ASSESSING TIDAL ROAD CROSSINGS IN THE SOUTH ATLANTIC

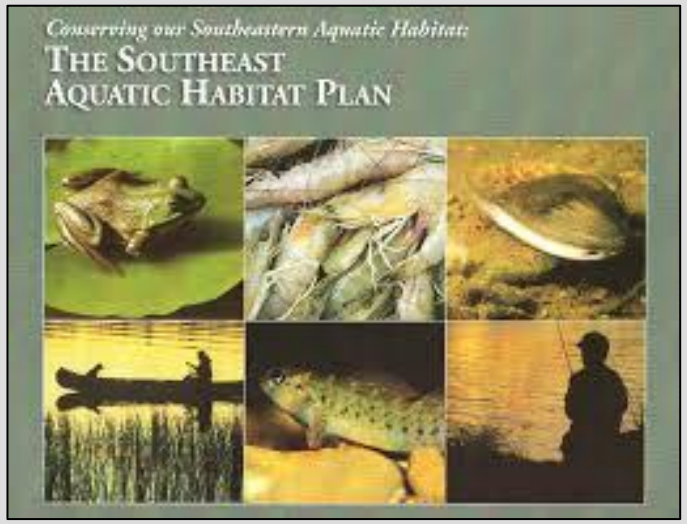
Kat Hoenke, GIS Coordinator

SOUTHEAST AQUATIC RESOURCES PARTNERSHIP

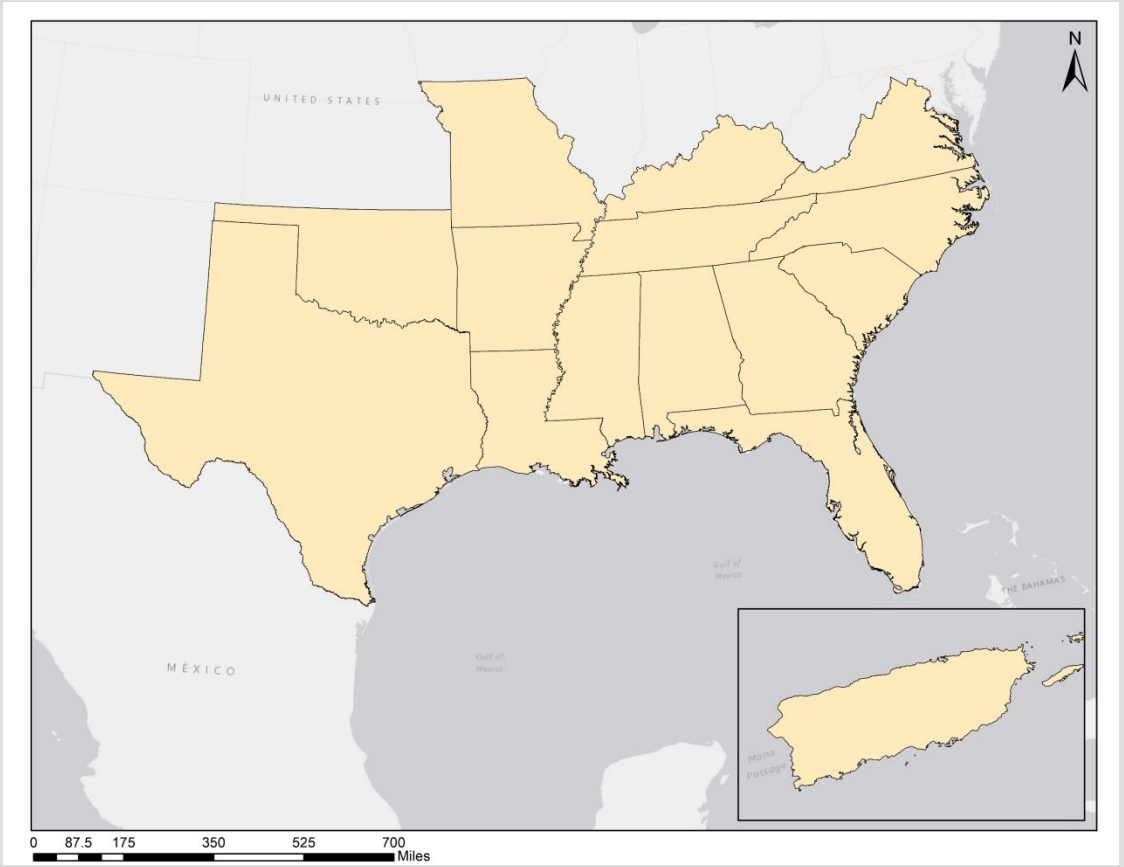
Mission

SARP will, with partners, protect, conserve and restore aquatic resources including habitats throughout the Southeast for the continuing benefit, use and enjoyment of the American people.

