

US EPA ARCHIVE DOCUMENT

Mohawk River Basin Management Prioritization Framework

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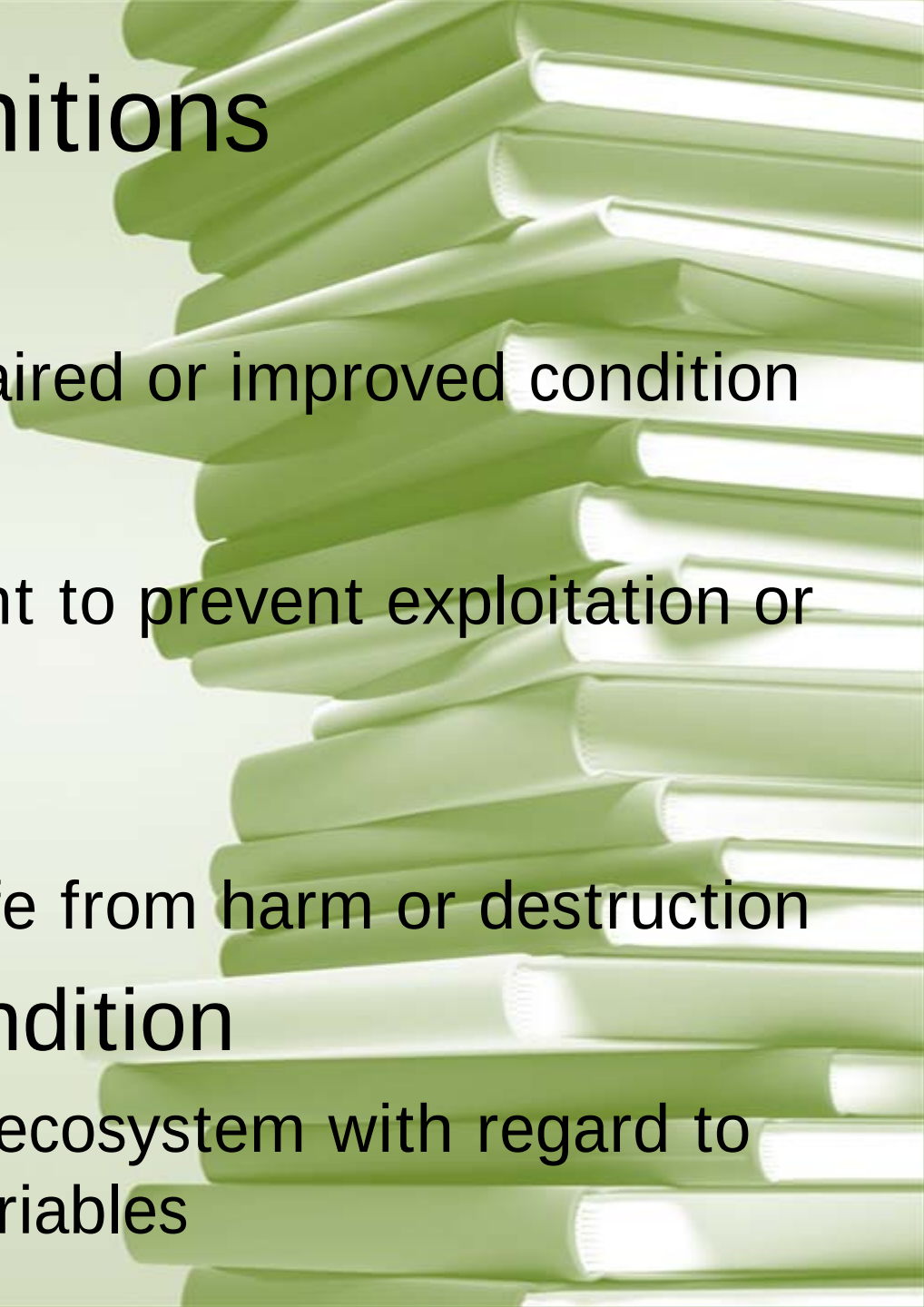
Mohawk River Research Center, Inc.



Rationale

- Informative decision making
 - Restoration project, land conservation or preservation
- Evaluate regional environmental condition
- Determine extent of data resources available to focus monitoring efforts

Definitions



- Restoration
 - restore to an unimpaired or improved condition
- Conservation
 - planned management to prevent exploitation or destruction
- Preservation
 - set aside to keep safe from harm or destruction
- Environmental condition
 - general state of the ecosystem with regard to human and biotic variables

Framework

- Map based system
- Integrates human and ecosystem processes
- Easily updated and queried
- Regional scale application



