



AUSABLE RIVER ASSOCIATION (AsRA) UPDATES

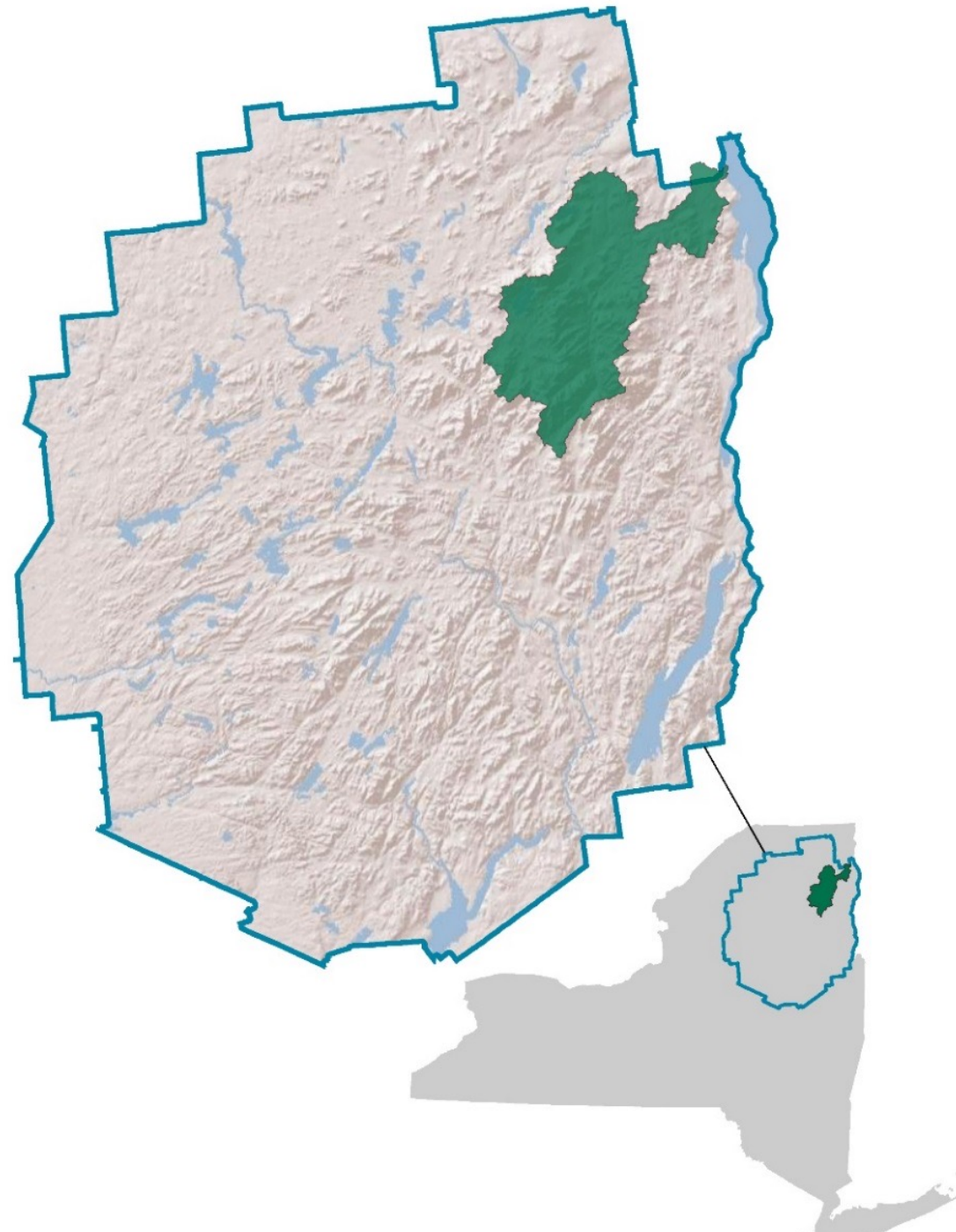


Carrie Pershyn, M.S.

Ausable River Association | April 22, 2024

New York Citizens Advisory Committee (NYCAC) on
Lake Champlain Management

512 square miles



Fed by > 70 streams

90 mi of river length



Courtesy Ausable River Association



Overview

Part I: Streamwise Community Partnership

Part II: Biodiverse Habitats Research

Part III: Clean Water Research

Part III: Stewardship and Community Engagement

Part IV: Healthy Streams Update



Streamwise Community Partner

- LCBP Streamwise Award Program
 - Pilot Year 2022
 - 2023 Year 2
 - 2024 Year 3



Buffers in the Ausable Basin

- Human Communities
- Development focused on river corridors and tributaries
- Buffers broken up
- Roads, buildings
- Landowner practices (mowing, view cutting)

Stream Wise Pilot Year

▶ 2022 Successes

- ▶ Ten Assessments
- ▶ Assess Riparian Buffer and good land practices
- ▶ Seven Stream Wise Awards
- ▶ Reports Customized
- ▶ Recommendations for best management whether award given or not



STREAM WISE
NY · QC · VT

Certificate of Participation
Thank you for joining Stream Wise.

Name: Bethany Krause
Address: 608 Housatonic Heights Rd. Jay NY

You are a valued member of your stream community in the Ausable watershed. Based on your property evaluation, here is a quick summary of current stream wisdom and possible improvements.

STREAM WISE CRITERIA
This property: Meets Does Not Meet

GOOD PRACTICES	IMPROVEMENT AREAS	POSSIBLE SOLUTIONS
<u>managing backhoes</u> <u>stack gravel</u>	<u>continue to expand mow</u>	<u>plant a few large trees</u>
<u>leaving woody debris</u> <u>leaving standing dead trees</u> <u>maintain a pillbox bank</u>	<u>add plants to riparian</u>	<u>considerative stake outages</u> <u>see report</u> <u>if required.</u>

Stream Wise 2023

- ▶ 2023 Successes
 - ▶ Planned 8-12 Assessments
 - ▶ Conducted 13 total
 - ▶ Mix of River and Stream properties
 - ▶ Seven Stream Wise Awards
 - ▶ Reports Customized
 - ▶ Shared with other Community Partners





Bringing the Community Together





Stream Wise Ausable

- Lessons Learned
 - Invasive Species
 - Forest Pests
 - Planning For the Future
 - Changing the Management conversation
 - Leave buffers alone



Stream Wise Report

Thank you for participating in the Stream Wise Assessment. You are a valuable part of your watershed!

Host Organization



Date of Assessment

September 27th, 2023

Evaluator

Carrienne Pershyn
Liz Metzger

Stream/River, Basin

East Branch Ausable River
Ausable Basin

Did you receive the Stream Wise Award?





Property Address

11597 Route 9N, Keene, NY 12942

Quick Summary of Site Visit

Prior to our site visit, we completed a desktop assessment where we utilized GIS and satellite maps to look at the property. We specifically looked at the buffer width and where it might be narrow, any development, impervious (buildings, paved driveways) or pervious (mowed lawns) that might be within the buffer, and the presence of any wetlands or floodplains on the property. This helped us identify areas we needed to check in person. During the site visit, we walked the buffer on the property, taking buffer width measurements and identifying the species present. We also looked for the vegetation tiers and buffer zones. The full list of criteria observed during the assessment will be listed later in the report.



Challenges and Opportunities

Positive Site Features

- Buffer meets minimum width
- Access paths are minimized (less than 6ft wide)
- All vegetation tiers and zones are present
- Native species comprise more than 75% of the buffer vegetation
- Minimal disturbance (mowing, raking, cutting) in the buffer – no cutting in the Streamside zone (15ft from river)
- Leaving dead and downed trees in buffer

Site Challenges & Areas for Improvement

- A few invasive species are present in the buffer and on the property. These are bush honeysuckle, common buckthorn, and Japanese barberry. There are few enough that these are easy to remove and maintain at this time, though left unchecked they could easily take over in 5-10 years.
- Buffer meets minimum width but could be expanded to improve buffer function.

Solutions & Recommended Practices

- Manage invasive species on property to prevent larger infestation. Information about identification and management of the invasive species on your property can be found on **pages 6-8**.
- Continue to let buffer expand naturally by not mowing upland zone. You can enhance this growth through supplemental tree plantings. Look around to the species that are already growing in your buffer for ideas on what species to plant. Information about plantings is on **pages 18 and 19**.
- More information about practices to consider about the future management of the buffer can be found under the Recommended Practices section starting on **page 13**.



The current buffer meets all of the criteria provided by Stream Wise. All of these criteria are listed on **pages 9 and 10**. The buffer meets the minimum width though there is room for expansion on the house side of the river. The buffer contains a lot of native diversity though there are a few invasive species. All tiers and zones are present within the buffer. Dead and downed trees are left in the buffer to provide habitat and nutrients. Access paths are minimized and there is little to no disturbance (mowing, raking, cutting) within the buffer and none within the Streamside (15ft from the river) zone. No area of concentrated flows from overland runoff.

In the tree canopy and understory, we noted several native tree species, including Eastern hemlock, white pine, sugar maple, basswood, red oak, white ash, and elm. We identified a few different species of shrubs in the buffer including common ninebark, American witch-hazel, meadowsweet, serviceberry, and chokecherry. There were many wildflowers and grasses including New York aster and goldenrods and few ferns including ostrich fern.



Future Considerations

Invasive Plants and Shrubs

Invasive species are species that are not native to the area and cause harm whether that be ecological, economical, or harm to humans. The Adirondack Park does not see the level of invasive species infestations that are found elsewhere across the state. Unfortunately, there are still quite a few invasive species that are common in the park and more that are introduced each year.

While at the time of the assessment there may have been few to no invasive species within the buffer, invasive species can be introduced and quickly spread if not managed. The introduction of an invasive plant or shrub can completely change the composition and function of a buffer. It is important to keep a vigilant eye out for invasives.

Areas that are vulnerable to invasive plants are ones that have been disturbed or degraded. This includes areas of bare and eroding soils, areas near construction sites or with fill from another place, areas that used to be lawn, grazing pasture, or developed, or streambanks impacted by severe flooding and erosion. Regularly monitoring these areas for invasive species can help catch them as soon as they are introduced and make management and eradication of the species much easier. If a species is found, report to [ImapInvasives](#) and look into management of the species. Management may include mechanical, chemical, or a combination of both management techniques.

Some of the most common species in the area are list on the bottom of this page and the next page

Common Buckthorn *Rhamnus cathartica*



Bush Honeysuckles *Lonicera spp.*





Future Considerations

Invasive Plants and Shrubs Continued

Japanese Barberry *Berberis*



Common Reed Grass *Phragmites australis*



Reed Canary Grass *Phalaris*



Purple Loosestrife *Lythrum salicaria*



Knotweed *Reynoutria spp.*



Autumn Olive *Elaeagnus umbellata*





Invasive Species continued

Management

Complete removal of whole plants is the most effective way to manage invasive shrubs on your property. For smaller shrubs, you may be able to pull the whole plant out of the ground. It is important to get as much of the root system as possible and to tamp down the soil afterward. If removal is not possible, cutting the shrubs is helpful in suppressing further proliferation, although you may have to cut multiple times during a season and repeat annually because the shrubs can resprout from the stumps. To combat that problem, you can cover the cut stumps of the shrubs with a [black plastic bag](#) for two growing seasons to ensure regrowth is not possible. It is best to remove plants before their flowers turn into seeds to avoid further spread. Mulch or burn the leftover plant material on site. Herbicides can also be applied to the cut stump. This allows a controlled application of the herbicide. Whenever using herbicides make sure to follow all instructions on the label.

After the removal of invasive shrubs, especially if they are covering a large area, it is beneficial to replant the area with native species to help keep other invasive species from moving into the area and to help keep the soil secure. Look around at native shrubs on your property to help determine which species you should plant. Some common species along streams or rivers include speckled alder, red osier dogwood, silky dogwood, Bebb's willow, silky willow, nine bark, and American witch hazel.



The Adirondack Park Invasive Plant Program has more information about invasive species identification and management. You can visit their [website](#) or check out their [Invasive Species Management Guide](#).

Biodiverse Habitats



Liz Metzger,
Research Associate



Carrie Pershyn,
Research Manager

Biodiverse Habitats - River Stewardship

- ▶ 10 Port-O-Johns
- ▶ 10 Wader Wash Stations
- ▶ 4 Boot Brush Stations
- ▶ River Steward Seasonal Position



Biodiverse Habitats: Riparian Planting & Research

- Sharing research
- Spring plantings
- Nursery care
- Long term monitoring
- Seed Mix Custom
- Ausable Conservation Nursery



Biodiverse Habitats Research

- Aquatic Organism Passage
 - Reprioritize culverts
 - Survey 20 sites
 - Bring 3 to design-ready
- Thermal Refuge
 - T loggers
 - Thermal drone
 - Ground water seeps



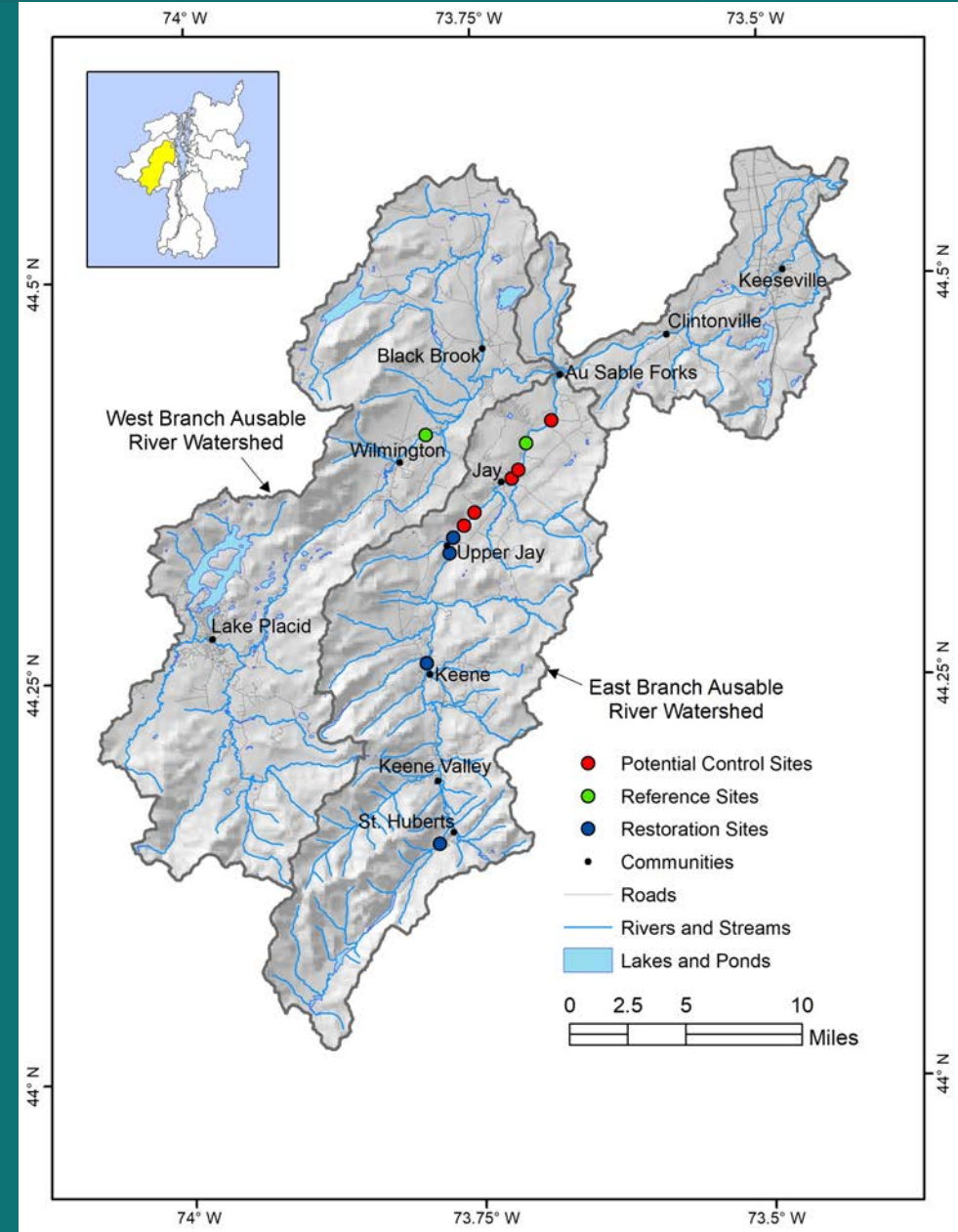
Biodiverse Habitats - Grant Research

- LCBP Tech Restoration Grant
- Measuring Biological Uplift/Change at Restoration Sites before/After
 - Macroinvertebrates
 - Benthic algae
 - Stream discharge/velocity
 - Fish surveys



Healthy Streams Research

- Restoration Monitoring
 - Can we measure the functional improvements of restored sites?
 - Geomorphological uplift?
 - Biological uplift?
 - Compare 3 types of river reaches in the watershed
 - Restored sites
 - Reference sites
 - Control sites





Biodiverse Habitats: Science Communications

- Technical Reports
 - Environmental DNA
 - River Steward
 - Botanical surveys
- Conferences
 - American Fisheries Society – NY Chapter
 - Adirondack Research Forum,
 - American Fisheries Society – Annual Meeting



Rapid Detection of Atlantic
Salmon and Trout in the Lake
Champlain Basin Using
Environmental DNA.

