

Wetlands and geospatial science: Remapping wetlands in Tompkins County

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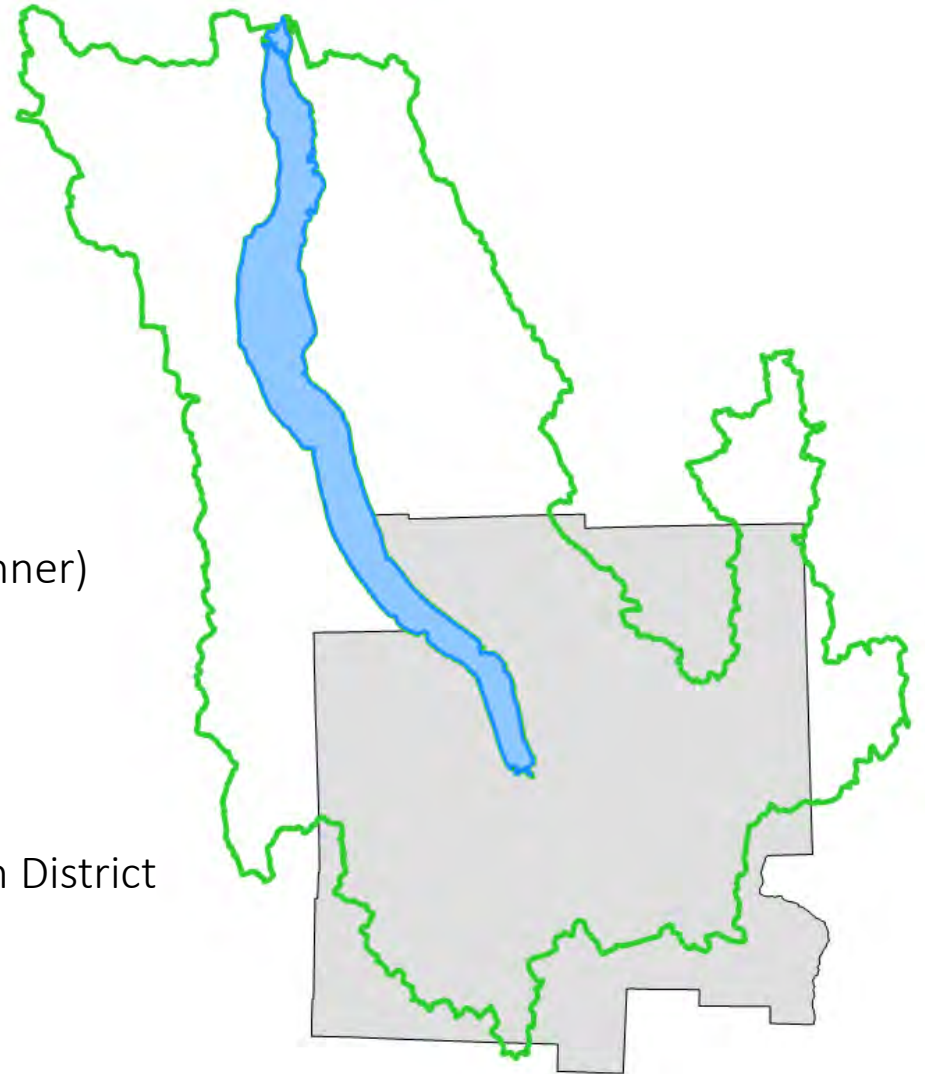
Tompkins County Water Resources Council

Tompkins County Soil and Water Conservation District

Finger Lakes – Lake Ontario Watershed

Protection Alliance (FL-LOWPA)

The Park Foundation



Wetlands

Wetlands exist... “at the interface between truly terrestrial ecosystems and aquatic systems, making them inherently different from each other, yet highly dependent on both.” Mitsch and Gosselink, 2007



Tidal Marsh

Credit: [Maine Natural Areas Program](#)

Wetlands

Wetlands exist... *“at the interface between truly terrestrial ecosystems and aquatic systems, making them inherently different from each other, yet highly dependent on both.”*

- Mitsch and Gosselink, 2007

“...areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

- U.S. Army Corps of Engineers (Corps) and the U.S. EPA accepted definition for regulatory purposes

