



Connecticut Department of Energy and Environmental Protection



A Random Revisit of the Statewide Stream Survey Project Focus on Wild Brook Trout

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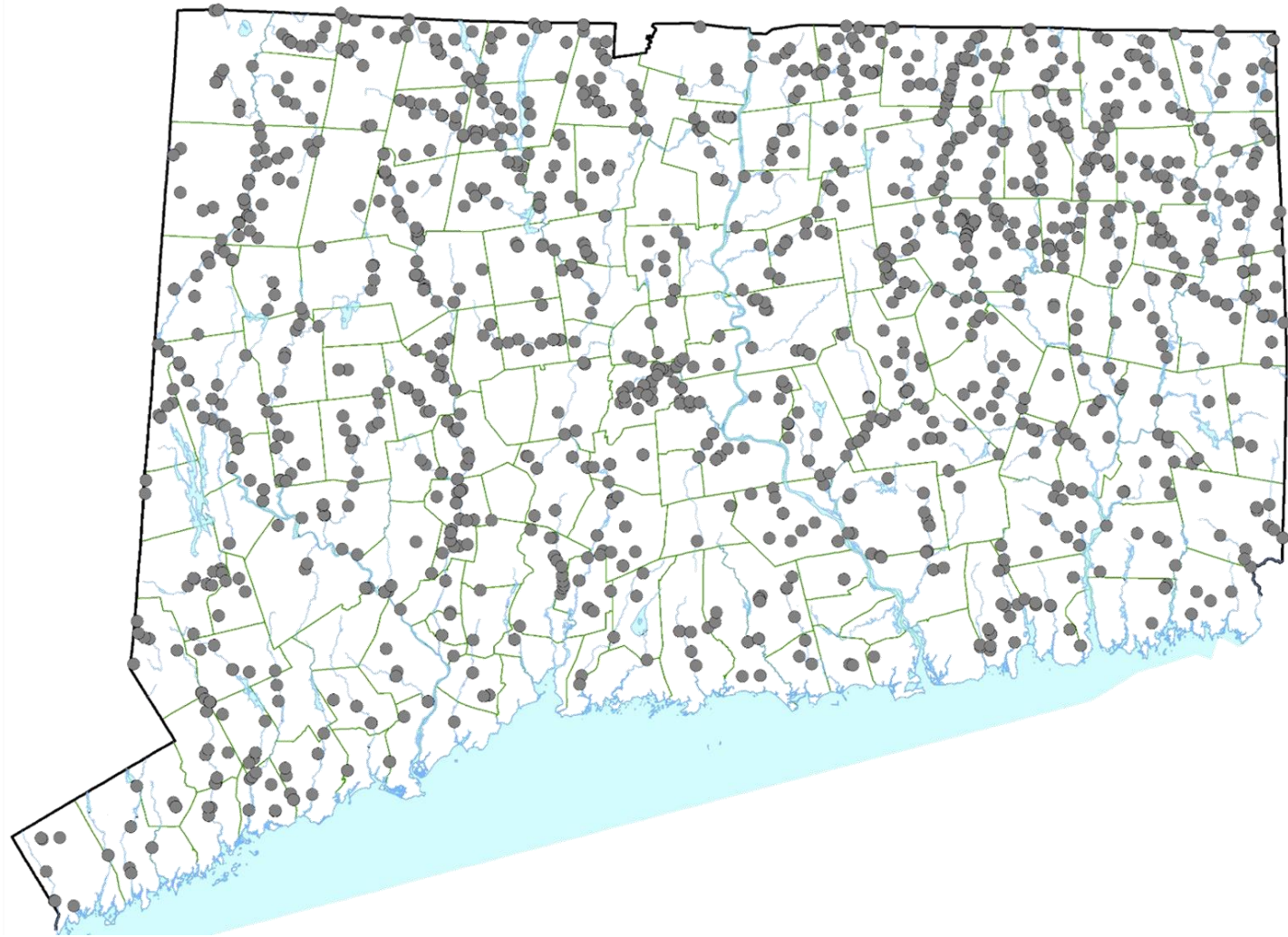
Anglers- ALL of your money **\$\$\$** invested in a fishing license goes to support fish, wildlife and forests!



State law (CGS 26-15a) requires 100% of the fees collected from the sale of sporting licenses to be allocated from the General Fund to the Department of Energy and Environmental Protection, Bureau of Natural Resources.

Your investment makes a difference. Thank You.

Statewide Survey (1988-1995)



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Why Revisit Old Survey Sites?

- It is important to return to previous sampling locations in order to document where fish species shifts have occurred
- There were indications that Brook Trout may have declined in as many as 22 local basins through targeted work by the Fisheries Division (2000-2015).



Why Revisit Old Survey Sites?

