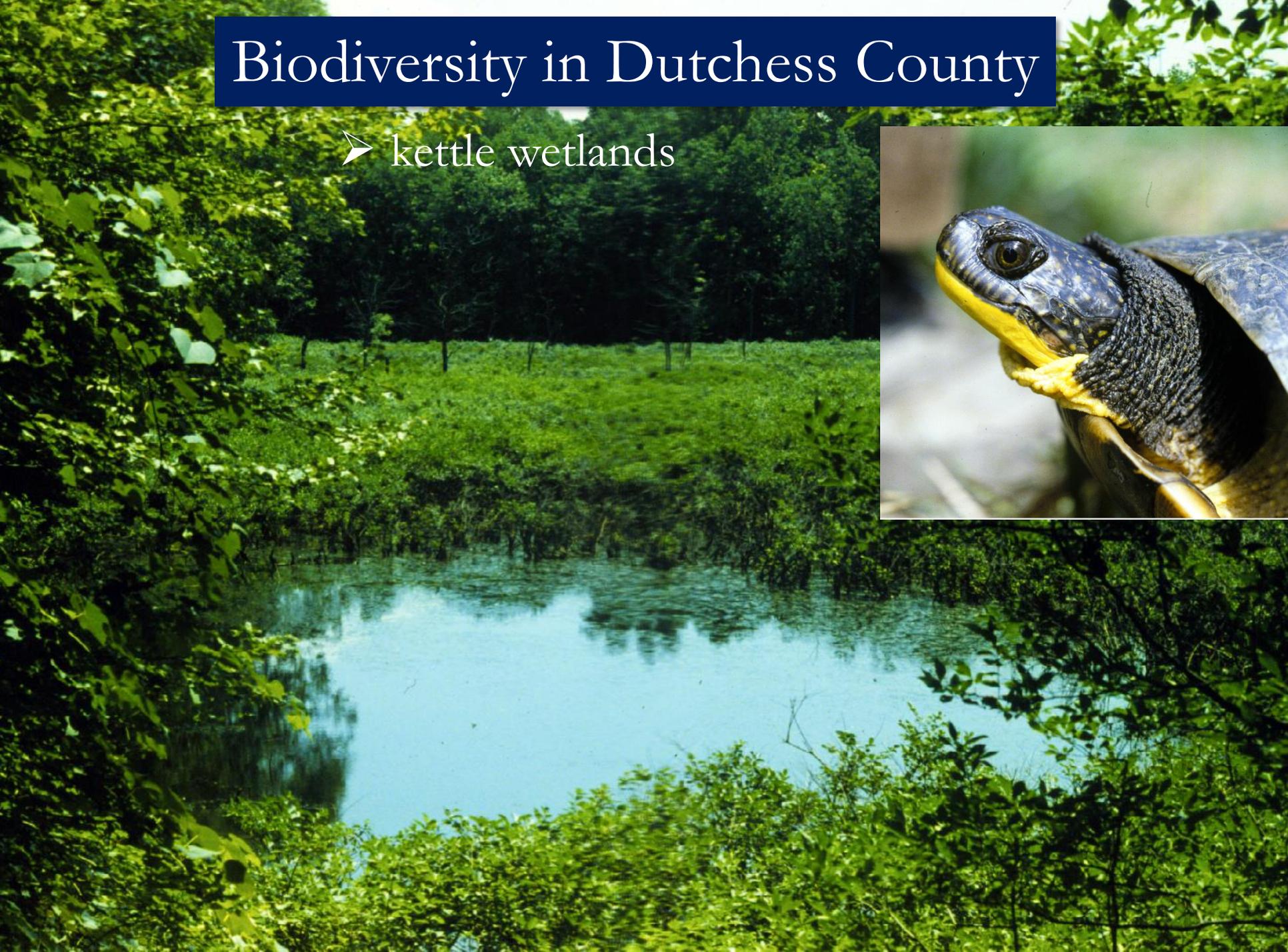




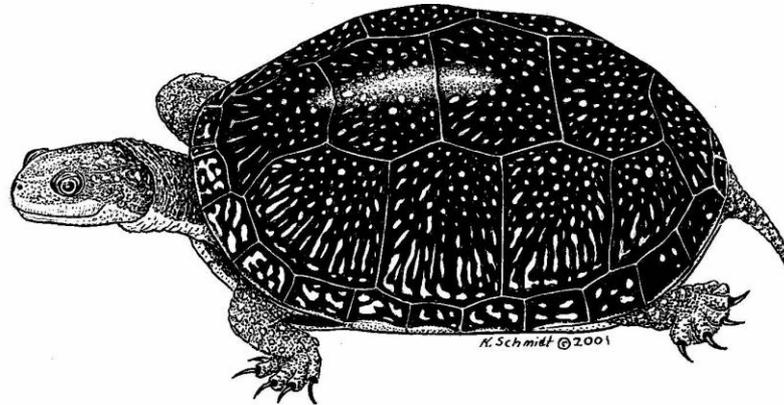
Biodiversity in Dutchess County

Biodiversity in Dutchess County

➤ kettle wetlands



BLANDING'S TURTLE HABITATS IN SOUTHERN DUTCHESS COUNTY



Report to the
Marilyn Milton Simpson Charitable Trusts
and New York State Department of Environmental Conservation
Hudson River Estuary Program

By Tanessa Hartwig, Gretchen Stevens,
John Sullivan, and Erik Kiviat

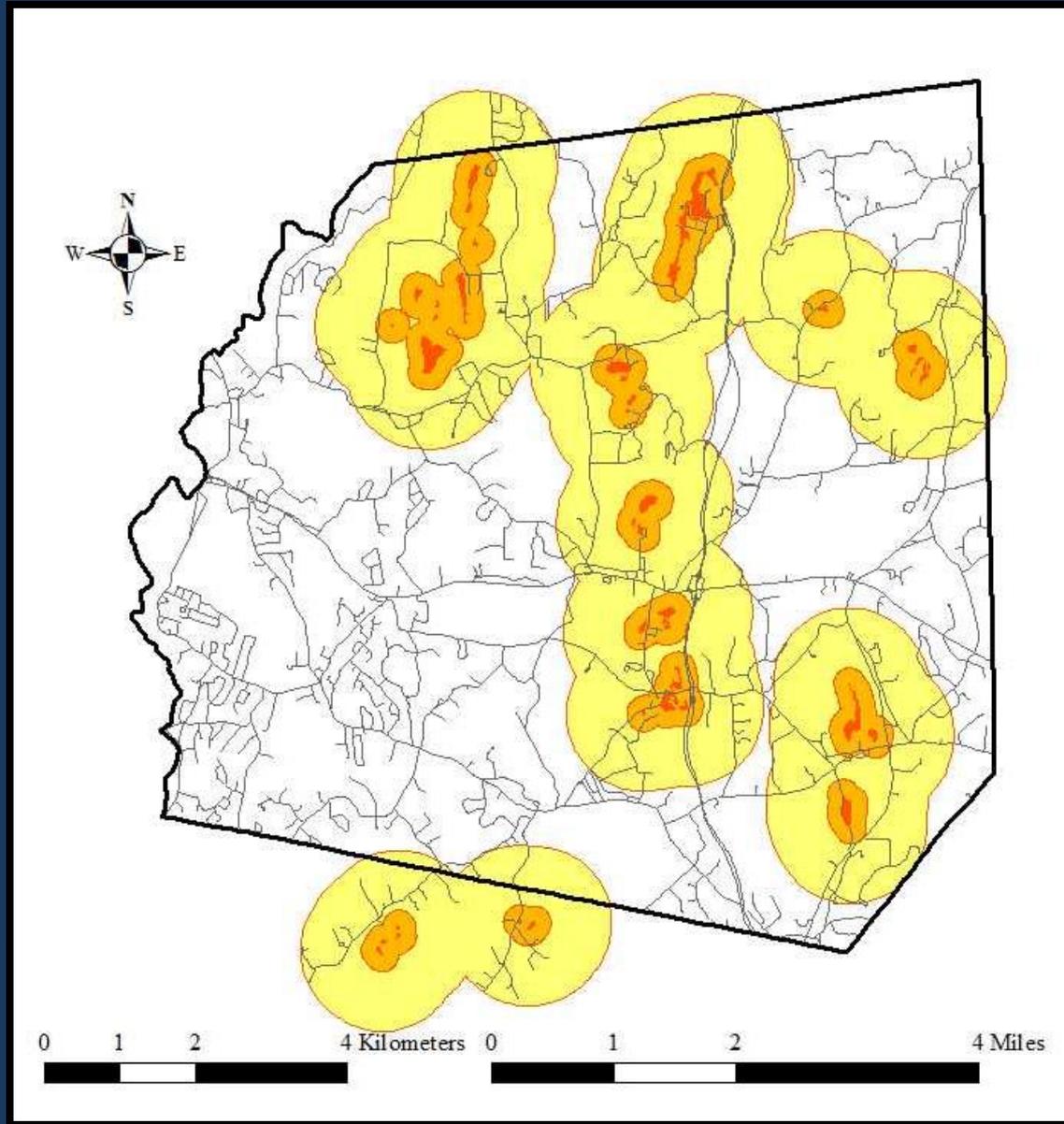
March 2009



Hudsonia Ltd.