Parameters

Human

- Land use
- Land use change
- Population
- Impervious surface

Ecosystem

- Specific conductance
- Aquatic insect community metric



Process

Steps

- Data collection
- Interpolation
- Reclassification
- Map calculation

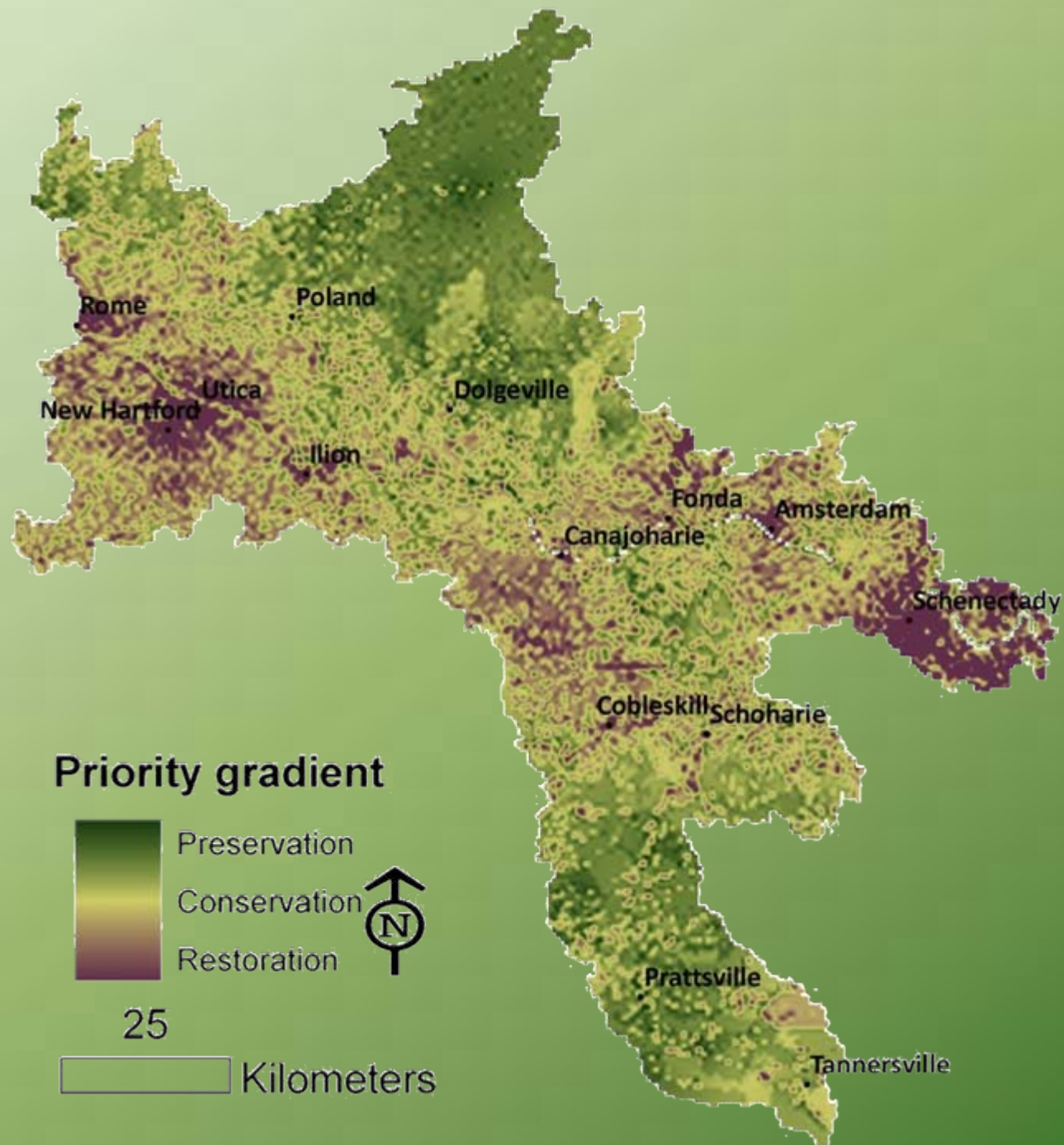
Reclassification criteria

- Land use
- Human population
- Land use change
- Impervious surface
- Specific conductance
- Biotic Assessment Profile (BAP) (aquatic insect community metrics)



Output: Prioritization map

Water quality condition	Action priority	Numeric score
Excellent	Preservation	24-33
Good	Conservation	15-23
Poor	Restoration	<15