Life History

- ▶ Live 4-5 years
- ▶ 5-14 inches
- ▶ Fall Spawning
- ▶ Upper limit: 79°F (26.1°C)
- ▶ Optimal: < 65°F (18°C)

Brook Trout (*Salvelinus fontinalis*)



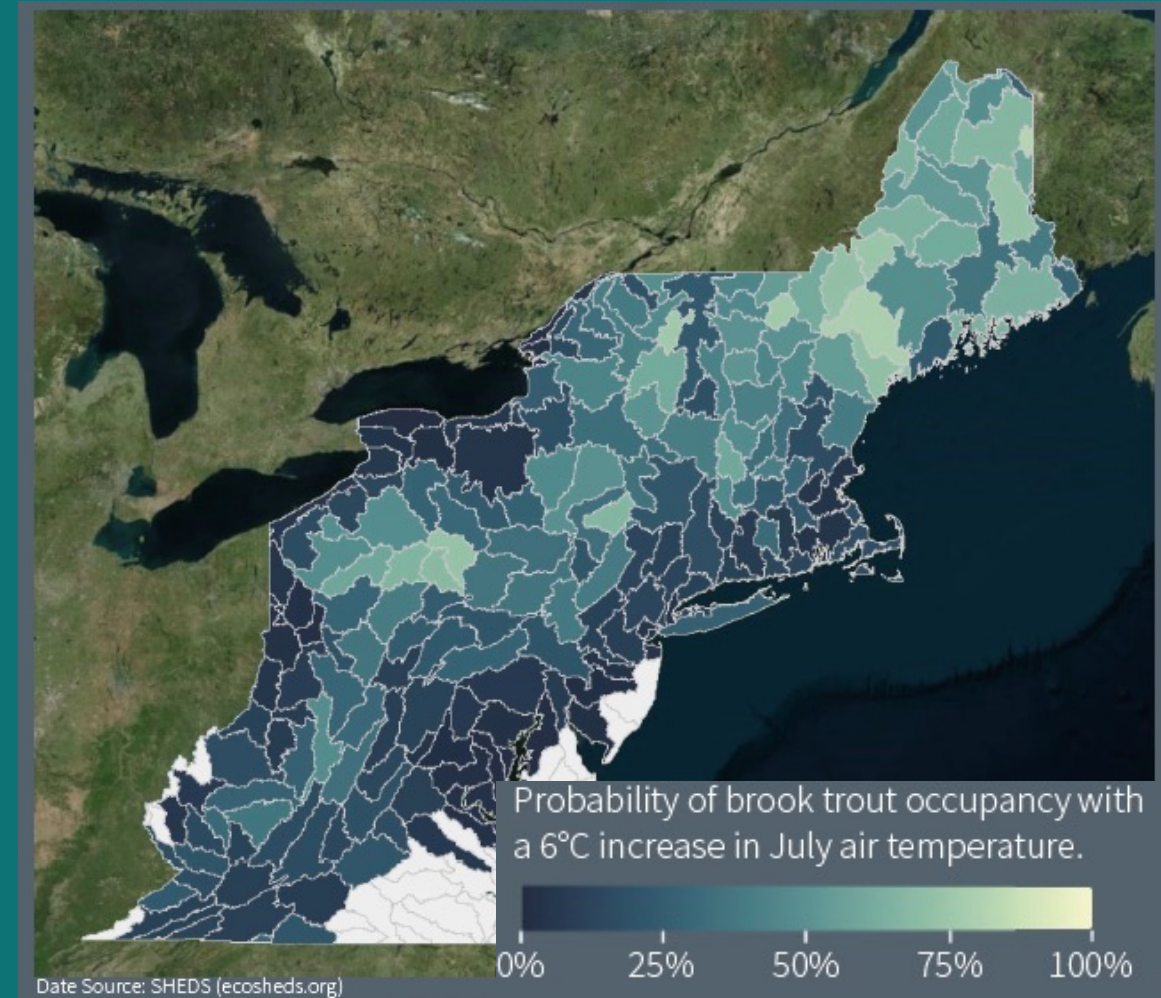
Threats and Conservation

Threats (EBTJV, 2011)

- ▶ Fragmentation
- ▶ Warming water
- ▶ Non-native species

Conservation

- ▶ Map existing stream populations
- ▶ Document changes in distribution
- ▶ Protect intact habitat



Introduced Species



Brown Trout, from Western Europe



Rainbow Trout, from California

Brook Trout in the Adirondacks

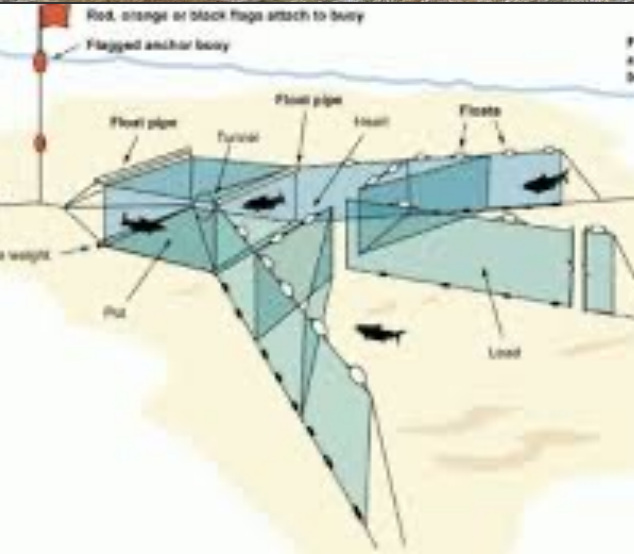
- ▶ 6 million acres
- ▶ Protected, forested
- ▶ Connected, intact Brook Trout habitat
- ▶ Cultural Connection





Traditional Methods of Fish Research

- ▶ e-fishing
- ▶ angling
- ▶ Trap nets
- ▶ Gill nets



Emerging Genomic Methods

- ▶ Tissue genotyping
- ▶ Microsatellite loci
- ▶ eDNA qPCR
- ▶ eDNA metabarcoding
- ▶ Single nucleotide polymorphisms (SNP's)



Environmental DNA



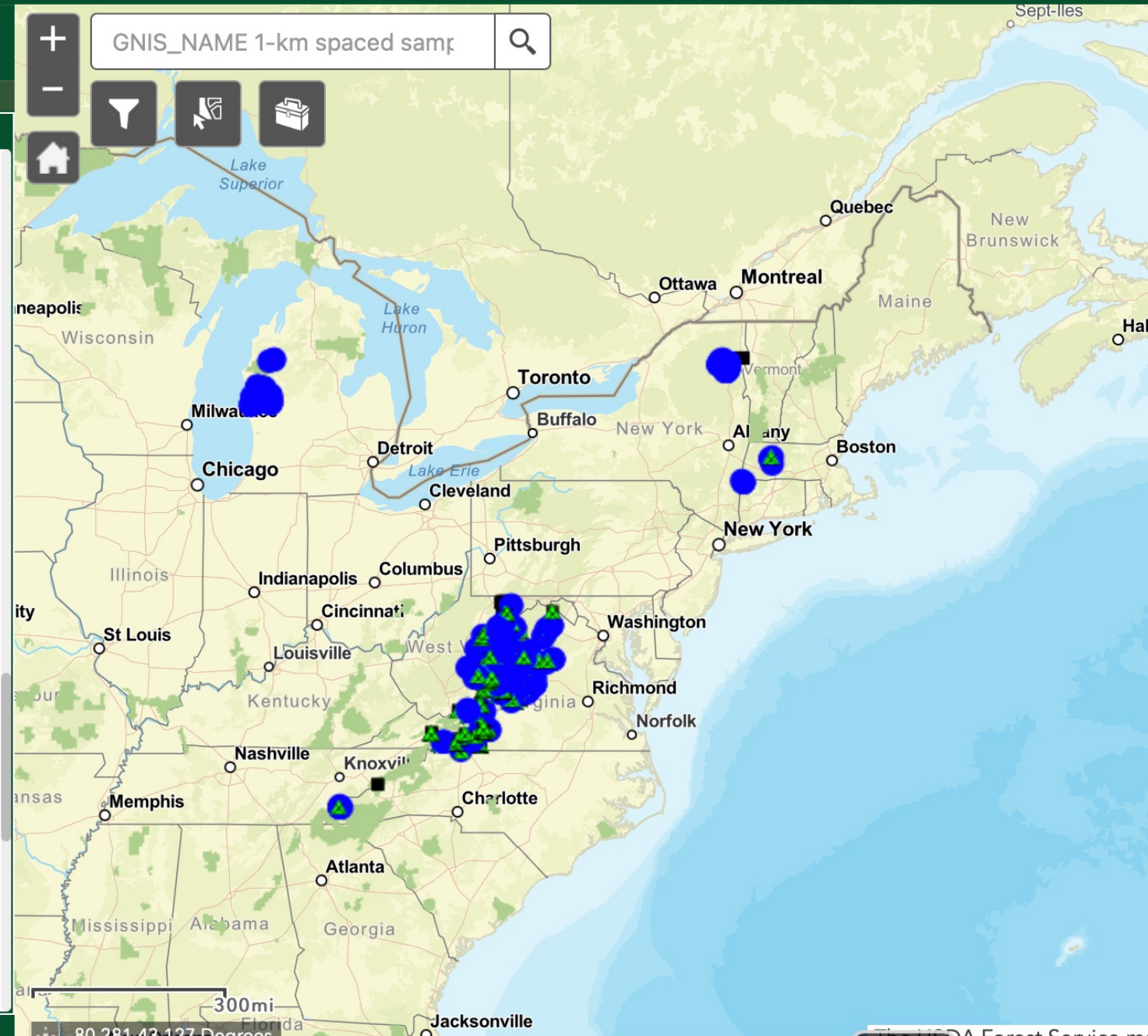


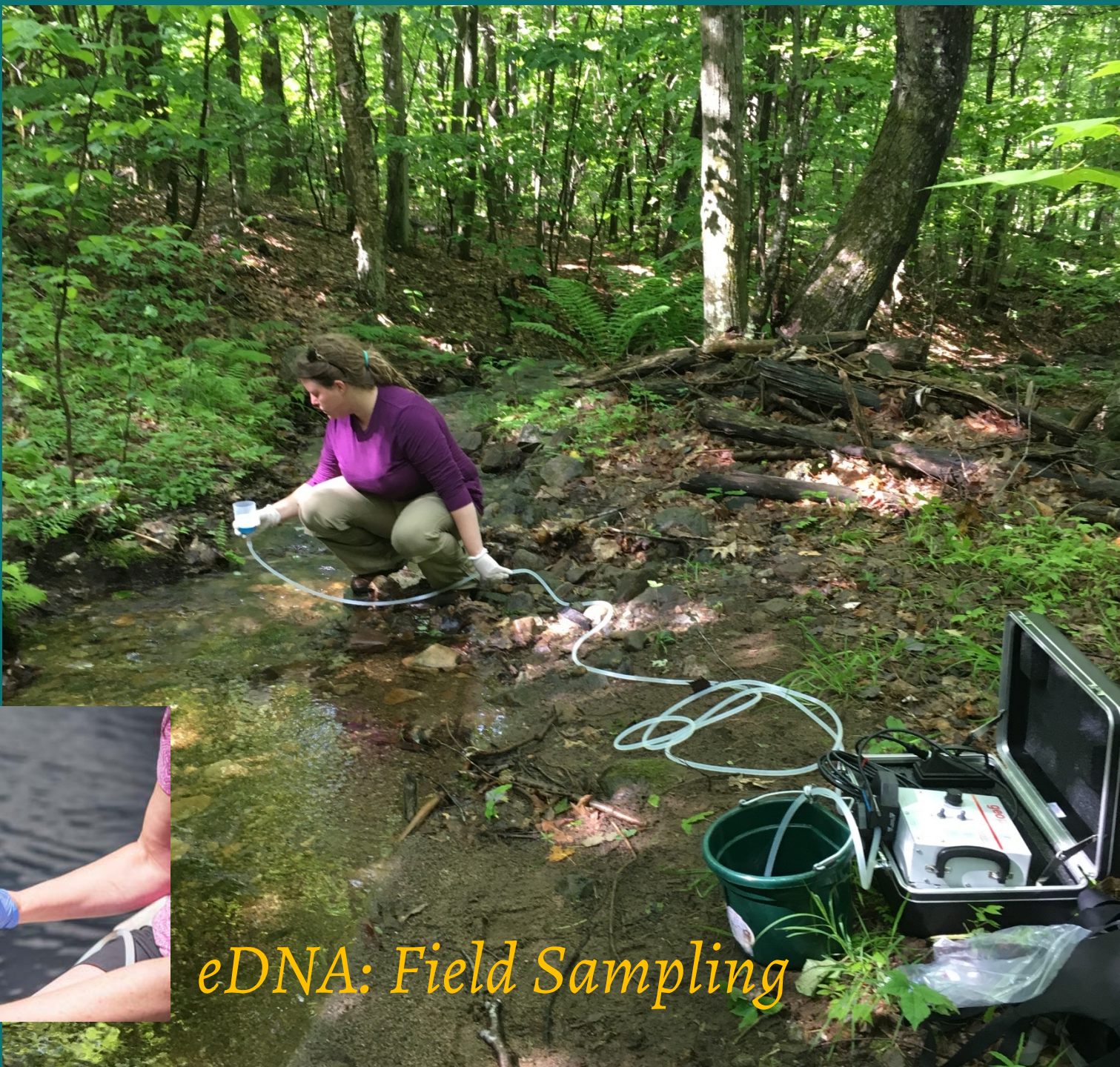
GNIS_NAME 1-km spaced samp



Layer List

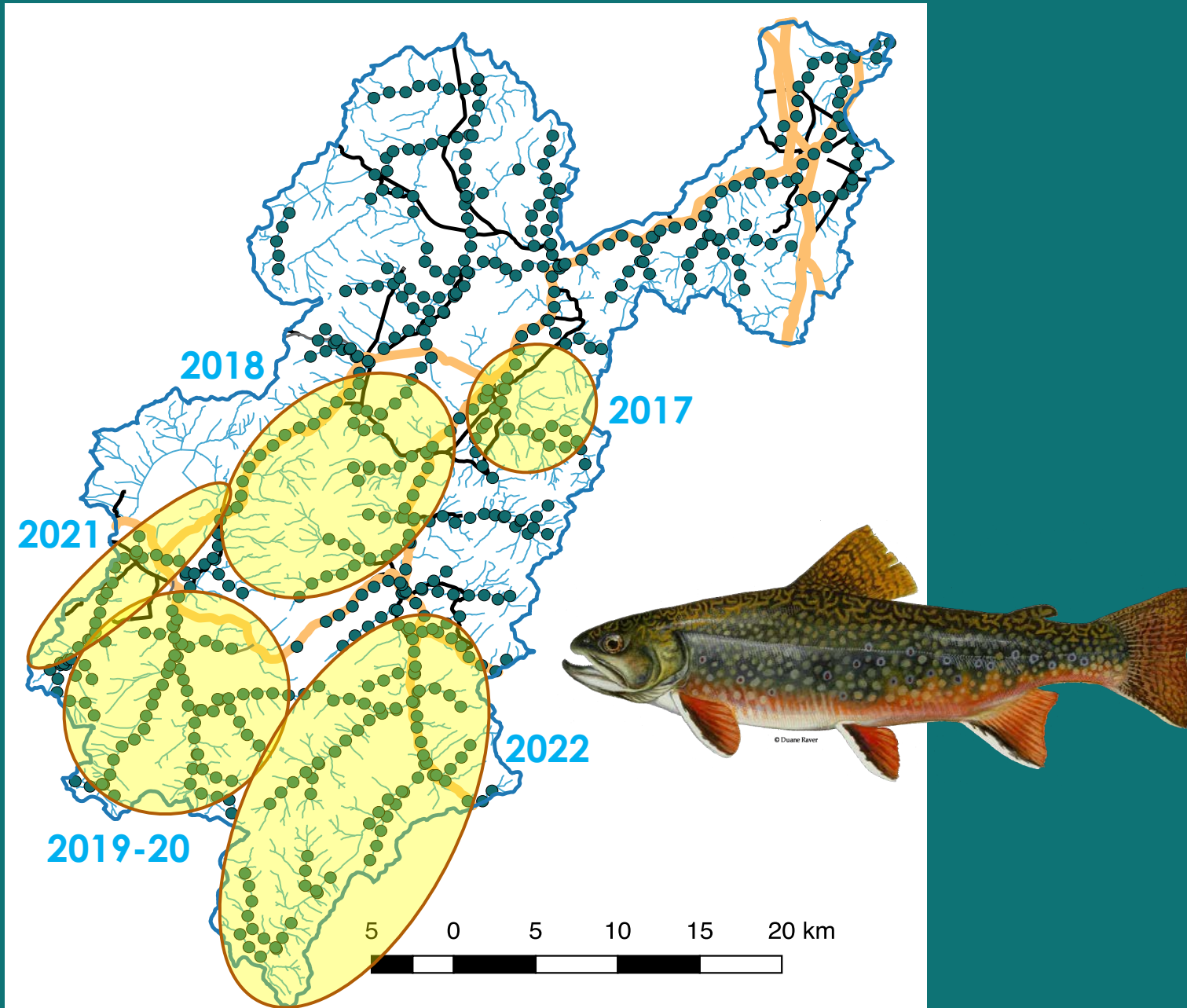
- "2" - sampled, species absent
- "3" - sampled, species present
- Northern Pike (NOPI) NHDPlusV2 streamlines ...
- "2" - sampled, species absent
- "3" - sampled, species present
- Rainbow Trout/Steelhead (RNBT) ...
- (RNBT) NHDPlusV2 streamlines ...
- "2" - sampled, species absent
- "3" - sampled, species present
- (RNBT) NHDPlusHR locations ...
- "2" - sampled, species absent
- "3" - sampled, species present
- Cottidae Marker (SCUL) ...
- (SCUL) NHDPlusV2 streamlines ...
- "2" - sampled, species absent
- "3" - sampled, species present