- Fast-forward 30 years
 - Changes in landscape
 - Climate change
 - Changes in fishing pressure
 - Changes in harvest

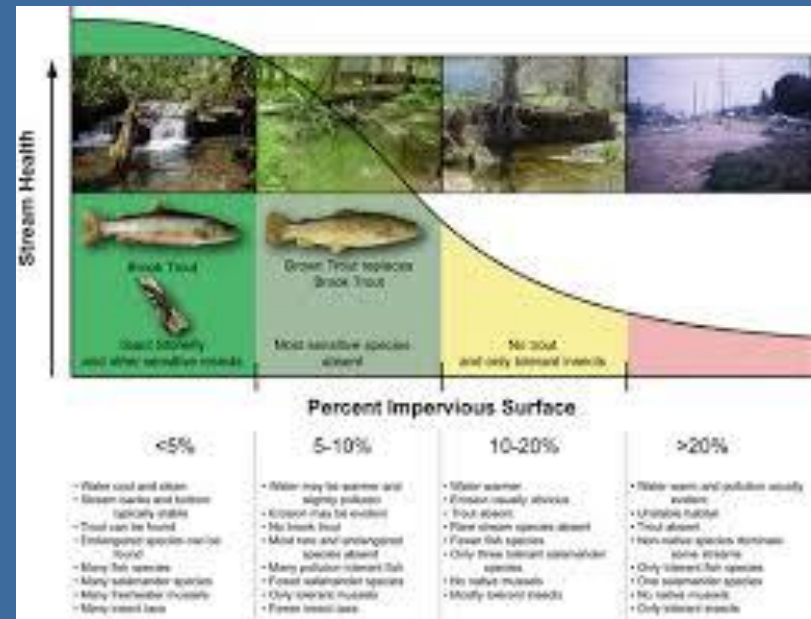
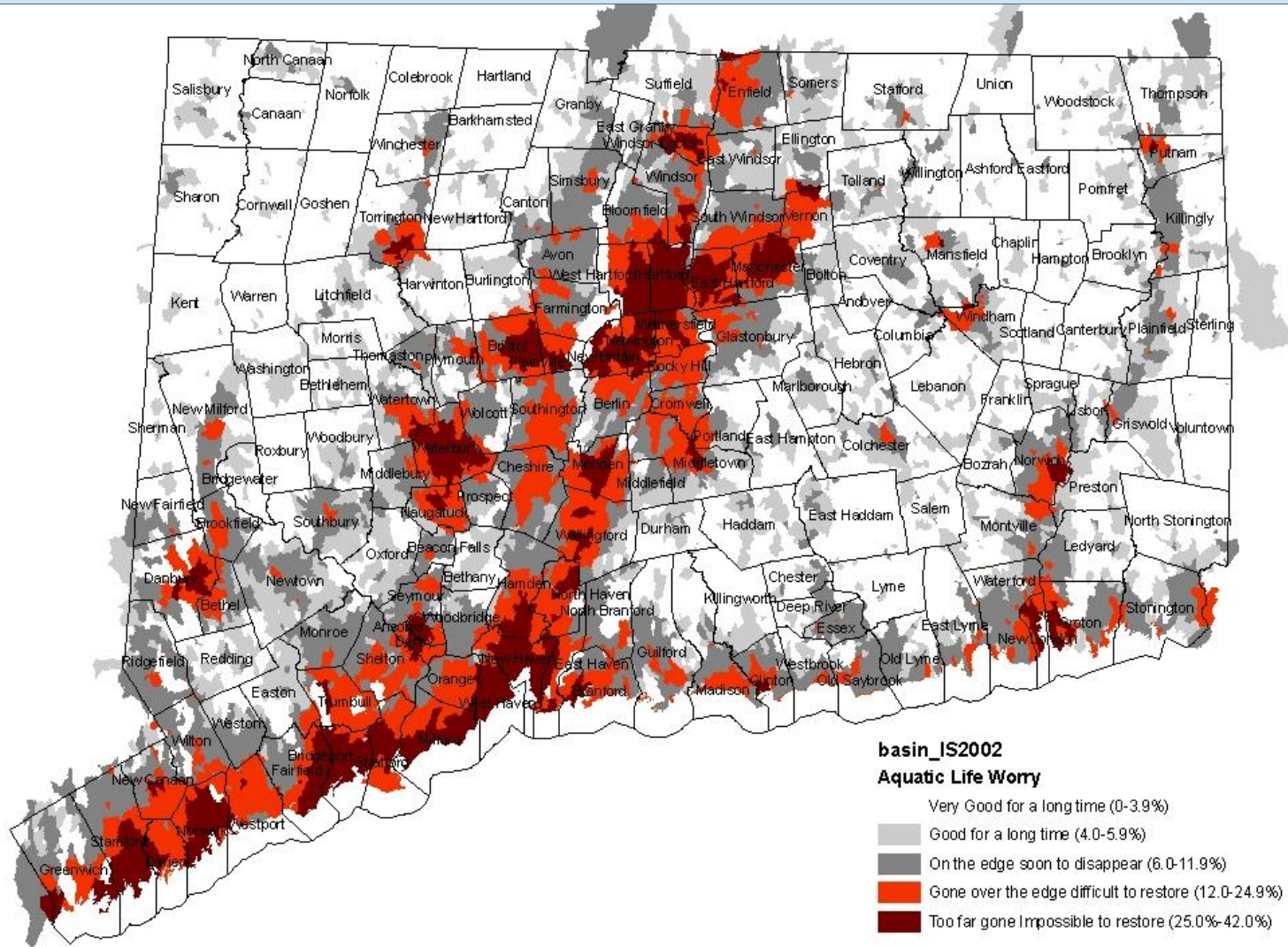


