

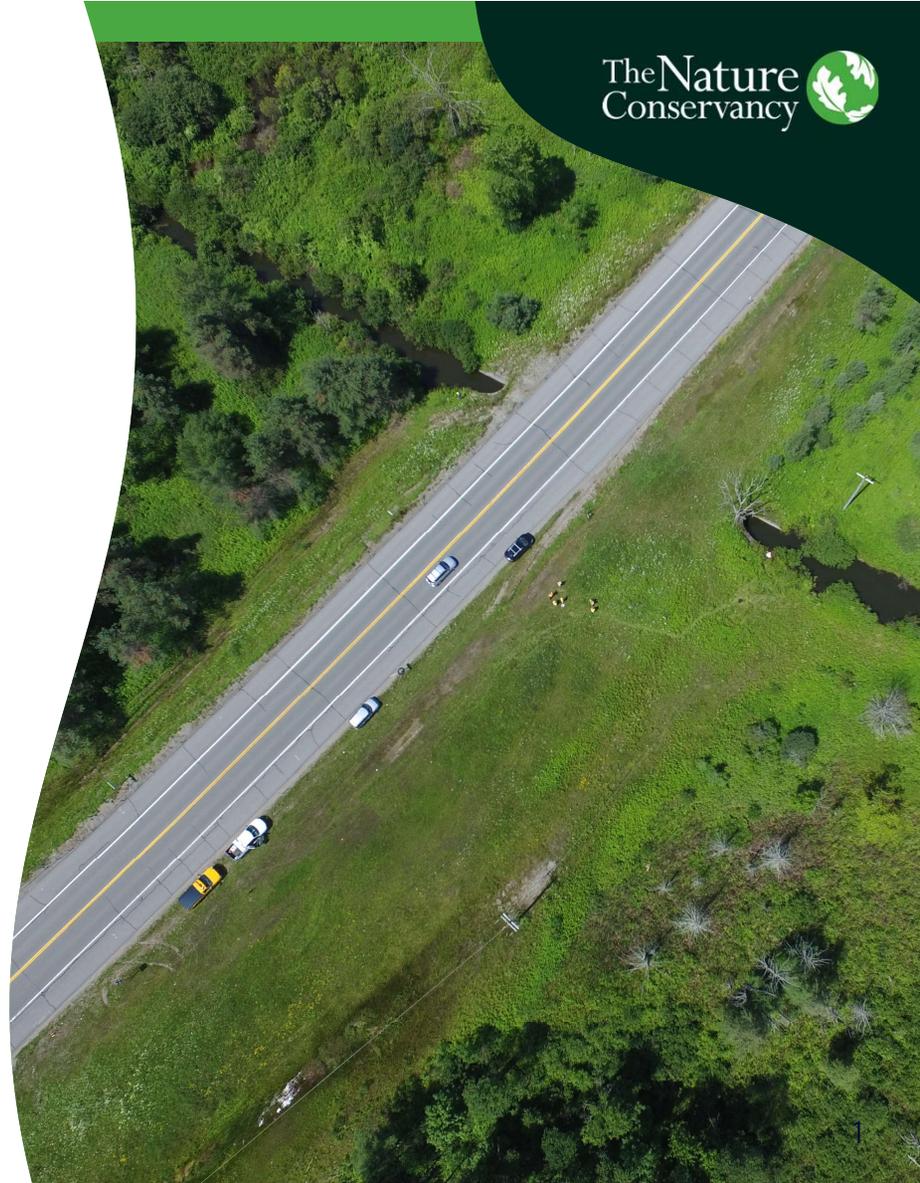
A Framework for Regional Road-Stream Crossing Coordination

Josh LaFountain

Freshwater Specialist, The Nature Conservancy

Image Credits: Zack Simek, TNC

The Nature
Conservancy 



Agenda

- Issue with road-stream crossings
- Issue at scale
- Upper Susquehanna status
- NCSC Model Story
- Regional coordination framework
- Where do we go next