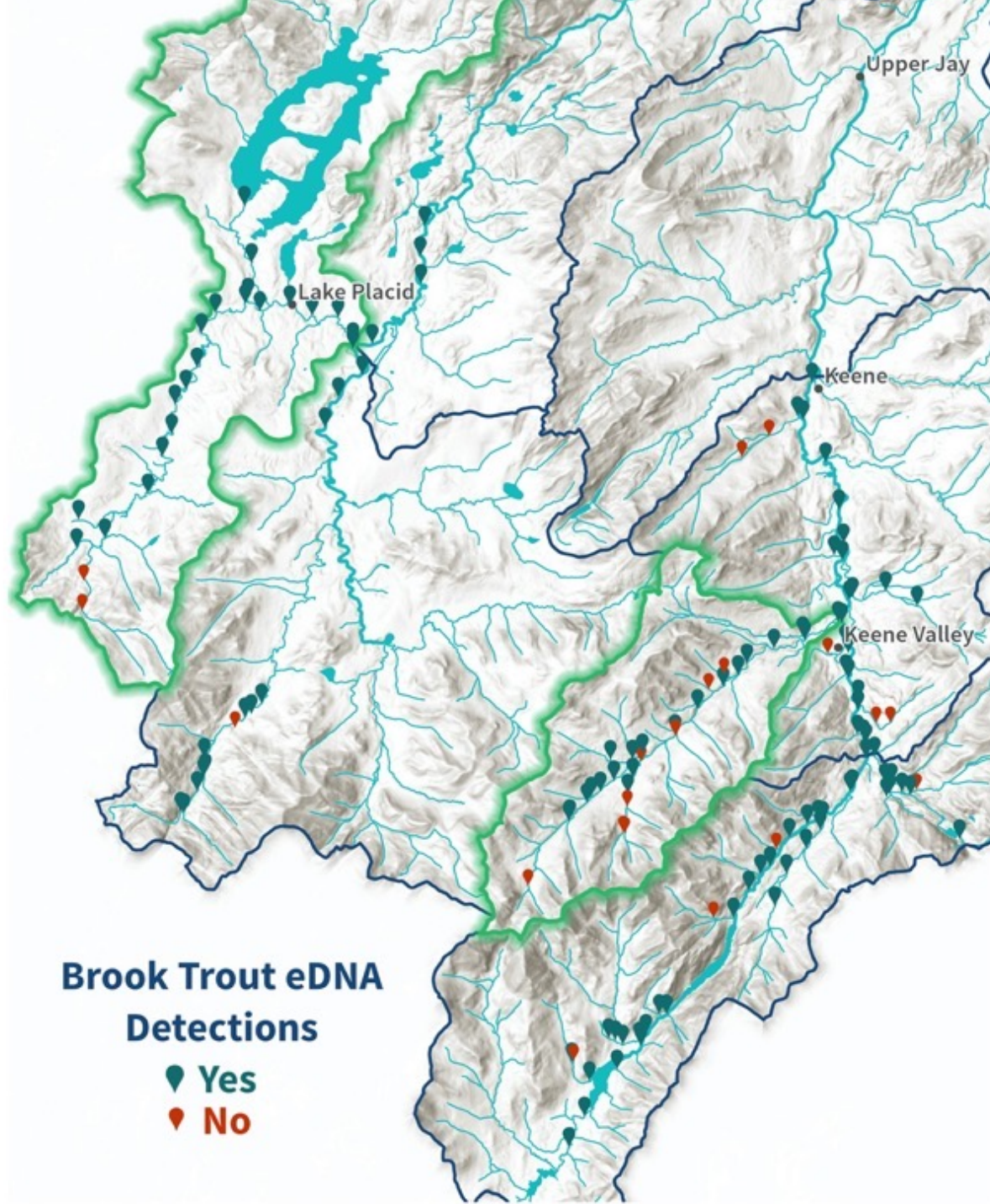


eDNA: Field Sampling

Ausable River eDNA Atlas: Brook Trout

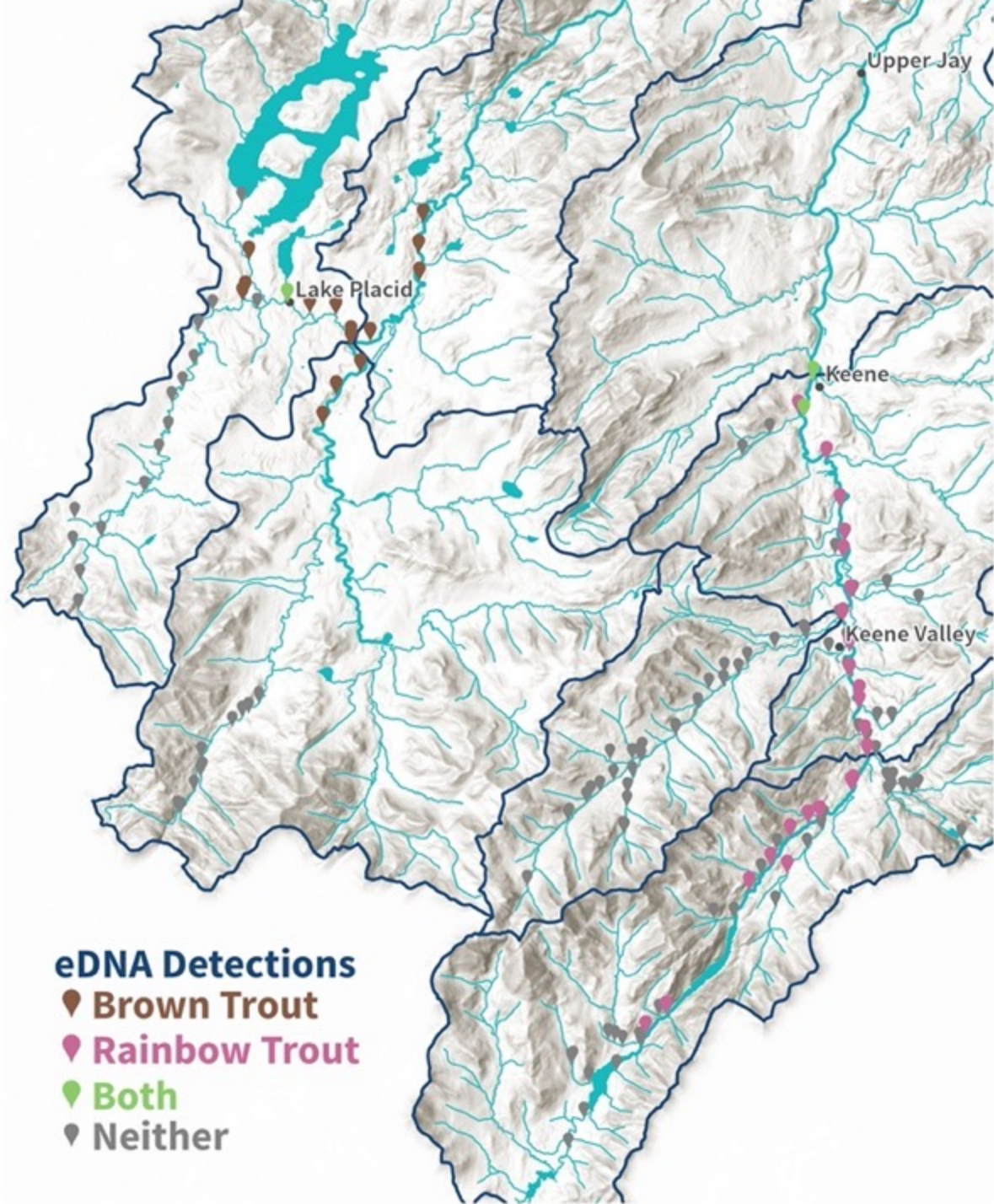






**Brook Trout eDNA
Detections**

-  Yes
-  No



eDNA Detections
📍 **Brown Trout**
📍 **Rainbow Trout**
📍 **Both**
📍 **Neither**

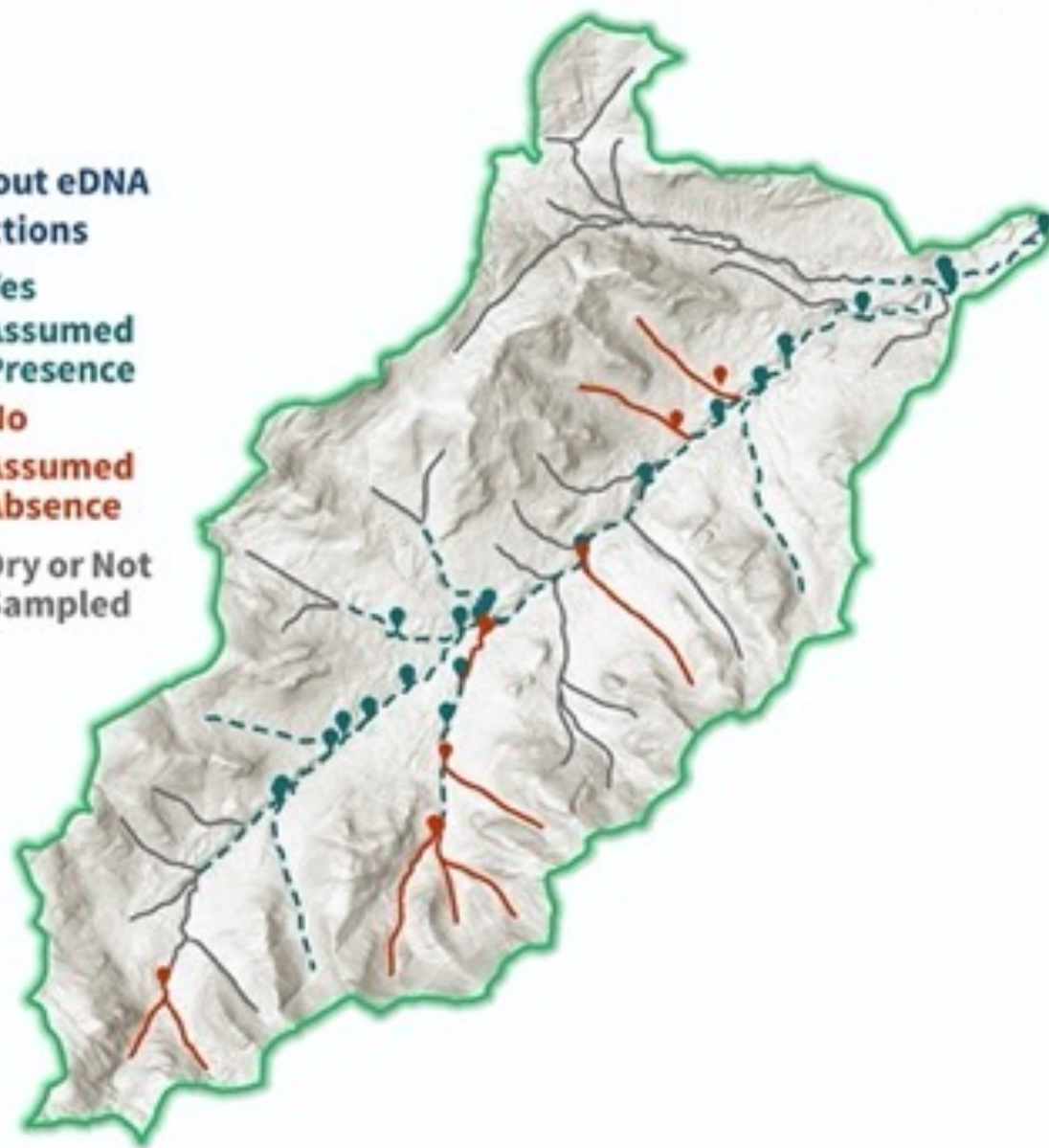
0 0.75 1.5 3 Kilometers



Brook Trout eDNA Detections

- Yes
- - - Assumed Presence
- No
- Assumed Absence
- Dry or Not Sampled

0 0.5 1 2 Kilometers



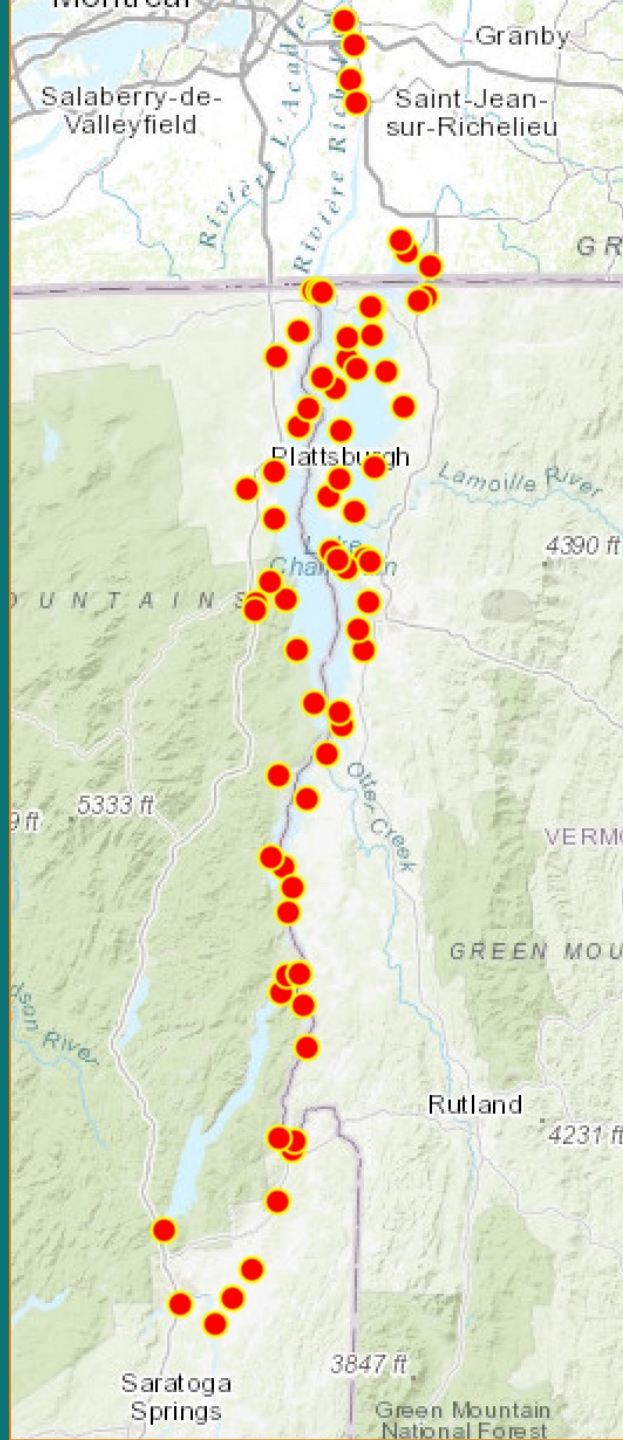
Future eDNA Work

Part I: Salmon/Lamprey Distribution

- Contracted by US FWS to understand salmon distribution and sea lamprey populations in rivers
- Sampling at different spacing and temporal to see what little streams might be missed

Part II: American Eel Restoration

- Eel DNA found across watershed 2022.
- Expanded sampling locations 2024





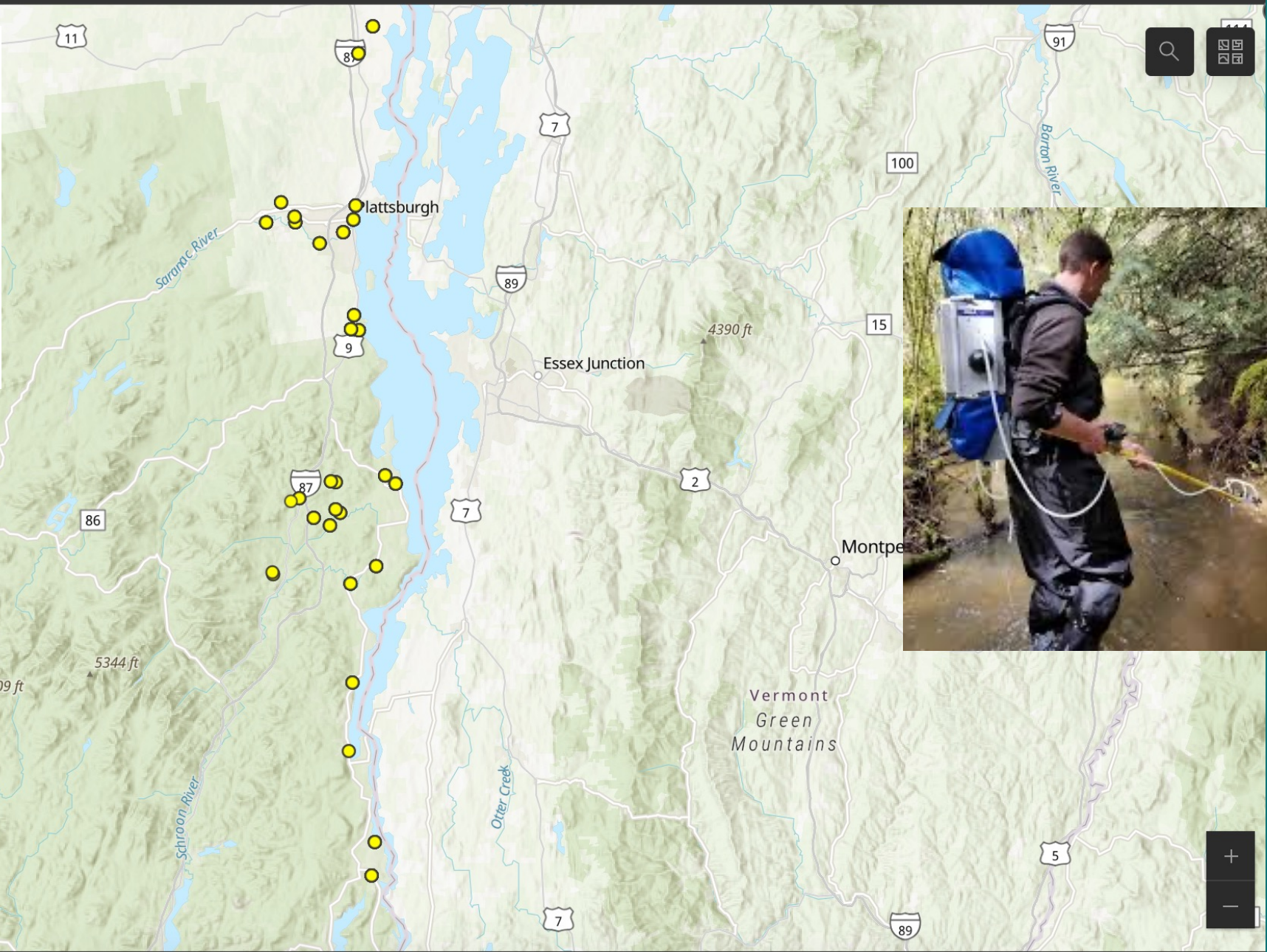
Lake Champlain Metaba... 2022 Salmon & L...

