Available Data and Tools to Inform Riparian Corridor Protection

CLEAR

UCONN EXTENSION

Our name has come up . . . Thank you!

1. What is the issue/problem we are addressing?
   - Land cover data on the status of and change in the riparian corridor

2. What width where?

   Some great tools that are helpful but not ideally suited
   - Source Water Protection Tool
   - Local Watershed Assessment Tool

CLEAR
University of Connecticut

- https://clear.uconn.edu

What ”problem” are we trying to solve?

Vegetated/forested/natural

- Absorb pollutants from the landscape
- Streambank stabilization
- Flood control
- Cooler streams
- Better aquatic and terrestrial habitat

Developed

- Adds pollutants/sediment through runoff
- Increases risk of erosion/channelization
- Risk of damaging flooding impacts
- Warmer streams
- Decreased habitat quality

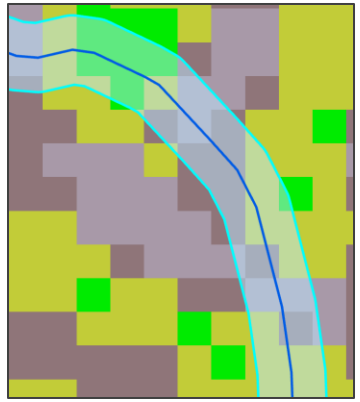
Using remote sensing to study Connecticut's changing landscape

- Land cover helps to **QUANTIFY** discussions about the state of things
- Can determine **STATUS** from single-year imagery dataset
- Can determine **CHANGE** from multiple-year imagery datasets

2 Datasets for Assessing the Riparian Zone in CT

NOAA Coastal Change Analysis Program (C-CAP)

- High resolution - 1m data
- Based on 2016 imagery
- We used 100 ft riparian zone
- Best for detailed look at **"current" STATUS**

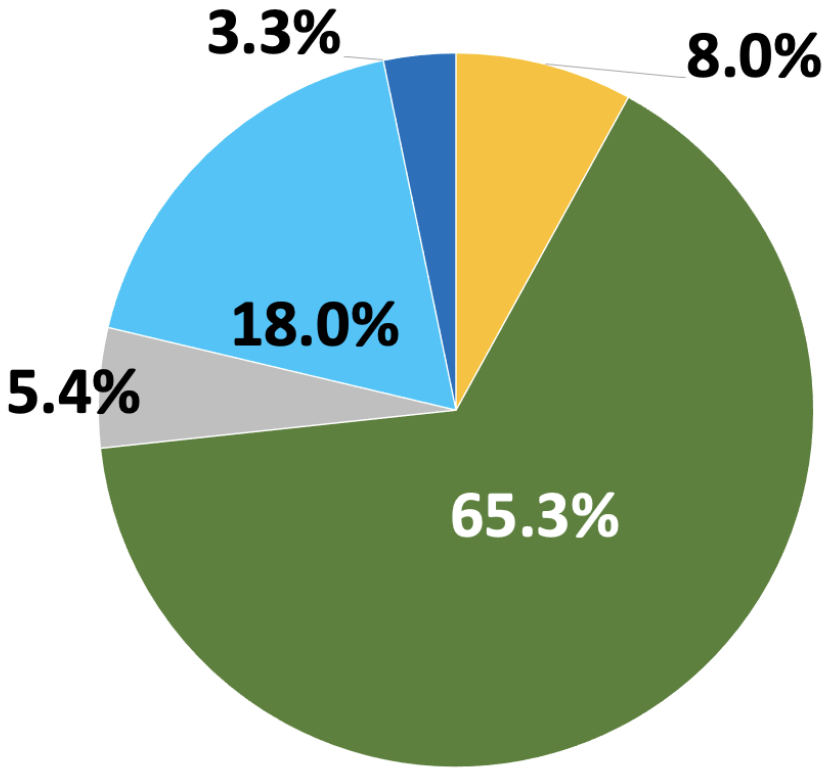


National Land Cover Dataset (NLCD)

- Lower Resolution -30m data
- 1985 -2023
- We used 300 ft riparian zone
- Best for **CHANGE**

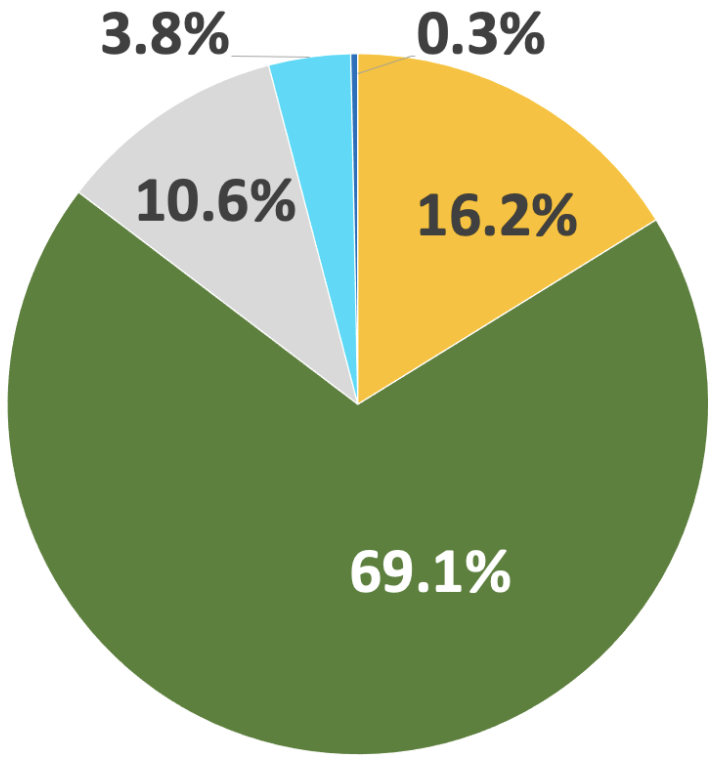
STATUS: Riparian vs upland land cover (2016)