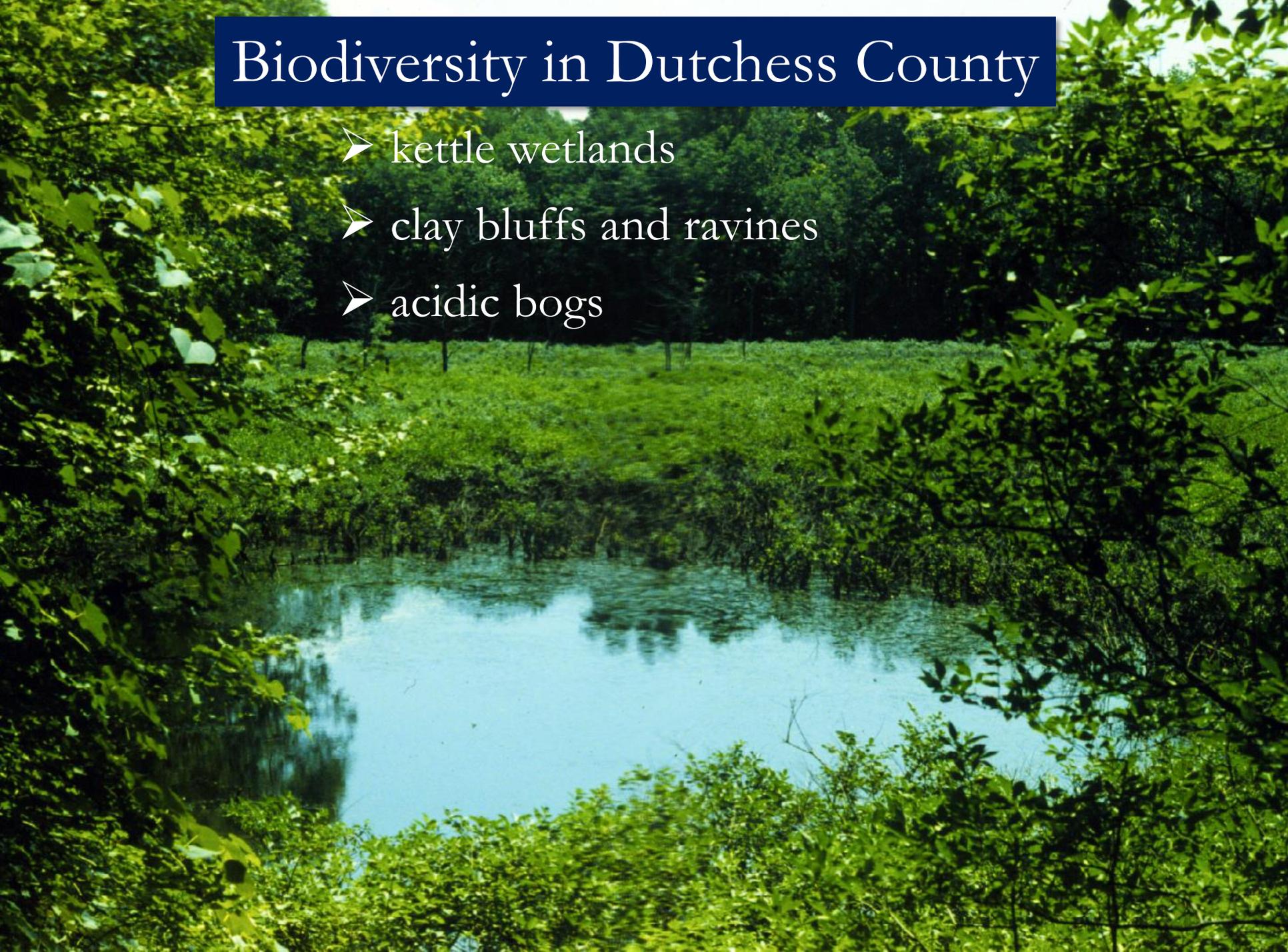
PO Box 5000
Annandale, NY 12504

Town of LaGrange, Blanding's turtle conservation zones



Biodiversity in Dutchess County

- kettle wetlands
- clay bluffs and ravines
- acidic bogs



acidic bog

pitcher plant

round-leaved sundew

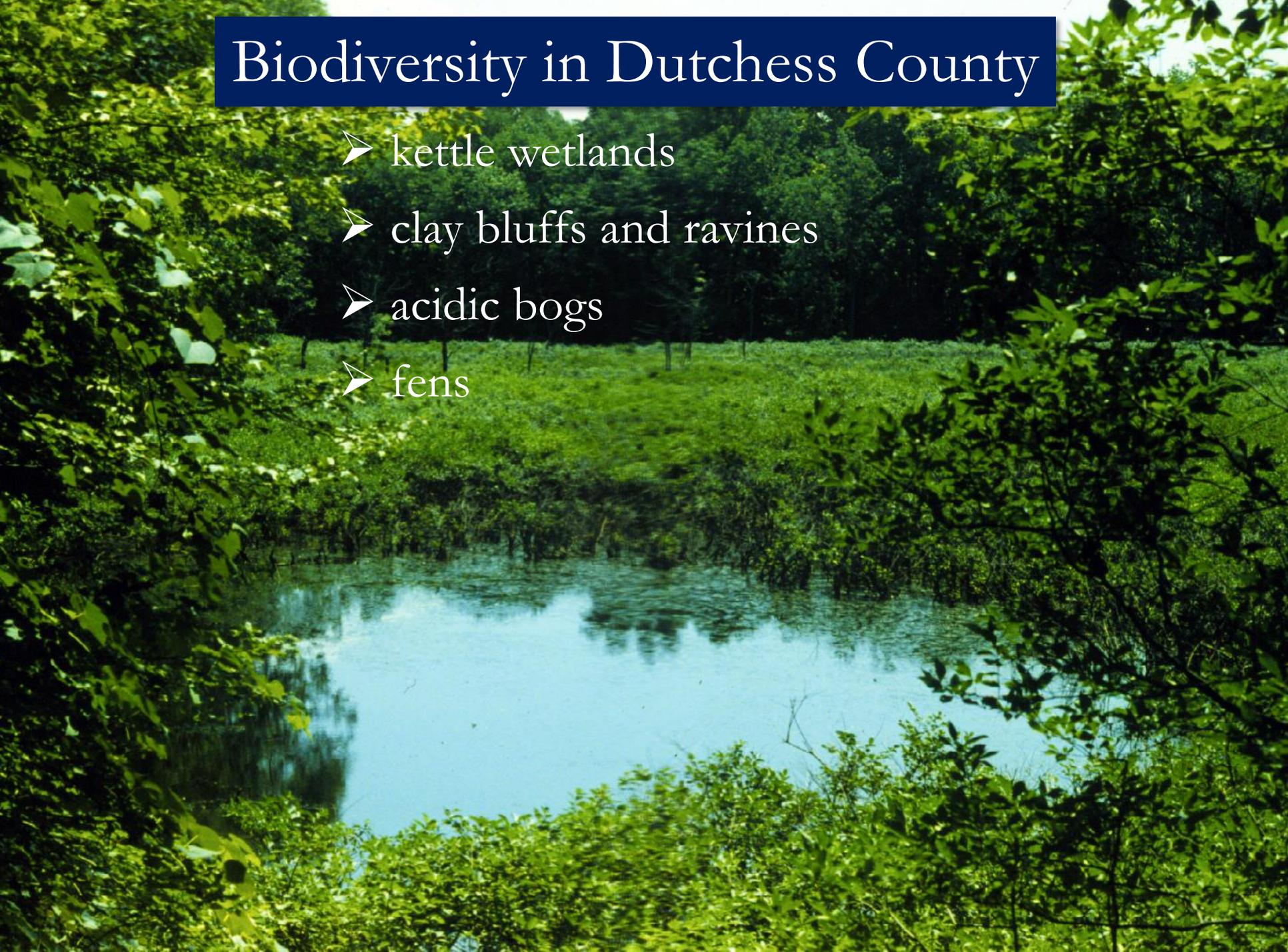


grass pink



Biodiversity in Dutchess County

- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens



fen

bog turtle

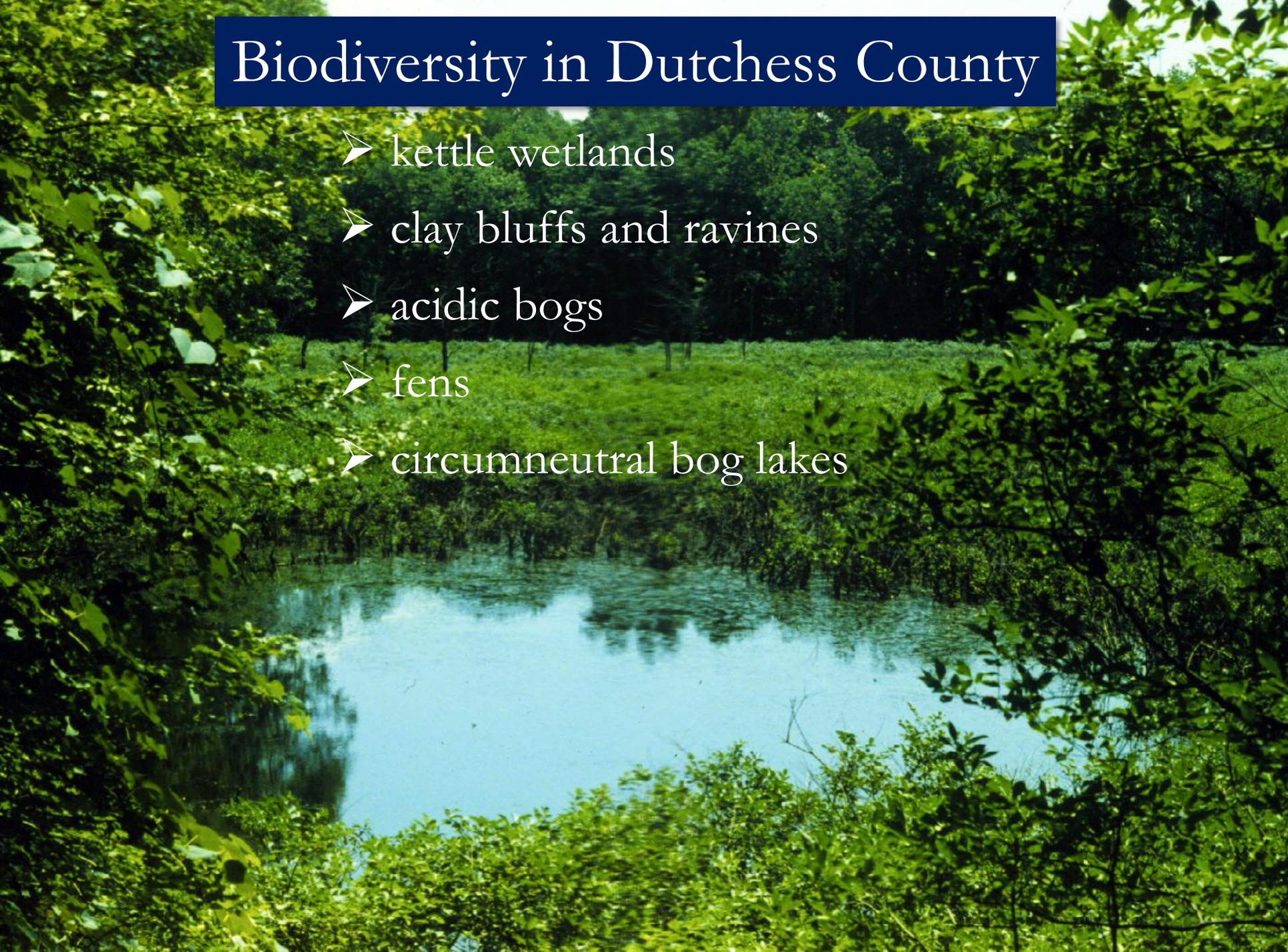


Indian paintbrush



Biodiversity in Dutchess County

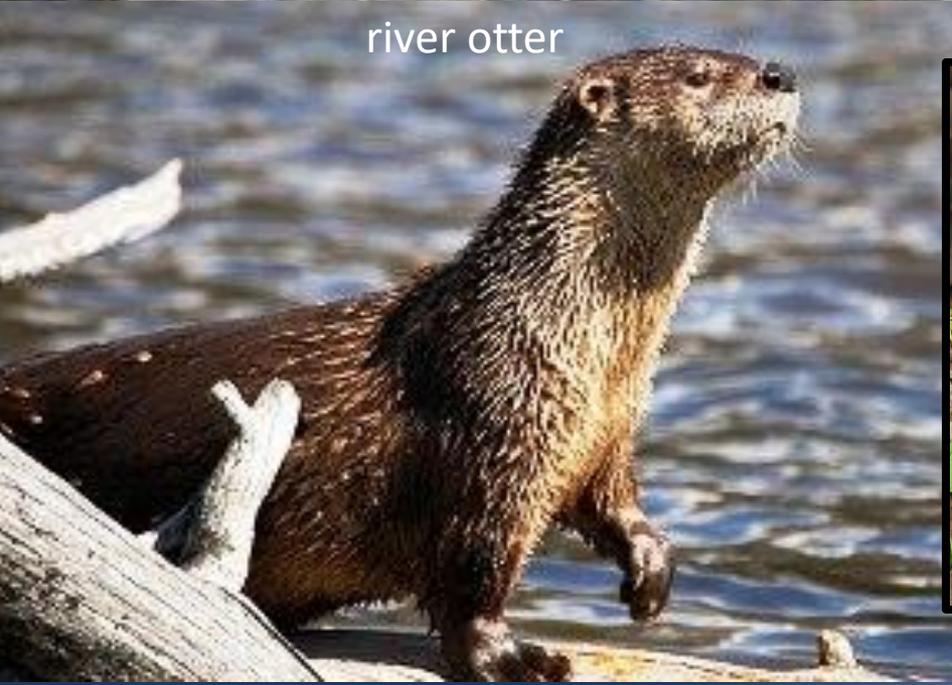
- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes



circumneutral bog lake



river otter



pitcher plant

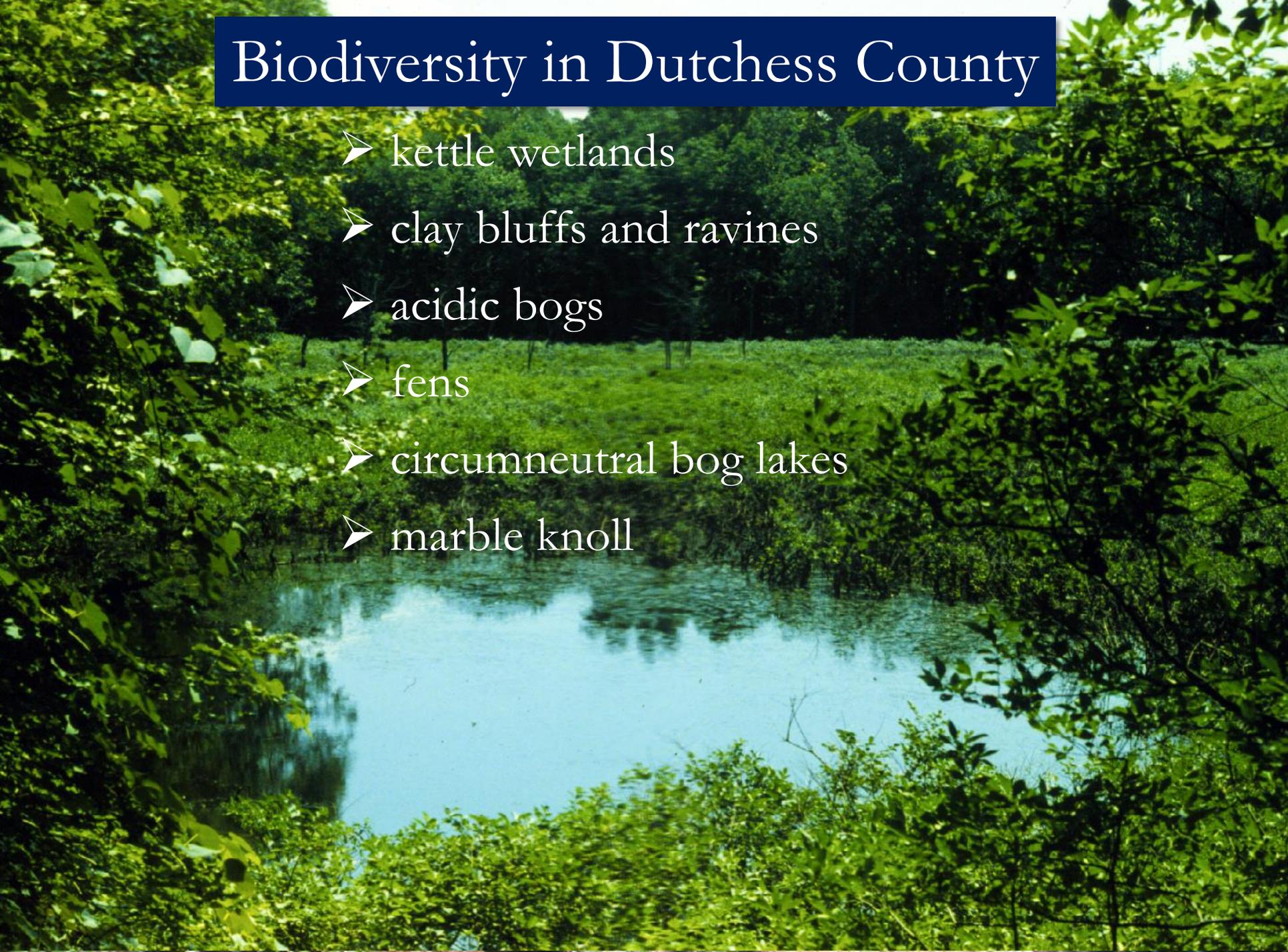


northern cricket frog



Biodiversity in Dutchess County

- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes
- marble knoll



marble knoll



C. Graham ©2018

Northern blazing-star



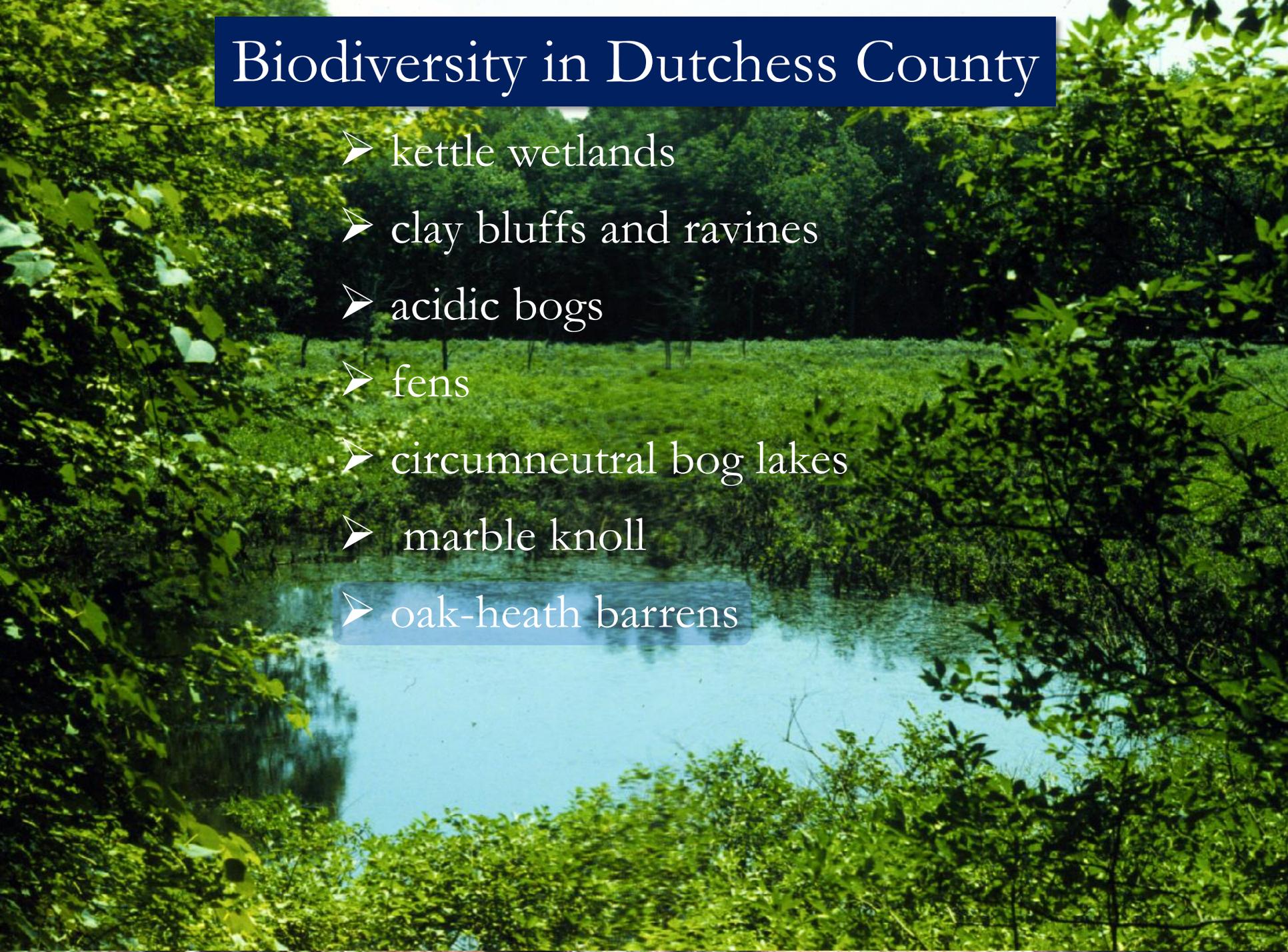
C. Graham ©2018

Carolina whitlow-grass

C. Graham ©2018

Biodiversity in Dutchess County

- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes
- marble knoll
- oak-heath barrens