Wetlands

Wetland Values

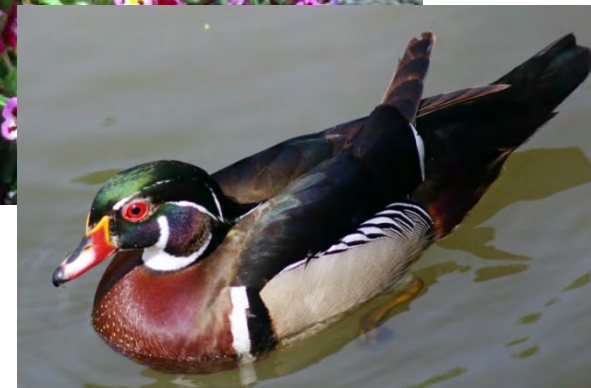
Ecological Values

- Support unique plant and animal communities
- High biological diversity
- Critical habitat for many rare and endangered species



Ecological goods and services

- Flood abatement
- Groundwater replenishment
- Erosion and sedimentation control
- Water purification
- Nutrient cycling & load reduction
- Recreation and tourism
- Open spaces



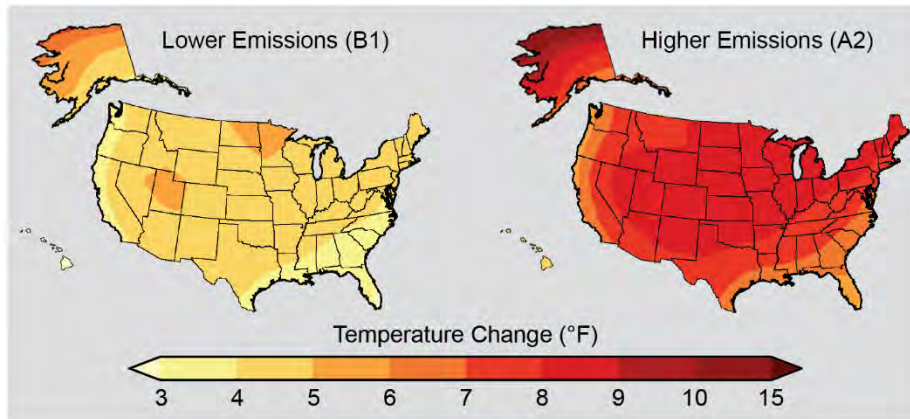
Wetlands

Wetland Values and Climate Change

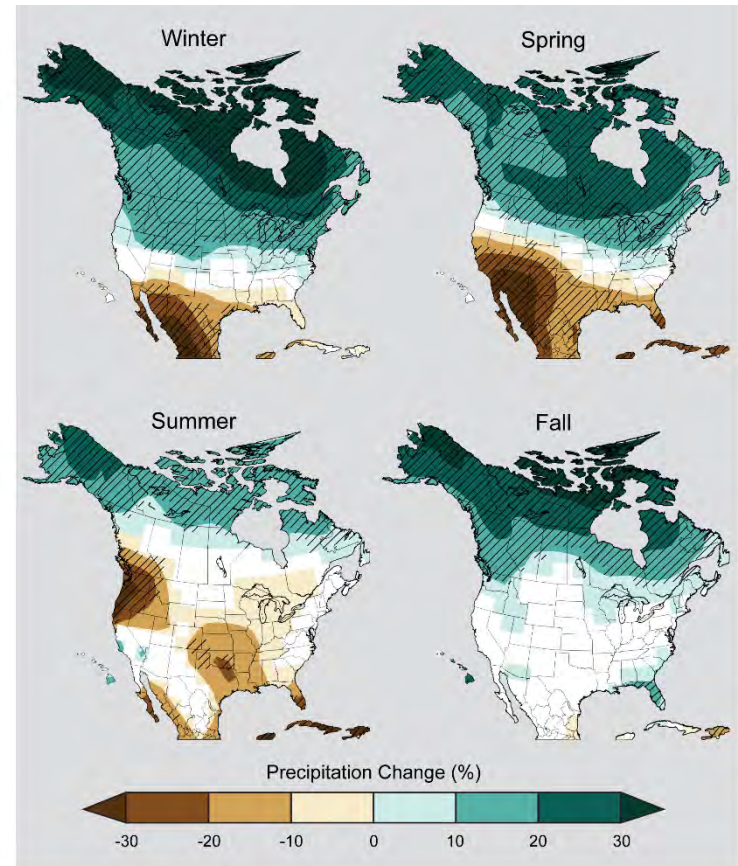
Projected changes

1970-1999 ---- 2071-2099

Temperature



Seasonal Precipitation



Existing Wetland Maps

National Wetlands Inventory (NWI)