Image Credit: Lucas McNally



The problem with road-stream crossings



- Road-stream Crossings (i.e. culverts and bridges) are generally undersized
 - Causes flooding and road damage/closures
 - Cuts off access to homes communities and resources
- Aging infrastructure increases the risk of failure and flood impacts
- Often a source of scour and erosion & disrupt streamflow and sediment transport

Increasing storm event intensity increases this problem

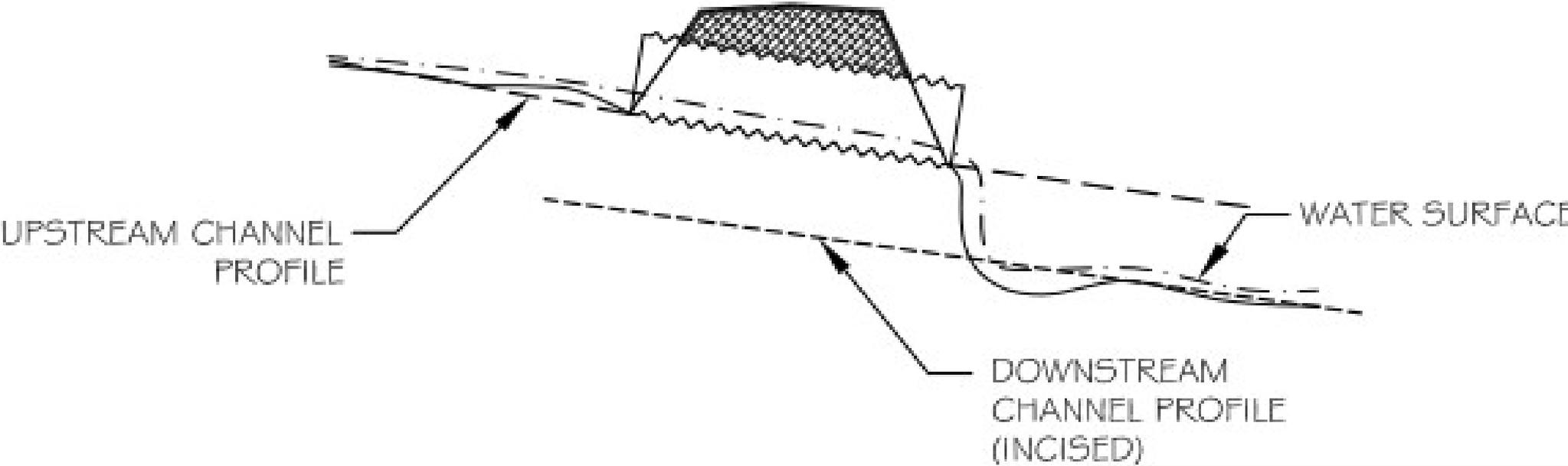
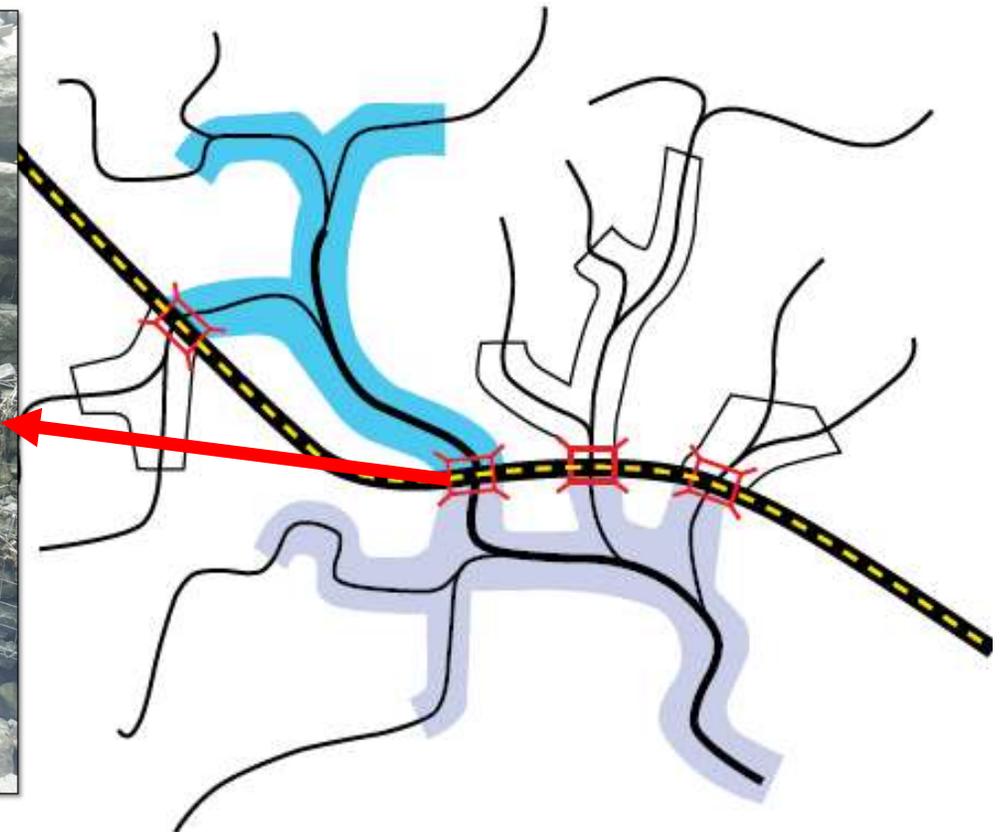