oak-heath barren

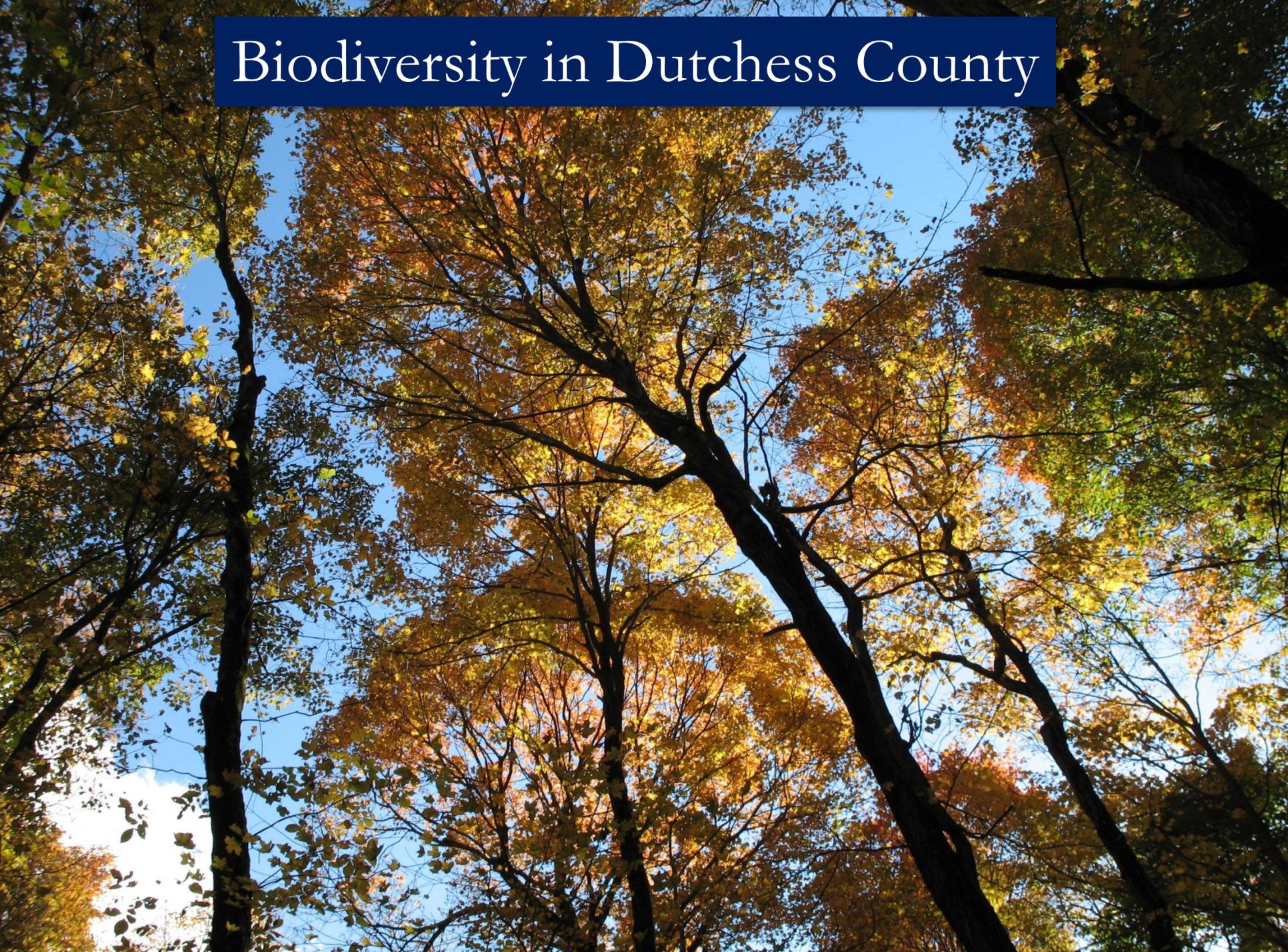


Kristen Bell

Biodiversity in Dutchess County

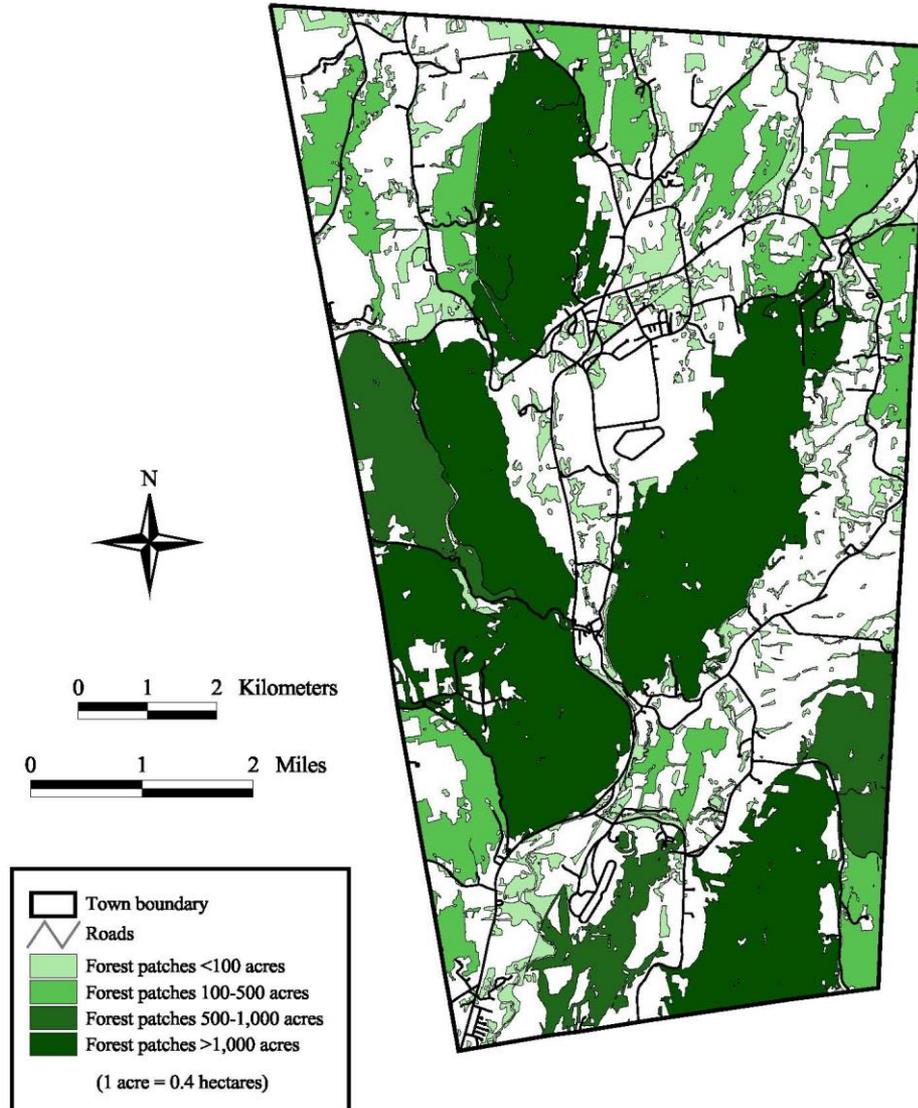
- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes
- marble knoll
- oak-heath barrens
- large forests

Biodiversity in Dutchess County

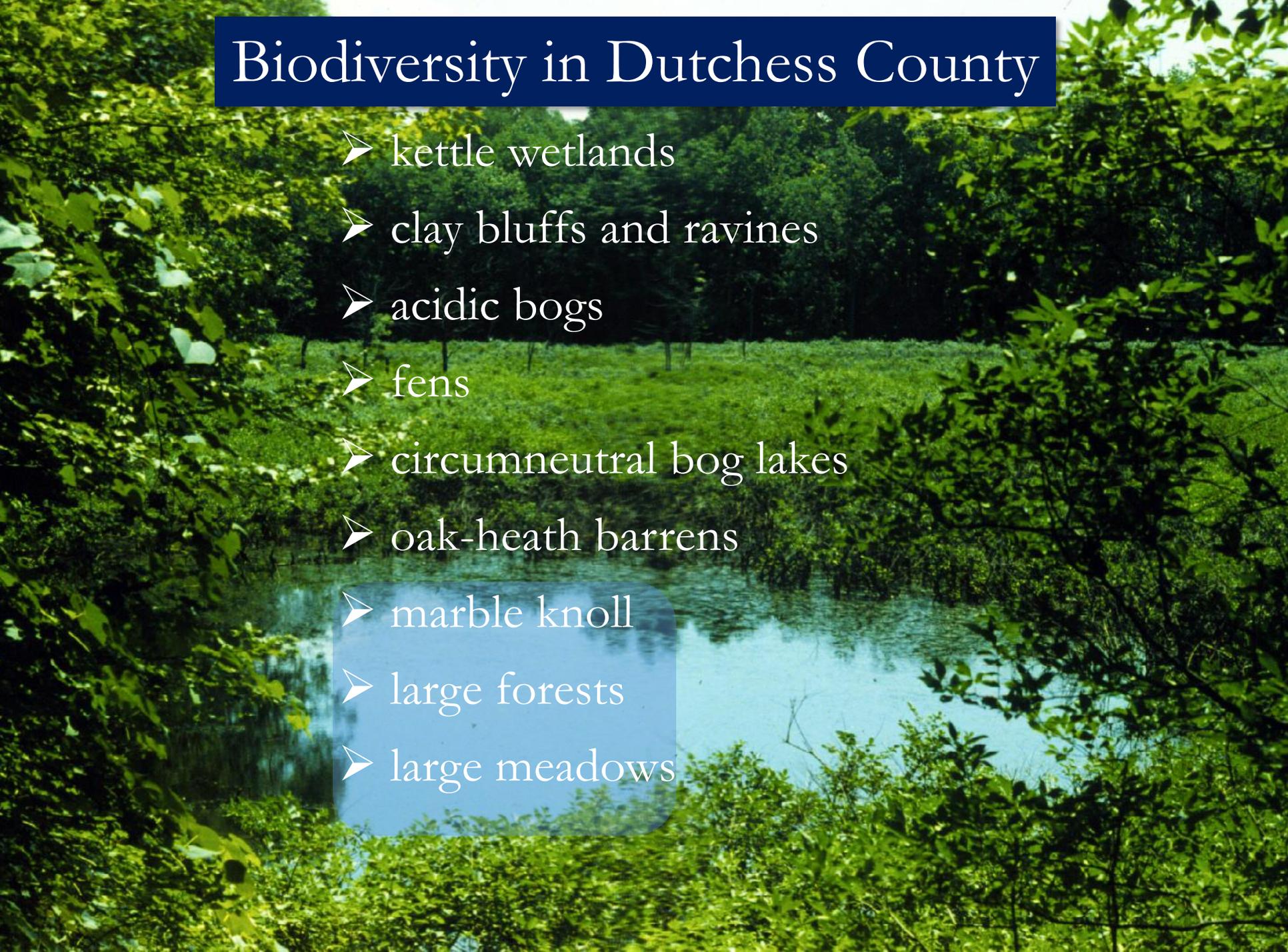


Biodiversity in Dutchess County

Large Forests, Town of Amenia



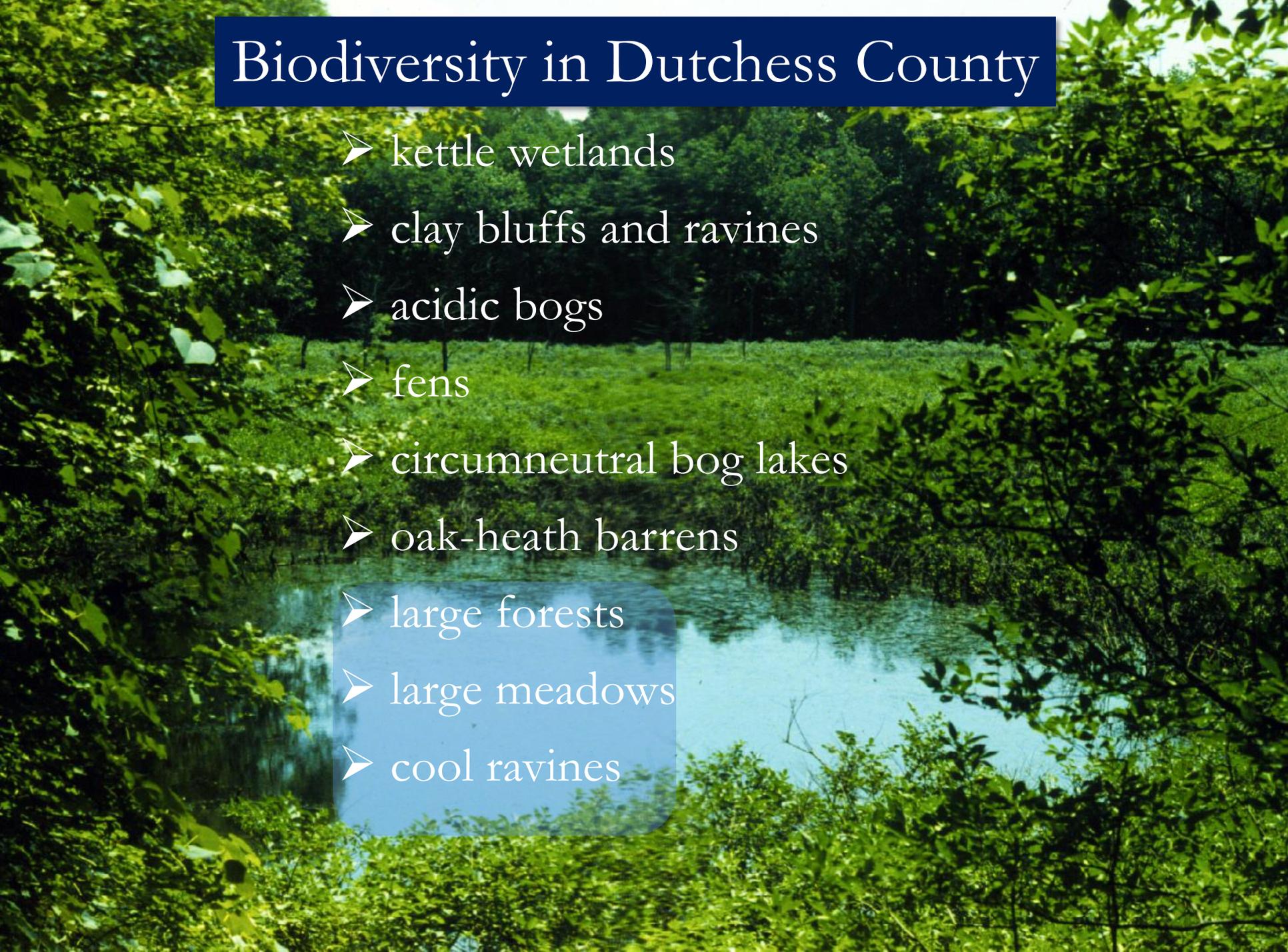
Biodiversity in Dutchess County

A scenic view of a wetland area with a pond, surrounded by dense green trees and foliage. The pond is in the center, reflecting the sky and the surrounding greenery. The trees are lush and vibrant, creating a rich, natural setting.

- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes
- oak-heath barrens
- marble knoll
- large forests
- large meadows



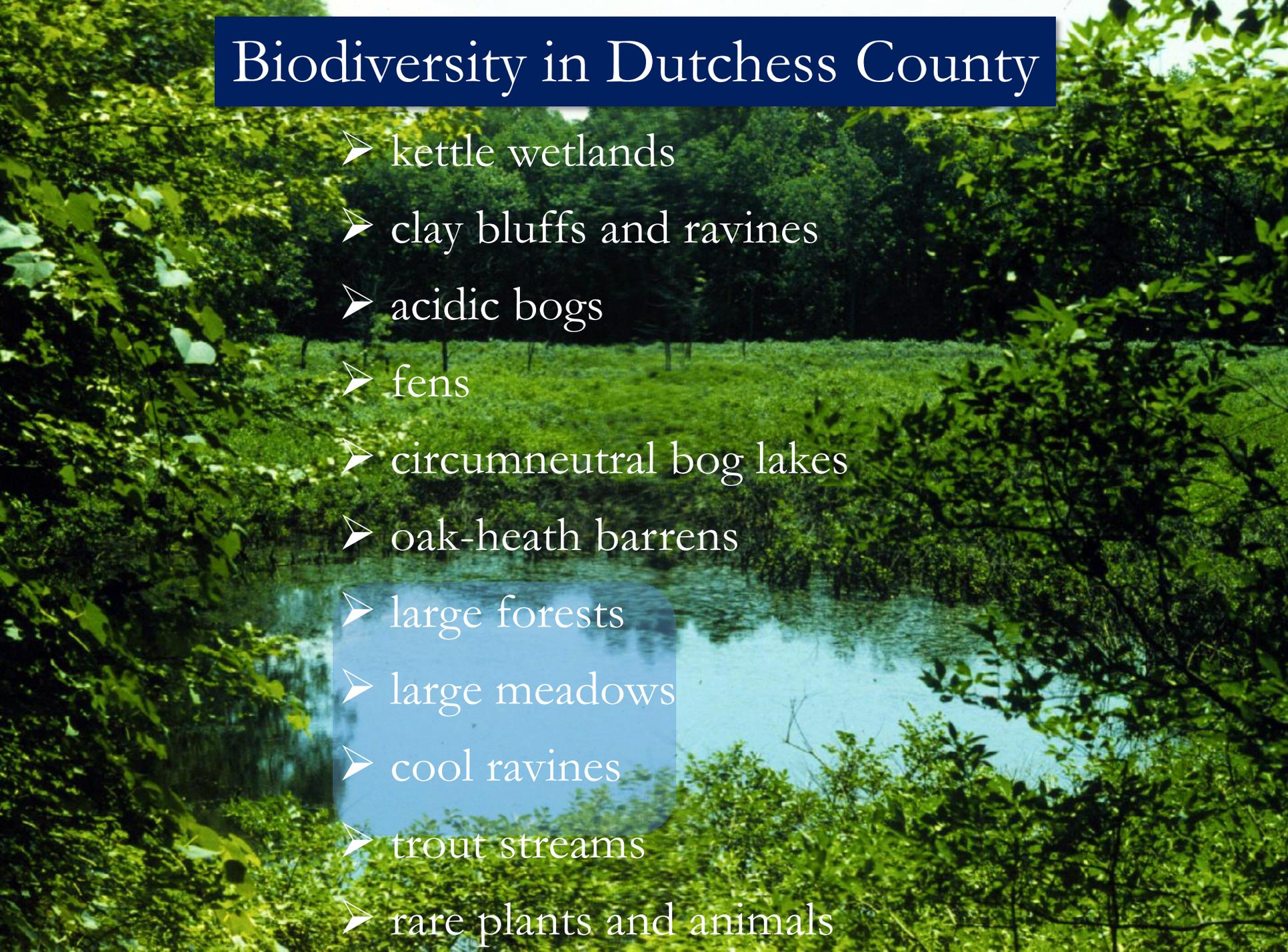
Biodiversity in Dutchess County



- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes
- oak-heath barrens
- large forests
- large meadows
- cool ravines

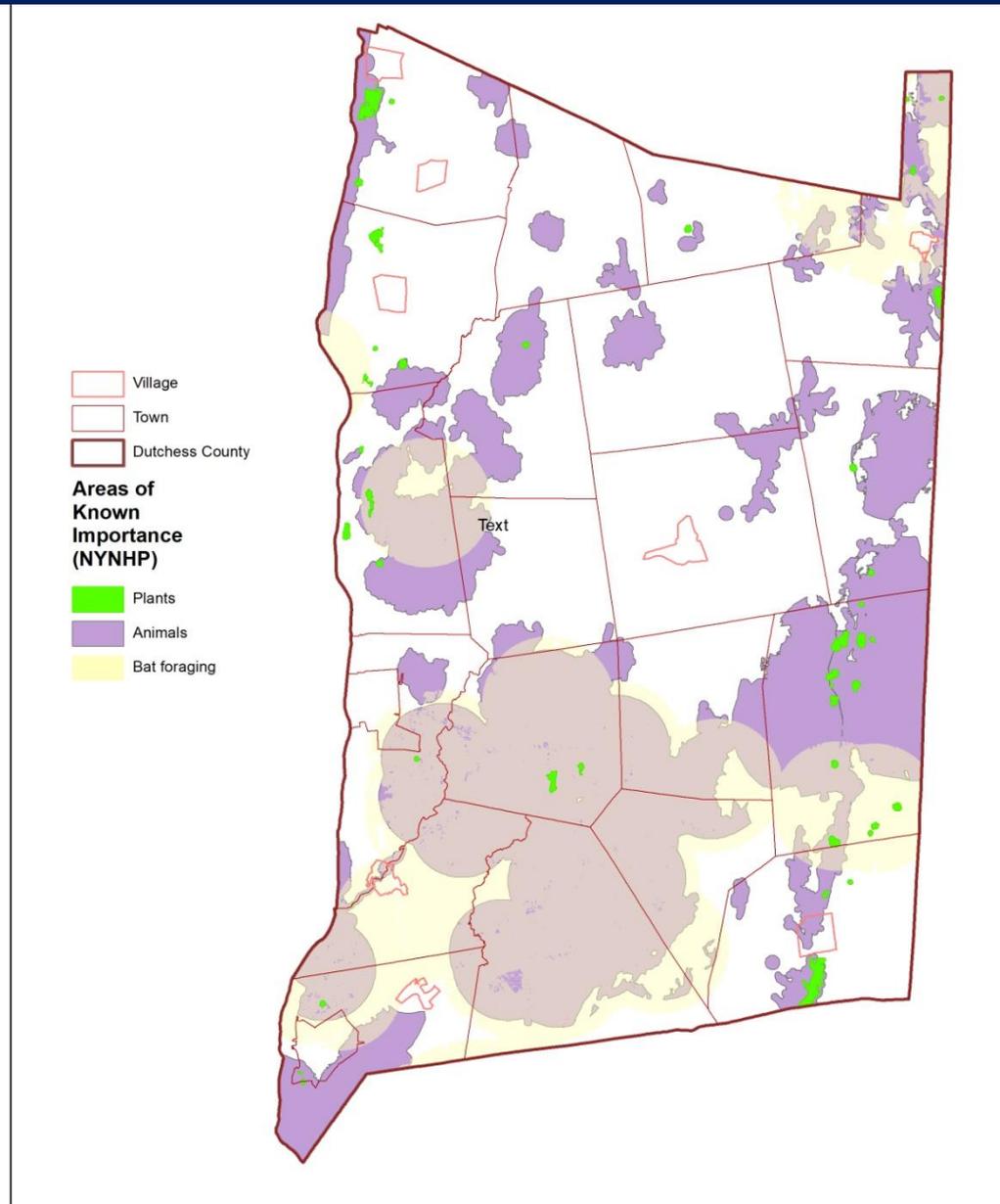


Biodiversity in Dutchess County

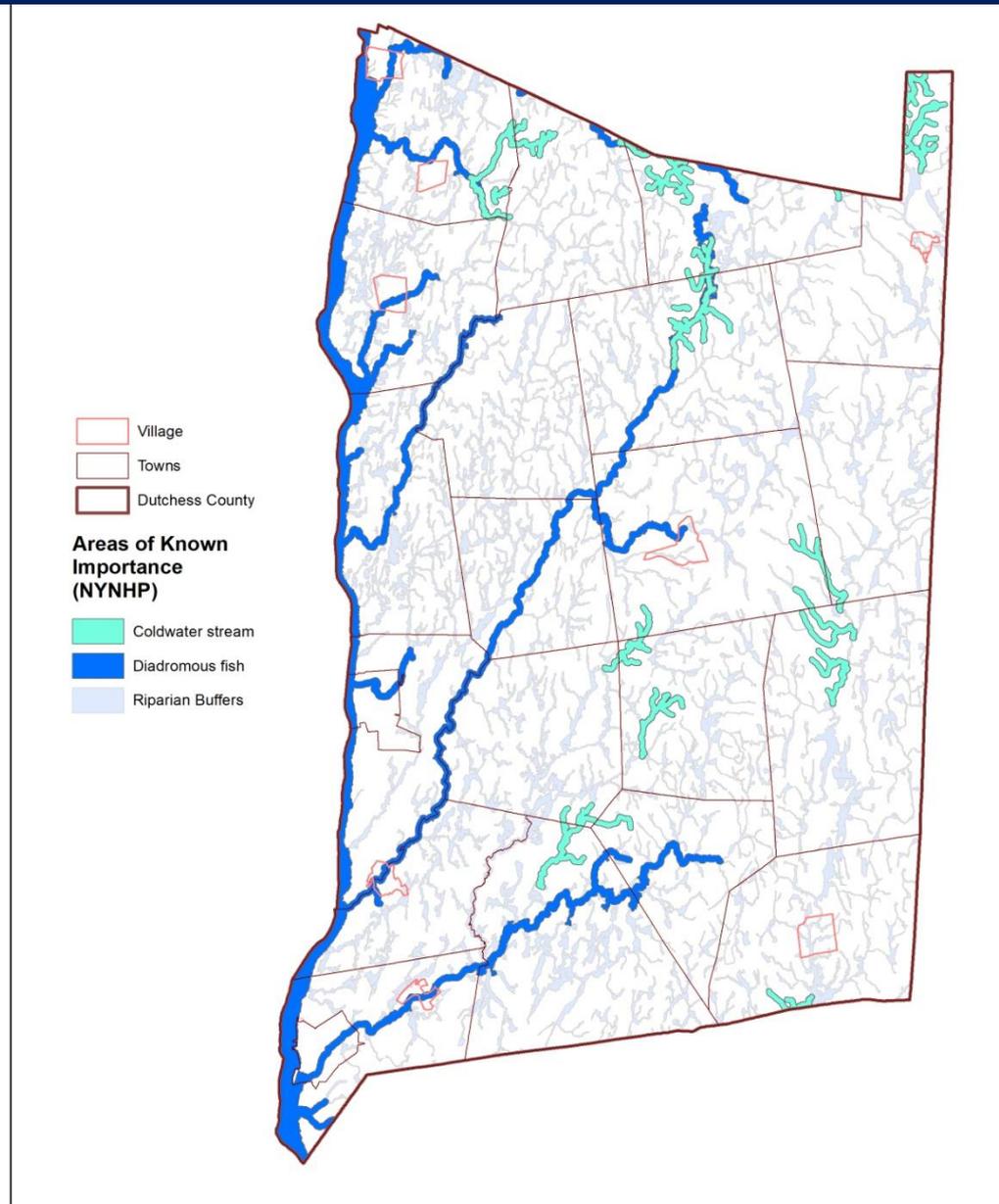


- kettle wetlands
- clay bluffs and ravines
- acidic bogs
- fens
- circumneutral bog lakes
- oak-heath barrens
- large forests
- large meadows
- cool ravines
- trout streams
- rare plants and animals

Areas of Known Importance for plants and animals of conservation concern



Areas of Known Importance for plants and animals of conservation concern



THREATS TO BIODIVERSITY

- climate change
- habitat loss
- habitat degradation
 - pollution
 - fragmentation
 - non-native species
- human-subsidized wildlife