US Fish and Wildlife Service

- Map all wetlands in United States

NYS Article 24 Freshwater Wetland Maps

NYS Department of Environmental Conservation

- Map all NYS jurisdictional wetlands (>12.4 acres) and smaller wetlands of unusual local significance

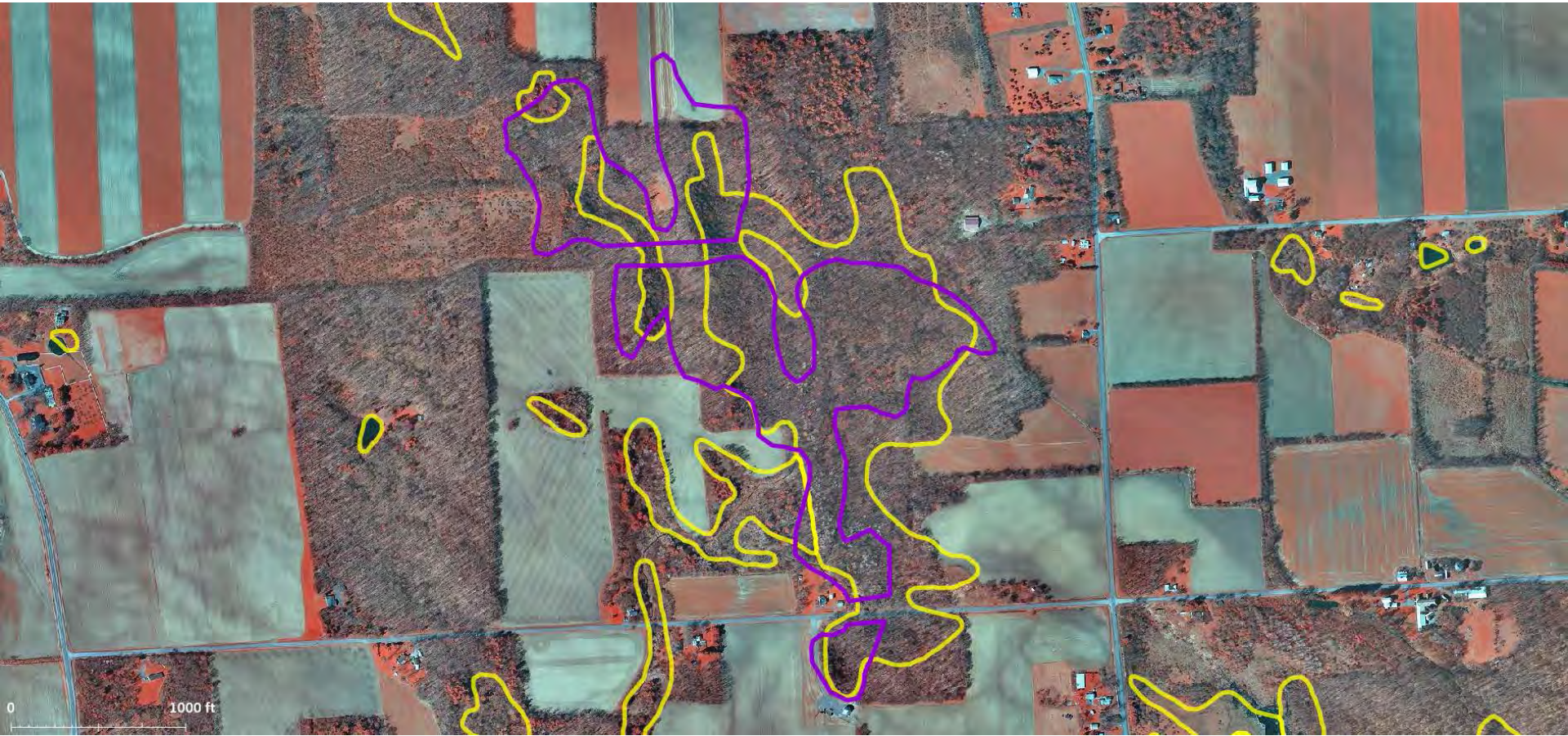
Existing Wetland Maps



USGS NHAP 1980s – Tompkins County

Existing Wetland Maps

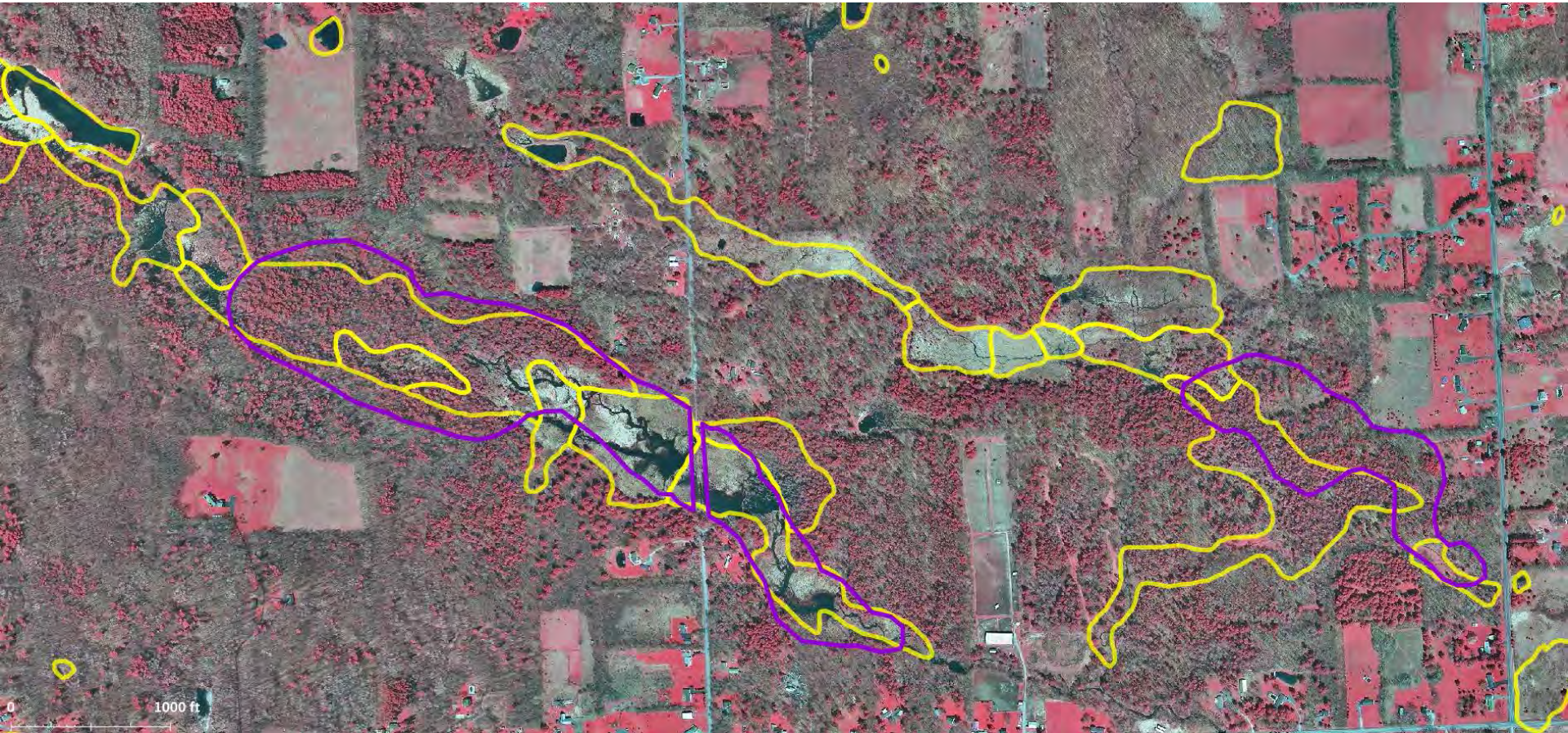
Lansing Example



NYS DOP 2012 – Tompkins County

Existing Wetland Maps

Dryden Example



NYSDOP 2012 – Tompkins County

Wetlands

Tompkins County

Wetland Protections in Tompkins County: Existing Status, Gaps, and Future Needs (2008)

- Field Survey
 - 17.4 miles, 45 wetlands encountered, totaling 605 acres
- Results
 - 19% of wetlands (#) in Tompkins have no protection under state or federal law
 - 70-80% of wetlands (#) not on existing wetland maps
 - 20% of wetland area in survey not included in USFWS NWI wetlands database

“identify and map all wetlands that are not currently regulated by DEC or the federal government and are therefore vulnerable to disturbance and destruction from development.”