Photo courtesy of dnr.maryland.gov



CT's Impervious Cover



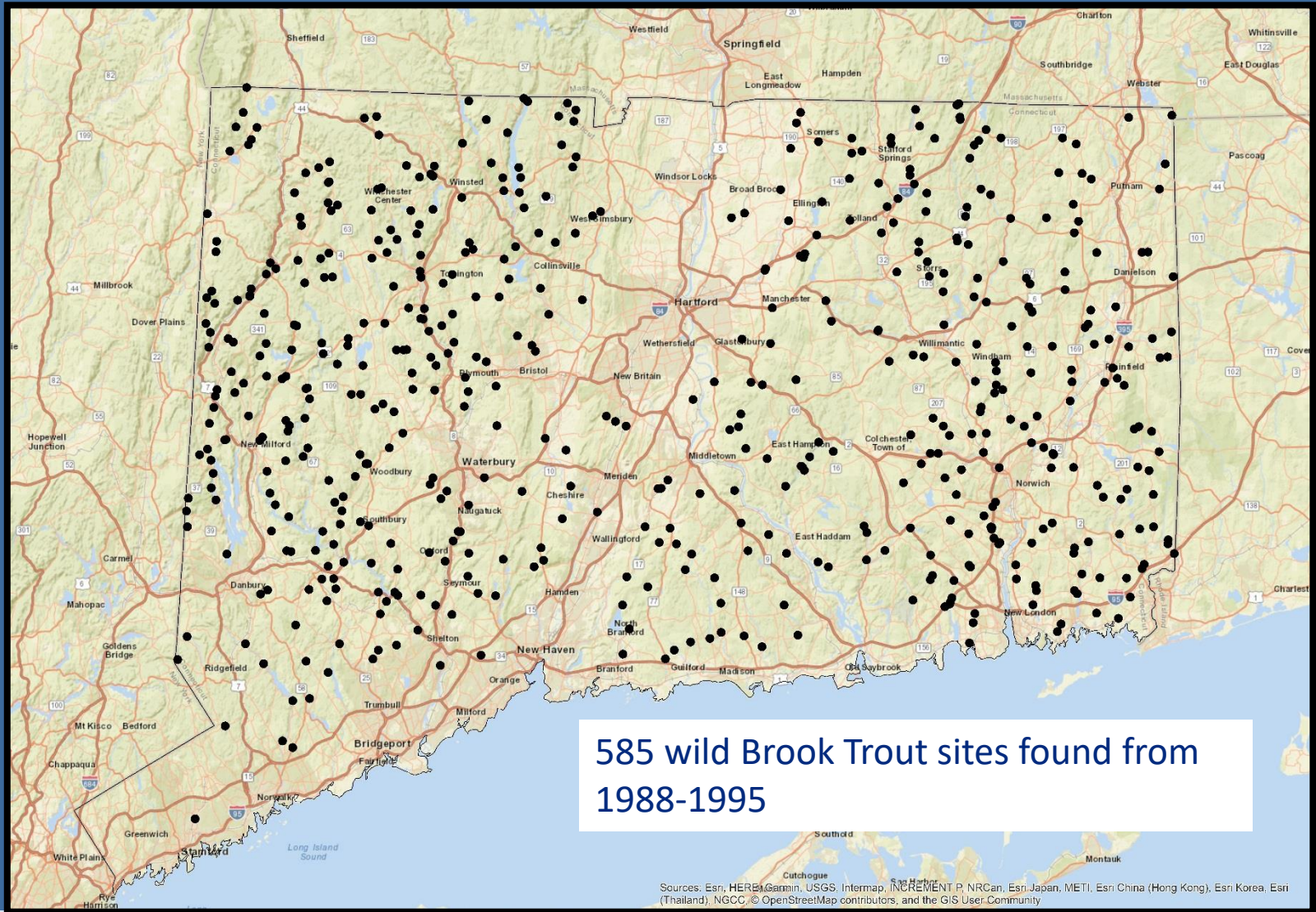
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Sampling Methods



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Sampling Methods



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Sampling Methods

- Sites were sampled over the summers of 2018 and 2019.
- Each site was sampled using Smith Root backpack or a tow behind unit).



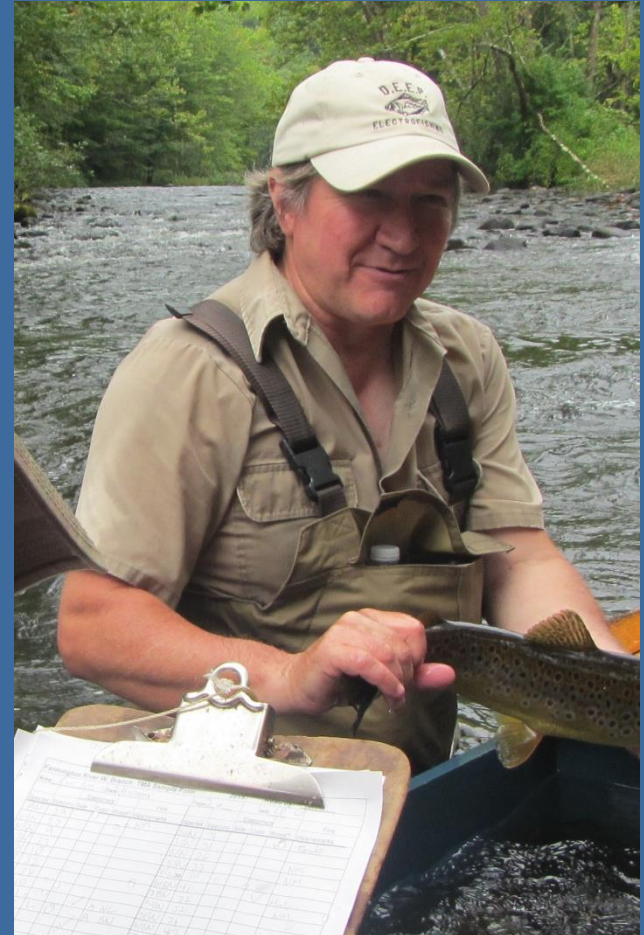
Sampling Methods

- Sample location and length was replicated where possible as to what was previously surveyed during the early period (1988-1994).
- If unable to resample the exact location, an adjacent stream reach was selected for sampling.