HOW TO PROTECT BIODIVERSITY

1. Understand what you have
2. Identify priorities
3. Plan for protection
4. Promote voluntary and regulatory measures



HOW TO PROTECT BIODIVERSITY

Understand what you have

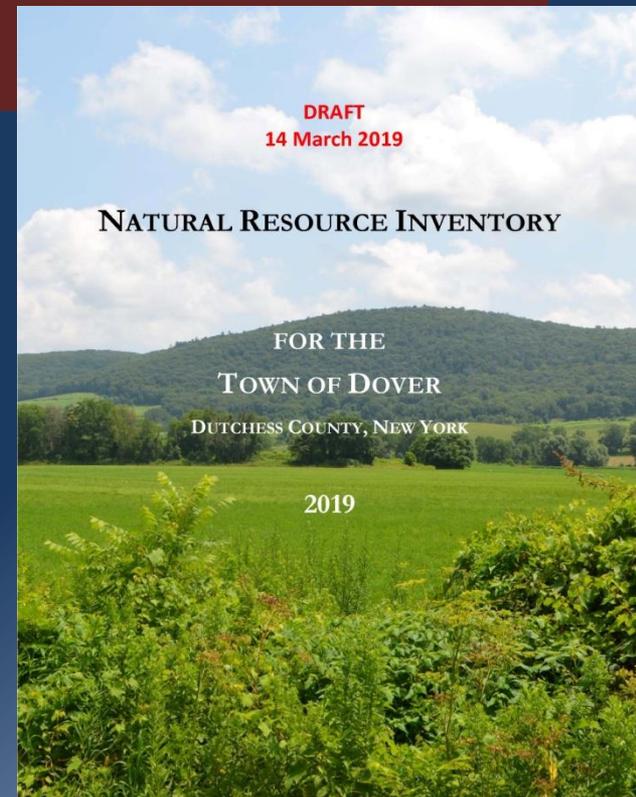
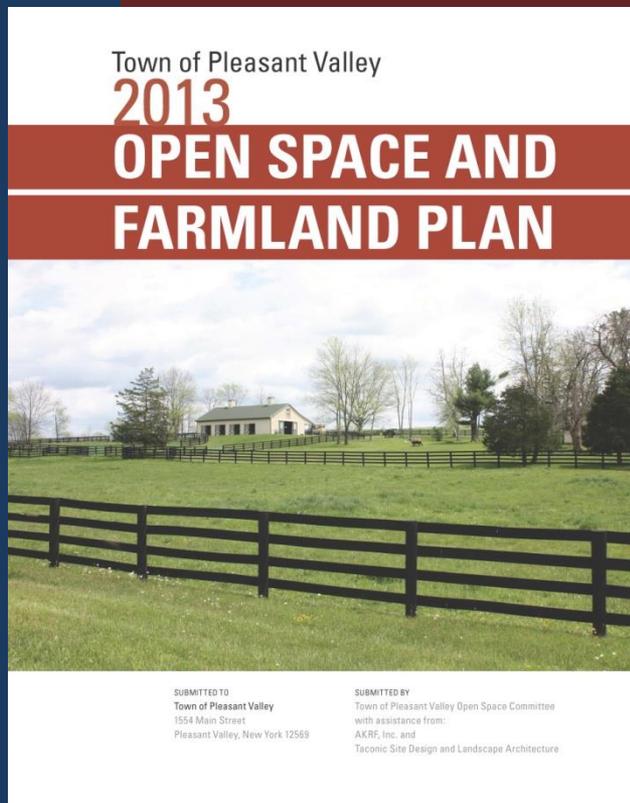
Hudson Valley Natural Resource Mapper

- ✓ streams (some)
- ✓ flood zones
- ✓ wetlands (some)
- ✓ trout streams
- ✓ rare species locations
- ✓ exemplary natural communities

HOW TO PROTECT BIODIVERSITY

Understand what you have

Natural Resource Inventories



HOW TO PROTECT BIODIVERSITY

Understand what you have

Habitat maps and reports

Amenia

Pine Plains

Beekman

Poughkeepsie (city)

Clinton

Poughkeepsie (town)

(Dover)

Rhinebeck

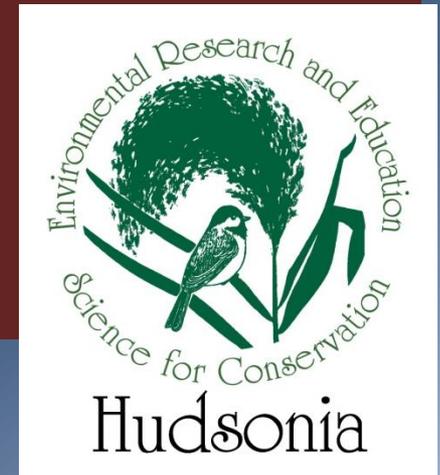
East Fishkill

Stanford

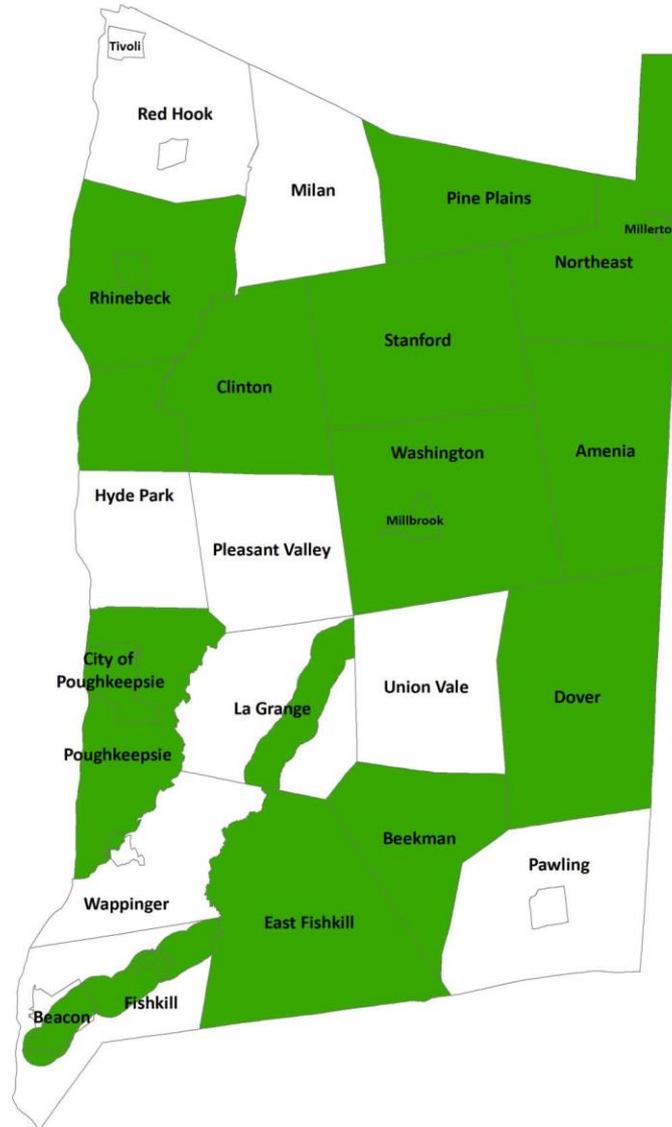
Hyde Park (1/3)

Washington

North East



Hudsonia habitat maps completed as of spring 2019, Dutchess County

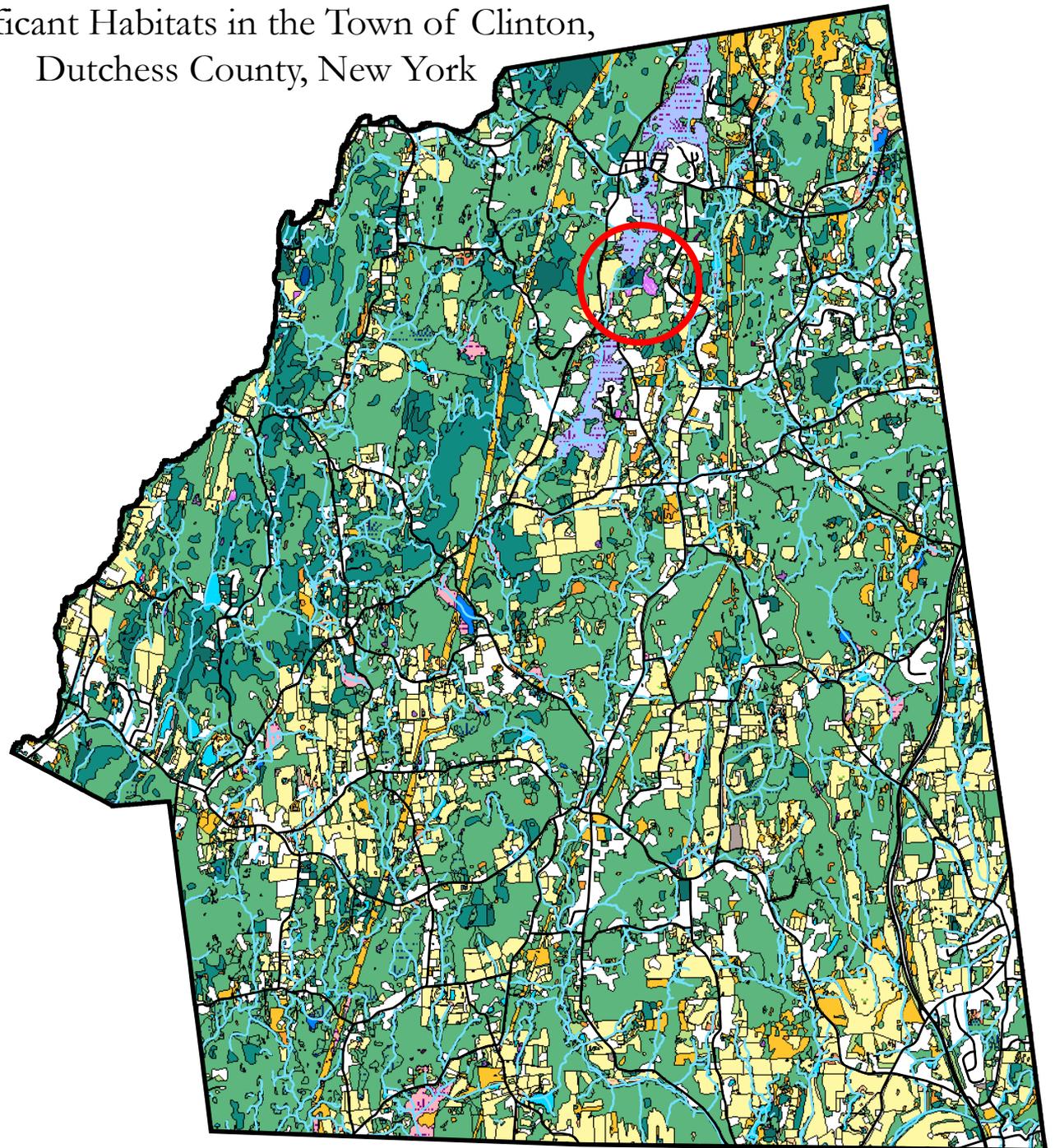


Significant Habitats in the Town of Clinton, Dutchess County, New York

- Town boundary
- Road
- Stream

Habitats

- Upland hardwood forest
- Upland mixed forest
- Upland conifer forest
- Red cedar woodland
- Barren
- Upland shrubland
- Upland meadow
- Orchard/plantation
- Cultural
- Waste ground
- Hardwood & shrub swamp
- Mixed forest swamp
- Conifer swamp
- Acidic bog
- Intermittent woodland pool
- Kettle shrub pool
- Buttonbush pool
- Marsh
- Wet meadow
- Calcareous wet meadow
- Fen
- Circumneutral bog lake
- Open water
- Stream/constructed pond





SIGNIFICANT HABITATS

IN THE TOWN OF CLINTON, DUTCHESS COUNTY, NEW YORK



Report to the Town of Clinton, the Hudson River Estuary Program, the
Millbrook Tribute Garden, and the Dutchess Land Conservancy

By Christopher Graham, Kristen Bell Travis,
and Gretchen Stevens

December 2012



Hudsonia Ltd.

P.O. Box 5000
Annandale, NY 12504

Figure 8. Intermittent woodland pools and their associated conservation zones in the Town of North East, Dutchess County, New York. Intermittent woodland pool conservation zones extend 750 ft (230 m) from wetland boundaries. Hudsonia Ltd., 2007.