100 ft riparian corridor



Ag & ag-like
Natural vegetation
Impervious
Wetland
Water

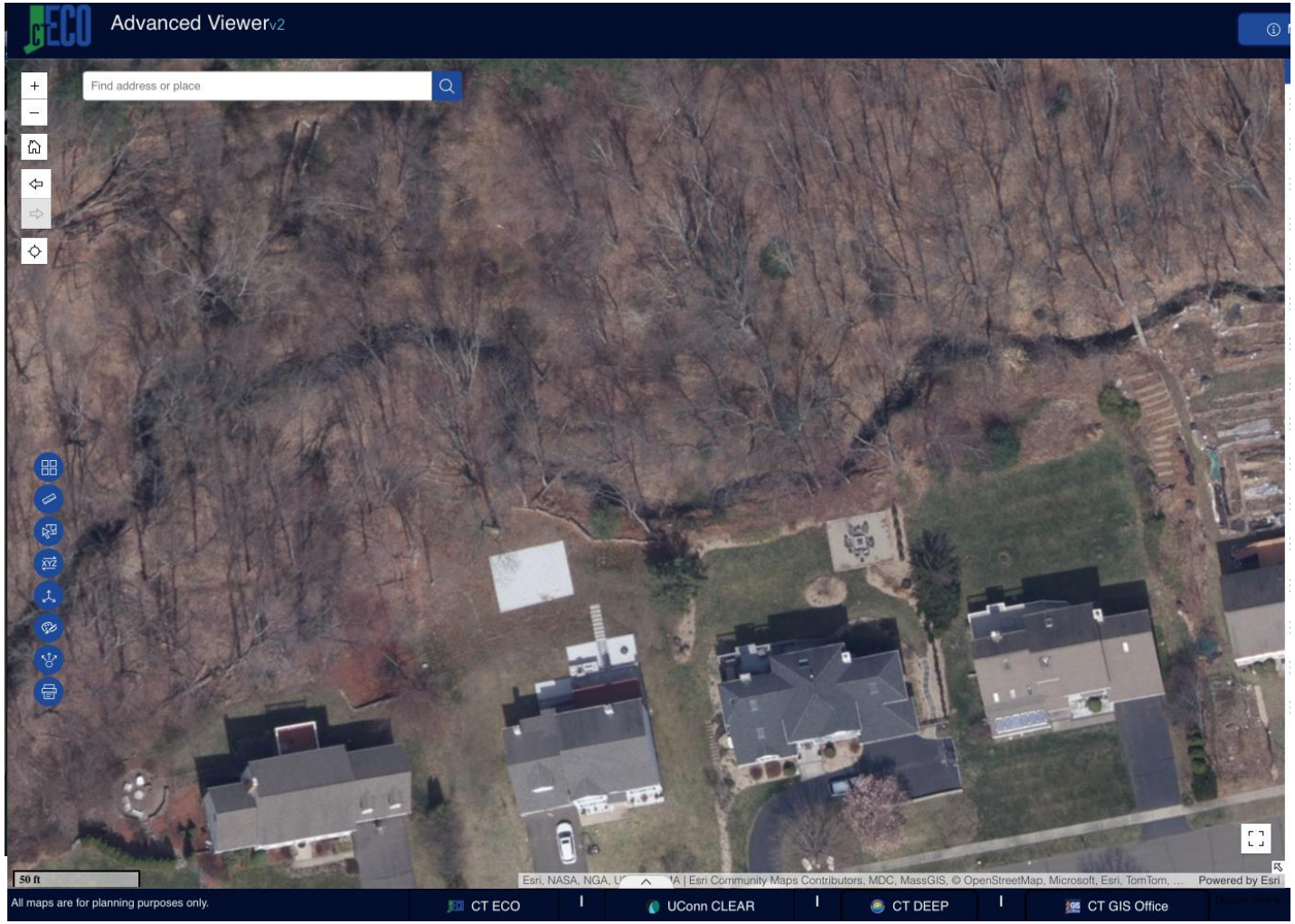
upland



Ag & ag-like
Natural vegetation
Impervious
Wetland
Water

Change may be coming – 2023 HR Land Cover

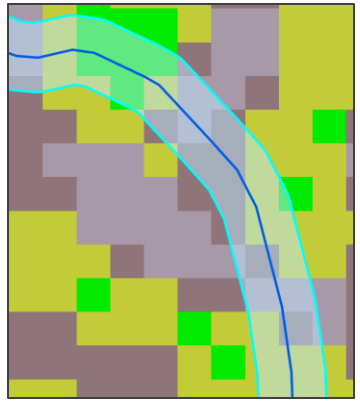
- New high resolution (1m) data from NOAA someday
- Will allow us to look at **detailed change** from 2016 – 2023
- Based on 2023 imagery collected by State (good investment)
- But we are in line behind paying customers



2 Datasets for Assessing the Riparian Zone in CT

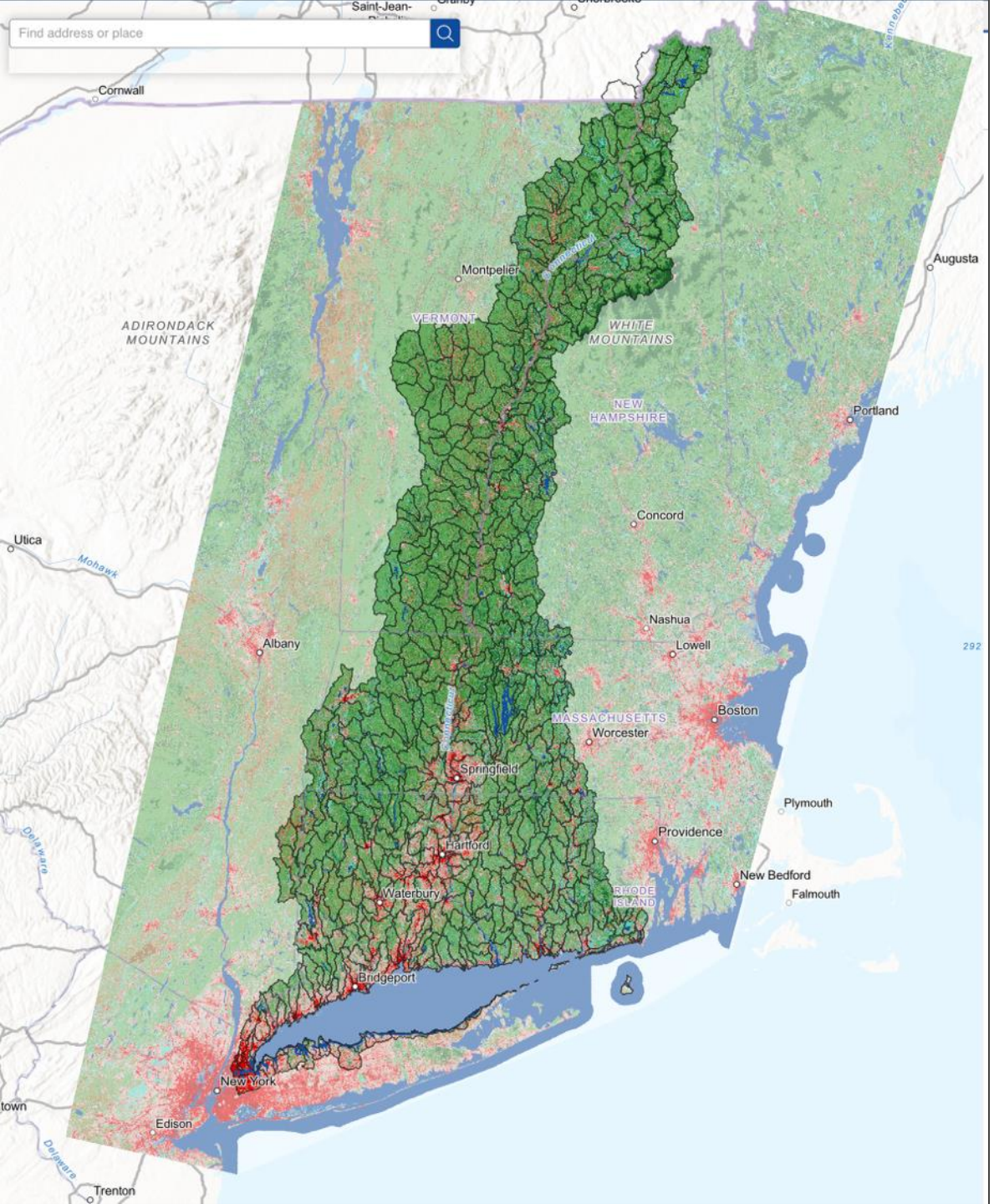
NOAA Coastal Change Analysis Program (C-CAP)

- 1m data
- Based on 2016 imagery
- We used 100 ft riparian zone
- Best for detailed look at **"current" STATUS**



National Land Cover Dataset (NLCD)