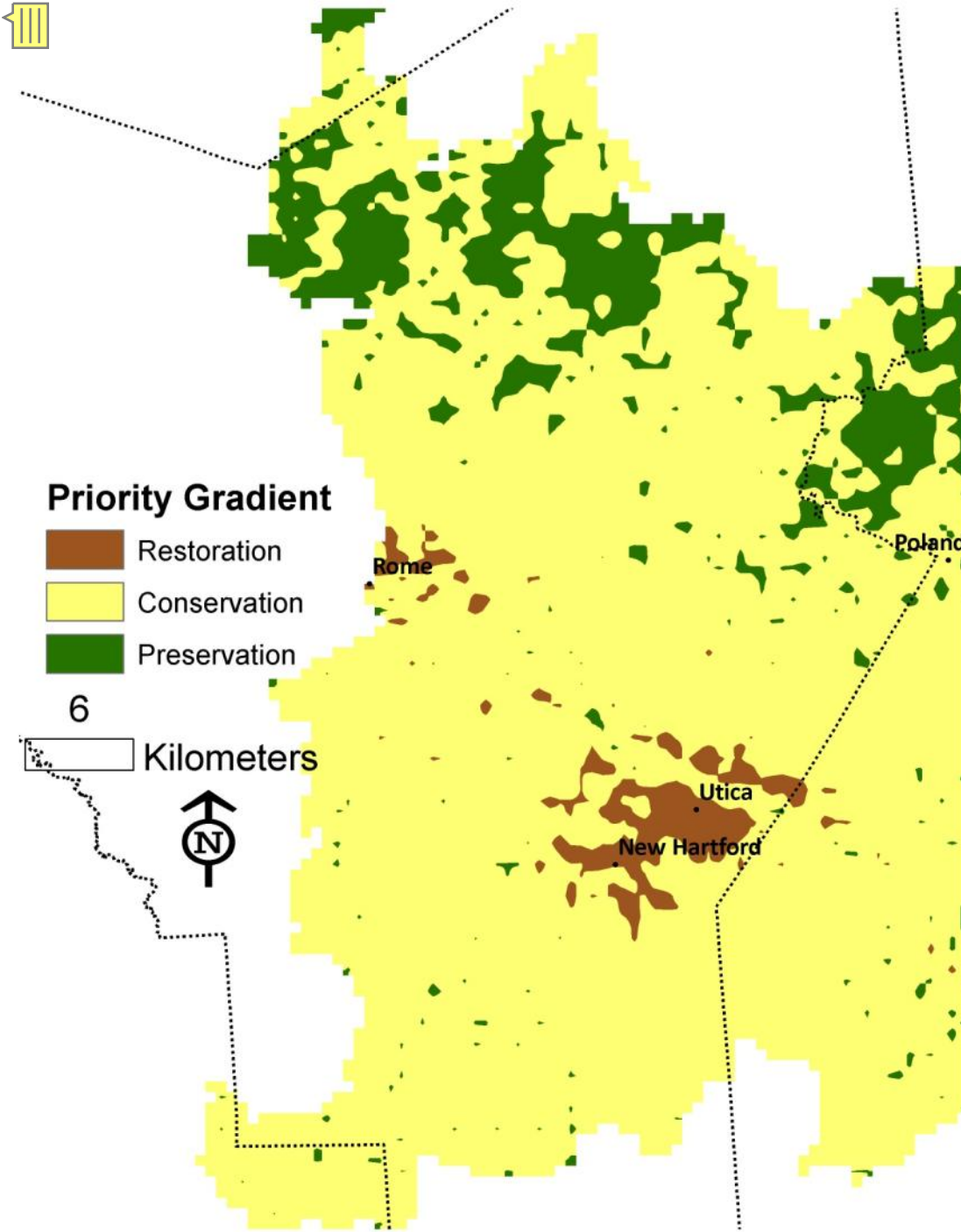


Applications

- Scenario 1: County scale
 - Land acquisition for preservation
- Scenario 2: Local municipality
 - Restoration project planning
- Scenario 3: Basin & stream scale
 - Identification of reference areas and location of stream segments that meet criteria

Scenario One: County scale

- Land acquisition by a conservancy within county boundaries
 - Classification system reports on the location of preservation areas to investigate
 - Coarse scale