- Tompkins County WRC Work Plan

New Data Resources

NYS Digital Orthoimagery Program

2002 - color-infrared (0.5ft and 1ft pixel resolution)

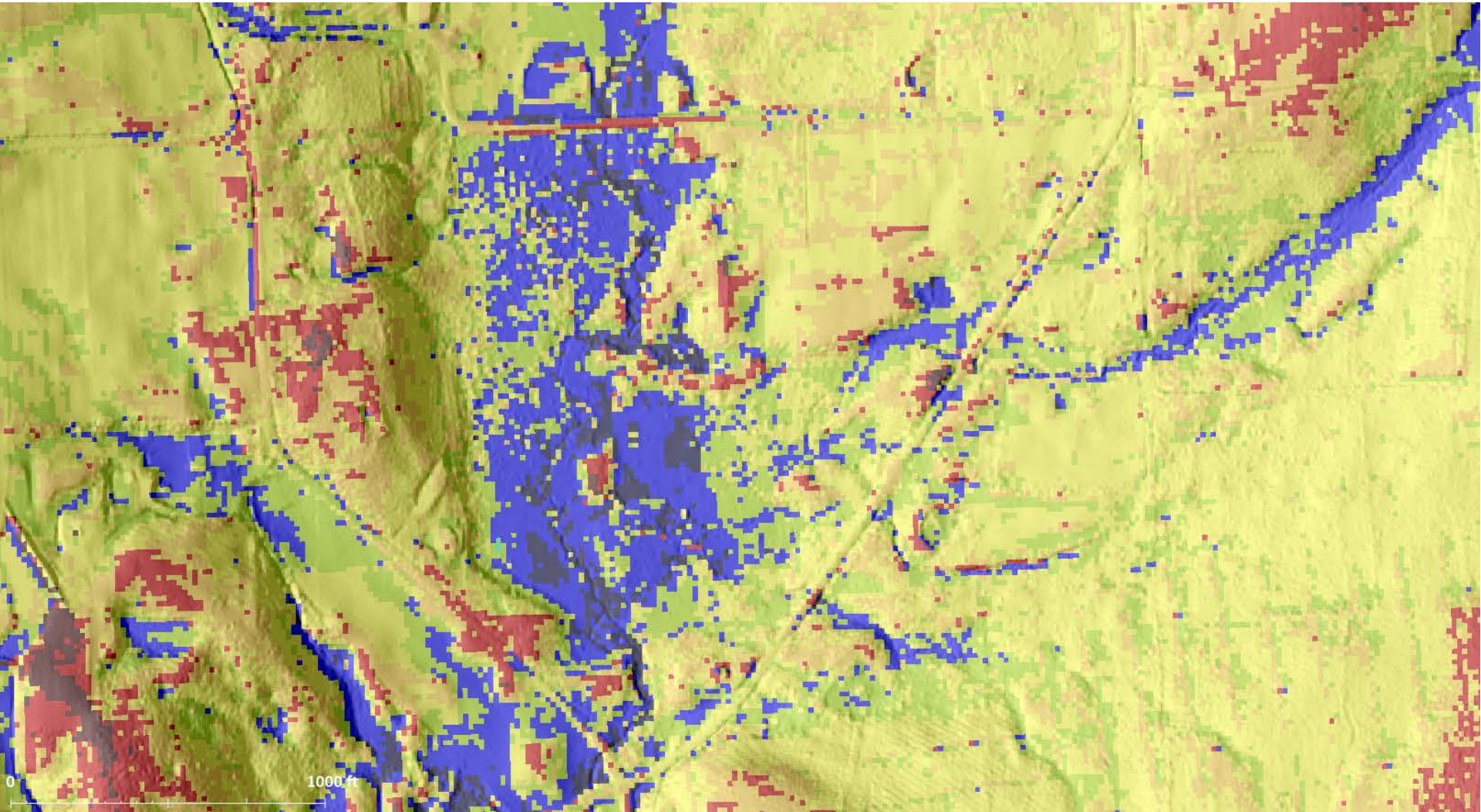
2007 - natural color (0.5ft and 2ft pixel resolution)

2012 - 4-band (0.5ft and 2ft pixel resolution)



New Data Resources

LiDAR Elevation Data (2008, funded by TCSWD)