- 30m data
- 1985 -2023
- We used 300 ft riparian zone
- Best for **CHANGE**



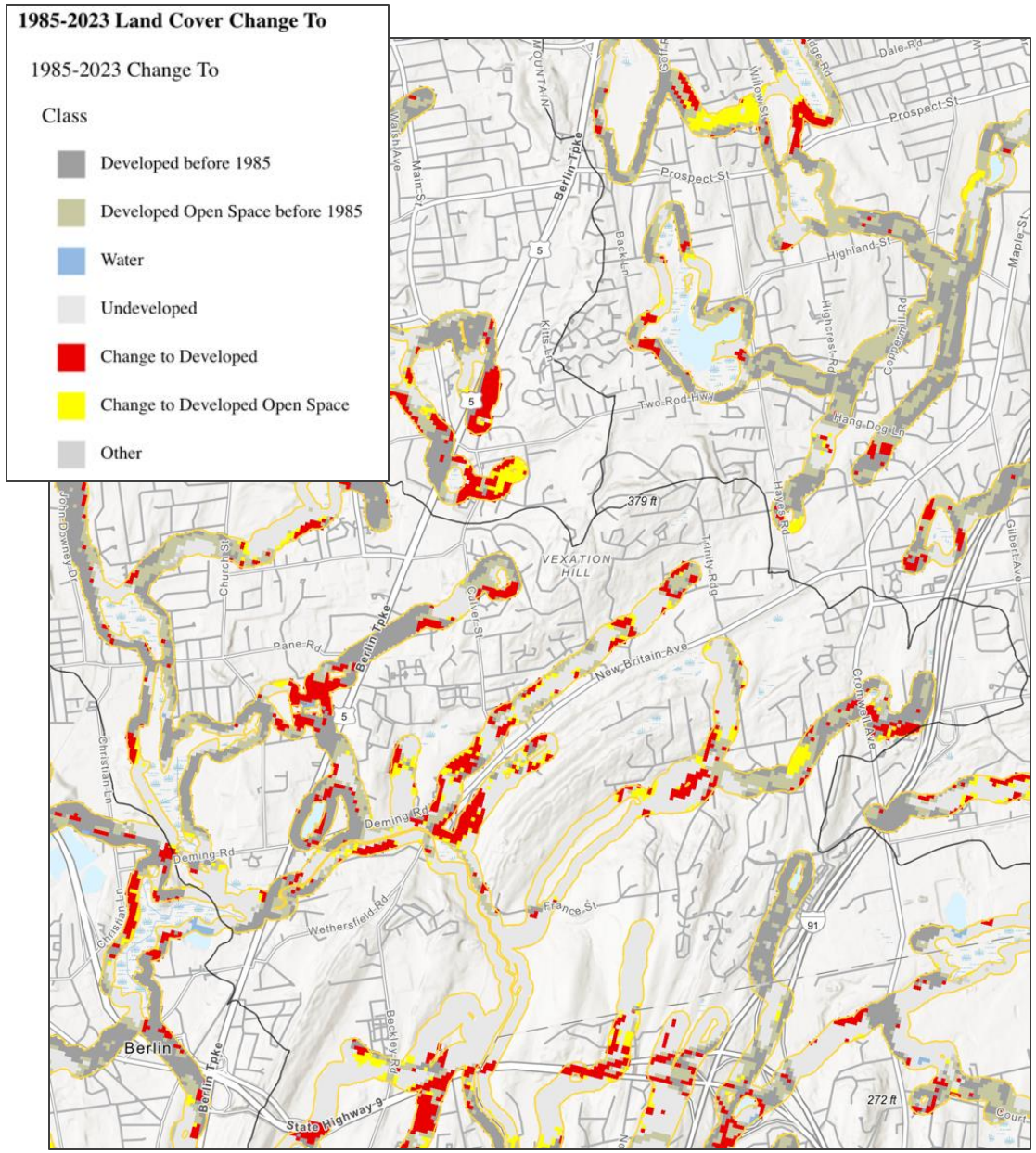
NEW Long Island Sound watershed land cover analysis

- National Land Cover Dataset (NLCD)
- 30m resolution
- 1985 – 2023
- Focus on watershed health indicators:
  - Impervious cover
  - Riparian areas (300 ft)

- Still being sliced and diced

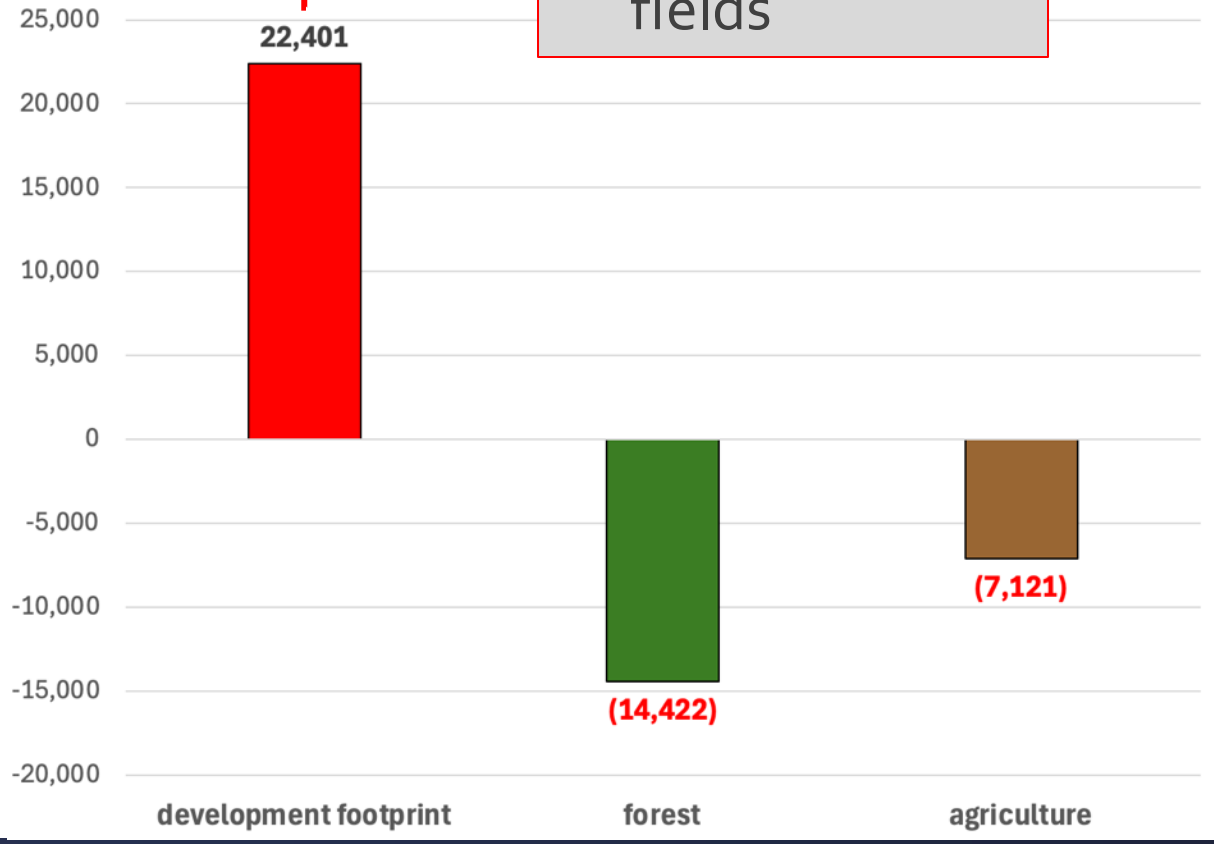
LONG ISLAND SOUND PARTNERSHIP

CLEAR University of Connecticut



CT 300 ft Riparian Zone Change
1985-2023 (acres)

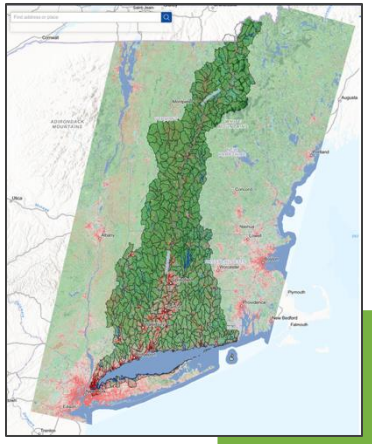
- 35 mi²
- 16,790 football fields



Development Increase in 300 ft riparian zone CT River watershed: 1985 – 2023

Percent of the 300 ft riparian Corridor in development footprint

	riparian area, 1985 (ac)	DF area within riparianl, 1985 (ac)	% of riparian area in DF, 1985	riparian area, 2023 (ac)	DF area within riparian, 2023 (ac)	% of riparian area in DF, 2023
CT	867,074	200,570	23.1%	867,074	222,971	25.7%
MA	534,240	63,235	11.8%	534,240	70,894	13.3%
NH	467,407	33,485	7.2%	467,407	39,365	8.4%
VT	680,535	53,975	7.9%	680,535	60,738	8.9%



Loss of forest cover in 300 ft riparian zone CT River watershed: 1985 – 2023

	riparian forest acres 1985	riparian forest acres 2023	Change	rel. change (% loss)
CT	599,422	585,000	(14,422)	-2.4%
MA	427,567	422,228	(5,339)	-1.2%
NH	400,607	395,510	(5,097)	-1.3%
VT	553,743	550,901	(2,842)	-0.5%