Sampling Methods

- Additionally, sample length was increased or decreased based on the presence of a well-defined start or end (e.g. riffle or fall line).
- All fish were netted, identified, and measured to the nearest centimeter and then immediately released.

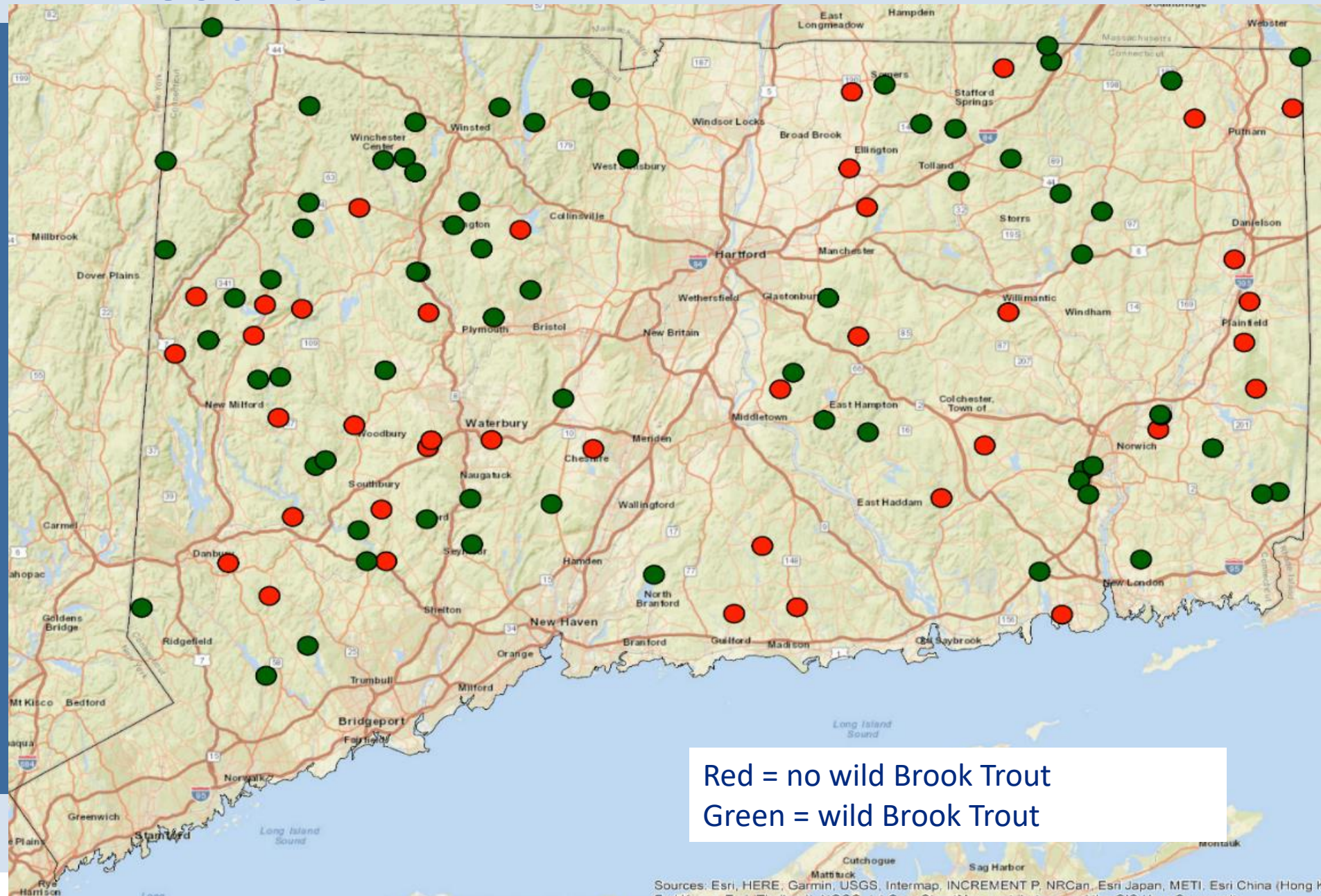


Results



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Results



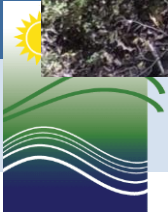
Results

- In addition to the decrease in number of sites between both sample periods, density of wild Brook Trout, when present, also decreased .
- A paired T-Test of wild Brook Trout density (square-root transformation) showed a highly significant difference (<0.001) between samples from both periods.