Results

- 3.4% Restoration
- 71% Conservation
- 25.5% Preservation

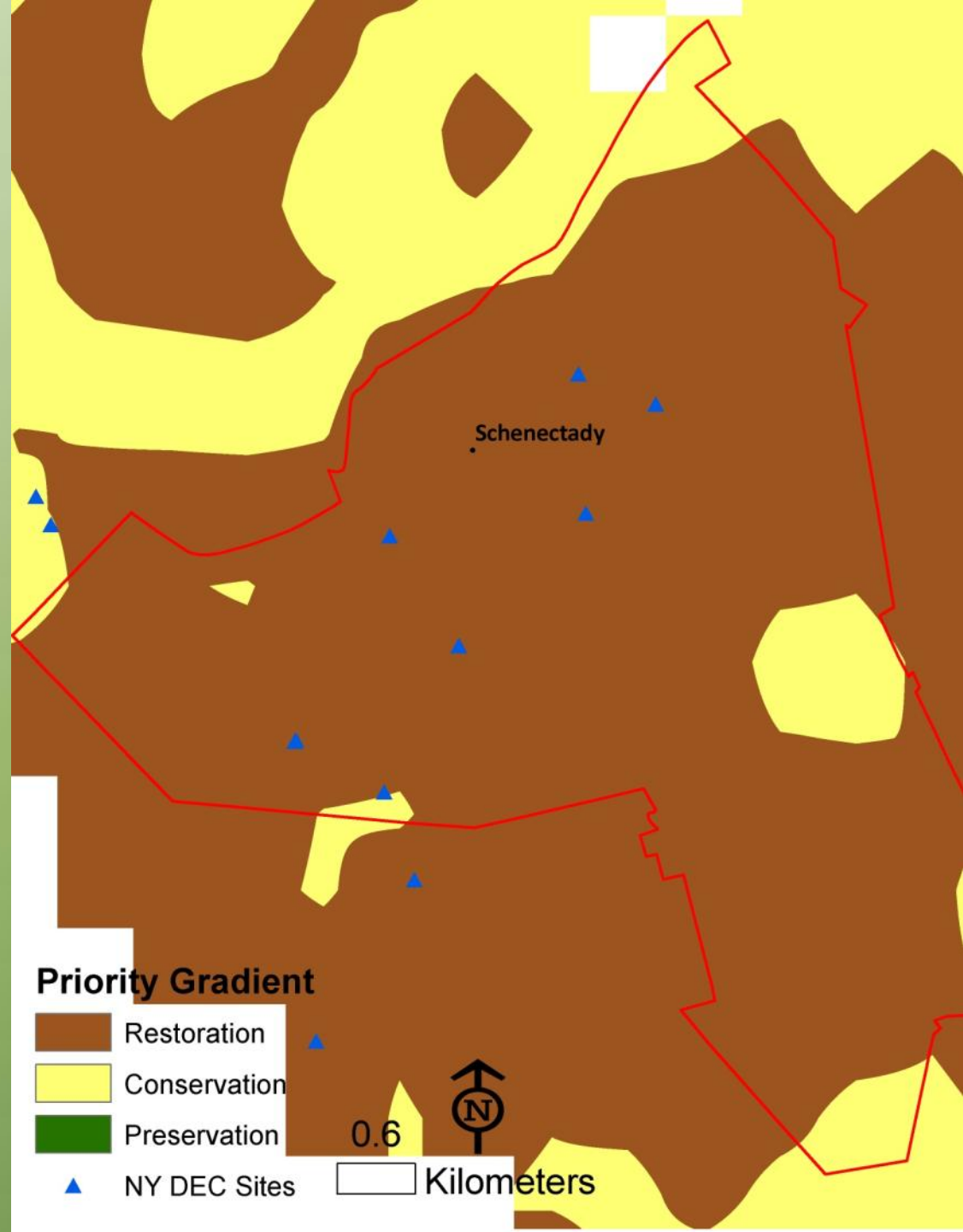
Scenario Two: Local municipality

- Determine locations for stream restoration projects in the City of Schenectady



Results

- 81.5% Restoration
- 18.5% Conservation
- 0% Preservation
- Few data points
- Coarse resolution
- Monitoring program