Figure credit: USFS Stream Simulation Manual

Ecological resilience impact



Solution: Implement Climate-friendly stream crossings

- Owner buy-in
- Use USFS Stream Simulation or similar for sizing and design
- Permitting & contracting
- funding



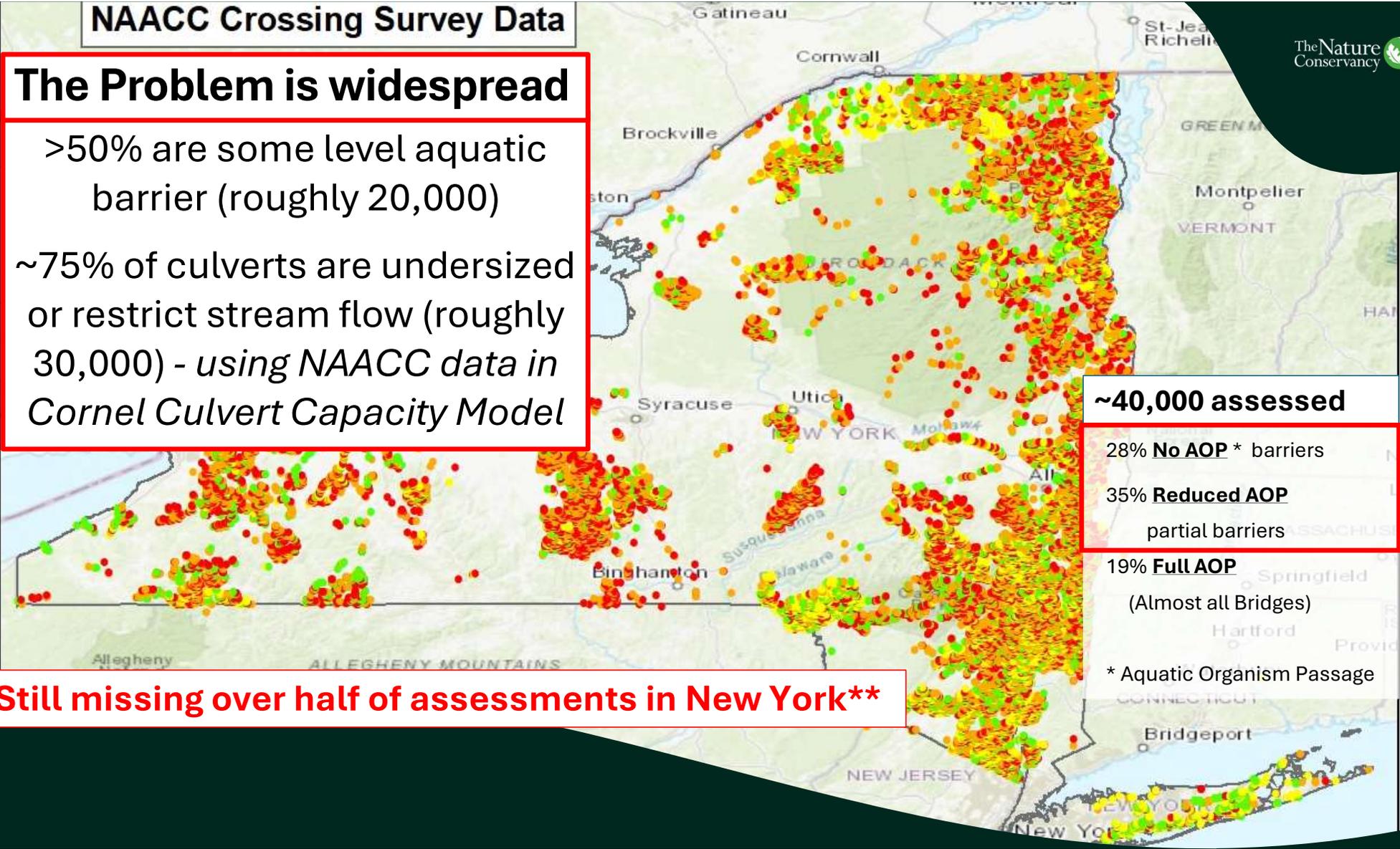
Image Credit (top and bottom): Josh LaFountain