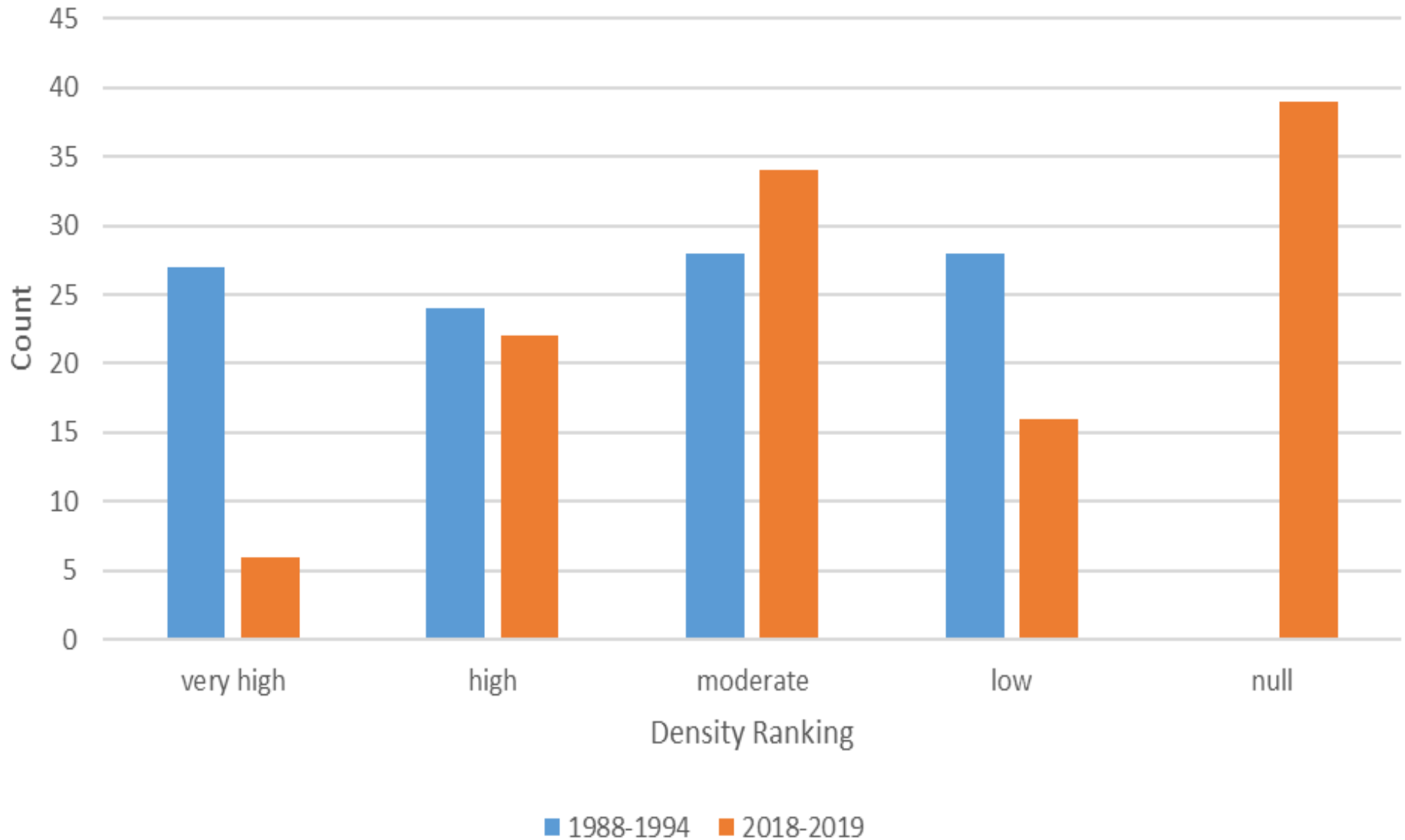
Results

- Mean density also decreased between the two sample periods (391 fish/km vs. 138 fish/km; early and late periods, respectively).