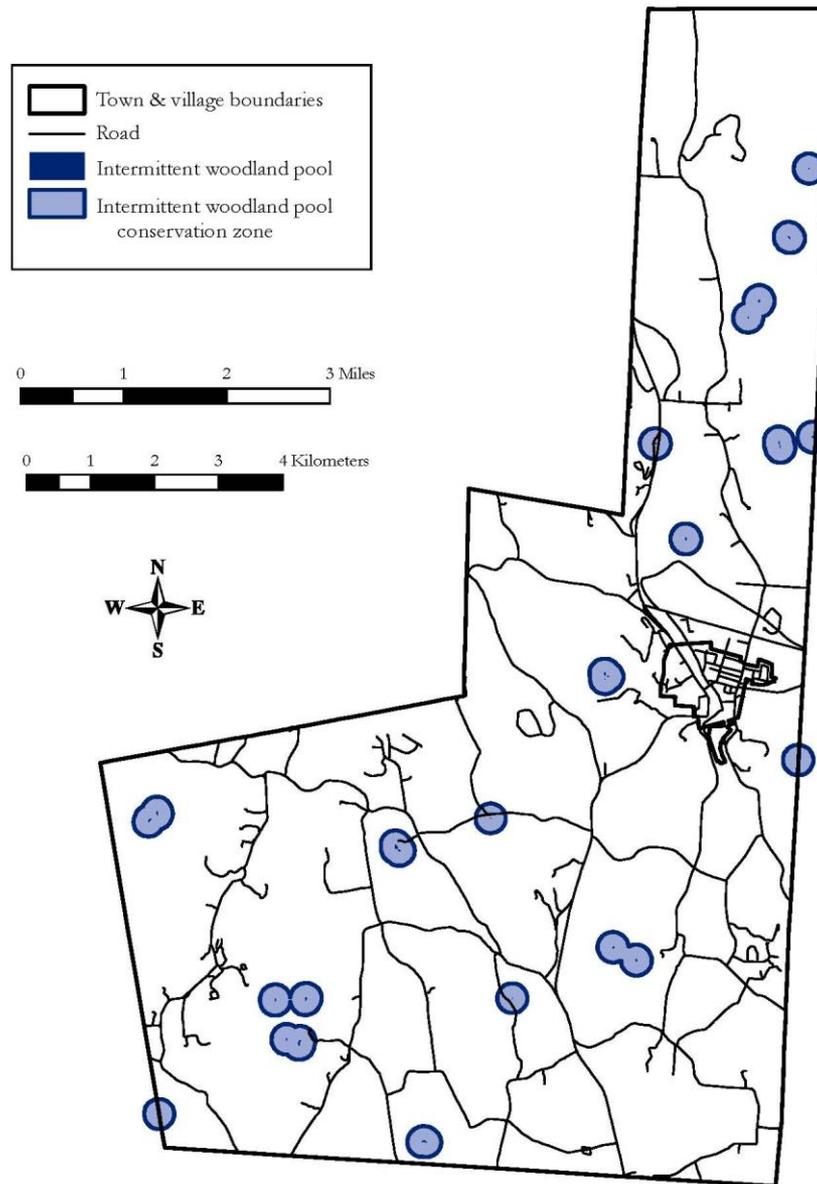


Figure 9. Acidic bogs, acidic bog lake, circumneutral bog lake, and associated conservation zones in the Town of North East, Dutchess County, New York. The conservation zones for all three of these special habitats encompass their entire watersheds; in addition, we have shown a conservation zone for the immediate watershed of the acidic bog lake. Hudsonia Ltd., 2008.

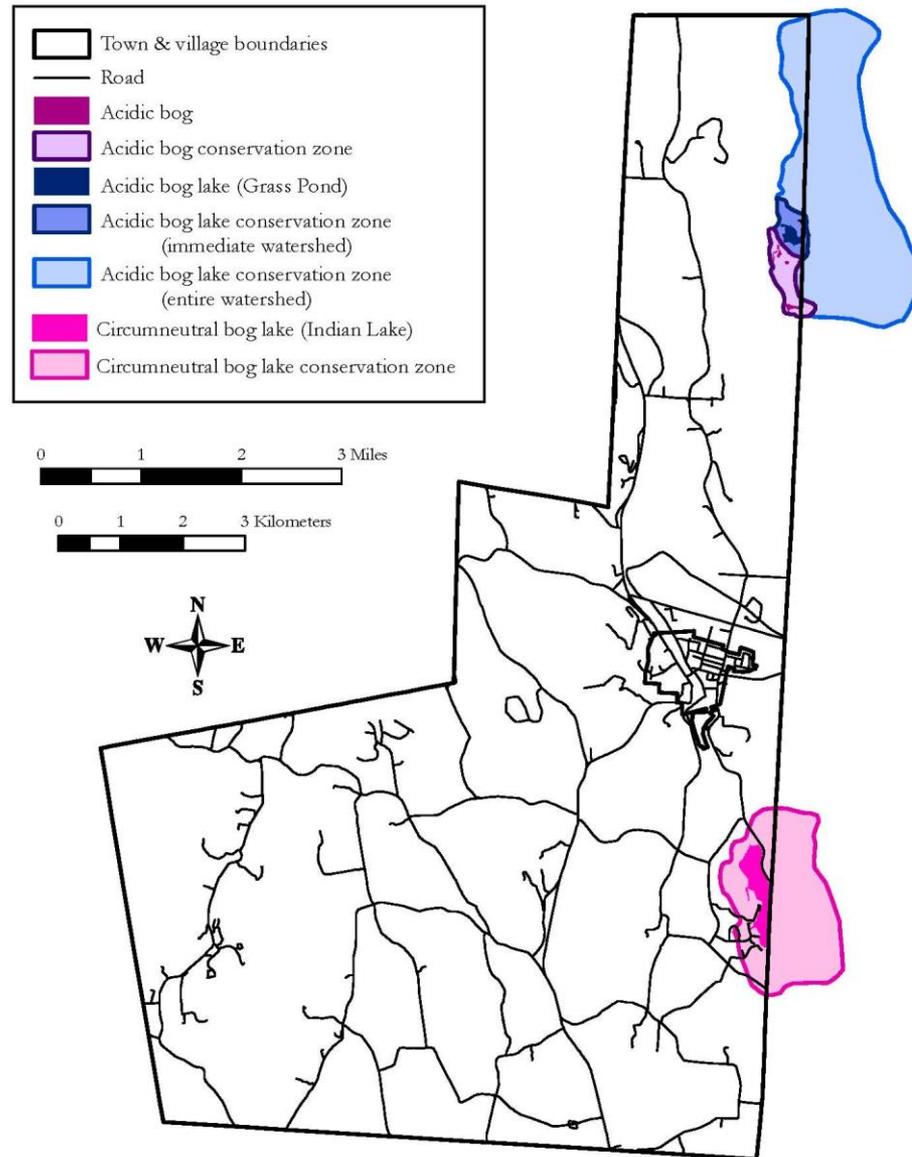
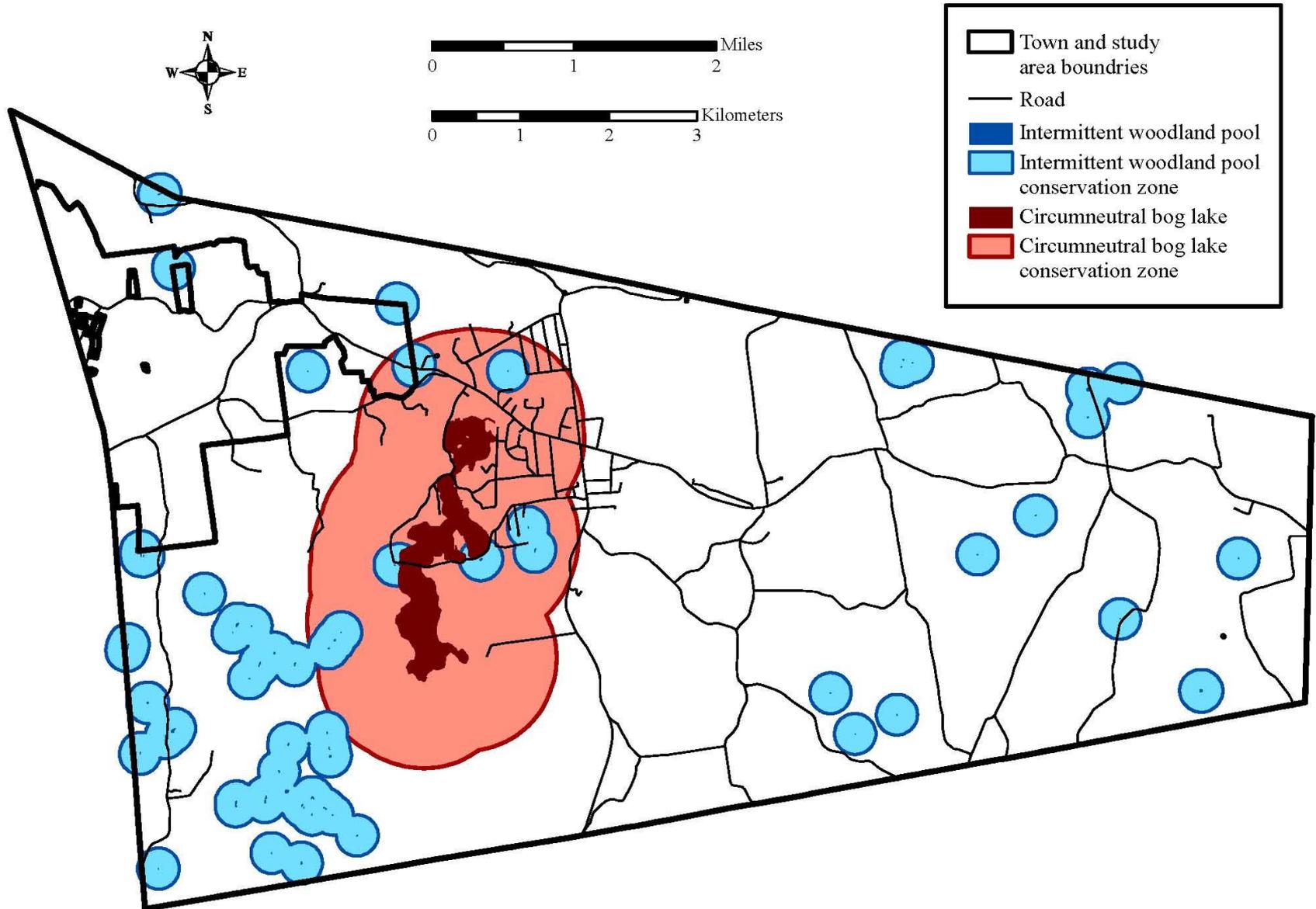


Figure 8. Intermittent woodland pools, circumneutral bog lakes, and their associated conservation zones in the study area in the Town of Pine Plains, Dutchess County, New York. Intermittent woodland pool conservation zones extend 750 ft (230 m) from the pool edge; circumneutral bog lake conservation zones extend 3,300 ft (1000 m) from the wetland edge. Hudsonia Ltd., 2009.



HOW TO PROTECT BIODIVERSITY

Understand what you have

Habitat maps and reports

Amenia

Pine Plains

Beekman

Poughkeepsie (city)

Clinton

Poughkeepsie (town)

(Dover)

Rhinebeck

East Fishkill

Stanford

Hyde Park (1/3)

Washington

North East

www.hudsonia.org



HOW TO PROTECT BIODIVERSITY

Understand what you have

- Habitat assessments
- Site visits !