Select an agency
Ausable River Ass...

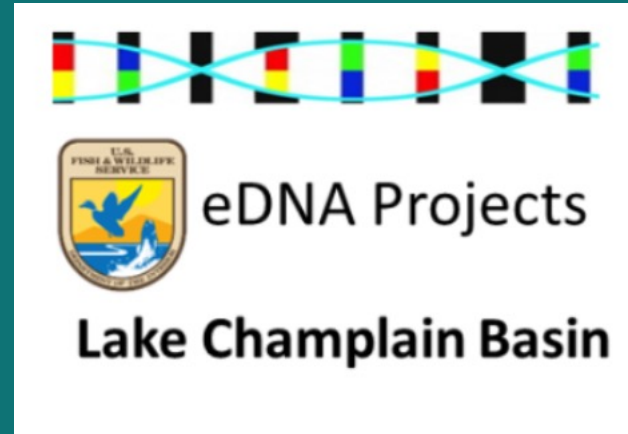
Site ID
No Site Se...

Sample Barc...
No sample s...

Species
No species s...



FWS Metabarcoding



Lake Champlain Metabarcoding 2022 Salmon & L...

Select an agency: Ausable River Ass... | Site ID: ARA202210... | Sample Barc...: No sample s... | Species: No species s...

Sample	Species	Read Count	Read Frequency	Common Name
EDNA2022578	tessallated darter	3,958	0.060	Ameiurus spp
EDNA2022578	common shiner	1,004	0.010	Atlantic salmon
EDNA2022578	pumpkinseed sunfish	2,151	0.030	banded killifish
EDNA2022578	longnose dace	3,694	0.050	bluntnose minnow
EDNA2022578	bluntnose minnow	14,946	0.220	brown bullhead
EDNA2022578	fallfish	22,975	0.350	brown trout
EDNA2022578	banded killifish	357	0.005	common shiner
EDNA2022578	brown			fallfish
				longnose dace
				Percina spp

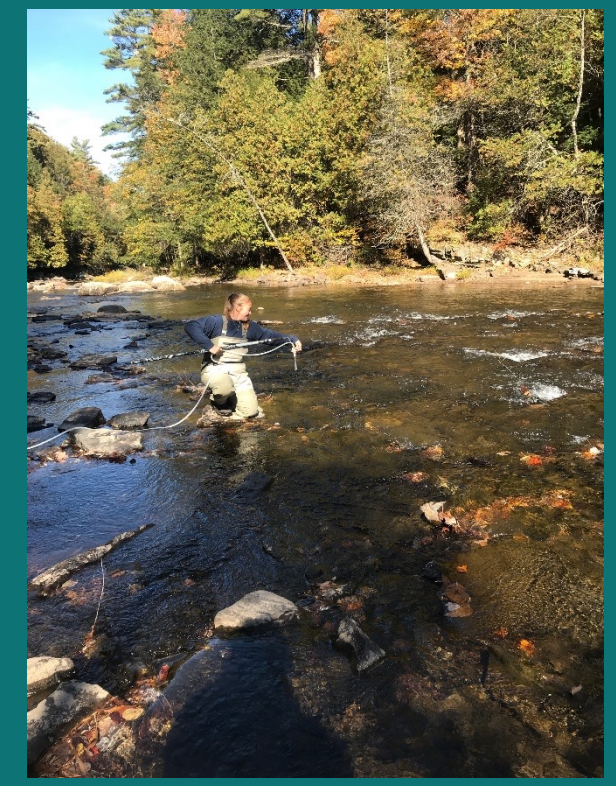
Shows maximum of 250 records

Samples

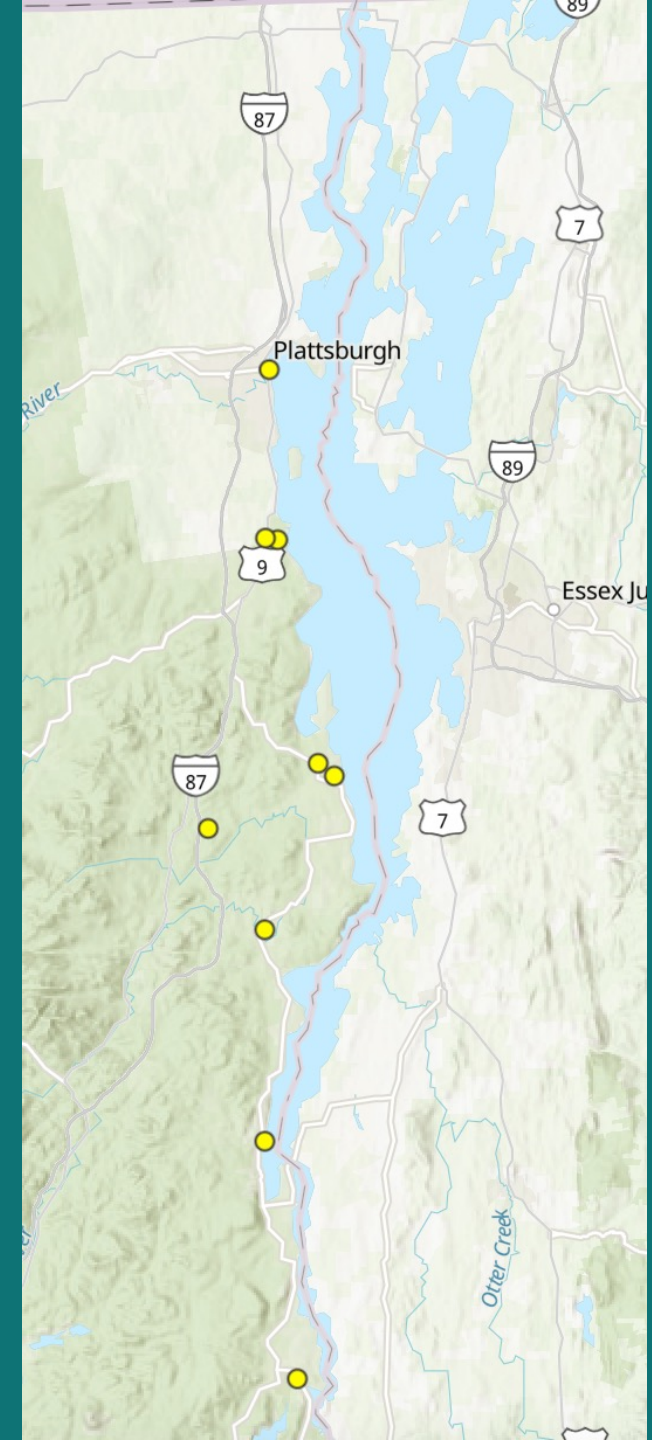
1 / 71

Species

17 / 52



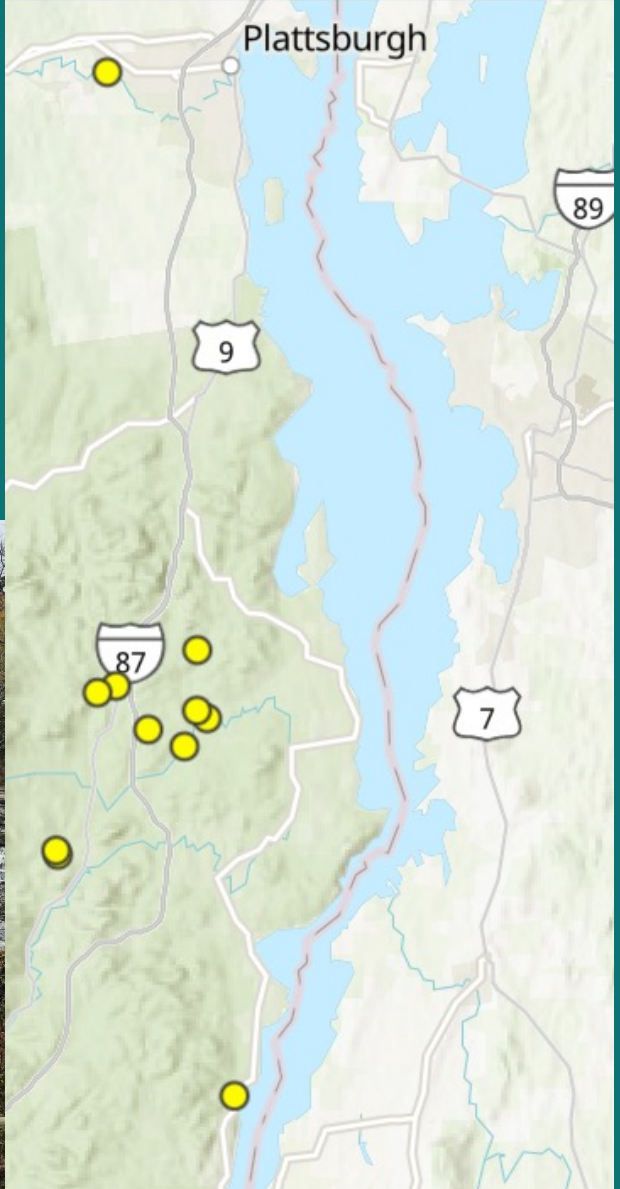
Atlantic salmon detections



Brook trout detections

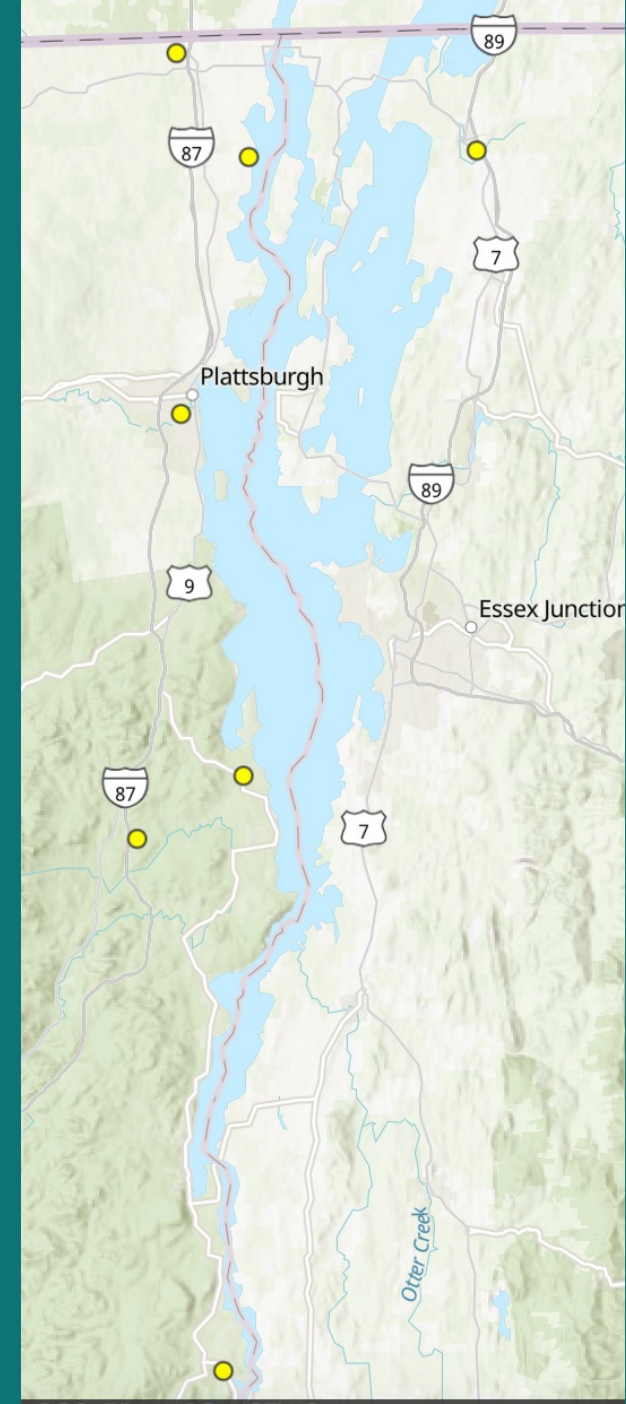


La...
Select an agency
Ausable River Ass.



American eel

MIGRATION PATTERNS OF THE AMERICAN EEL



Project Partners

- USFWS –Laurie Earley, Jonah Withers, Bill Ardren
- US Forest Service – Taylor Wilcox and Ashley Walters
- NYSDEC – Tom Shanahan, Nicole Balk, Stephen Pearson



Clean Water



Phil Snyder, Water Quality Manager

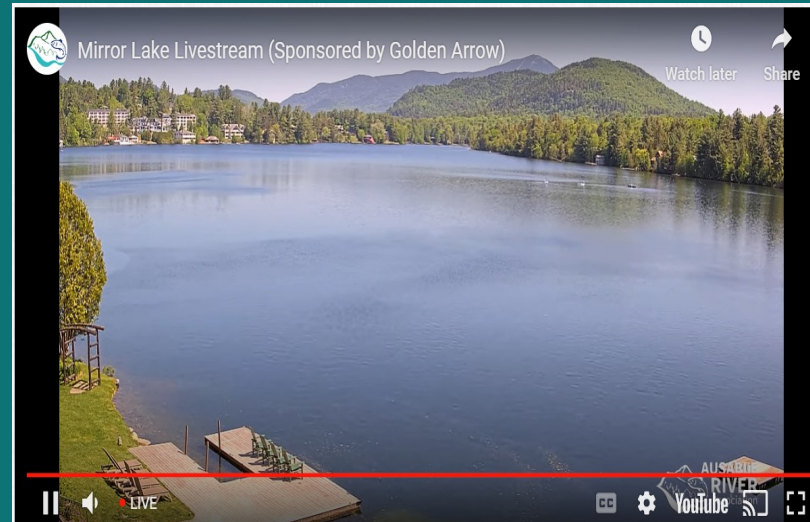
Mirror Lake

- ▶ Bi-monthly water quality chemistry sampling with AWI to monitor lake health and status of salt use reductions.
- Maintain buoy for continuous water quality data record.