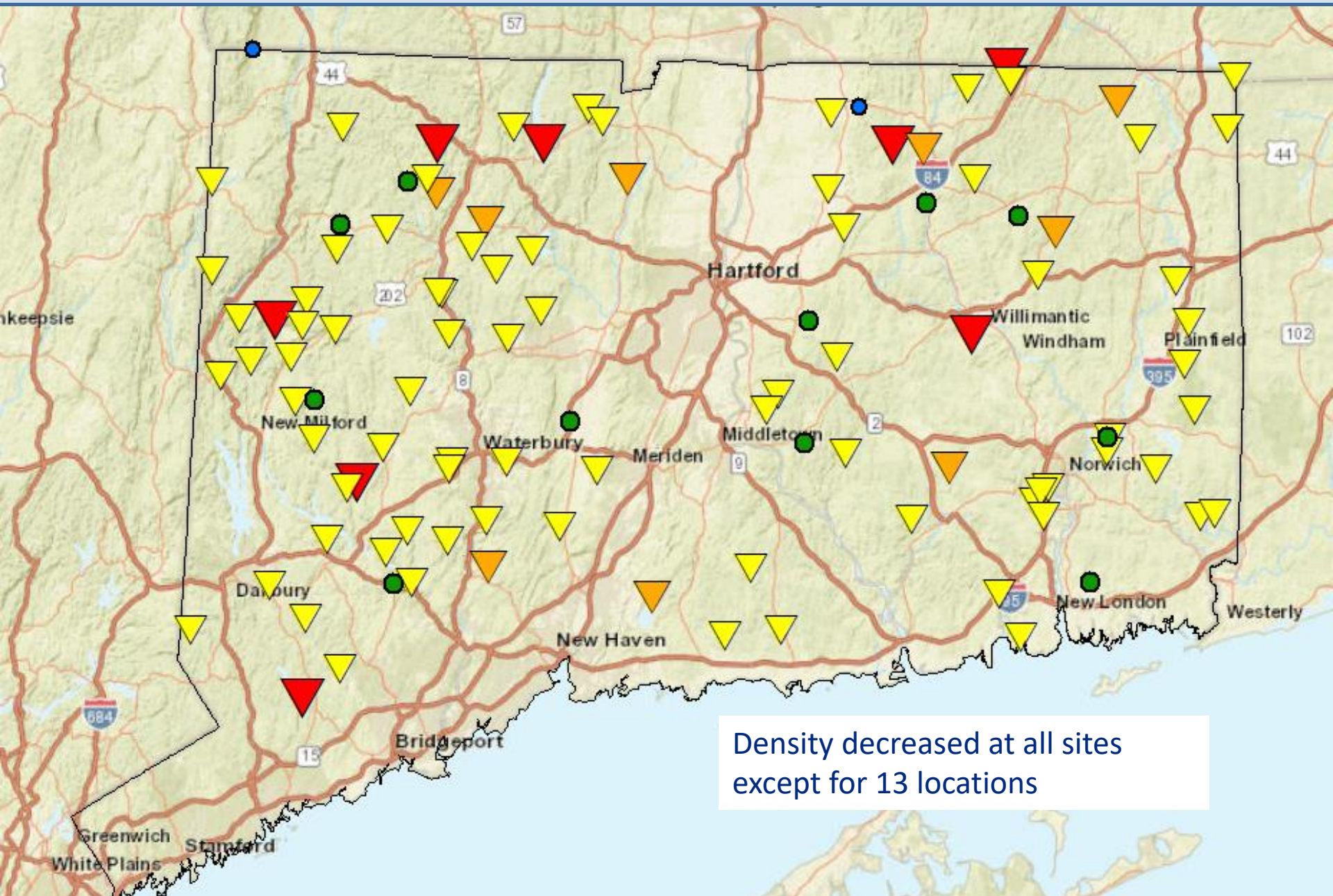


Results

Brook Trout Density Rankings



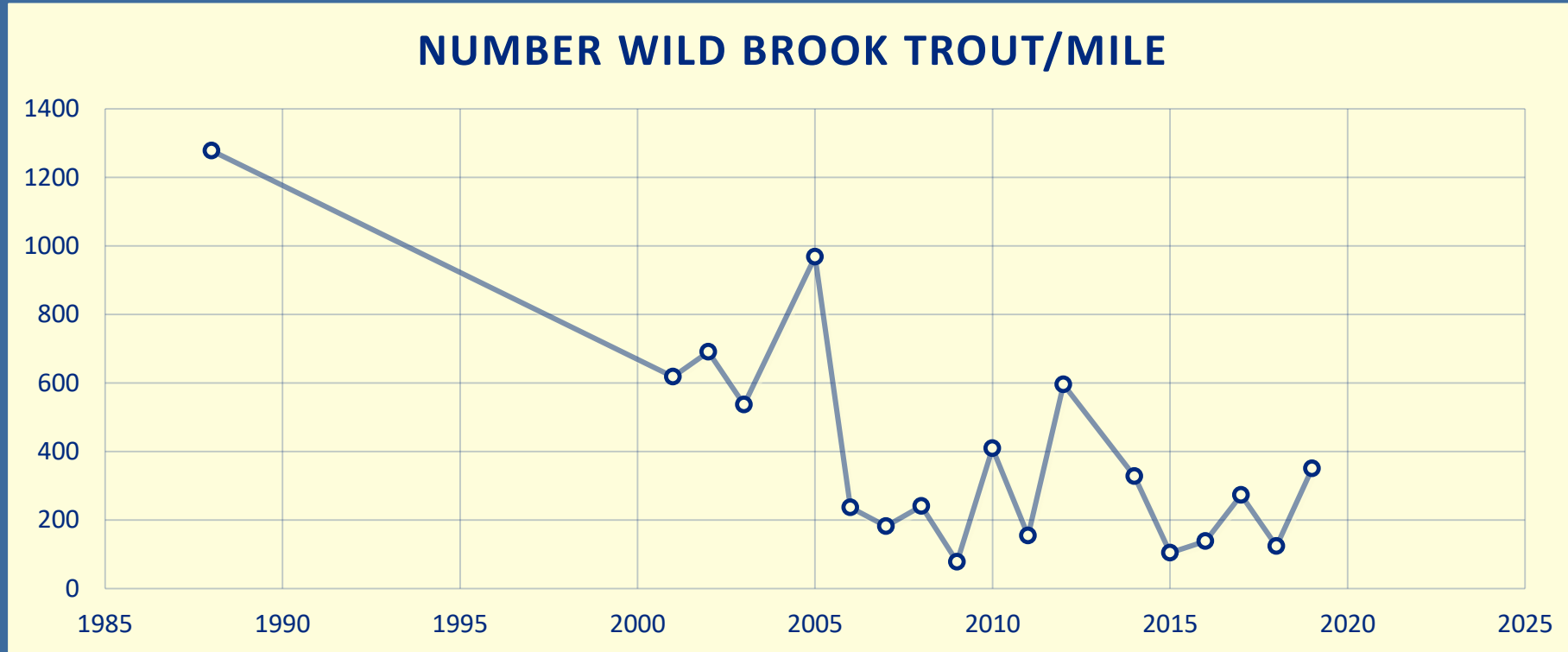
Results



Density decreased at all sites
except for 13 locations

Results

Valley Brook, Barkhamsted, CT



Long-term dataset shows a sharp decrease in density



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Next Steps



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Next Steps - Monitoring

- Conduct additional sampling at specific sites to acquire fine-scale assessment in waters where wild Brook Trout were not observed (sample additional reaches and nearby tributaries to see if still present but at smaller extent).