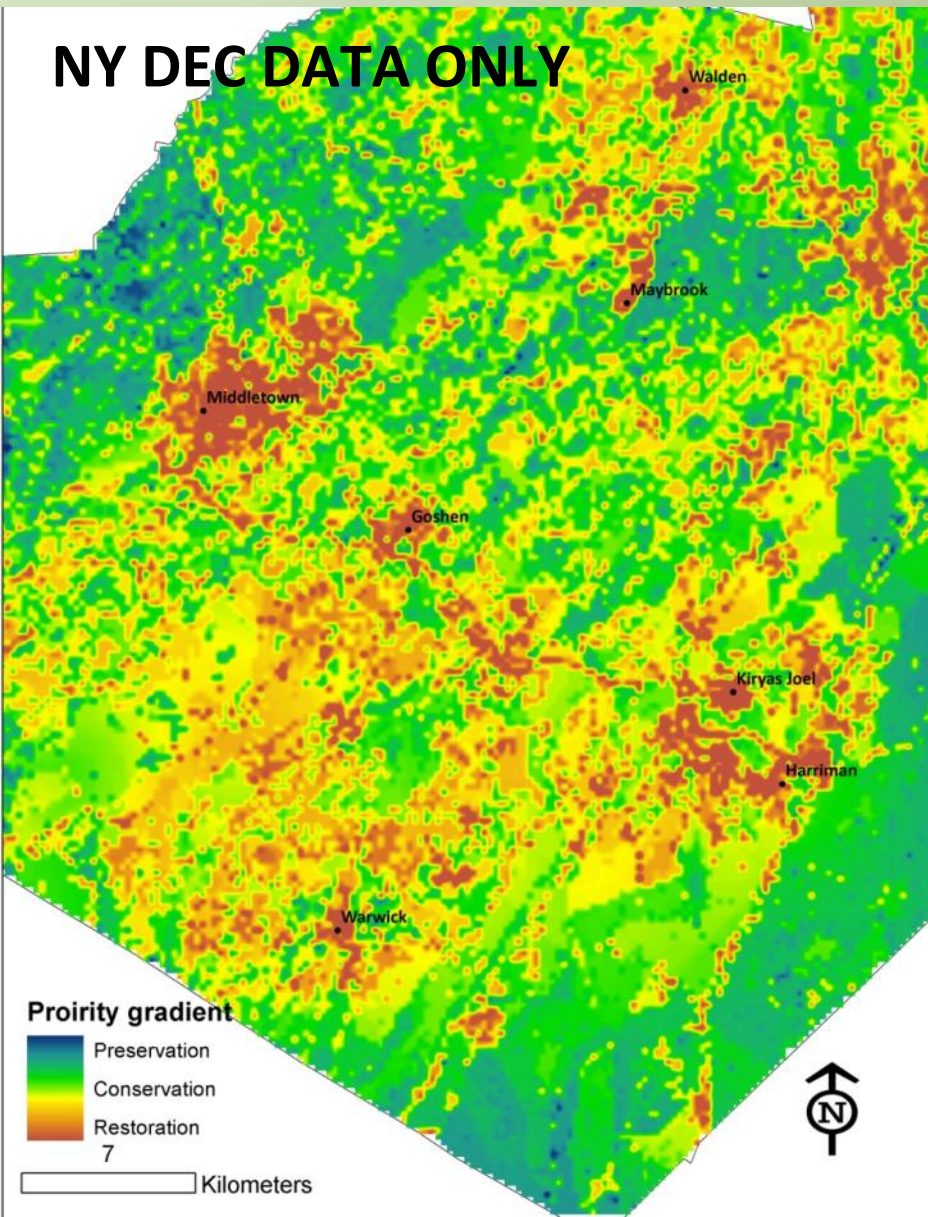


Example: Orange County, NY

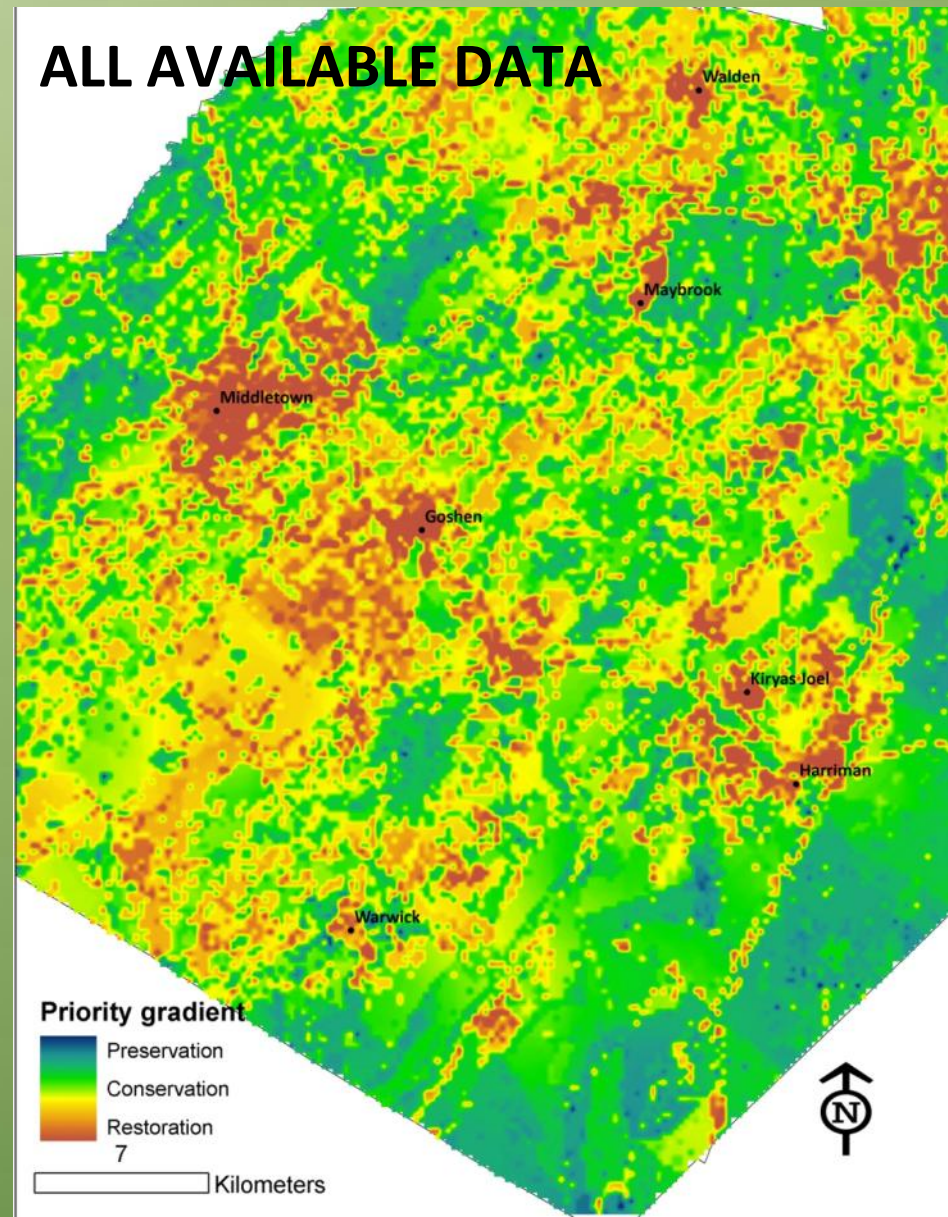
- Hudson Basin River Watch
 - Monitoring program additions:
 - Increased the number of sites 68 to 229
 - Most notable difference were the specific conductance interpolation results (15 sites to 176 sites)
 - More accurate interpolation (lower prediction errors)
 - Improved estimate of condition based on parameters