Mirror Lake

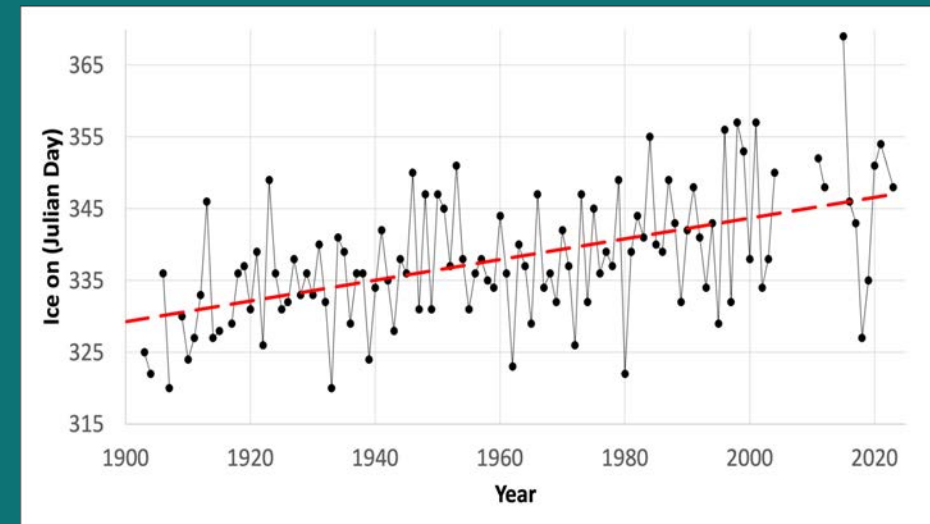
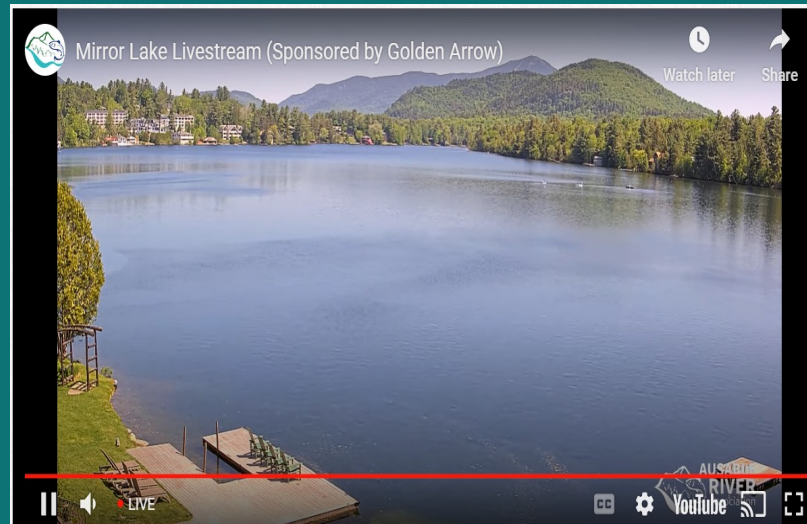
- Outreach Technology
 - Weather Station
 - Live Camera
 - Maintain ice record



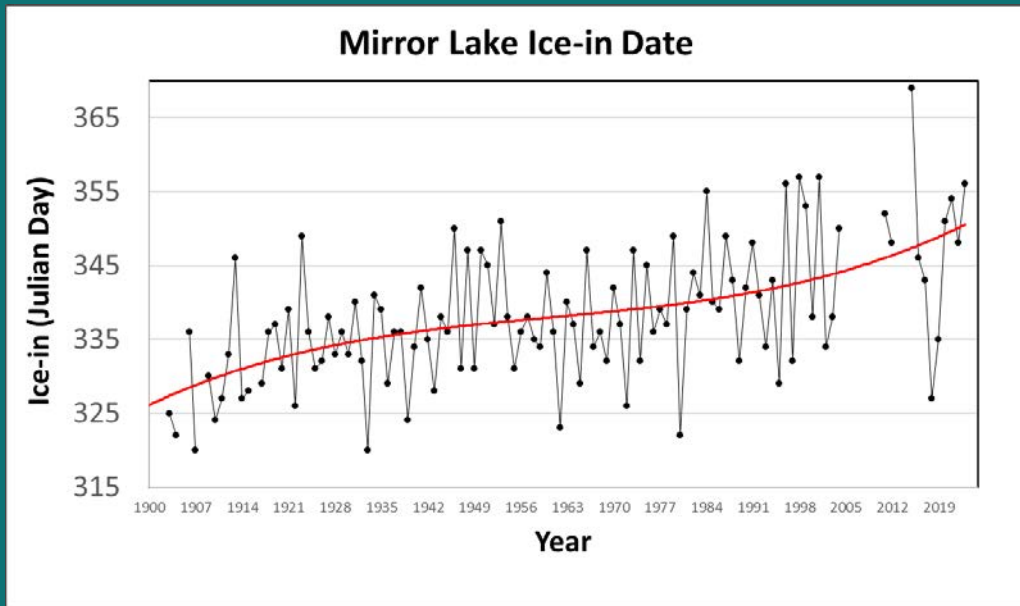
Clean Water Projects

Mirror lake

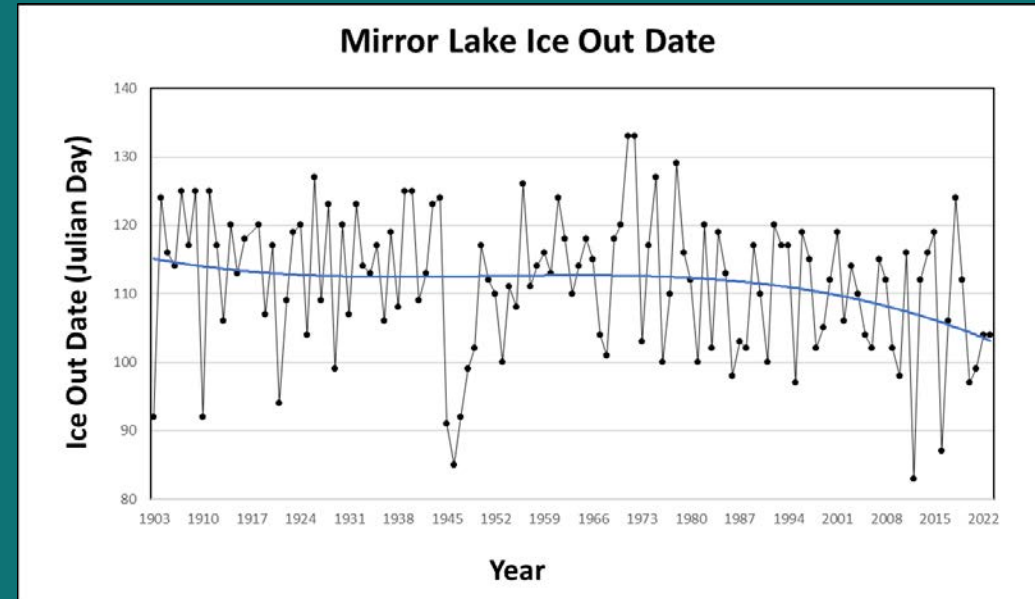
- Outreach Technology
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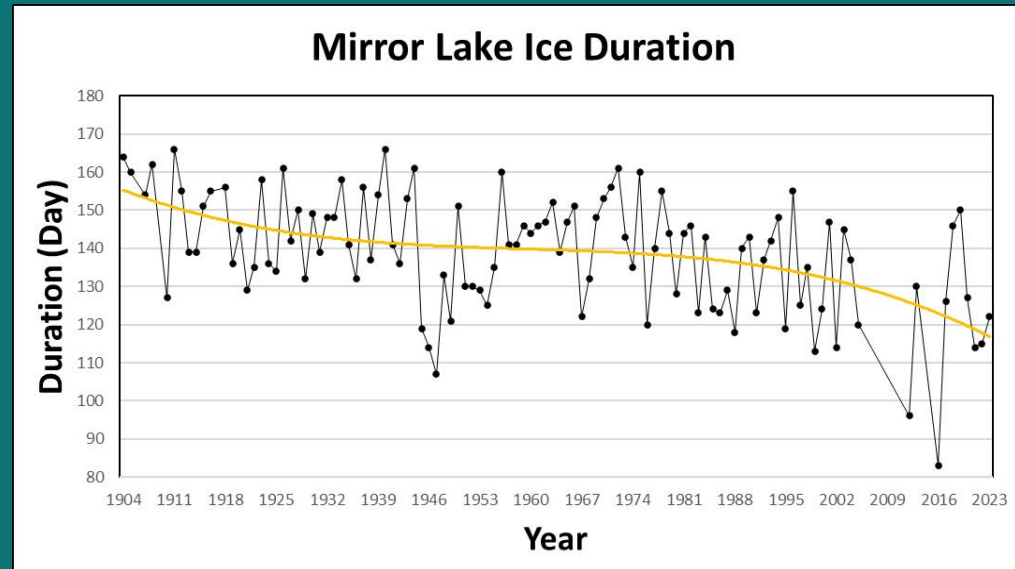
Mirror Lake Ice Record



Significant increasing trend.
Ice-In occurring 18 days later than beginning of record.

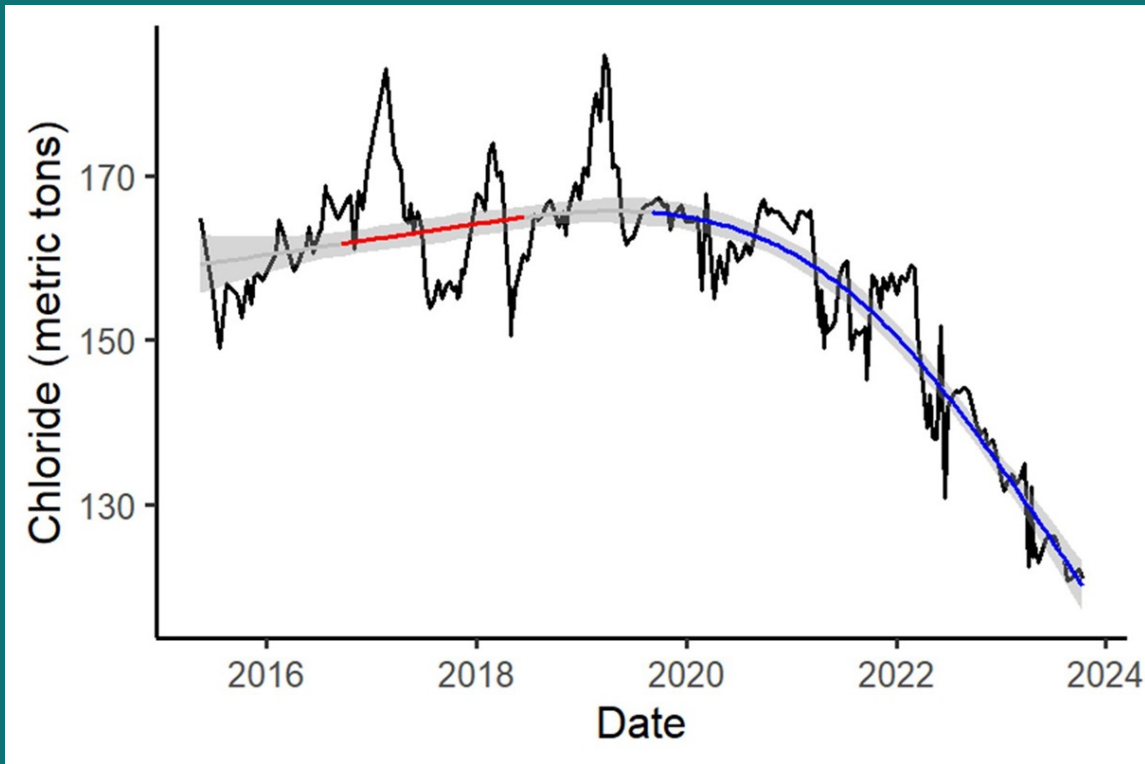


Significant decreasing trend since 2020.
Ice-Out occurring 8 days sooner than beginning of record

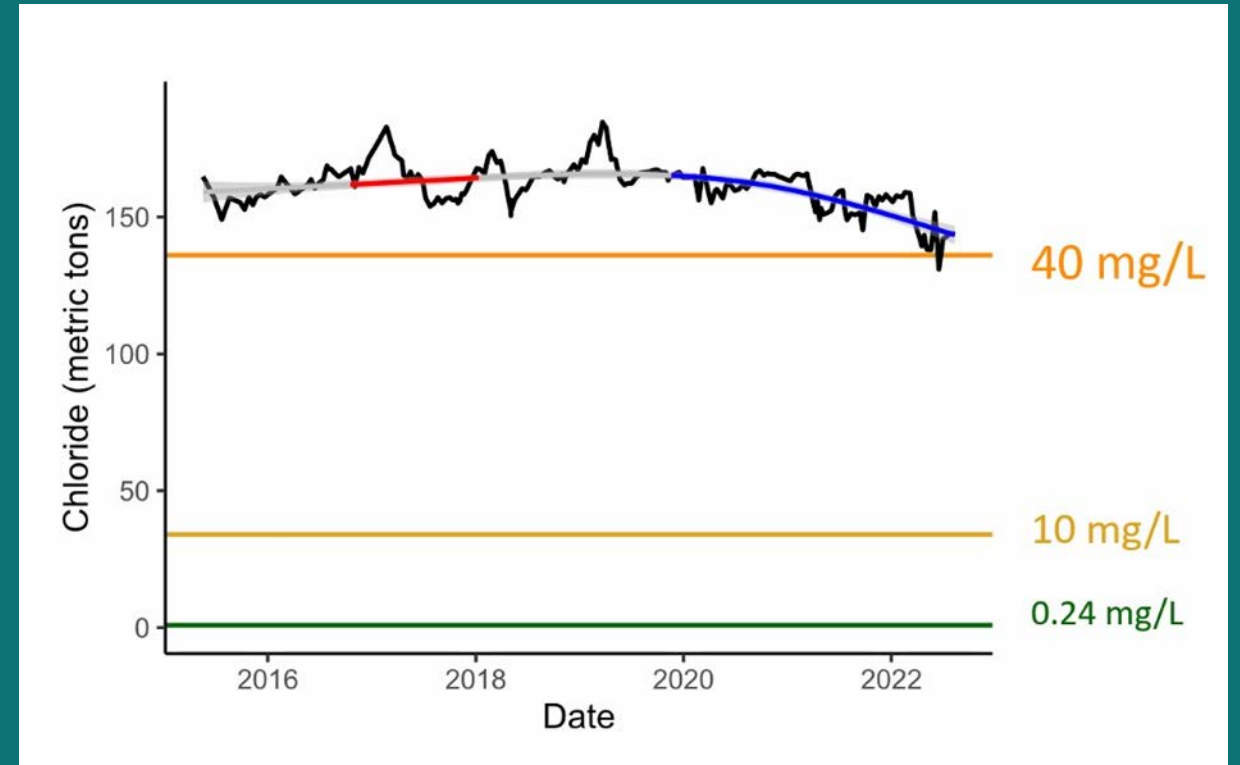


Significant decreasing trend.
Ice Duration 25.7 days less than

Chloride is Decreasing in the Lake



Reductions Still Needed to Reach Target Goals



Clean Water Projects

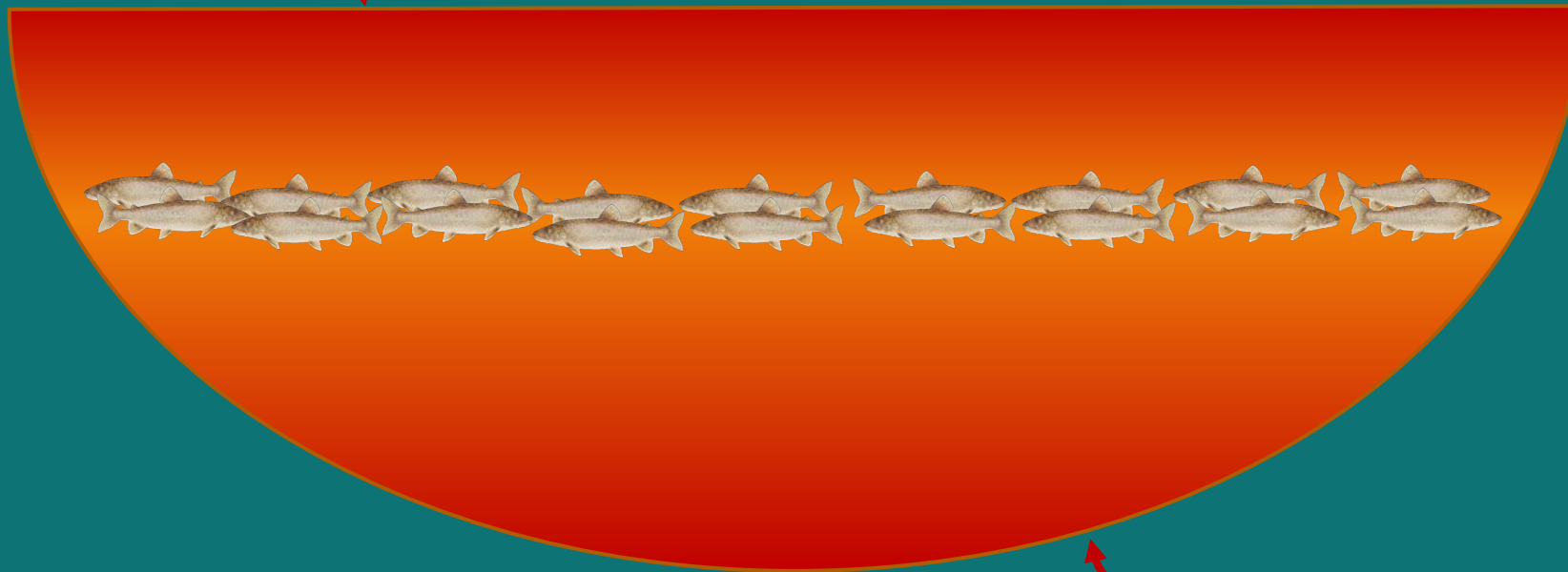
Ausable Watershed Lakes and Streams

- Perform seasonal sampling at 6 lakes in the watershed on a monthly basis.
- Maintain year round bi-monthly water quality record at 30 stream locations throughout the watershed.