NAACC Crossing Survey Data

The Problem is widespread

>50% are some level aquatic barrier (roughly 20,000)

~75% of culverts are undersized or restrict stream flow (roughly 30,000) - using NAACC data in *Cornel Culvert Capacity Model*



~40,000 assessed

28% **No AOP** * barriers
35% **Reduced AOP**
partial barriers

19% **Full AOP**
(Almost all Bridges)

* Aquatic Organism Passage

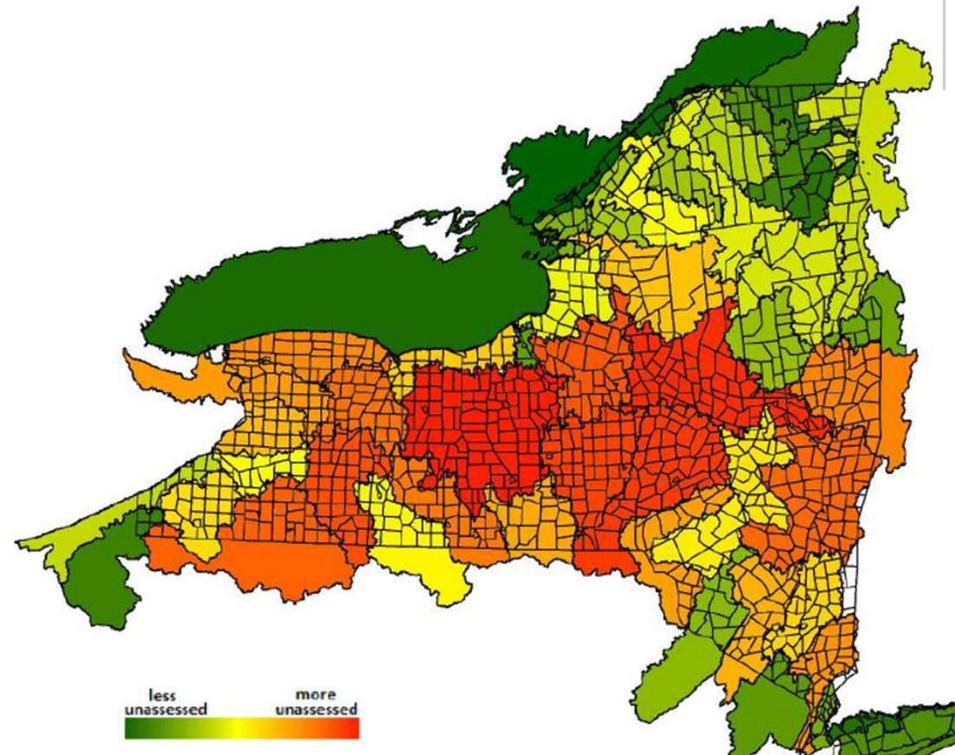
****Still missing over half of assessments in New York****