Next Steps - Conservation

- When wild Brook Trout population densities are deemed to be unnaturally low or if populations are determined to be disconnected from all other wild Brook Trout populations
 - Determine if transplanting fish from other populations are needed when habitat conditions are appropriate.
 - Determine if habitat restoration efforts are needed (i.e. instream restoration efforts, dam removals, culvert replacements, water temperature management)
 - Determine if fish management regulations are appropriate.



Next Steps - Conservation

- Collaborate with partners and municipalities
 - Northeast Fisheries Administrators Association's River and Stream Technical Committee, Wild Trout Subgroup
 - Eastern Brook Trout Joint Venture (EBTJV) with monitoring wild Brook Trout distribution at a regional level
 - Local and statewide Trout Unlimited
 - Town Conservation Commissions, Town Planners, Wetland Commissions
 - Other DEEP programs (permitting, WPLR)
 - Other Fisheries Division Programs (Habitat, Conservation and Enhancement Program)
 - Connecticut Department of Transportation



Next Steps - Restoration

- When wild Brook Trout are determined to be extirpated
 - Evaluate changes in land use, water diversions, and water temperature
 - Evaluate recreational fisheries management (stocking adult trout, stocking early life stage Atlantic Salmon and Brown Trout, harvest limits, size limits, etc.)
 - Produce Standard Operating Procedures to implement restoration of wild Brook Trout if prevailing waterbody conditions are deemed appropriate for supporting wild populations.



Next Steps – Education/Outreach

- Produce a statewide interactive map showing areas of wild Brook Trout population status
 - Identify areas of
 - Robust populations
 - Stable populations (may not be robust, but remain steady)
 - Populations in peril
 - Areas for restoration (extirpated from adequate habitat)
 - Areas where extirpated (restoration not likely)



Next Steps – Education/Outreach

- Increase public awareness of wild Brook Trout amongst fishing and, maybe more importantly, the non-fishing members of the public
 - Hold advertised public meetings throughout the state
 - Create educational products such as ArcGIS StoryMaps
 - Create and increase social media opportunities