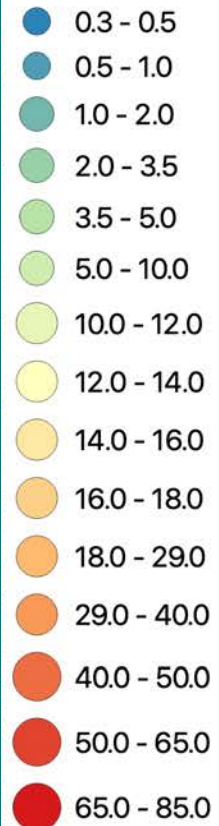
Late Summer

Too Warm

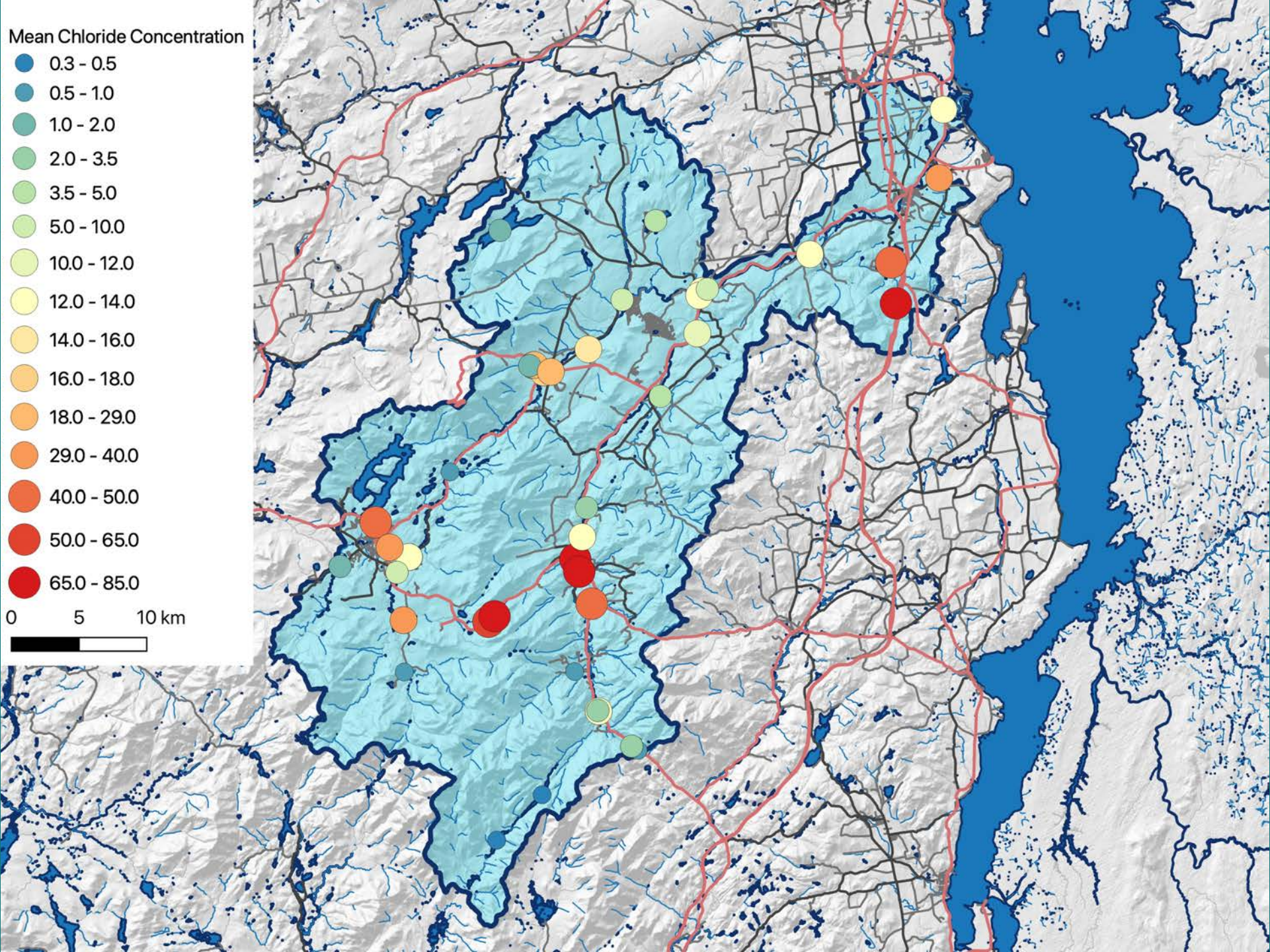


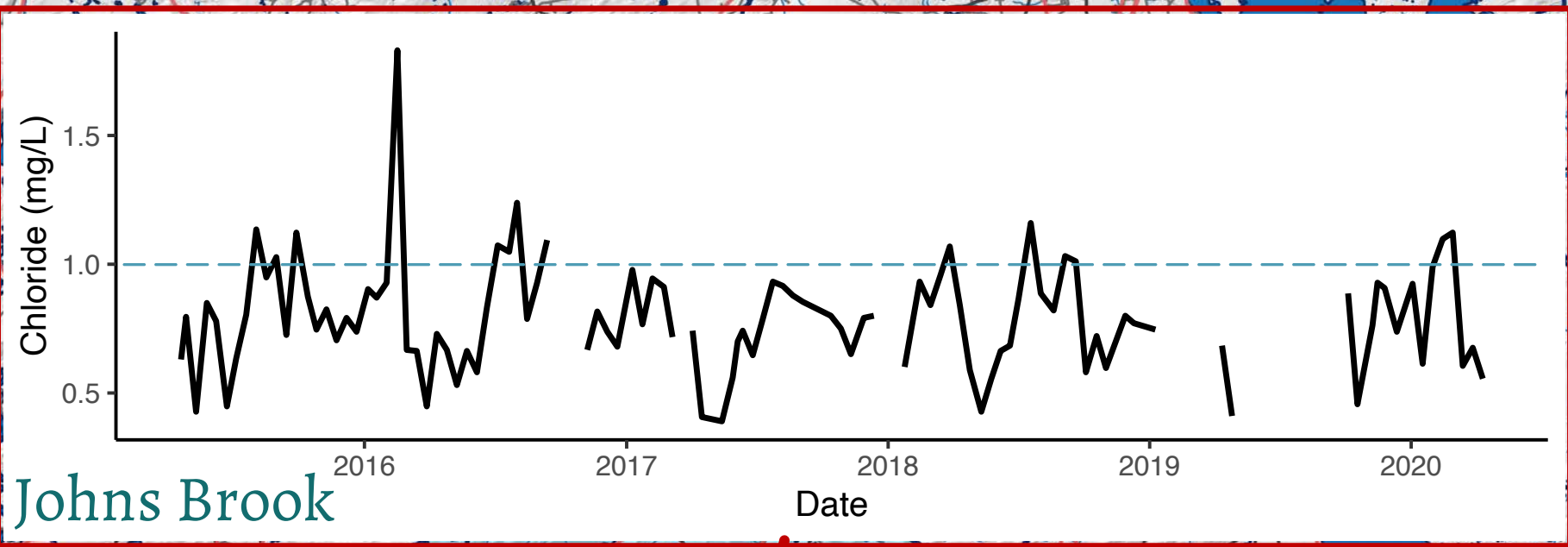
Low Dissolved Oxygen

Mean Chloride Concentration

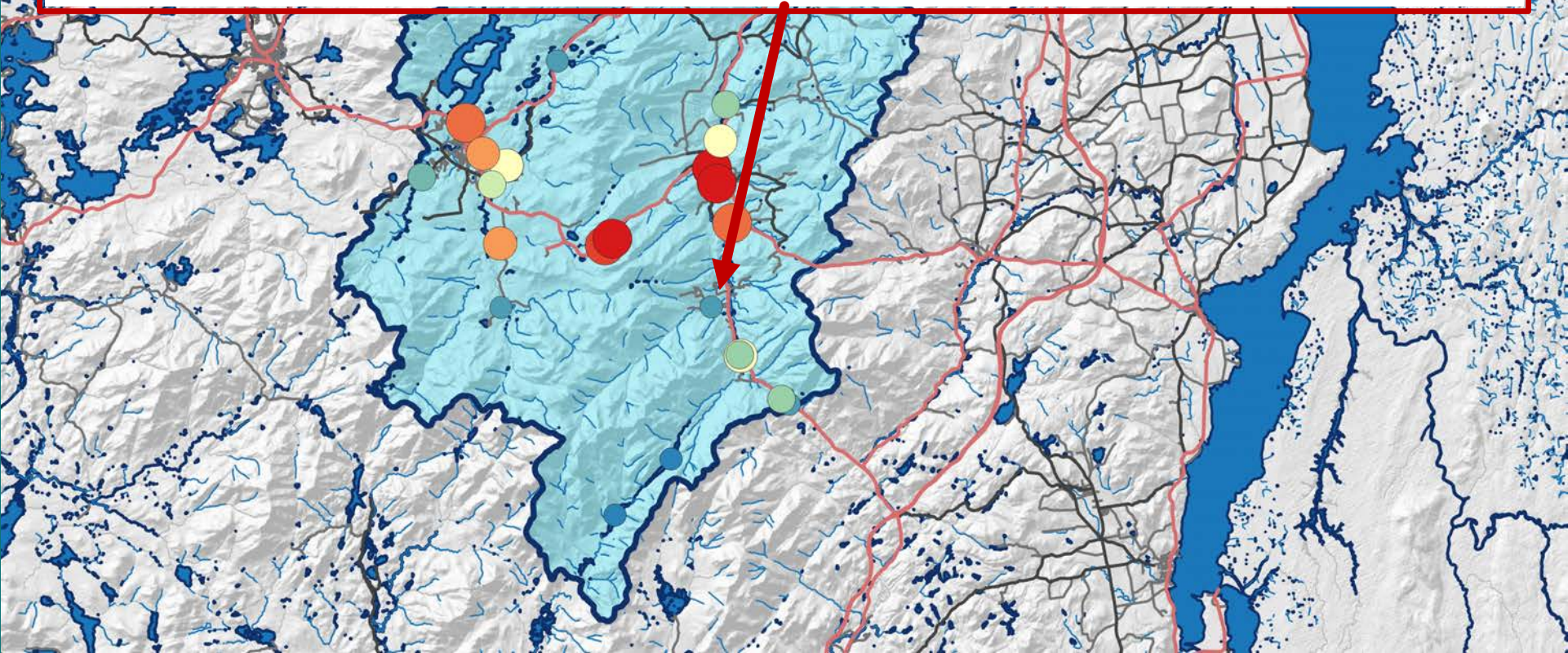


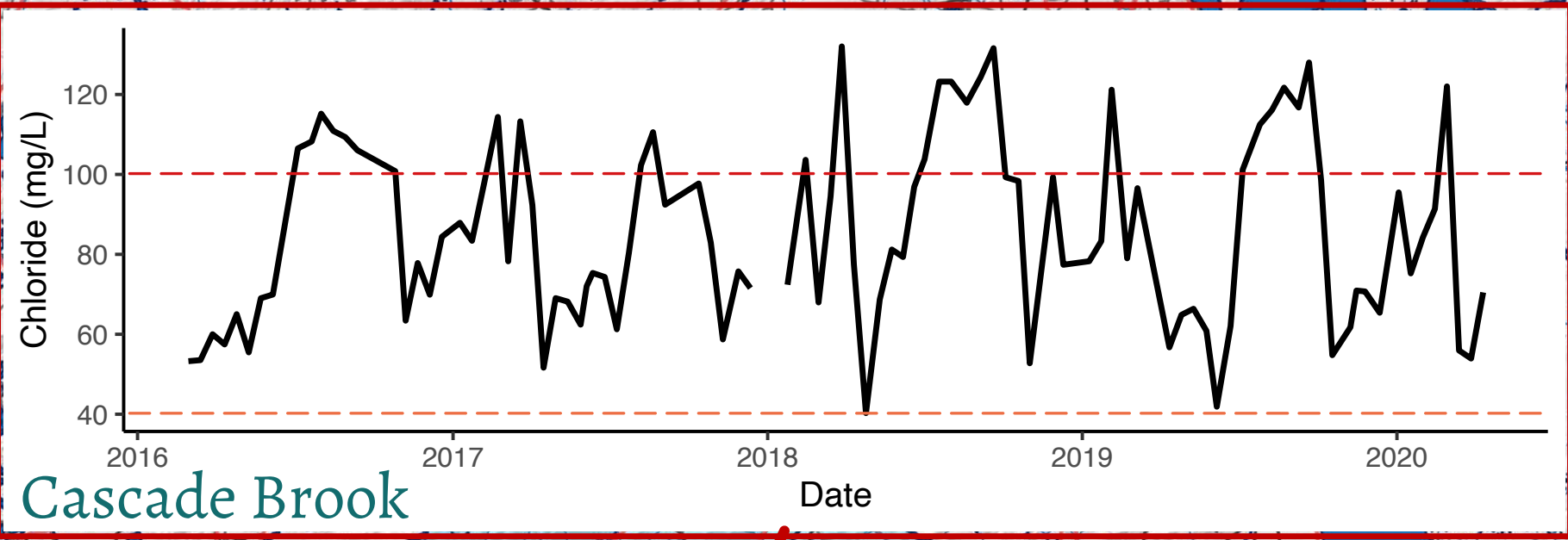
0 5 10 km



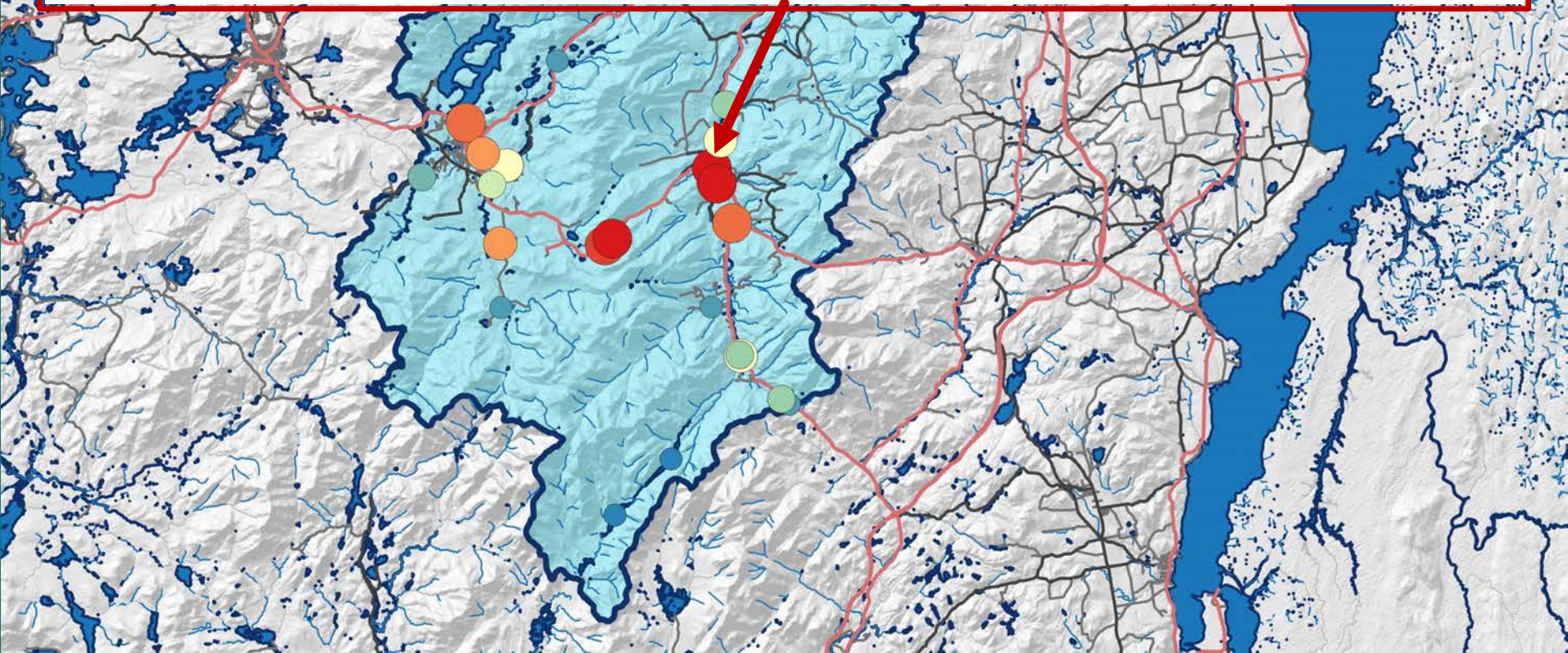


Johns Brook





Cascade Brook



Clean Water Projects

SCALE Pilot Program

Survey of Climate in Adirondack Lakes and Ecosystems

- ▶ A consortium approach to understanding the effects of a changing climate on Adirondack aquatic ecosystems.



Clean Water Projects

SCALE Pilot Program Partners



Clean Water Projects

SCALE Pilot Program Research Objectives

- Develop and test sampling techniques to create proven methods applicable to a larger scale survey.
- Create a baseline data set that will guide future work.



Clean Water Projects

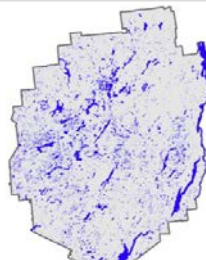





SCALE Pilot Program Scientific Focus

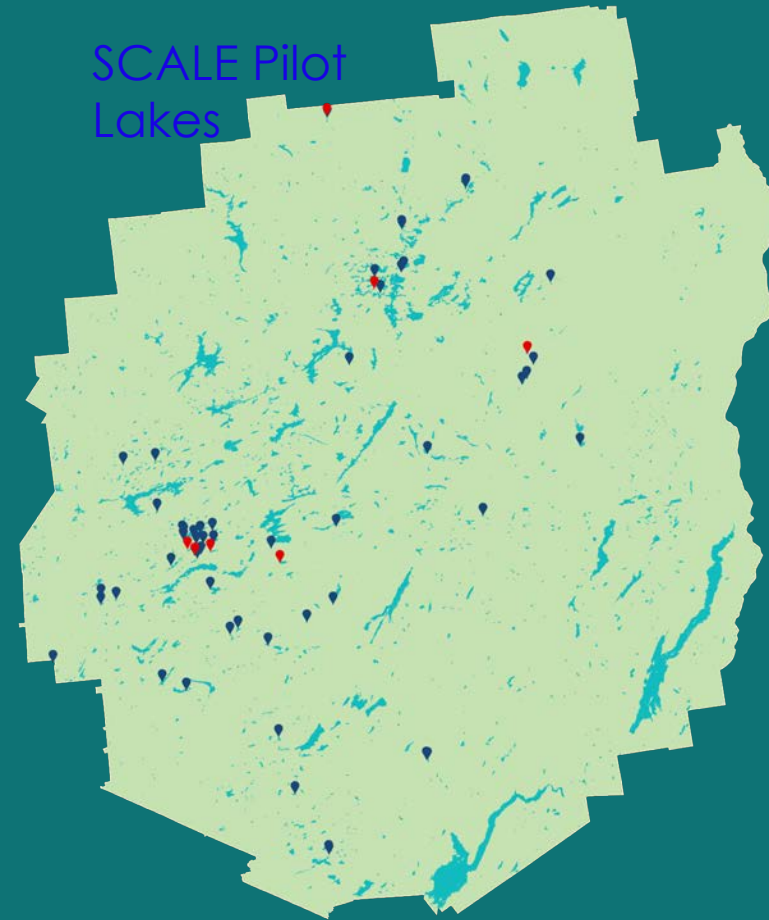

- Browning of Adirondack Lakes.
- eDNA as a tool for fish species presence.
- Stable isotope analysis to examine food web interactions.
- Remote sensing to provide real time lake surface data.