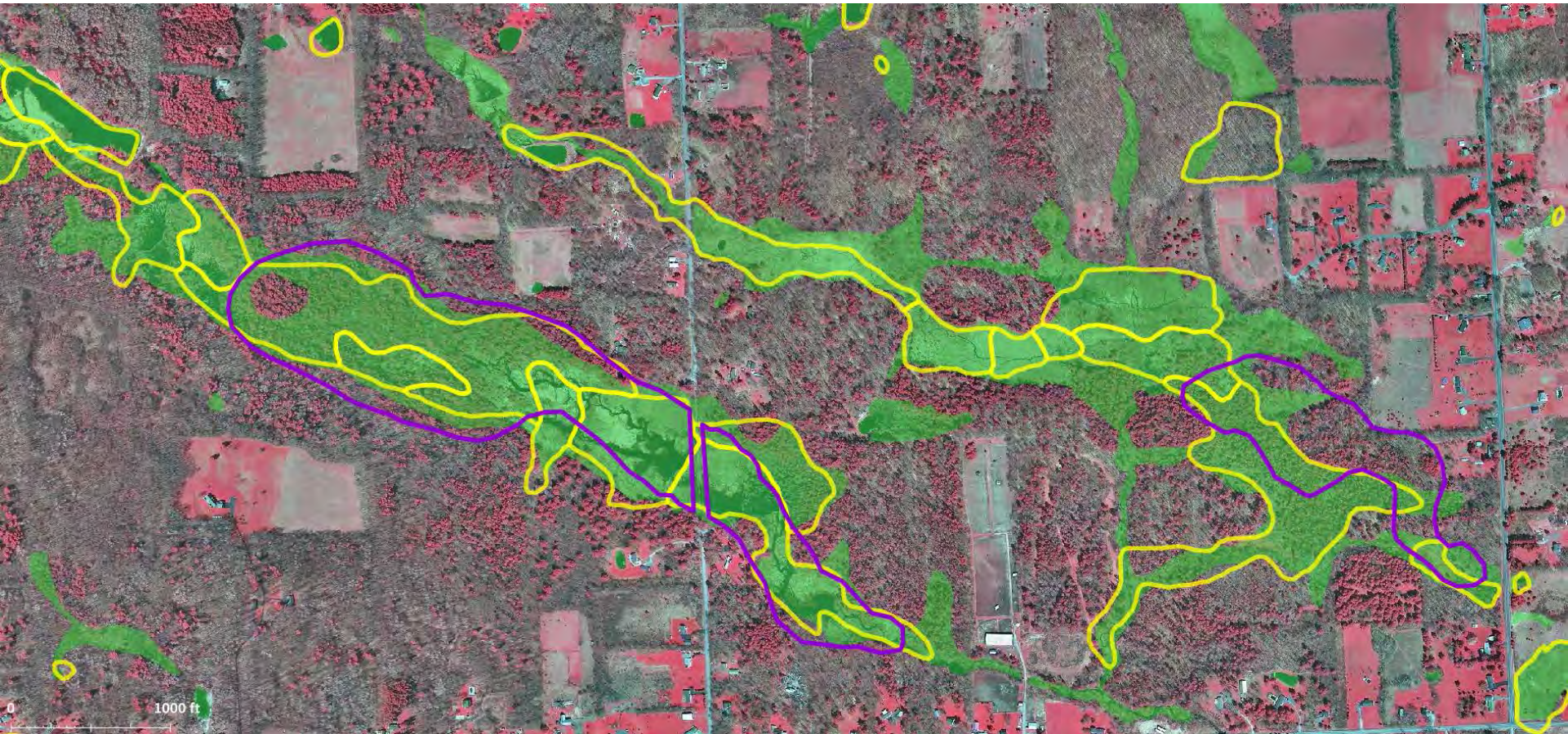
New Data Resources

Oblique Aerial Imagery



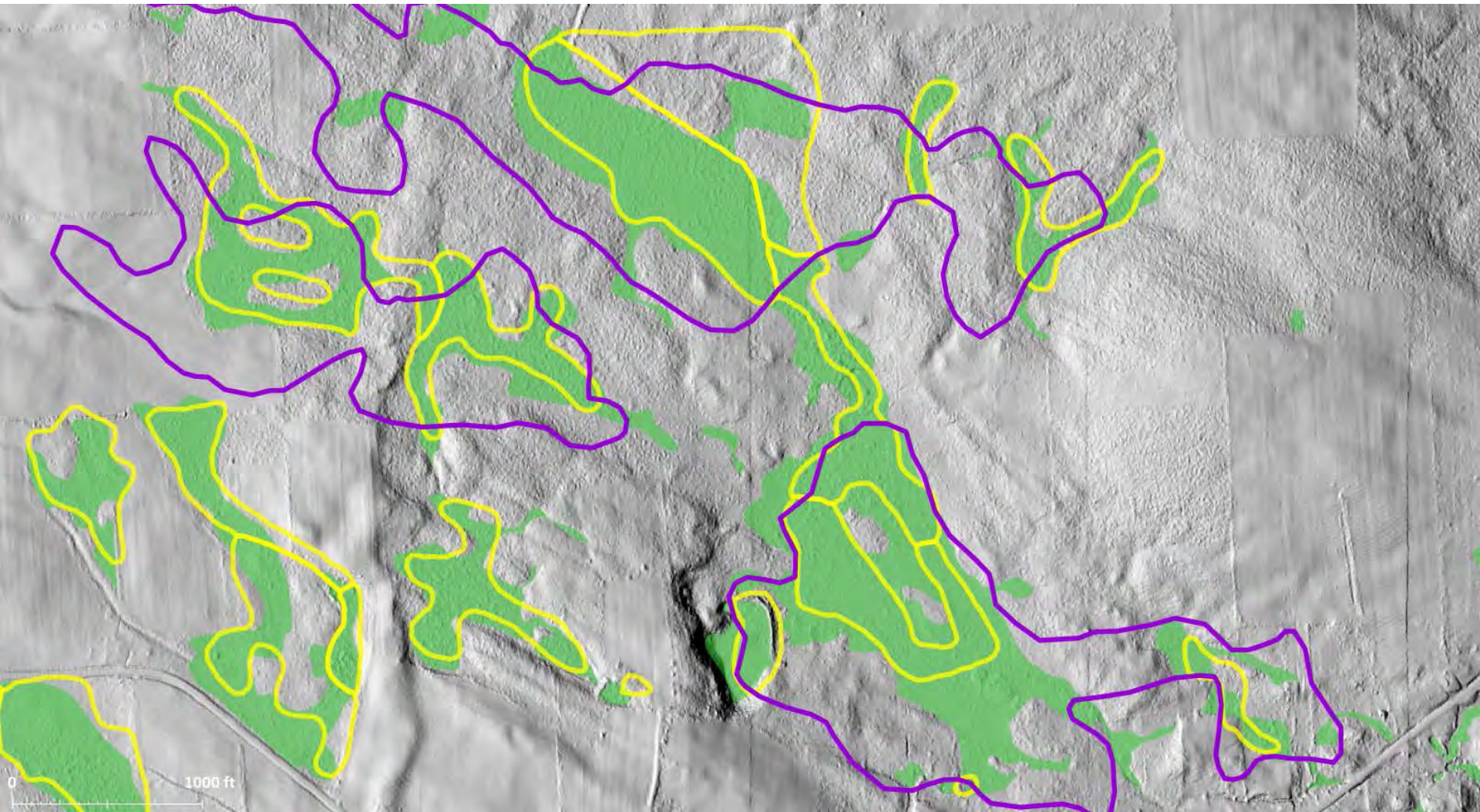
Tompkins County 2012 Wetlands Map

Dryden Example



Tompkins County 2012 Wetlands Map

Groton Example



Tompkins County 2012 Wetlands Map

Result: Wetland acreage by category

	DEC	NWI	Tompkins 2012
Freshwater Emergent		2,196.4	4,002.9
Freshwater Forested/Shrub		7,329.9	9,359.7
Freshwater Pond		890.1	1,618.0
Unconsolidated shoreline		11.6	8.2
Lake		213.4	207.9
Riverine		117.6	115.8
Total	5,631.9	10,747.5	15,312.5

Tompkins County 2012 Wetlands Map