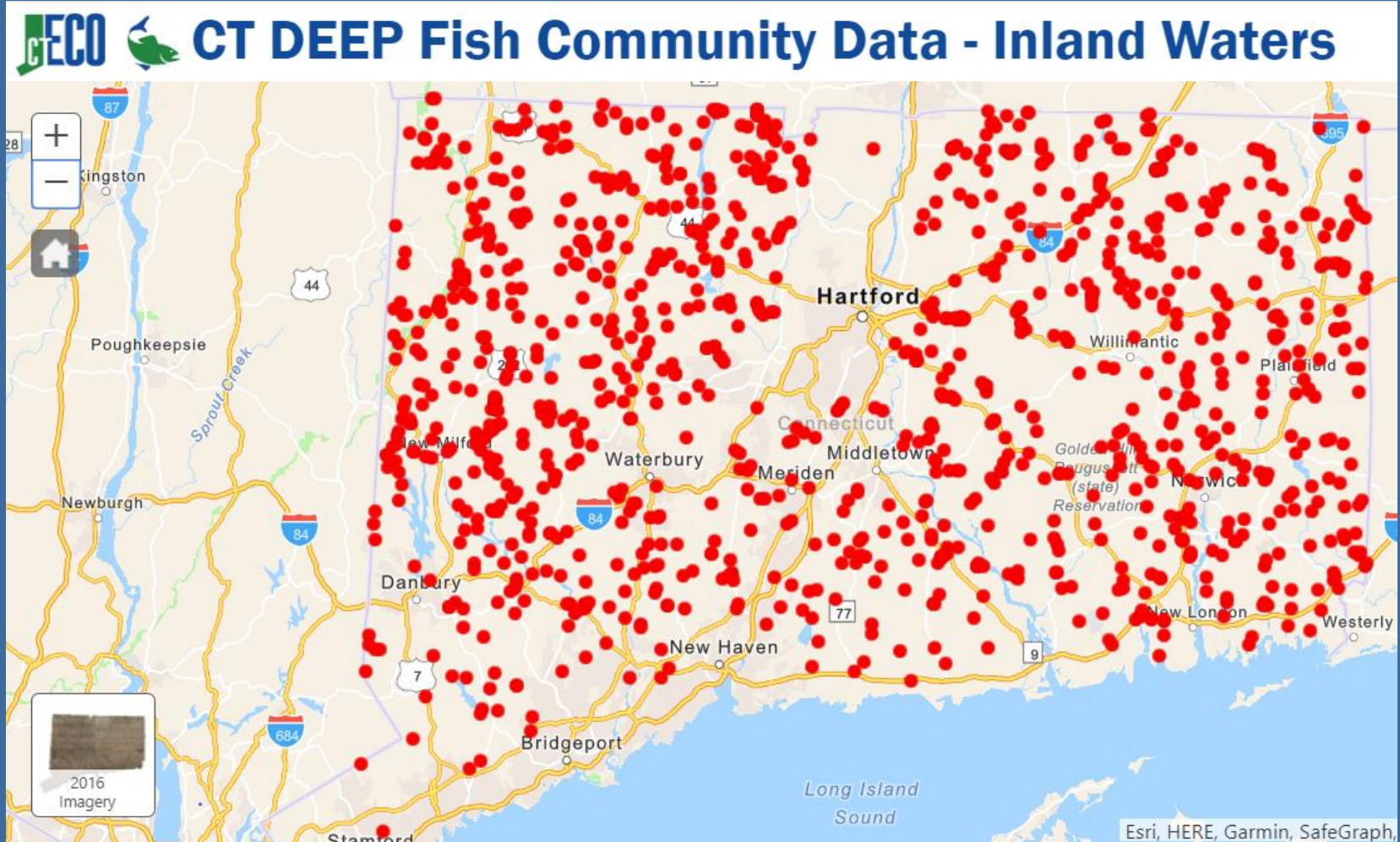


Next Steps – Education/Outreach

- DATA
- Fish Community Data Viewer
- Coldwater Stream Habitat Map

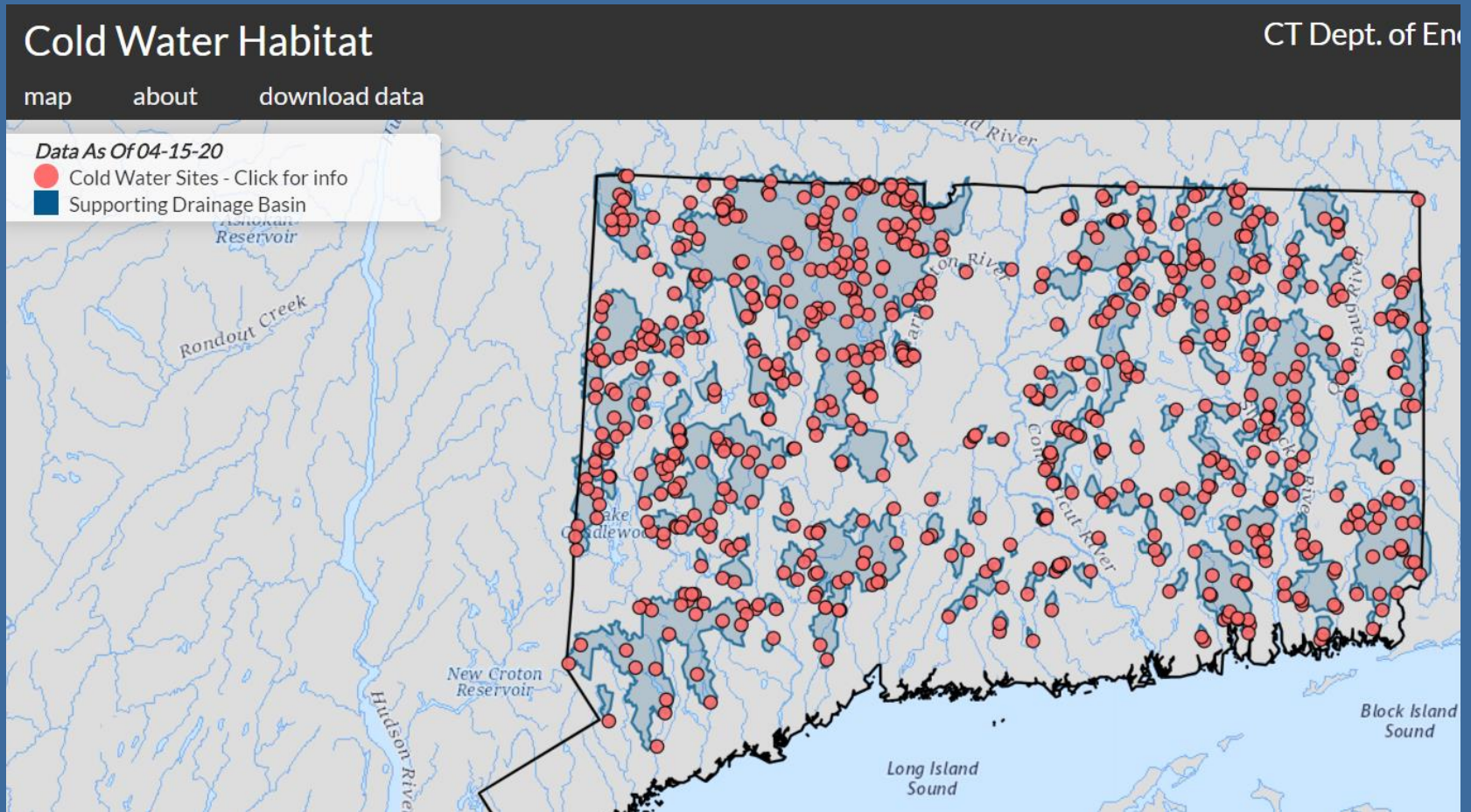


Fish Community Data Viewer



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Connecticut's Coldwater Stream Habitat



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Questions?

Help Needed!



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