2023 SCALE Pilot Field Effort

2023 UPDATE

11201 Lakes in the ADK park		 Lakes sampled by field teams	47
1600 ADK lakes ever sampled		 Measurements of lake physics	137
91 Lakes with long-term monitoring (10 samples over 20 years)		 eDNA samples to identify species invasions and declines	800
900 Lakes evaluated using satellite imagery		 Water samples for chemical analysis	126
453 Lakes modeled for physical mixing dynamics		 Samples for environmental DNA analysis	384



Clean Water Projects

SCALE Pilot Program Products and Goals

- By the Spring of 2024, collaborators will publish the findings of the 2023 pilot study.
- Mine historic data sets to select up to 400 lakes for a larger scale survey.
- Establish an independent advisory committee to coordinate the larger survey and steer the science.



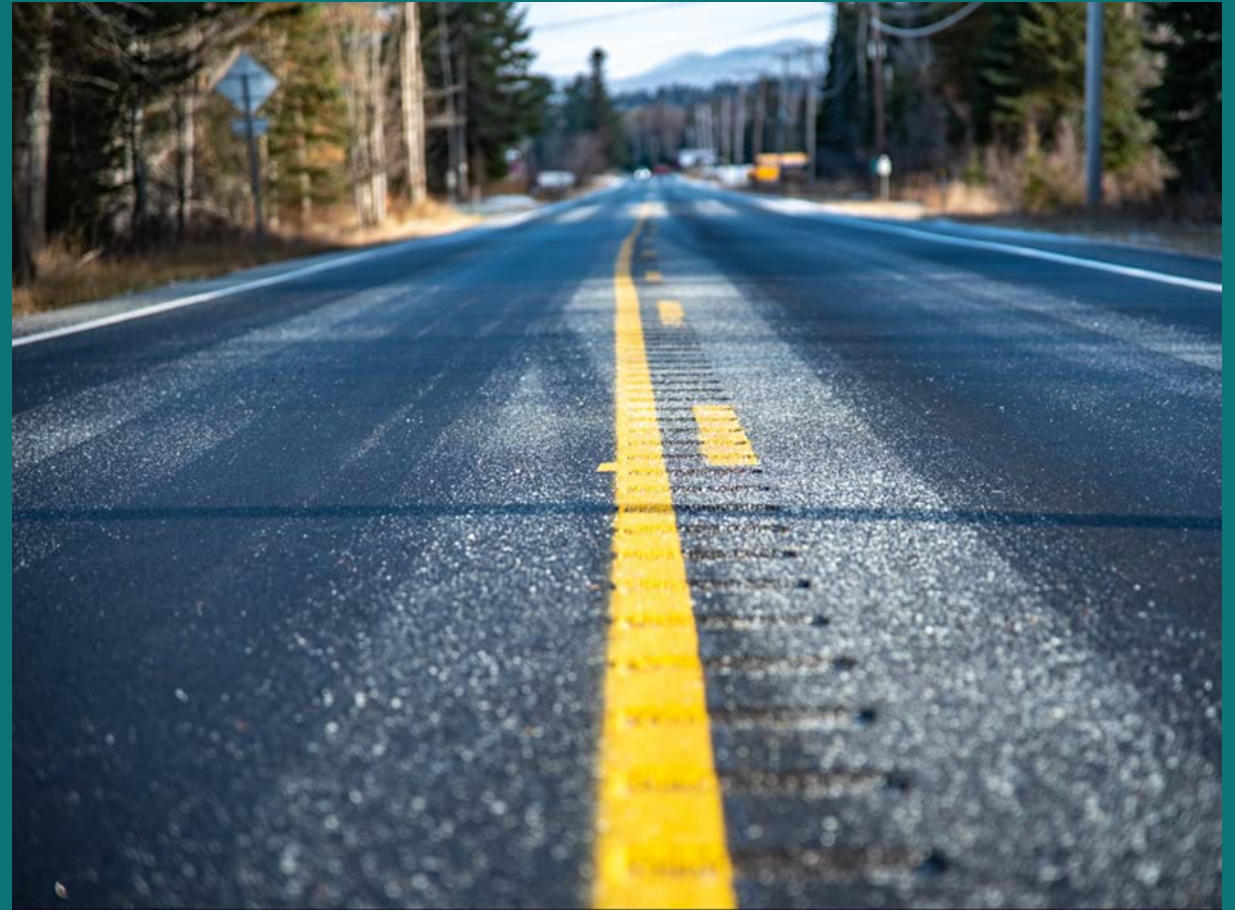
Empowered Stewardship



Carolyn Koestner, GIS & Science Communications Fellow

Let's Talk Salt

- ▶ NYS is the largest user of road salt in the U.S.
- ▶ Road management changed after the 1980 Olympics – bare roads were now the expectation
- ▶ Negative impacts on drinking water, aquatic habitat, and terrestrial habitat



Salt Reduction Outreach Campaign

- ▶ Clean Water, Safe Roads
 - ▶ In partnership with ADKAction
- ▶ Spreading local awareness about road salt issues and solutions
 - ▶ Distributing brochures
 - ▶ Tabling at local events
 - ▶ Presenting to local groups



Guided Watershed Tours

- ▶ Since 2019, AsRA has been offering free opportunities for people to connect with the Ausable through its Guided Watershed Tours program.
 - ▶ We've had hundreds of participants in our tours since then, engaging around 100 people per year
 - ▶ In 2023, we held 10 tours that were attended by 100+ participants
- ▶ Educate and inspire responsible stewardship.
- ▶ Accessible to a spectrum of ability levels.
- ▶ Whenever possible, gear such as kayaks, canoes, binoculars, hiking poles, and snowshoes, are provided at no cost to those attending.



Volunteer Opportunities

- ▶ Earth Month Ausable River Cleanup: April, 100+
- ▶ Spring Tree Plantings, May
- ▶ Fall River Cleanup, September
- ▶ Ausable Conservation Nursery



Outreach Events

- ▶ Youth Education

- ▶ Giant Map

- ▶ In Partnership with LCMM, AWI, and LCSG

- ▶ Keene and Ausable Forks

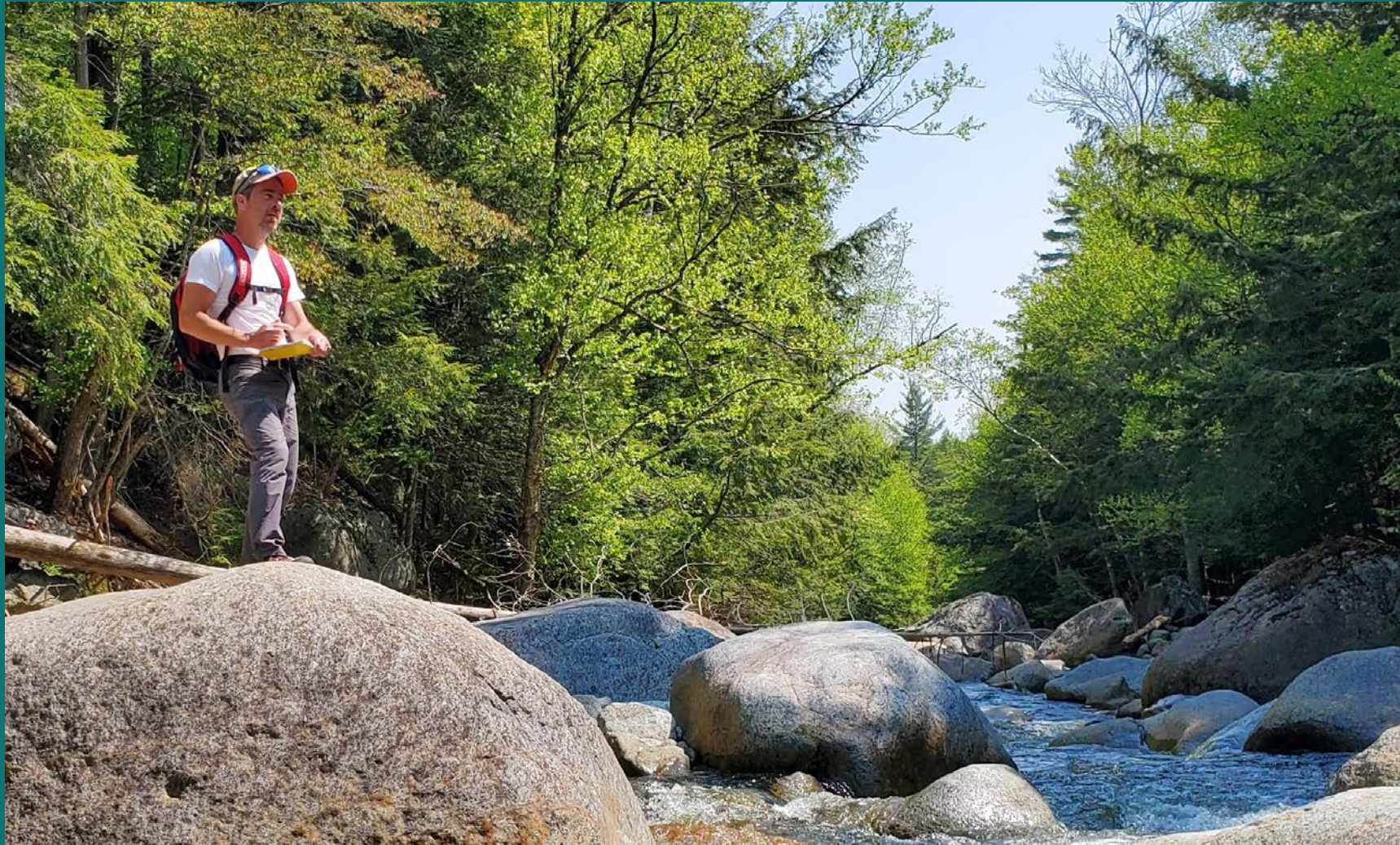
- ▶ Teen Aquatic Stewardship Program

- ▶ In partnership with ADK

- ▶ 8th Year



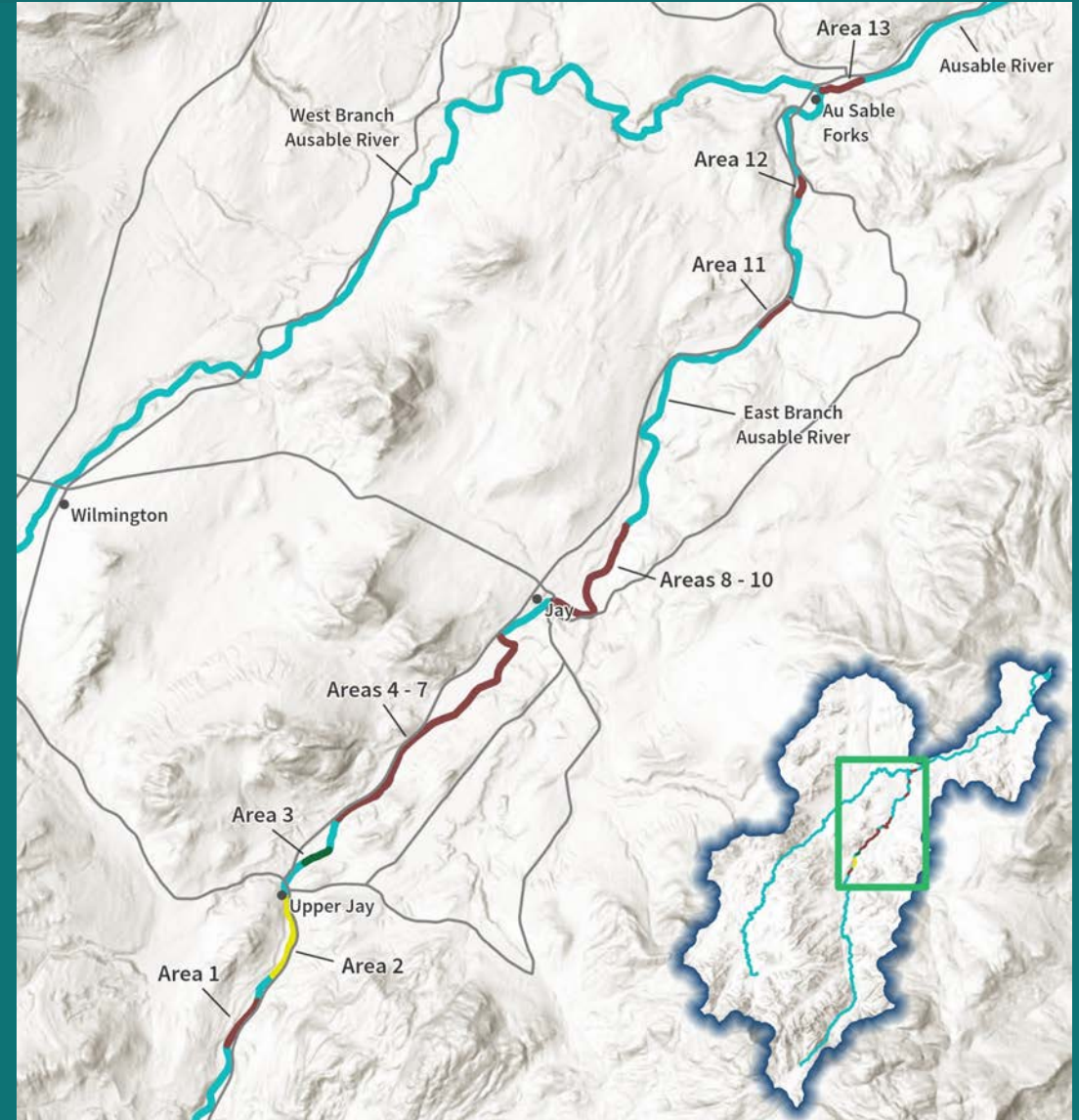
Healthy Streams



Gary Henry, Stream Restoration Manager

Healthy Streams Projects

- East Branch Restoration Program
 - Town of Jay planning completed 2019
 - Town of Keene planning to begin soon



Project Status

- Completed
- Scheduled for Construction
- In Progress

Healthy Streams Projects

- Design
 - Community outreach
 - Survey
 - Modeling
 - Engineering



Healthy Streams Projects

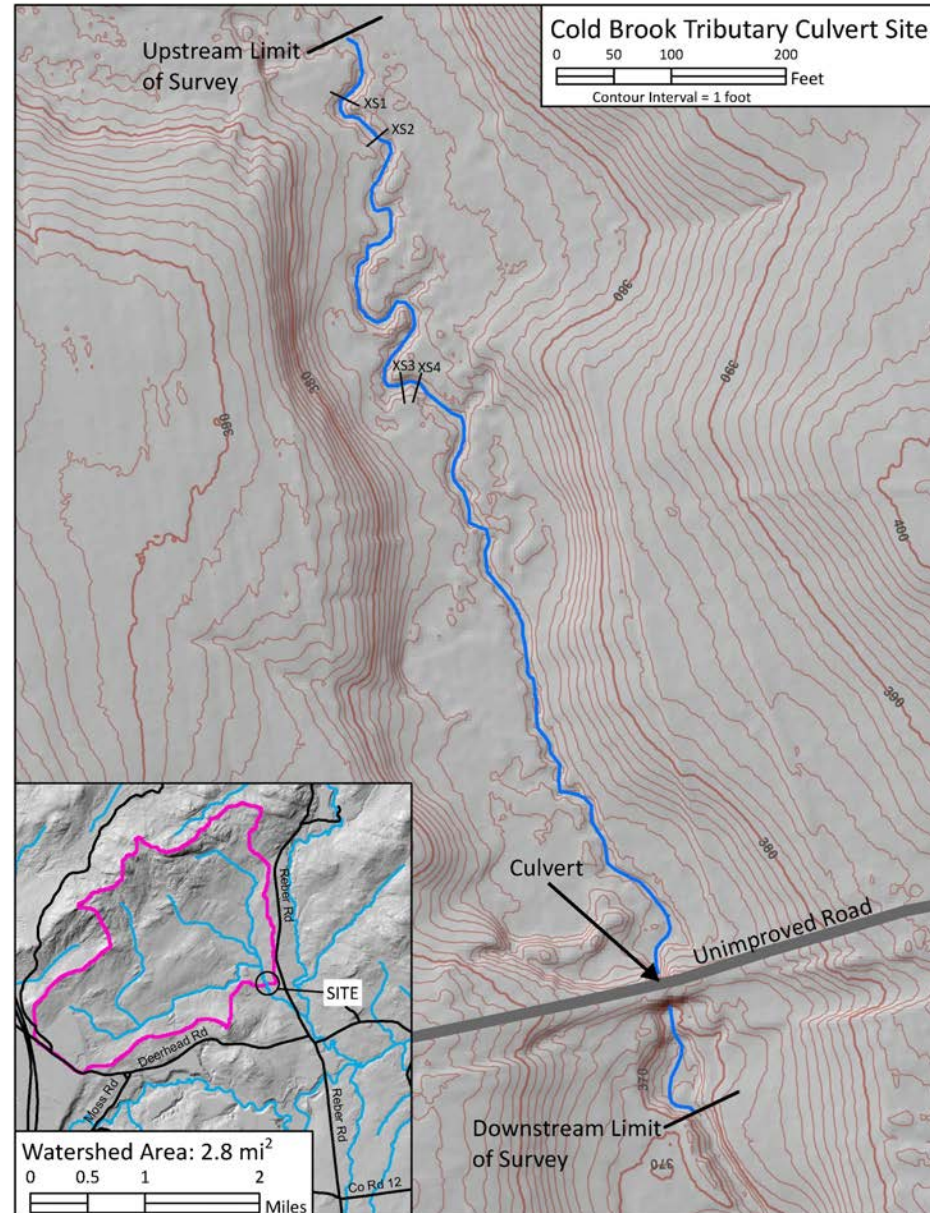
- Implementation

- Bidding
- Permitting
- Materials acquisition
- Staging
- Construction
- Planting
- Monitoring