Results: Comparison to existing wetland map

Natural Wetlands Only

Size Class	DEC	Tompkins 2012
< 0.5 ac		1,667
0.5 - 1.0 ac		434
1.0 - 2.0 ac		342
2.0 - 12.4 ac	9	525
> 12.4 ac	81	197
Totals	90	3,164

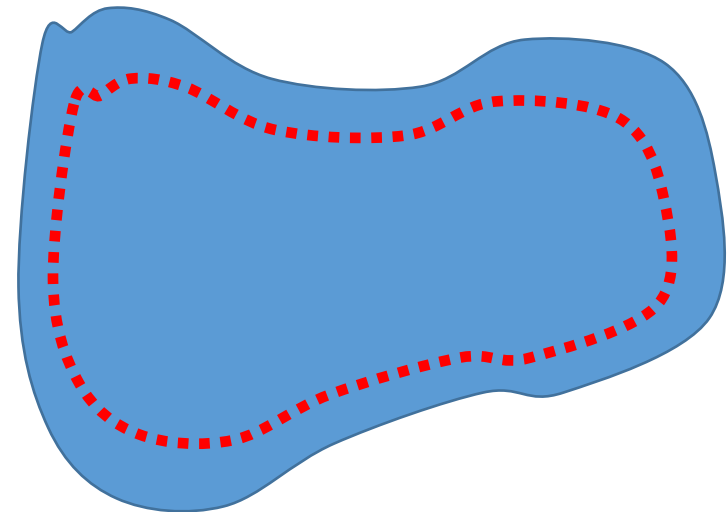
5,632ac

10,205ac

Tompkins County 2012 Wetlands Map

Accuracy Assessment on Cornell Natural Areas

1. New map is more complete and spatially accurate
 - 74% of all wetlands
 - 97.5% of wetlands > 0.5 acres
2. New map is not perfect
 - Still missing smallest wetlands (<0.5ac)
 - Overestimates floodplain wetlands
 - May underestimate wetland size on average