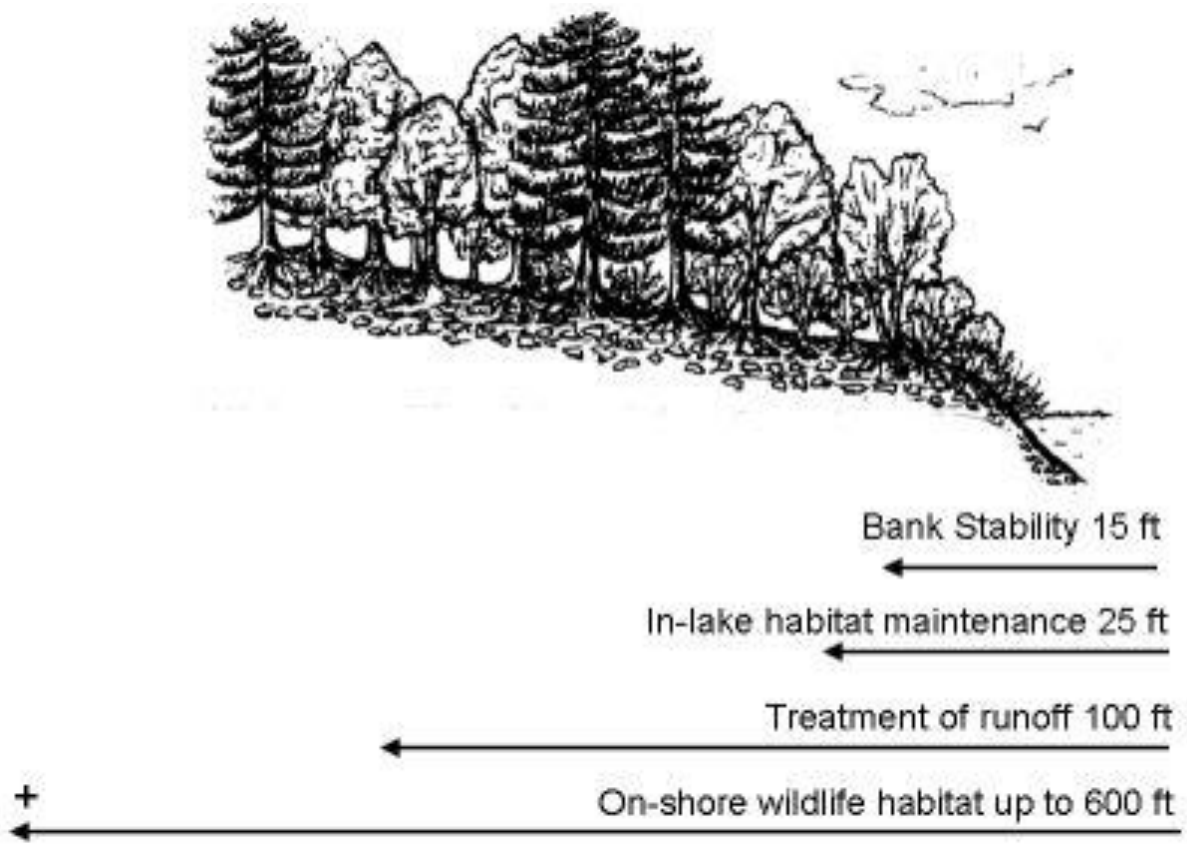
Our name has come up . . . Thank you!

1. What is the issue/problem we are addressing?
   - ➢Land cover data on the status of and change in the riparian corridor

CLEAR
University of Connecticut

2. What width where?
   - Some great tools that are helpful but not dispositive
     - ➢Source Water Protection Tool
     - ➢Local Watershed Assessment Tool

- https://clear.uconn.edu



It depends.... on site conditions: location within the watershed, soil type and slope, hydrology AND what the function of the buffer is.

Riparian Corridor Widths for Specific Objectives

Bottom line: bigger is better

Small riparian corridors

(25 – 50 ft)

- Help to protect water quality
- Streambank stabilization
- Provide small scale travel routes for wildlife
- May provide

Larger riparian corridors

(> 50 ft)

- Provide habitat components to more species
- Help to reduce secondary inputs
- Increased water quality

Juliana Barrett

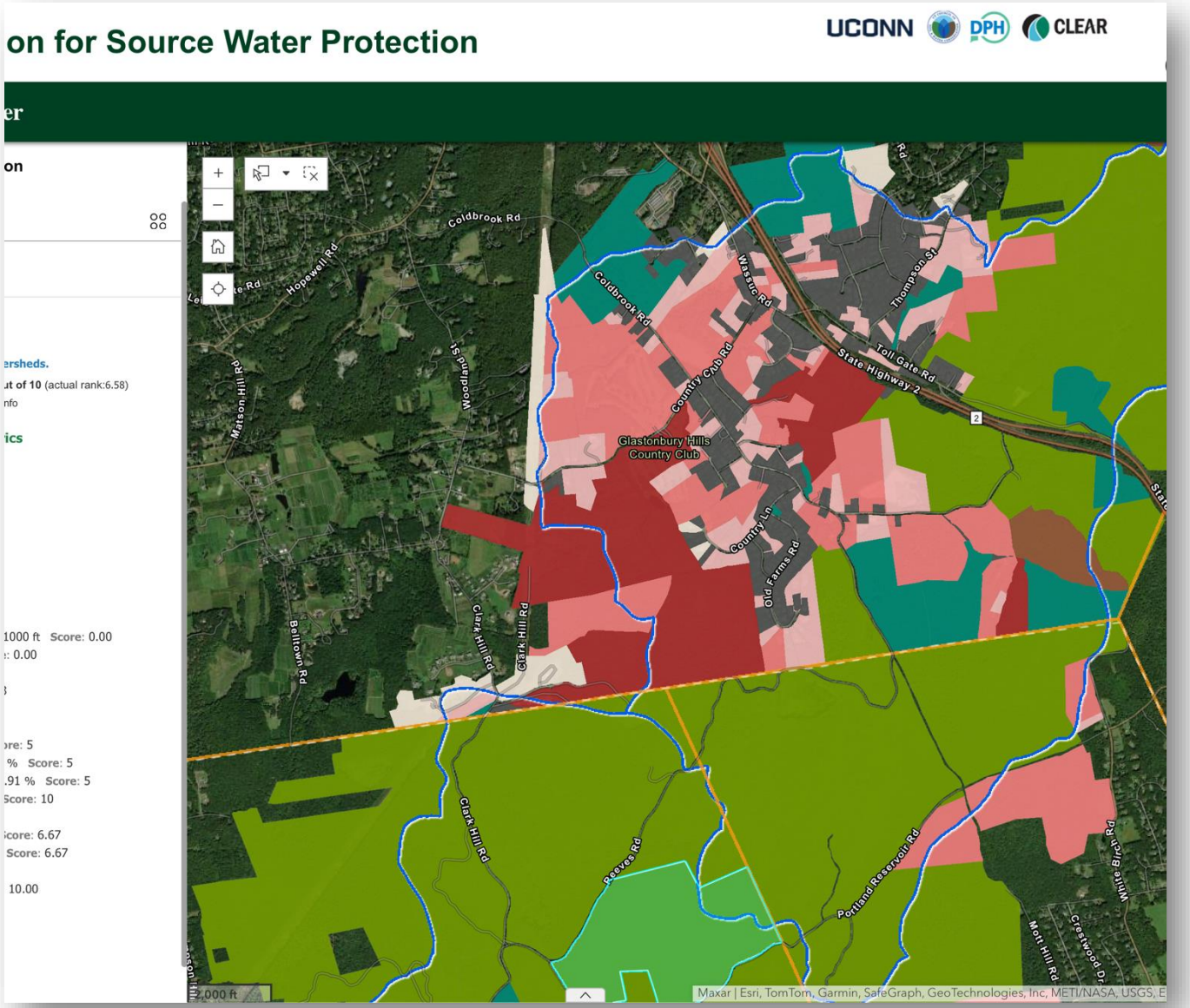
Coastal Habitat/Resilience Educator, CT Sea Grant