HOW TO PROTECT BIODIVERSITY

1. Understand what you have
2. Identify priorities 
3. Plan for protection
4. Institute voluntary and regulatory measures

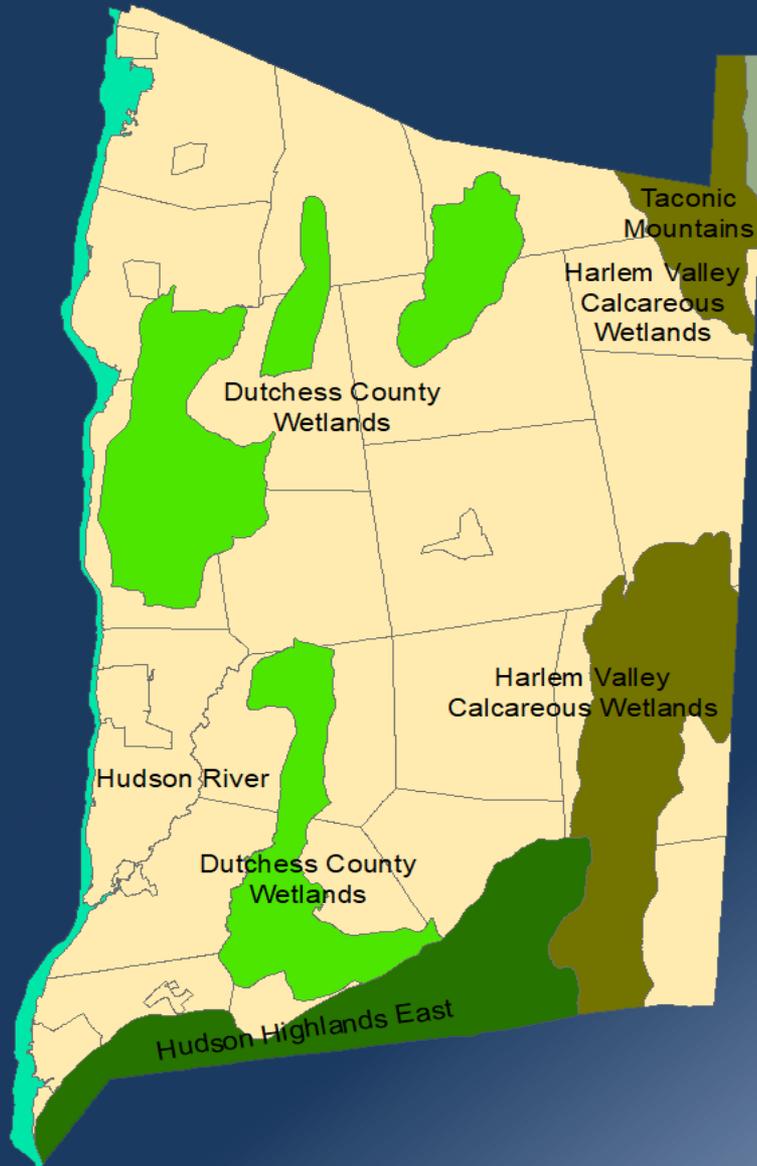
IDENTIFYING CONSERVATION PRIORITIES

?

IDENTIFYING CONSERVATION PRIORITIES

- ✓ **large forests** (≥ 50 ac, ≥ 200 , ≥ 1000 ac)
- ✓ **large meadows** (≥ 10 ac)
- ✓ **large areas of contiguous habitats**
- ✓ **corridors between protected areas**
- ✓ **100-yr and 500-yr flood zones**
- ✓ **perennial and intermittent stream corridors**
- ✓ **trout streams / trout-spawning streams**
- ✓ **wood turtle streams**
- ✓ **small and isolated wetlands**
- ✓ **NYNHP "Areas of Known Importance"**
- ✓ **NYSDEC "Significant Biodiversity Areas"**
- ✓ **south-to-north corridors**
- ✓ **low-to-high-elevation corridors**

Significant Biodiversity Areas (NYSDEC)



HOW TO PROTECT BIODIVERSITY

1. Understand what you have
2. Identify priorities
3. Plan for protection 
4. Institute voluntary and regulatory measures

PLAN FOR CONSERVATION

- Open Space Plan
- Watershed Plan
- Comprehensive Plan

HOW TO PROTECT BIODIVERSITY

1. Understand what you have
 2. Identify priorities
 3. Plan for protection
 4. Institute voluntary and regulatory measures
- 



HOW TO PROTECT BIODIVERSITY

Voluntary and Regulatory Measures

- landowner initiatives
- SEQR
- comprehensive planning
- local legislation

HOW TO PROTECT

PROPERTY

Voluntary Measures

- education and assistance for landowners
- education for applicants/developers
- environmental review procedures
 - ✓ mandatory habitat assessments
 - ✓ using SEQR more effectively
- municipal operations
 - ✓ night lighting
 - ✓ road salt applications
 - ✓ stormwater management
 - ✓ culvert improvements

HABITAT FACT SHEETS

<https://hudsonia.org/resources/>

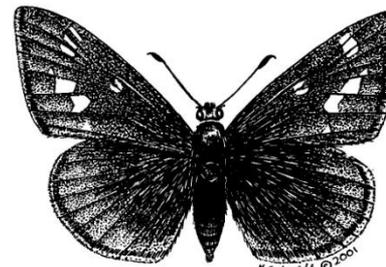
Habitat fact sheet

RED CEDAR WOODLAND

Red cedar woodlands feature an overstory dominated by widely spaced eastern red cedar trees and grassy meadow remnants between them. Red cedar is one of the first woody plants to invade abandoned pastures on mildly acidic to alkaline soils in this region, and red cedar woodlands are often transitional between upland meadow and young forest habitats.



J. Tollefson 2003

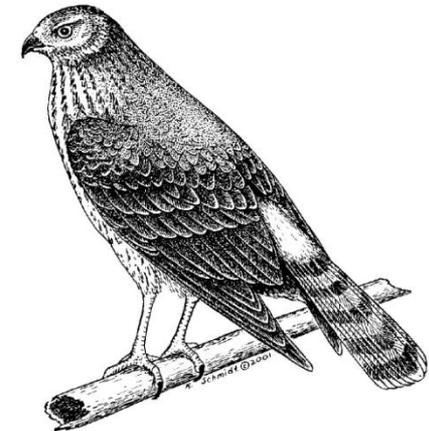


Dusted skipper

SPECIES OF CONSERVATION CONCERN

- Rare plants including Carolina whitlow-grass, yellow wild flax, and Bicknell's sedge
- Foraging fruit-eating birds
- Roosting raptors such as northern harrier and short-eared owl
- Nesting wood turtle, eastern box turtle, and eastern hognose snake
- Olive hairstreak, dusted skipper (butterflies)

These are just a few of the species of regional or statewide conservation concern that are known to occur in red cedar woodland habitats. See Bell et al. (2005) for a more extensive list.



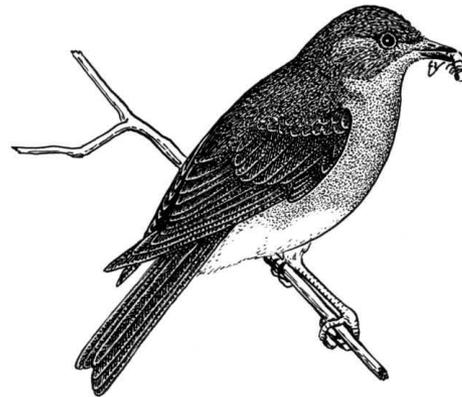
Northern harrier. © K. Schmidt 2001

THREATS TO RED CEDAR WOODLANDS

Extensive occurrences of red cedar woodlands are restricted to particular regions of the Hudson Valley, and are often associated with less common habitat types. Red cedar woodlands on abandoned agricultural lands are often considered prime development sites, and thus are particularly vulnerable to **direct habitat loss or degradation**. Woodlands on steep slopes with fine sandy soils may be especially susceptible to **erosion** from ATV traffic and other human uses. Human disturbances may also facilitate the **invasion of non-native forbs and shrubs** that tend to diminish habitat quality by forming dense stands that displace native plant species.

CONSERVATION RECOMMENDATIONS

- ❖ Prevent the direct loss or degradation of these habitats, and maintain unfragmented connections with nearby wetlands, forests, and other important habitats wherever possible.
- ❖ Use light grazing, occasional mowing, or occasional manual removal of tall woody plants where necessary to maintain meadow habitats for rare plants and to maintain unshaded reptile nesting areas.



Eastern bluebird, © K. Schmidt 2001

References

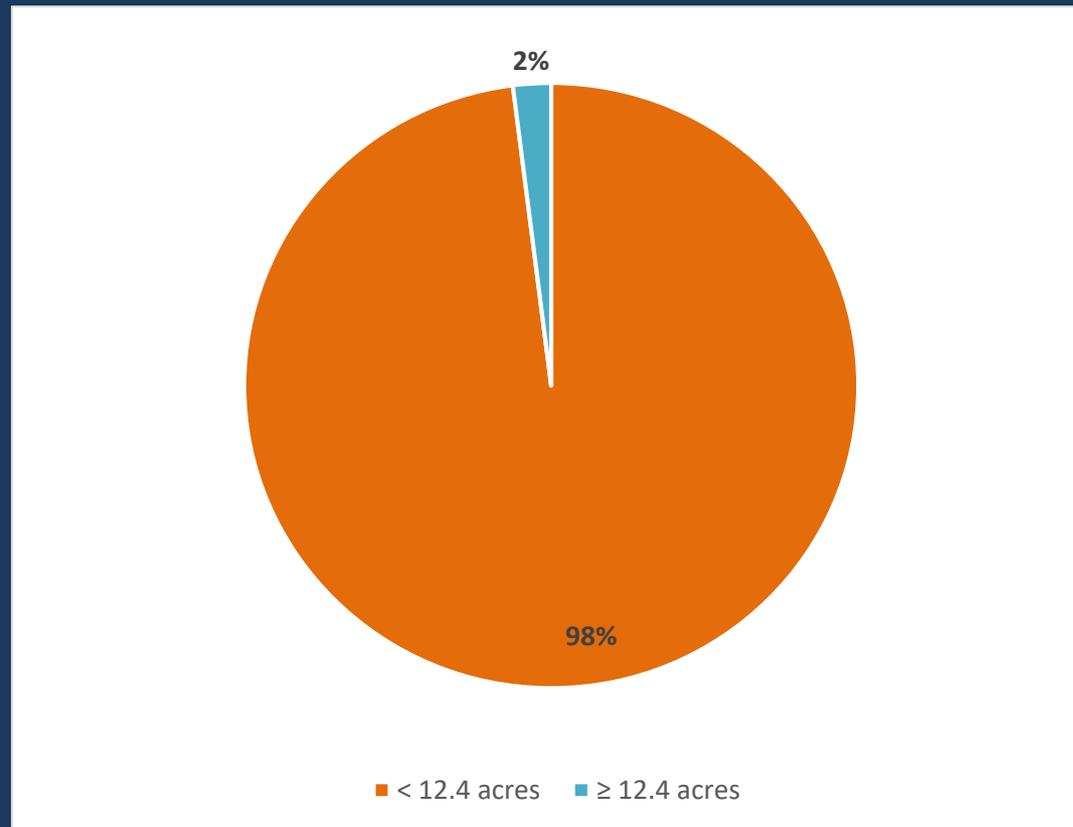
Bell, K., C. Dickert, J. Tollefson, and G. Stevens. 2005. Significant habitats in the Town of Stanford, Dutchess County, New York. Report to the Millbrook Tribute Garden, the Dyson Foundation, the Town of Stanford, and the Dutchess Land Conservancy. Hudsonia Ltd., Annandale, NY. 123 p.

HOW TO PROTECT BIODIVERSITY

Regulatory Measures

- zoning ordinance revisions
 - conservation overlay districts
 - protections for small streams & isolated wetlands
 - buffer zones/ setbacks
- subdivision regulations revisions
- Critical Environmental Areas

HOW TO PROTECT BIODIVERSITY



Dutchess County wetlands by acreage class







Erik Kiviati