Upper Susquehanna Watershed Status

Table 1: Number of unassessed road-stream crossings by HUC 8 watershed in New York State. Data generated by NAACC Data Center and accessed 12/2024 – 1/2025. Note: Lake Erie, Long Island Sound, and Richelieu HUC 8 watersheds were excluded due to NAACC dataset errors.

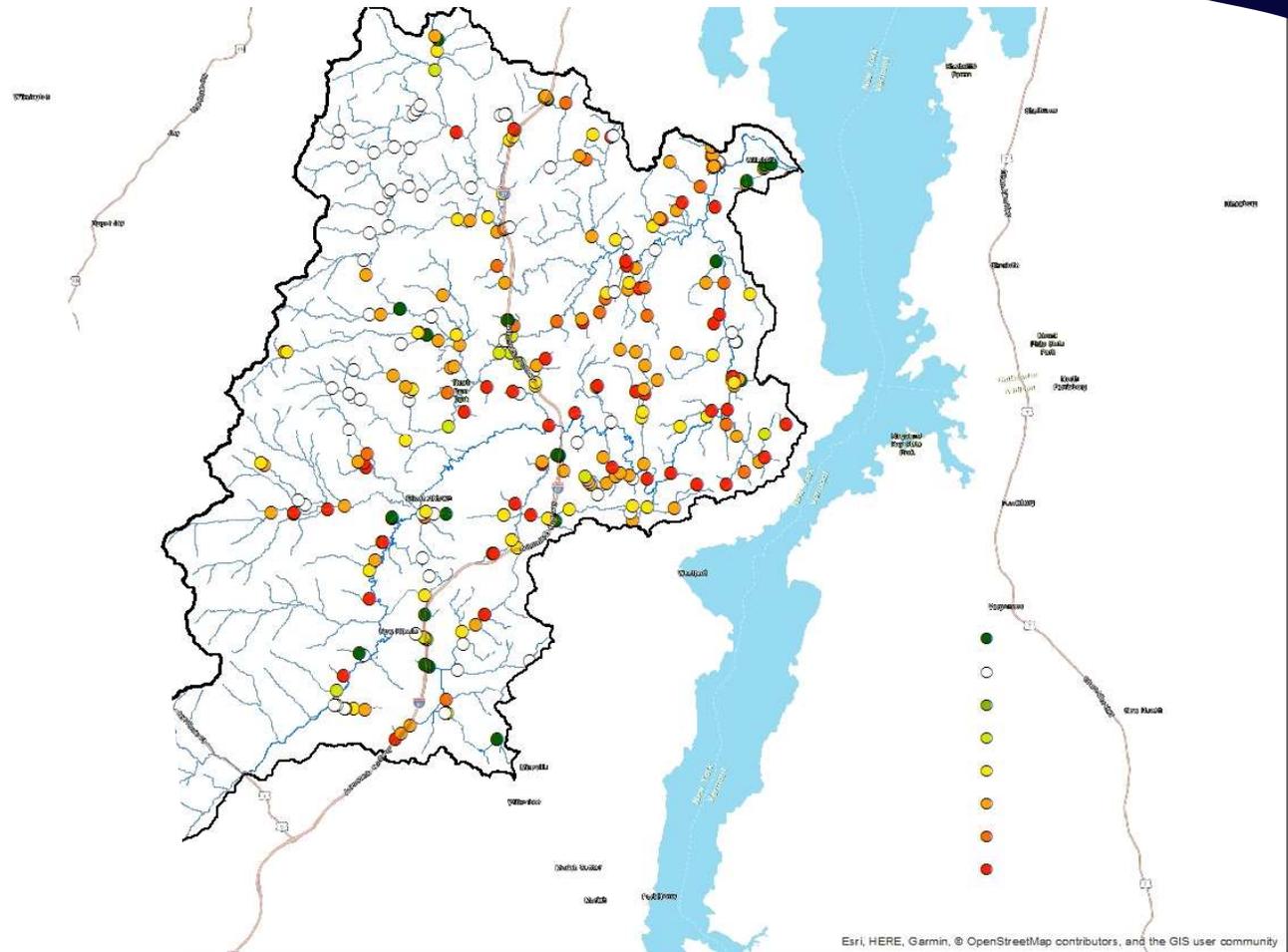
HUC8	# assessed	total crossings	# unassessed
Seneca	1651	10302	8651
Mohawk	609	6500	5891
Upper Susquehanna	636	5457	4821
Chenango	497	4011	3514
Upper Genesee	656	4169	3513
Oneida	90	3414	3324
Upper Allegheny	811	3970	3159
Mid Hudson	6573	9512	2939
Lower Genesee	413	3204	2791
Chemung	65	2643	2578
Hudson-Hoosic	1564	4023	2459
Oak Orchard-Twelvemile	603	3048	2445
Lower Hudson	747	3160	2413