Juliana Barrett was an Extension Educator with the Connecticut Sea Grant program at the Avery Point campus and a core team member of CLEAR. As an ecologist, her focus was the coastal habitats of Connecticut and climate adaptation. She worked with towns and groups throughout the state on the conservation and management of coastal areas and resilience of communities – both coastal and inland. She is currently being hired by Sea Grant in a part-time contractual capacity to continue some of this work, including her leadership of the Climate Corps, an undergraduate program in which UConn undergrads work with communities on climate adaptation projects.

orridors

Sourcewater Protection Tool

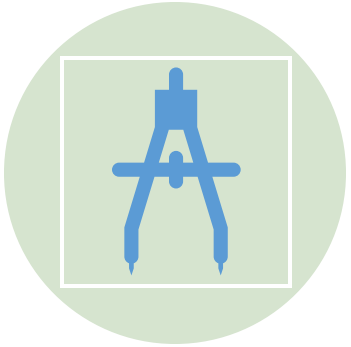
A PARCEL-BASED drinking water protection prioritization tool



Methods

Collect Parcels

Define Metrics



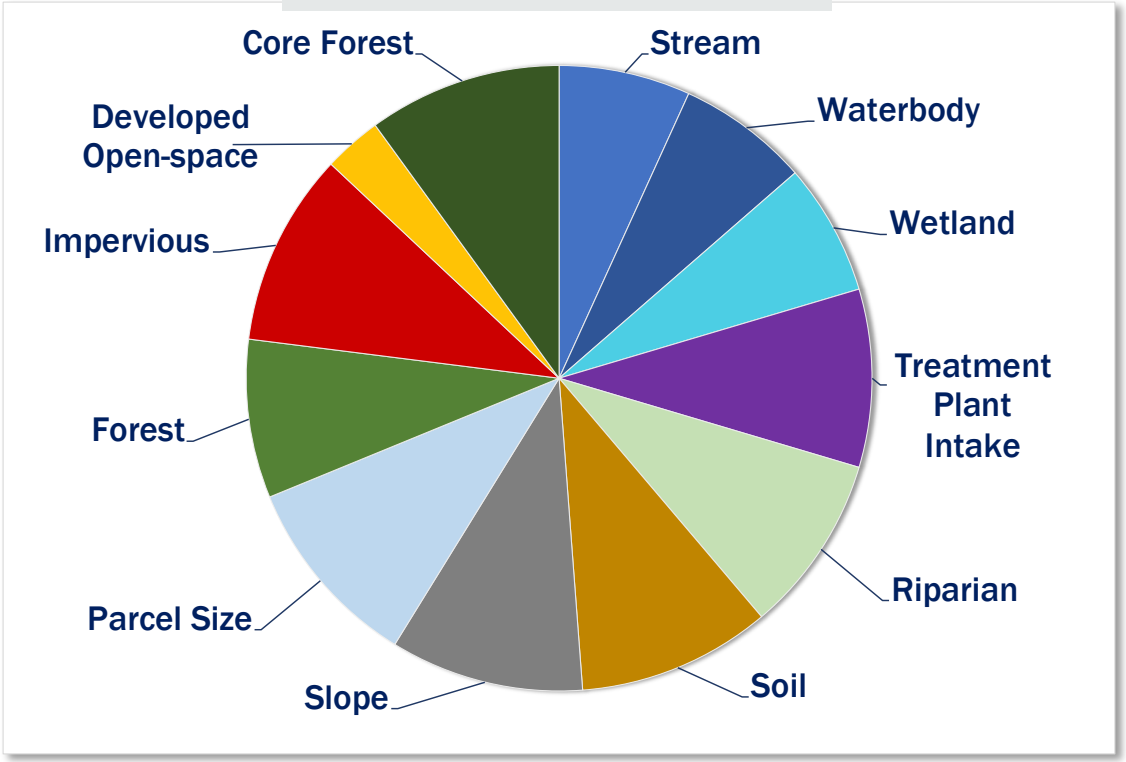
Calculate Ranks

Develop Web Tool

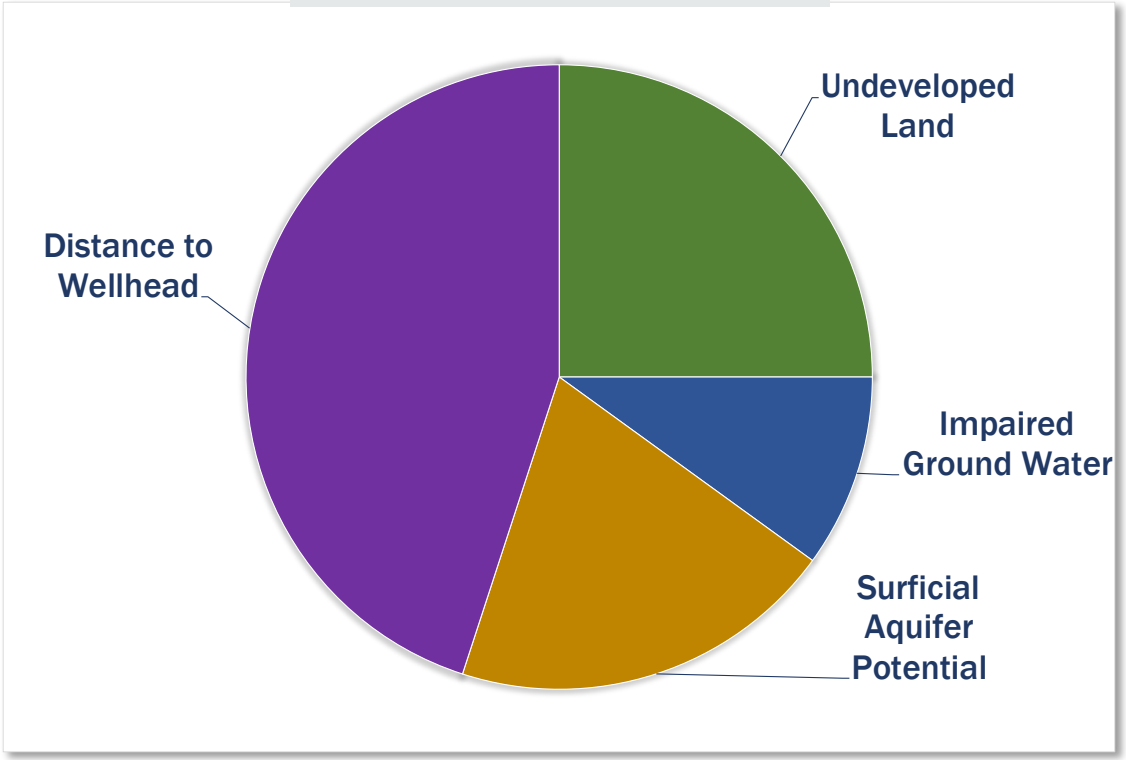
Metric Weights

- Sum of weights = 1
- More important metrics get higher weights.
- Determined by expert opinion