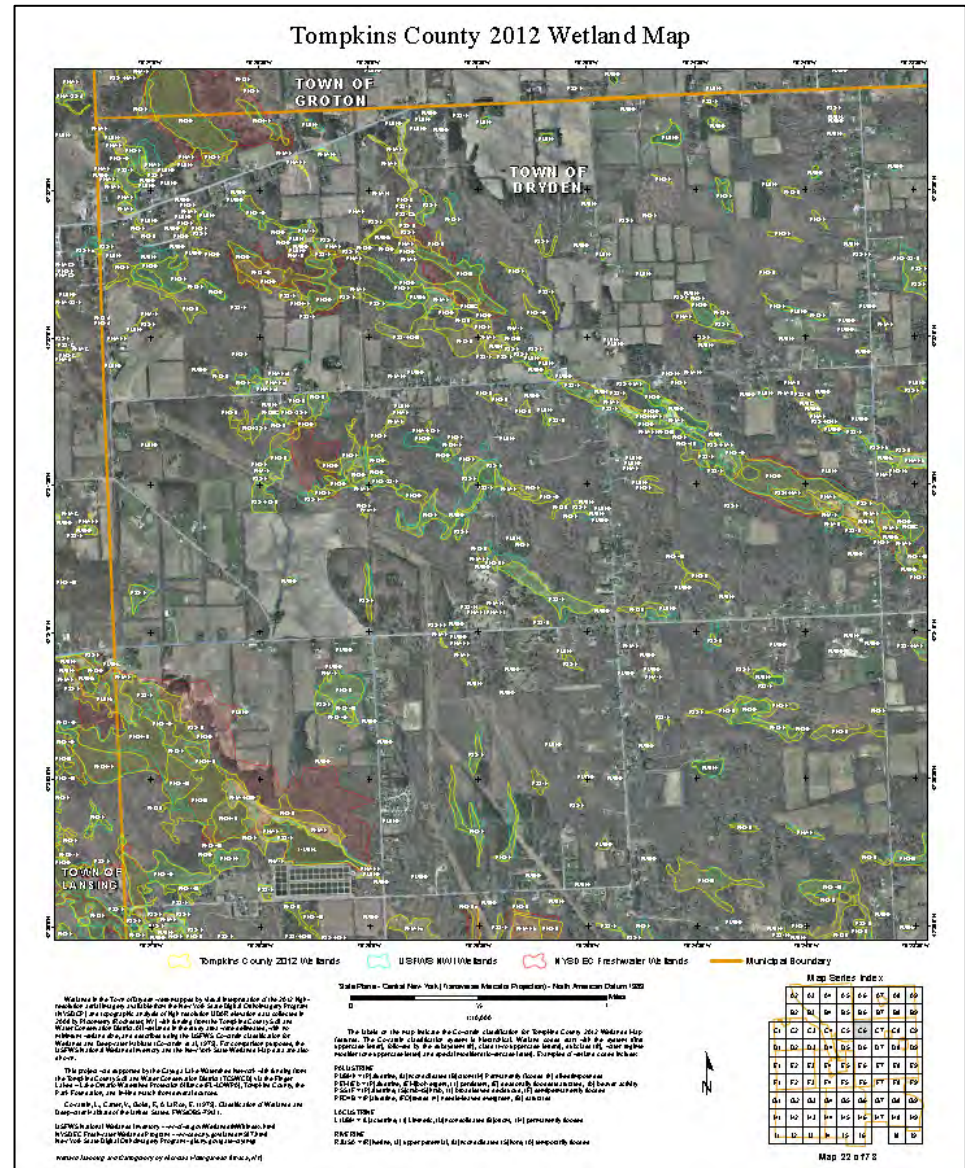


Tompkins County 2012 Wetlands Map

Data Availability

Publicly Available

- Geospatial Data
- Hardcopy/PDF Maps



Tompkins County 2012 Wetlands Map

Unique Natural Areas