Example: Orange County, NY

NY DEC DATA ONLY



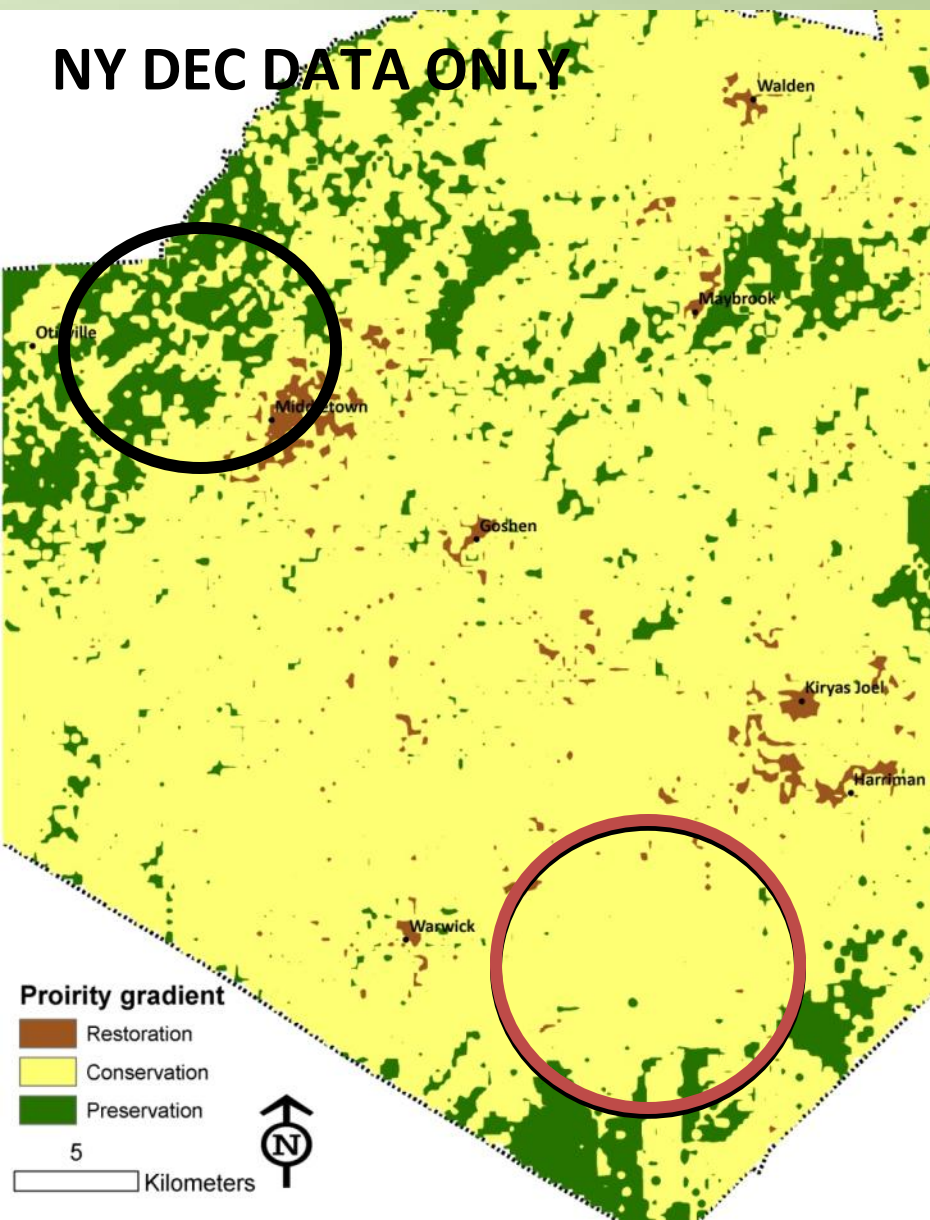
ALL AVAILABLE DATA



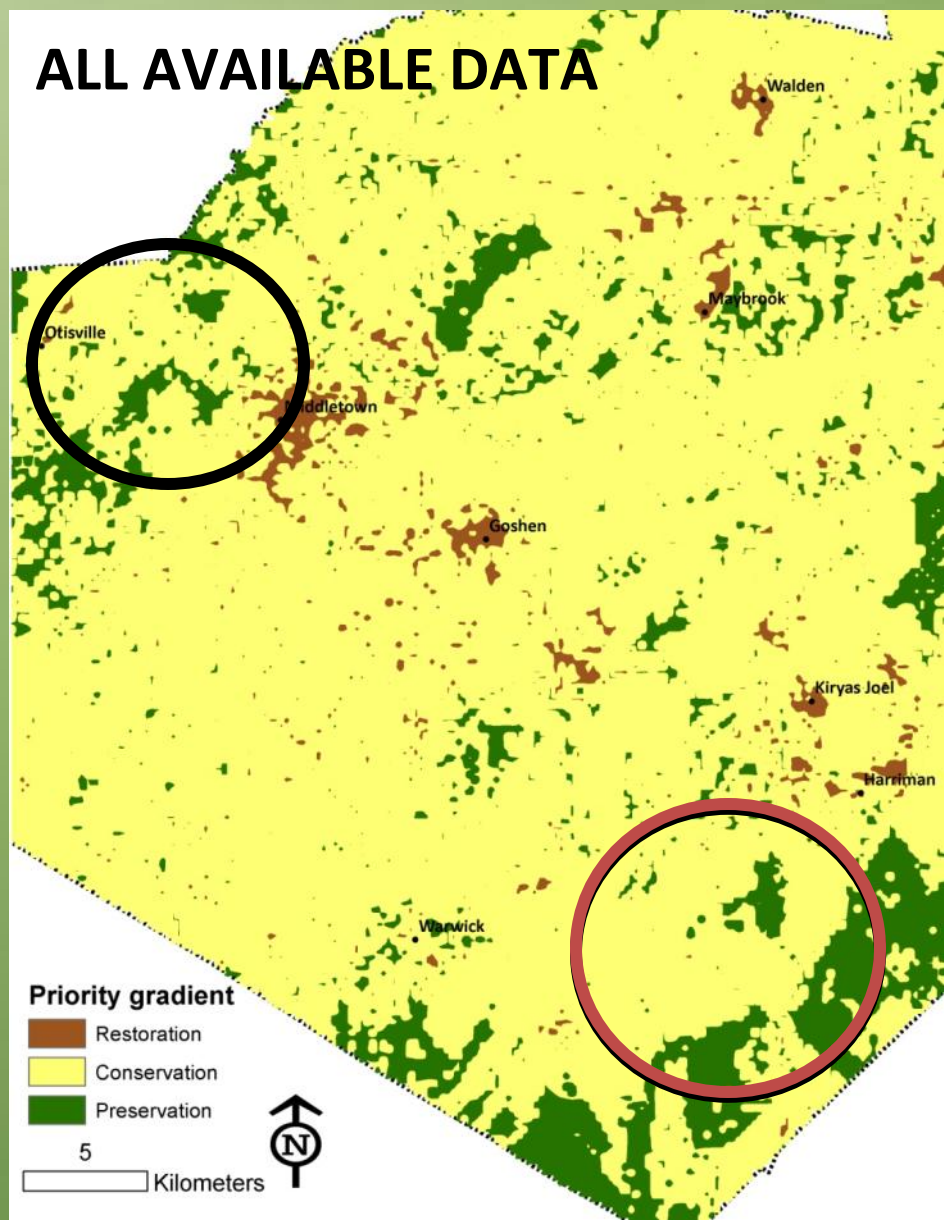


Example: Orange County, NY

NY DEC DATA ONLY

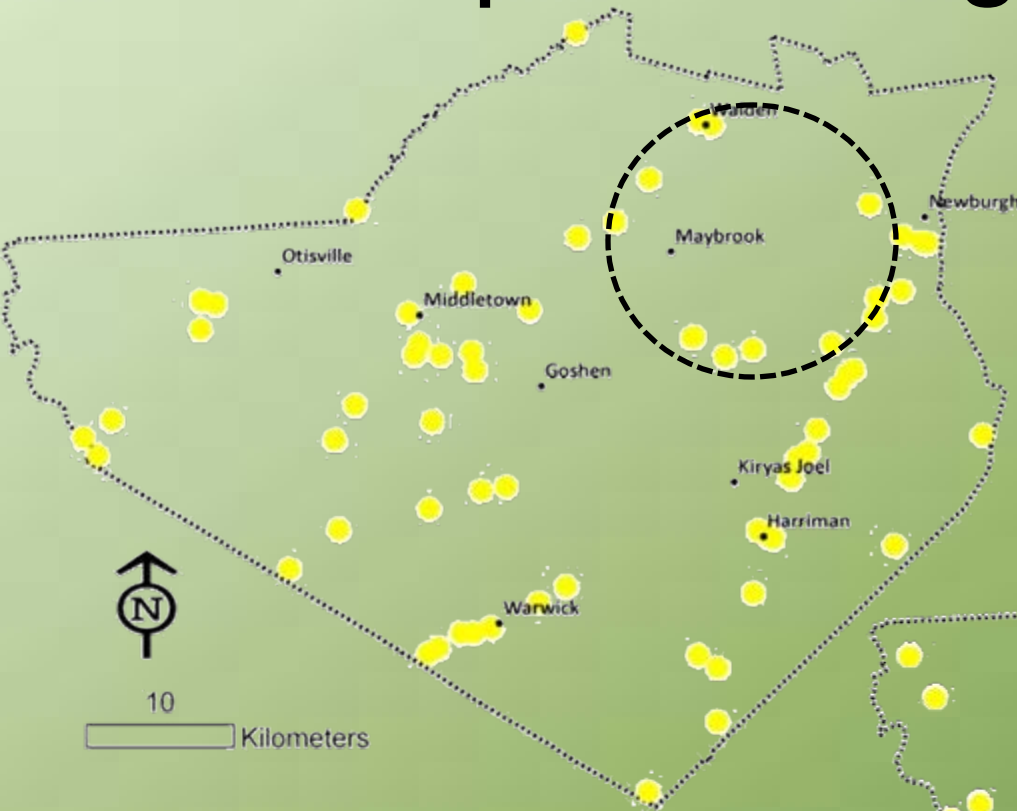


ALL AVAILABLE DATA





Example: Orange County, NY



ALL AVAILABLE DATA

NY DEC DATA ONLY





Example: Orange County, NY

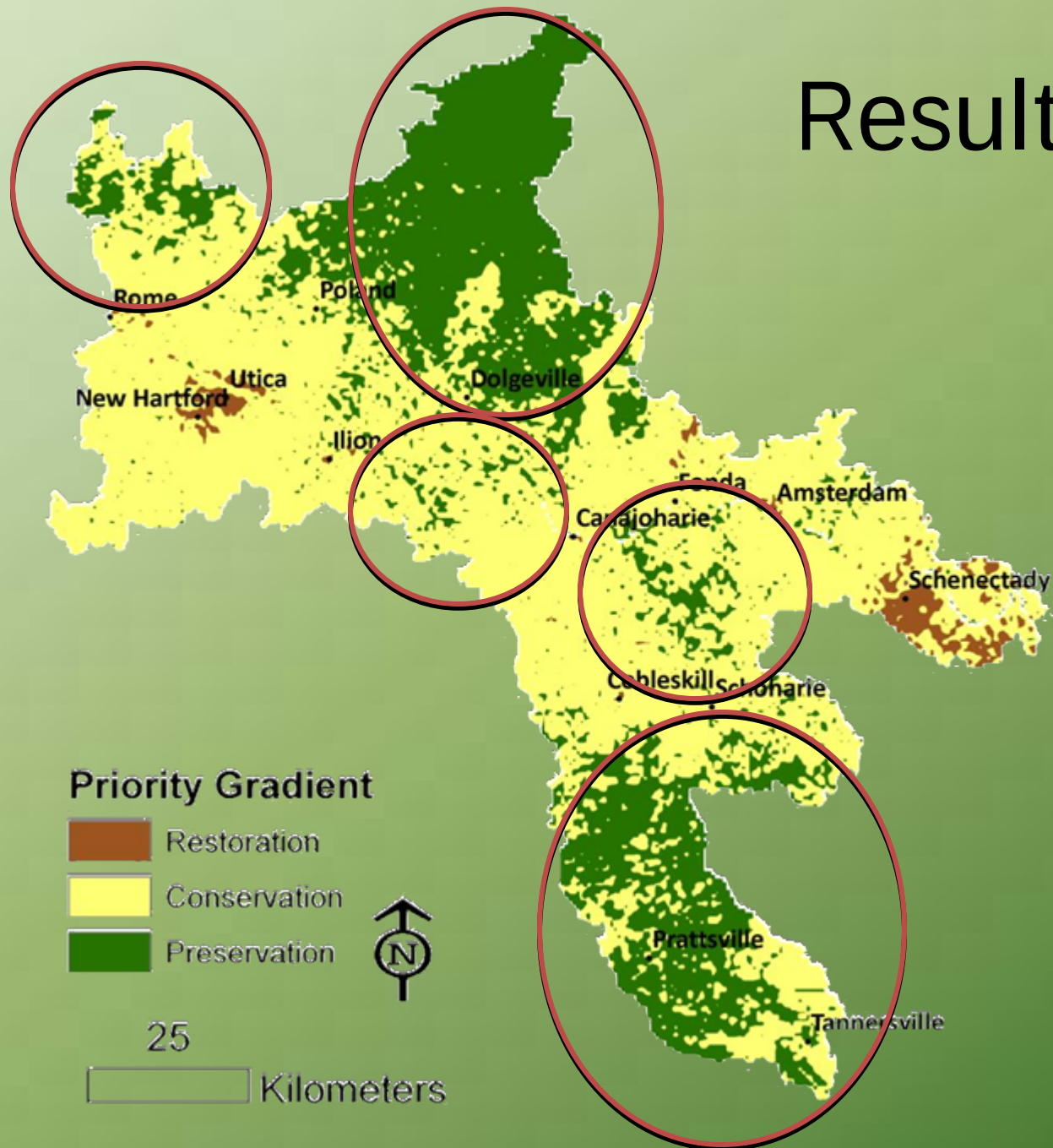
Water quality condition	Priority action	DEC only	With additional monitoring
Excellent	Preservation	24.2	22.1
Good	Conservation	71.4	73.3
Poor	Restoration	4.3	4.5

Scenario Three: Basin & Stream

- State agencies require basin wide coverage and detailed to stream level
- At basin scale identified potential reference areas
- Extracted results to within 200 m of stream



Results



Results

- Distribution of stream condition
 - 200 meter buffer
 - 600 meter resolution
- Aid with reference site selection



Refinements

- Inclusion of geologic data to account for naturally high conductivity
- Other important biological parameters
- Additional data points
 - Interpolation, reclassification, and calculation at the sub-basin scale to improve resolution
- General interpolation model improvements

Questions?

Thank you!