Surface Water Metrics



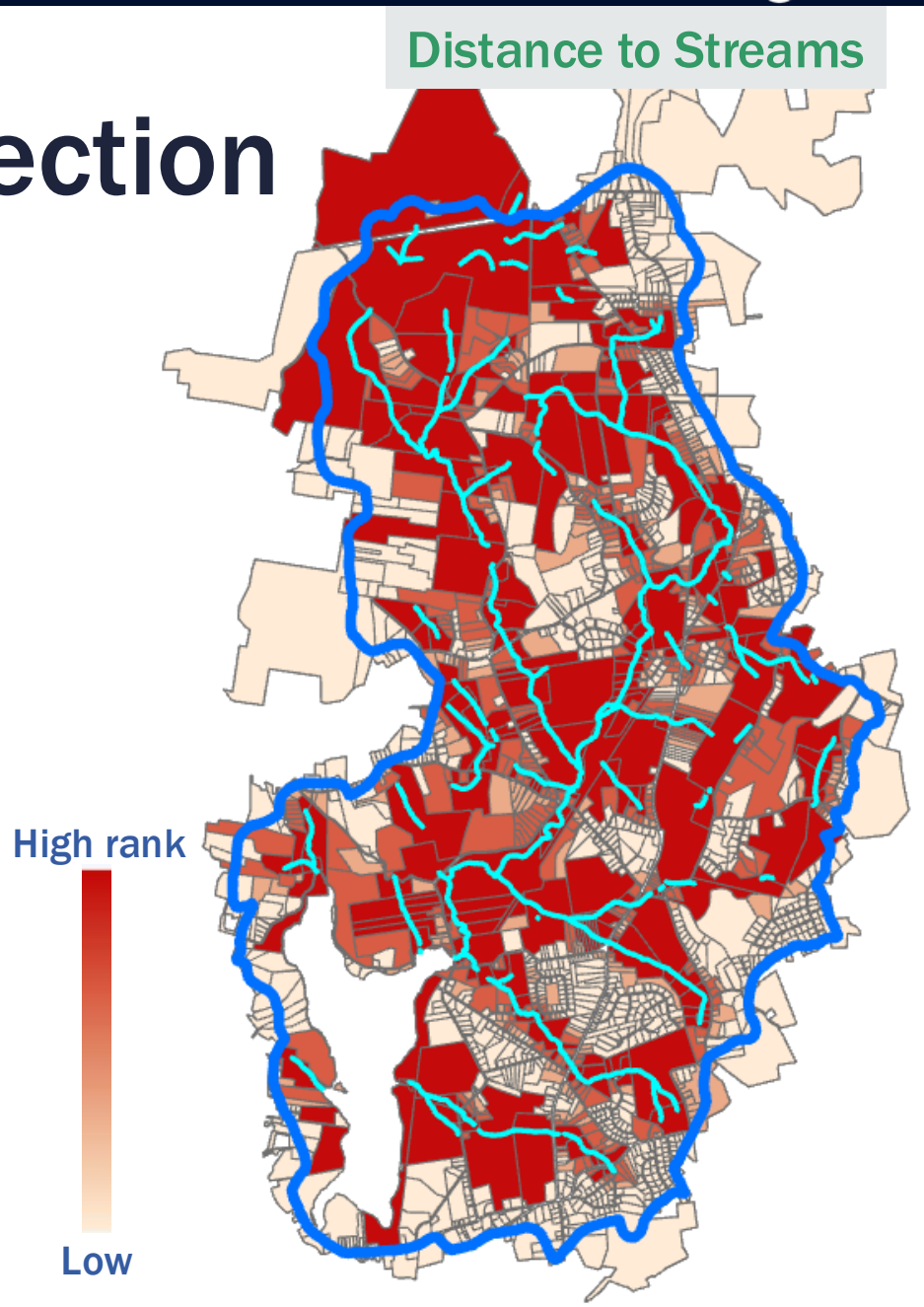
Ground Water Metrics



Metrics for Surface Water Protection

Parcels have higher priority:

- Closer to and have greater lengths of Stream
- Closer to and have higher % area of Waterbody
- Closer to and have higher % area of Wetland
- Closer to Treatment Plant Intake
- Greater area and higher % area of Riparian Zone



Apply to Riparian Widths?

Could theoretically develop tool with similar analysis

- Identify metrics (slope, uses, drinking water watershed, etc.)
- Assign weights
- Collect data (assuming have)

Emily Wilson

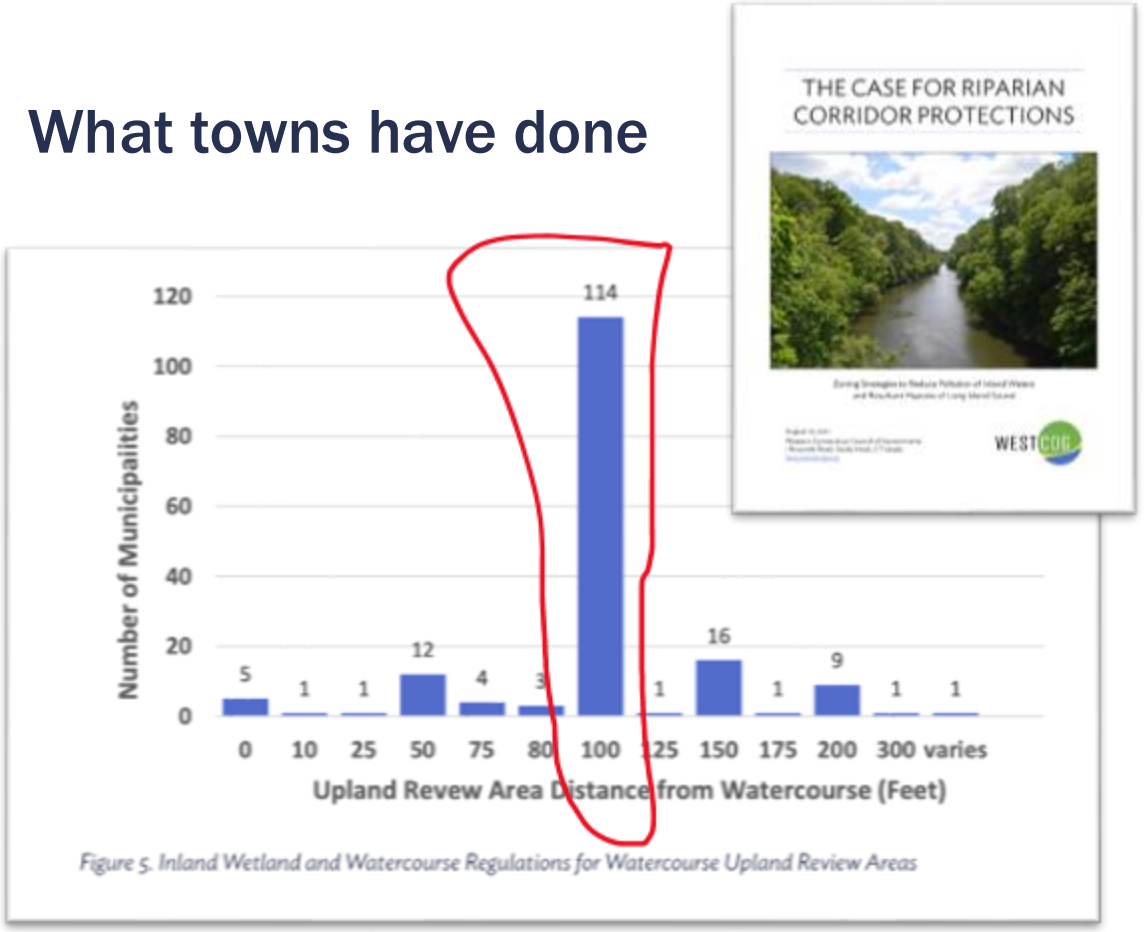
Extension Educator, CT ECO, CT Trails, State GIS