1,198 out of 12,111 assessed = ~10%
~ 49% barrier moderate-severe barrier



How do we improve scale and pace?

- We're going to be better coordinated and add/share capacity
- We need to bring in more funding
- We need to assess & prioritize



Screenshot of TNC-NY Lake Champlain Basin BAT

North Country Stream Coalition - Regional Coordination Model

History:

- Some groups leading assessment/prioritization and replacement efforts since 2011, but not well coordinated & pace was slow
- Met fall 2023 to get on the same page about current projects & priorities
- Adapted a Trout Unlimited priority Matrix to define projects & readiness + over lay existing tools and useful information

Image Credit: Josh LaFountain, TNC



North Country Stream Coalition Today

- Several tools developed to help us gather information pre and post implementation
 - helping us quantify cumulative numbers (regional funding gaps, total gains)

- Over 300 partner priorities identified - culverts and dams

- Seeing a definitive increase in projects moving forward and grant applications submitted

- ***Still definitely a work-in progress***

TIER	Number of projects	Miles reconnected	Ecological	Resilience/Flooding	Water Quality	Combination	Estimated Cost	Estimated remaining cost
Tier 1 (Next 3 years)	34	158.4	5	8	2	19	\$4,200,000.00	\$3,550,000.00
Tier 2 (3-5 years)	19	41.6	2	0	0	17	TBD	TBD
Tier 3 (no timeline)	159	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Underway or funded	10	19.3					\$2,865,000.00	\$725,000.00
TOTALS	222	219.4	7	8	2	36	\$7,065,000.00	\$4,275,000.00

Identify regional partners and coordinators: Regional Stakeholder Survey

Information Gathering with partners

- Develop list of partner road-stream crossing & barrier priorities: Regional priority Matrix -
 - Plan for data collection and prioritization for longer-term, maximizing co-benefits
- Identify partner's expertise and willingness to share capacity: Organizational capacity Form

Identify opportunities for sub-working groups

Tie projects to funding sources; package projects

Identify regional plans to include projects(HMP, WMP, LWRP, Resilient NY)

Incorporate in transportation planning (TIP & STIP)

Build capacity & scale assessment efforts

Directly and quickly support high priority individual projects

Step 1: Identifying Stakeholders & Coordinators

- Identify who are the groups and people working on this in a region & connect
- Identify what groups may be interested in coordinating/facilitating role
- [Regional Stakeholder Survey](#)