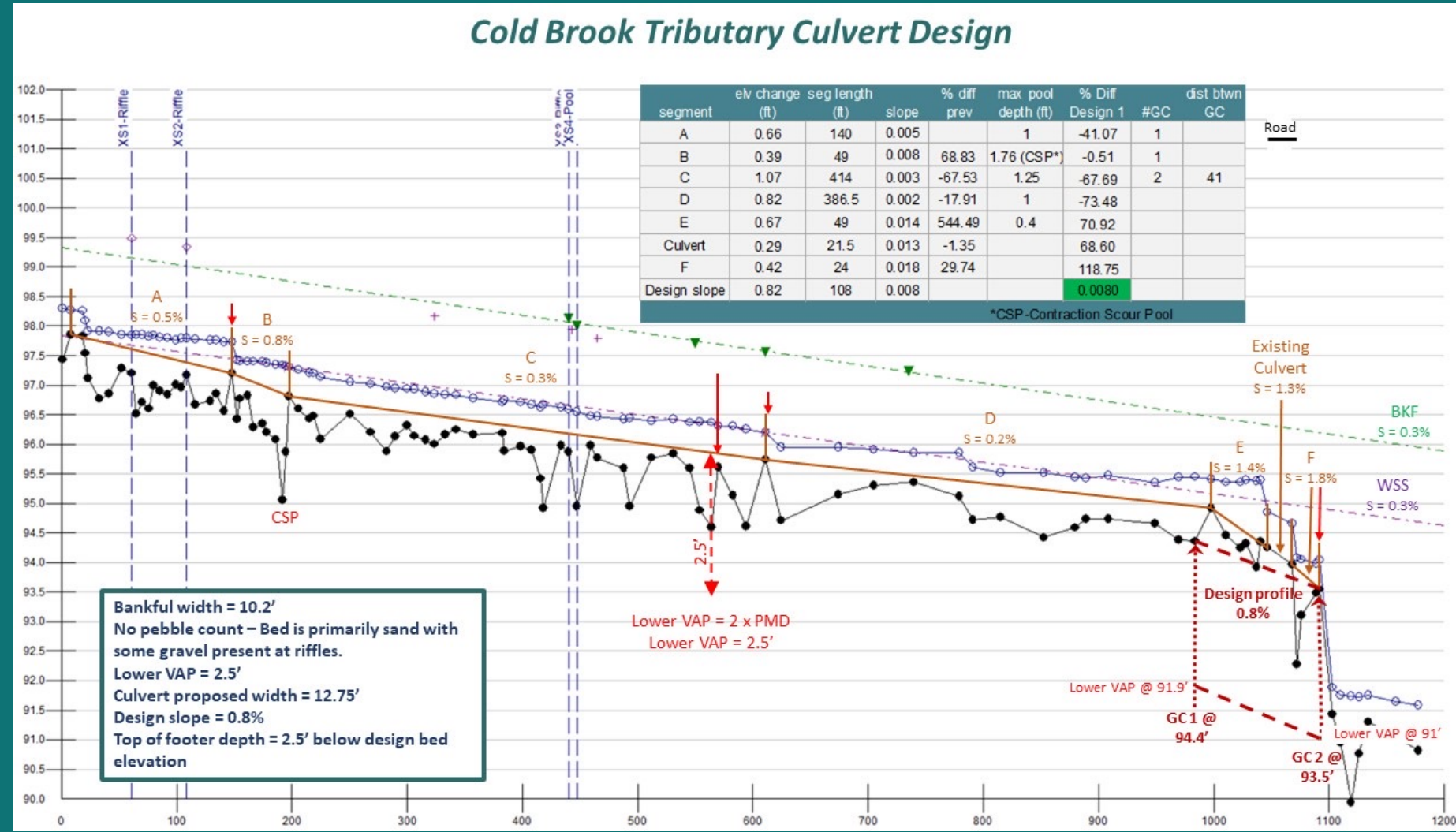
Healthy Streams Projects

- Climate-Ready Culverts
 - Survey
 - Design
 - Engineering
 - Implementation



Healthy Streams Projects

- Climate-Ready Culverts
 - Survey
 - Design
 - Engineering
 - Implementation



Project Area 3



Project Area 3



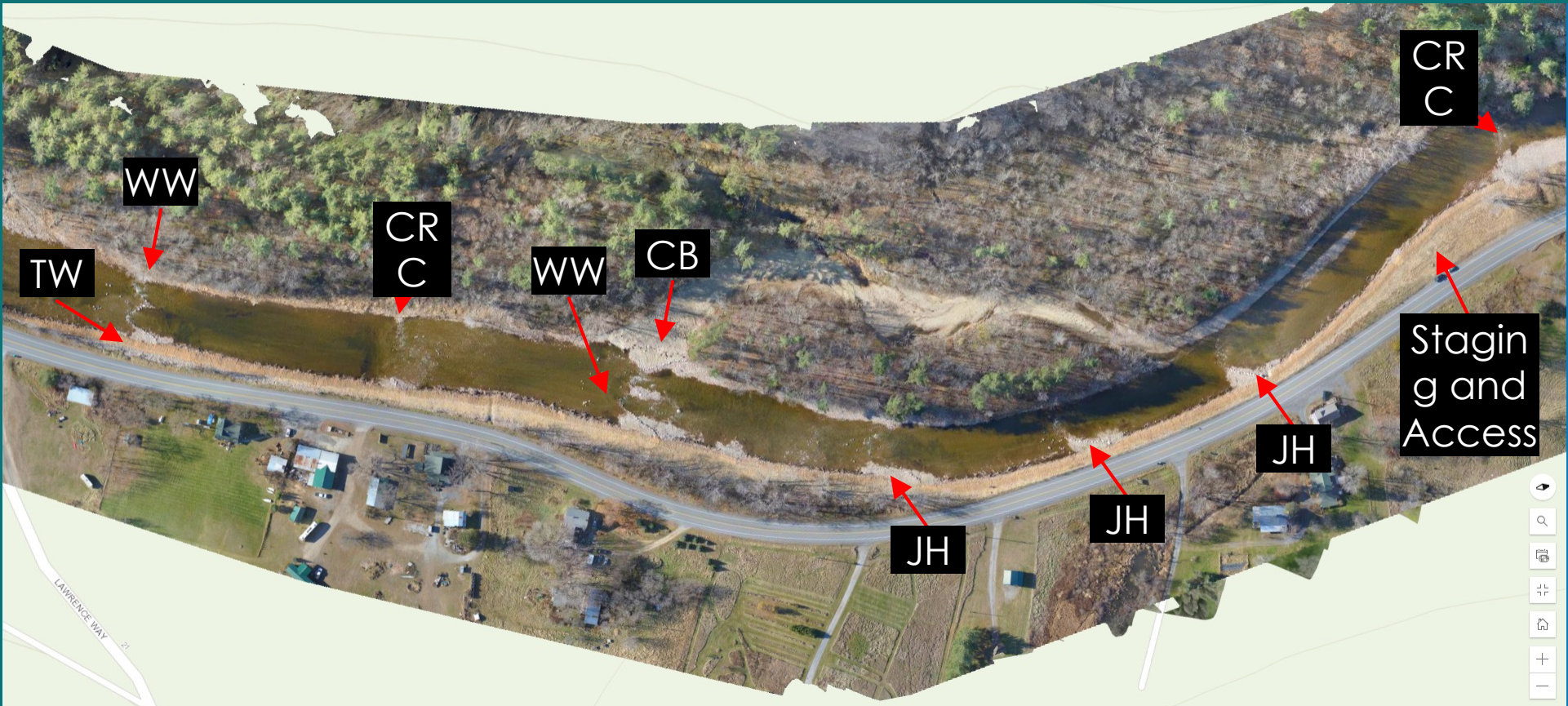
Project Area 2



Project Area 2



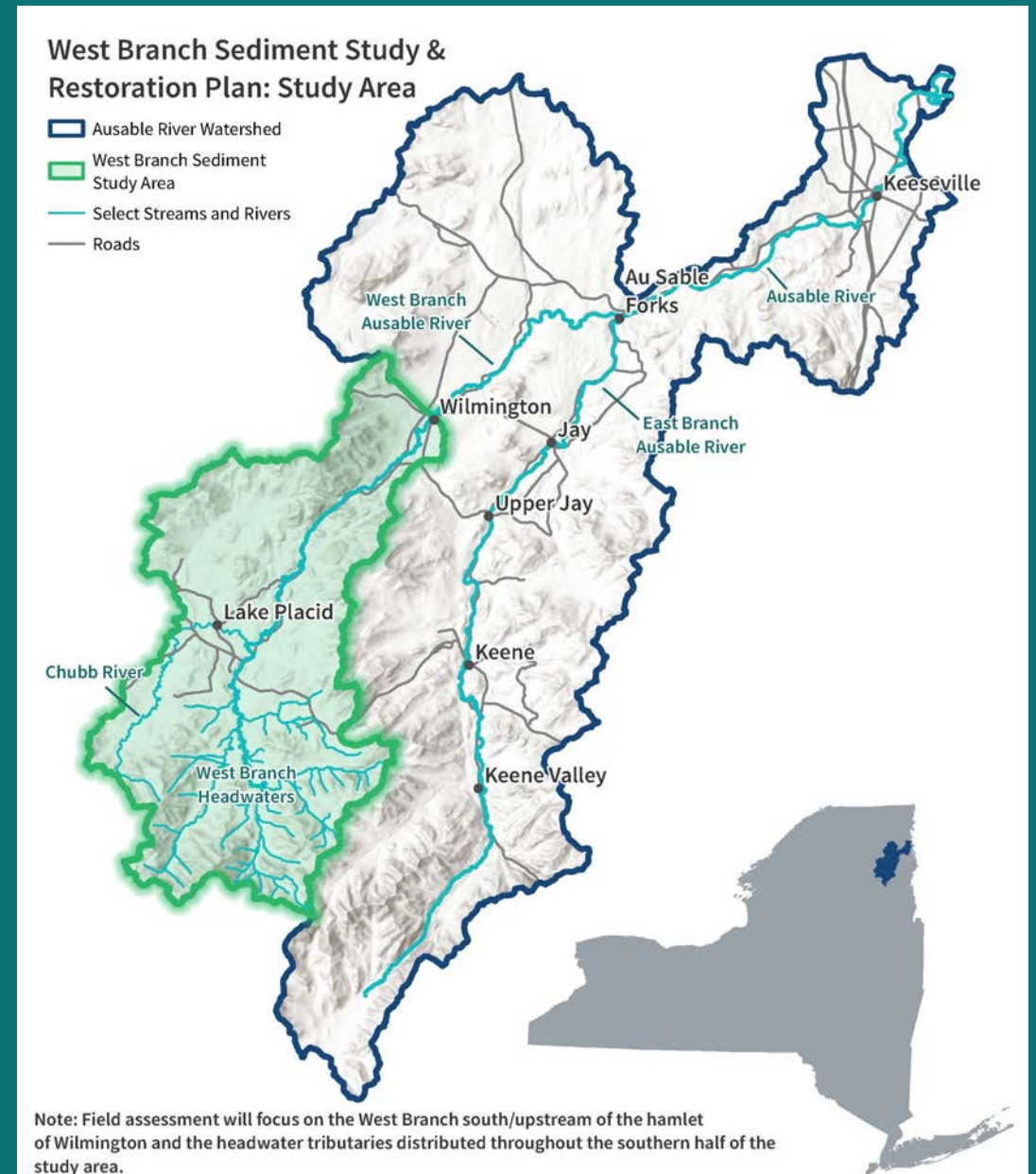
Project Area 2



WW – w-weir; TW – toe wood; CRC – converging rock cluster;
JH – j-hook; CB – channel block

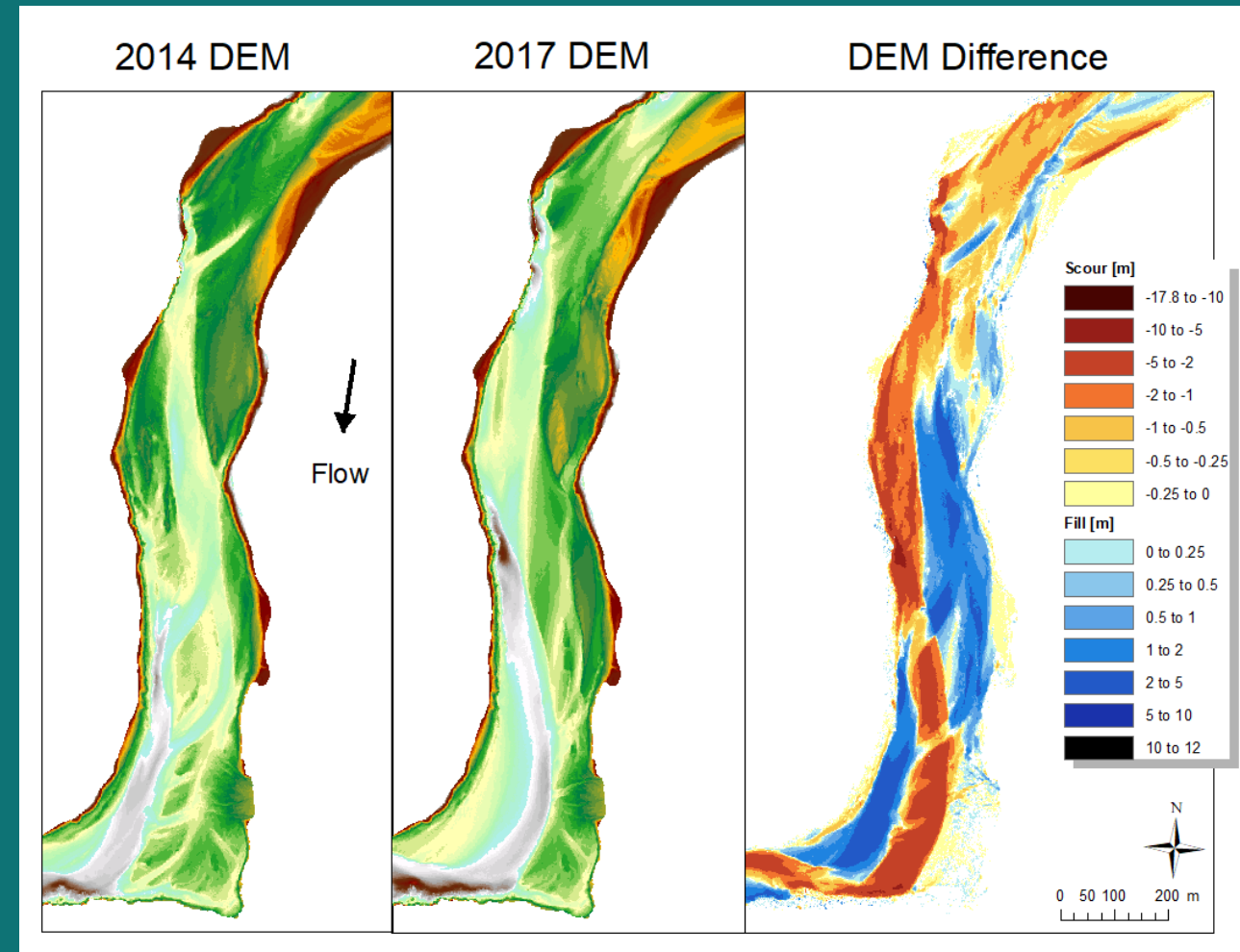
West Branch Sediment Study

- Questions
 - Where are the sources of fine sediment moving through the WB?
 - What are the processes involved in sourcing and transporting sediment?
 - Is there anything that we can do about it?



Study Outline

- Produce new Digital Elevation Model (DEM) for comparison to 2014 DEM
- Public Engagement/Historical Analysis
- Desktop Assessment



Study Outline (continued)

- Geomorphic assessment of streams
- Compile data, maps, summaries
- Public report and interactive web map(s)





Questions?

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