Read Bio

Phone: (860) 345-5226

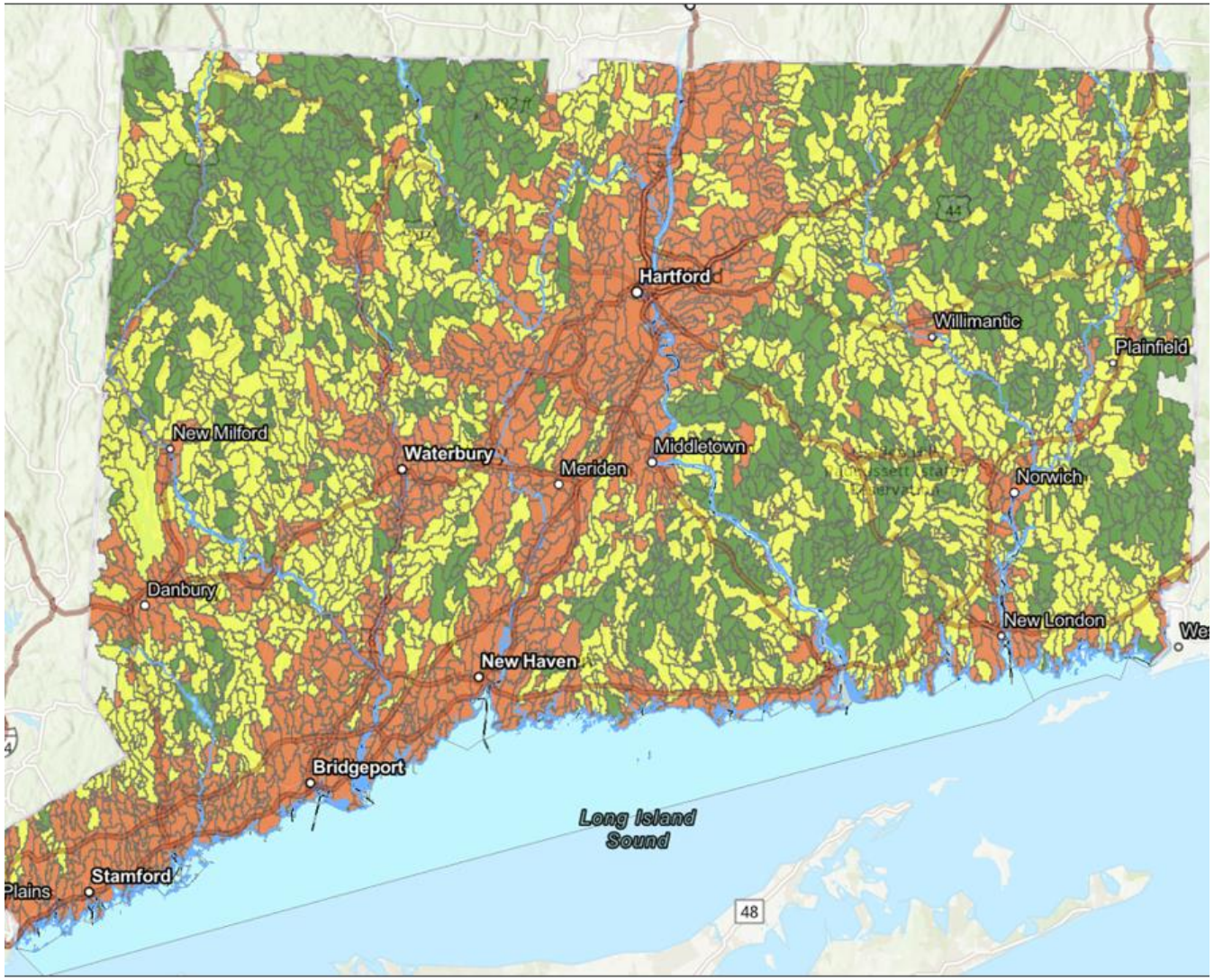
E-mail: emily.wilson@uconn.edu

What towns have done



Local Watershed Assessment Tool

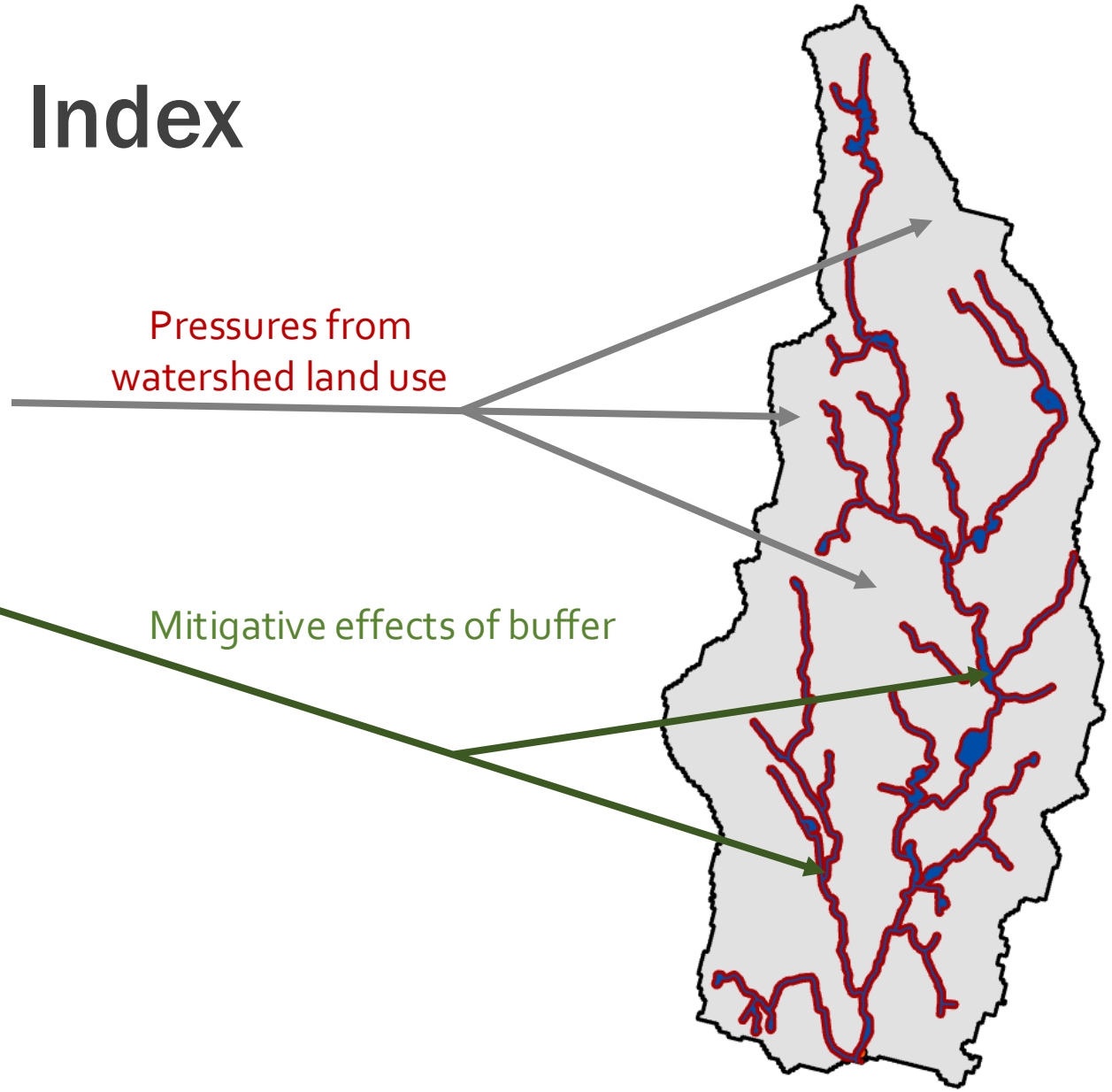
- Effort to assess the health of <u>small</u> watersheds in CT
- based on high resolution (1m) land cover
- Compares land cover in upland vs riparian areas for each basin