Step 2: Hold kick-off meeting & collect information

- Request partners input their priority projects to the [Regional priority Matrix](#) and [Mapper](#)
 - Define project readiness in tiers and ID goal: flood reduction, connectivity, water quality
 - Define scoring metrics and scope of the Matrix (i.e. including crossings and dams, terrestrial connectivity, species)
 - Use NAACC and other available tools (CCCM, local prioritization) to inform Matrix
- Determine potential partner roles and potential for shared capacity: [Organizational capacity Form](#)
- [Example Agenda and resources](#) for these meetings*
- **Continue to collect information & updates regularly:** [Completed project form](#), [Mapper](#)

Step 3: Identify potential working groups and direct project support

- Facilitate sub-meetings where priorities among multiple partners overlap in a watershed or priority area
 - Discussions at this level are often much more detailed at the project level and drill down to the main projects that the working group can advance
- Identify how partners can help support projects that are ready to move quickly
 - i.e., projects that have had a design or where a partner is ready to submit for an open or upcoming funding source (Tier 1's in Matrix)
 - Projects that are more complicated such as large culvert-bridge upgrades or dam removals

Step 4: Connect priorities to funding and plans

- Work through inputted priorities and determine what might be a potential good funding source
 - Generate list of recurring and potential funding sources and their goals/criteria and limitations– flood resilience, Aquatic Organism, water quality improvement, etc. Then identify the projects that might fit based on project goals and benefits
 - Package like projects where able to increase competitiveness
 - Define roles: Project manager, grant writer/administrator, permitting, geomorph/design + cost share opportunities
- Identify plans that may open up additional funding opportunities & steps to get these projects included
 - i.e., TIP & STIP, Hazard Mitigation, Watershed Management Plans/9E plans, LWRP plans, RWG grant

Becoming more critical with a changing funding landscape

Step 5: Build Capacity and fill data gaps

- Identify groups interest in NAACC, Stream Smart, project management trainings or shadowing opportunities for projects already in progress
 - Coordinate these training opportunities within the region (if no trainers exist, NAACC-NY trainers may be able to help)
 - Target engineers and contractors in the region who you may be working with to also build their knowledge and capacity – this may require assigning continuing education credits or direct sponsorship for their time
- Identify data gaps: NAACC (aquatic, terrestrial, and condition) and overlapping data to inform priorities
 - Identify other helpful prioritization tools and data. i.e., what NAACC assessments have been done, are there other prioritizations, flood data, land protection/linkage data, Transportation organization lists that exist and can be used to further drill down to priorities
 - Determine focal areas/watershed and how the group can complete these assessments. i.e., can the group get a planning grant, hire seasonals to complete assessments, work with SWCD's?
 - Identify other priority data to include in Matrix or separate prioritization tool – species specific data (ex. Trout streams), climate data (ex. cold water refugia), transportation/EMS and evacuation routes, traffic volumes, etc.

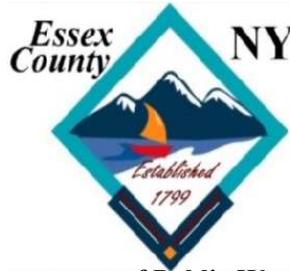
Benefits of this approach

- Gets partners priorities quickly & starts them moving through planning process
- Tiered approach lets partners ID what projects they are most ready towards implementation
- Identifying expertise and partner capacity helps to connect priorities and organizations on projects or working groups
- Including metrics such as cost estimate and mileage gain allows for summarizing these metrics for a focal area quickly
- Quickly gets to data gaps, priority gaps in region, and partners needs

What's next?

- Tool improvement & flow of engagement
- Try exporting model to new regions
 - Long Island + LIS, Great Lakes/Finger Lakes, Lower Hudson Watershed, Upper Delaware
- Increase coordination with transportation planning process
- Increase visibility for more potential funding opportunities

Acknowledgements



Department of Public Works



Department of Environmental Conservation



Department of Transportation

Questions & Discussion

Josh LaFountain
Freshwater Specialist
The Nature Conservancy

josh.lafountain@tnc.org

Image Credit: Josh LaFountain, TNC