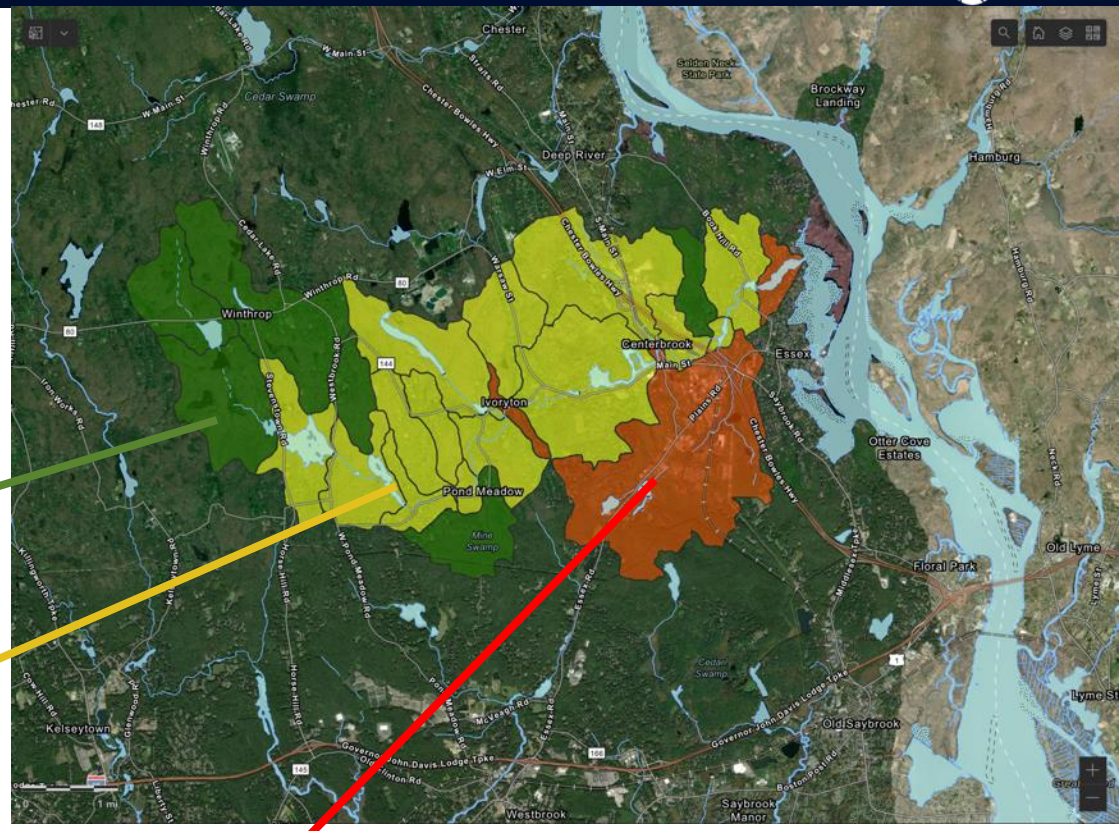
Combined Condition Index

1. Divide a watershed into
   - upland watershed (everything outside the buffer)
   - 100' riparian buffer

2. Compare land cover makeup of the two zones.
   - Natural
   - Impervious
   - Agriculture-like



CCI Management Category indicates the state of, and suggested land use strategies for, a local basin



Conservation: CCI >=0.75

protective strategies

Recovery:

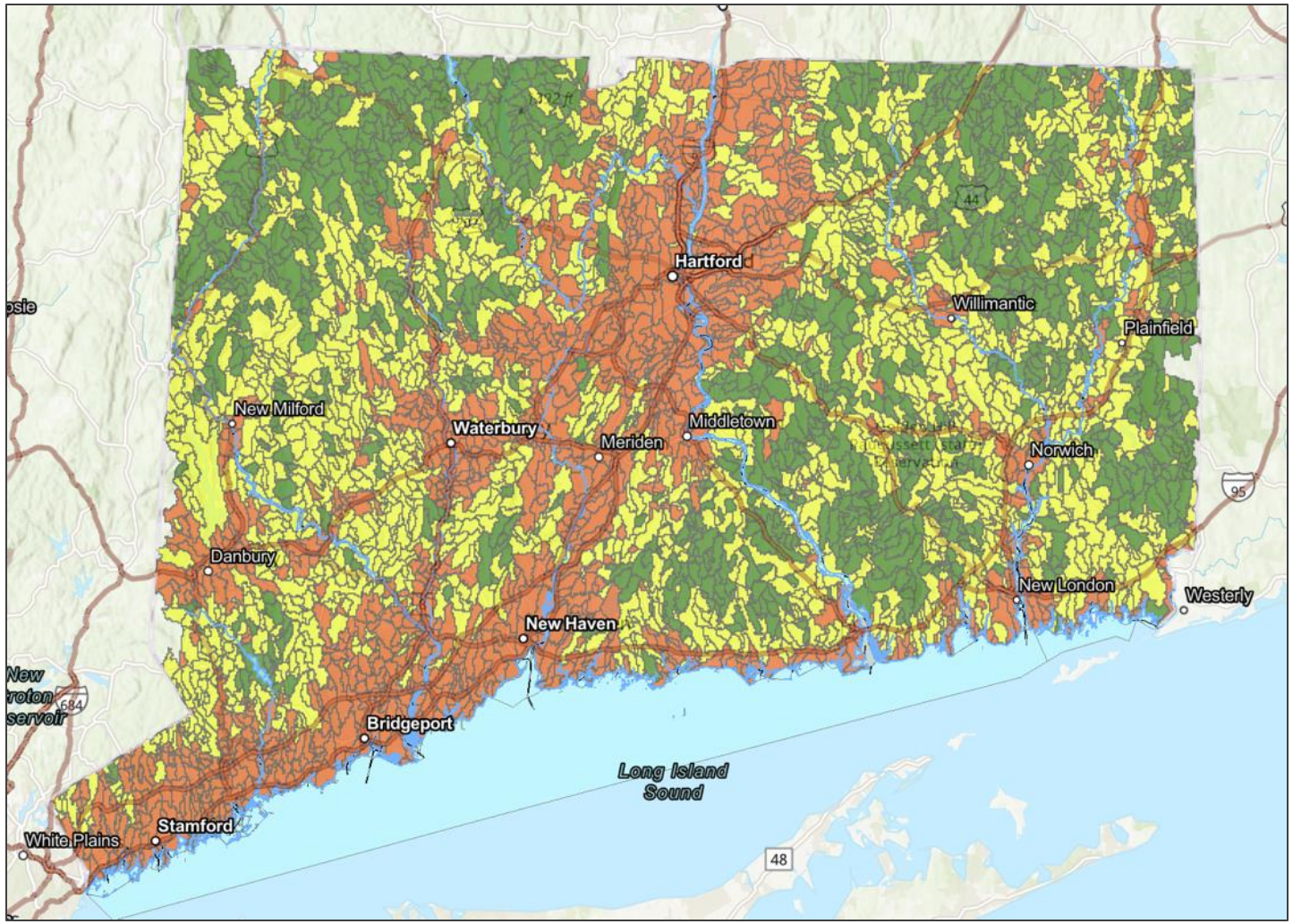
0.43 < CCI < 0.75.

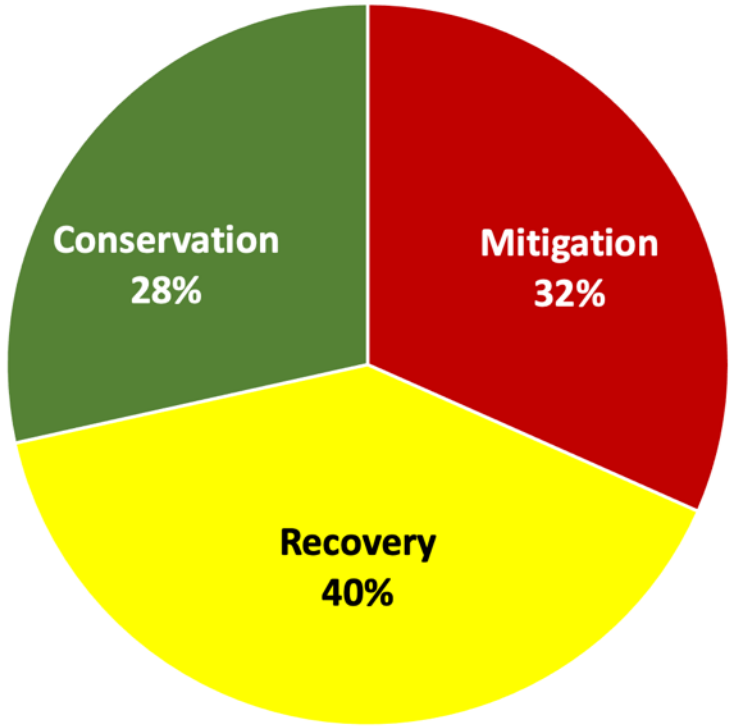
reforesting, riparian protection, mitigation (GSI)

Mitigation: CCI < 0.43

riparian restoration, urban tree canopy initiatives, GSI

CCI map of CT


Hartford
Willimantic
Plainfield
New Milford
Waterbury
Meriden
Middletown
Norwich
Danbury
New London
Westerly
New Haven
Bridgeport
Long Island Sound
Stamford
White Plains
44
95
48
684


Conservation
28%
Mitigation
32%
Recovery
40%

Let us know if we can help

Dave Dickson, CLEAR Director

David.Dickson@uconn.edu

Juliana Barrett, Coastal Habitat/Resilience Educator Emeritus

Juliana.barrett@uconn.edu

Emily Wilson, Geospatial Educator & Data Guru

Emily.Wilson@uconn.edu