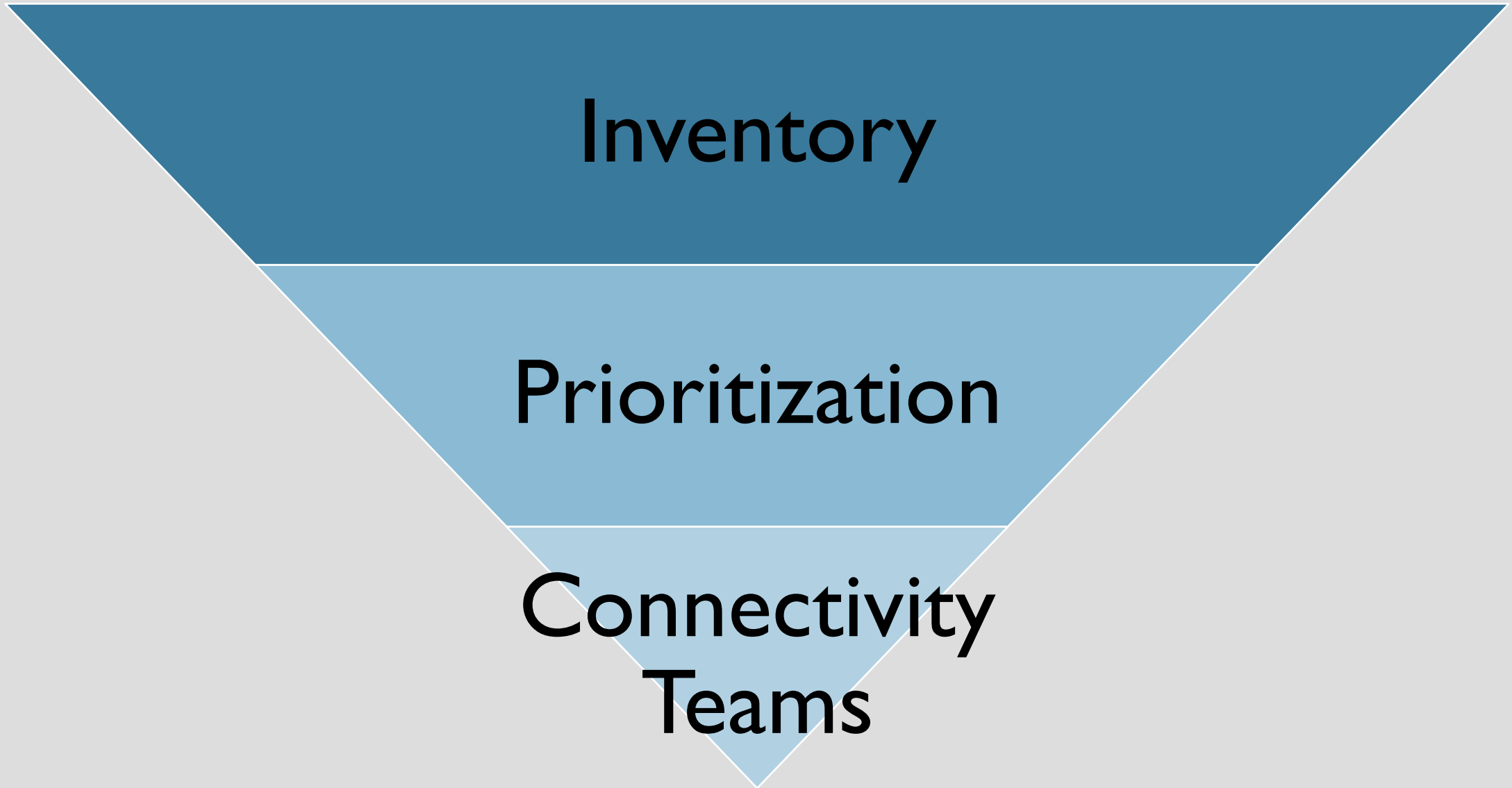
SOUTHEASTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES

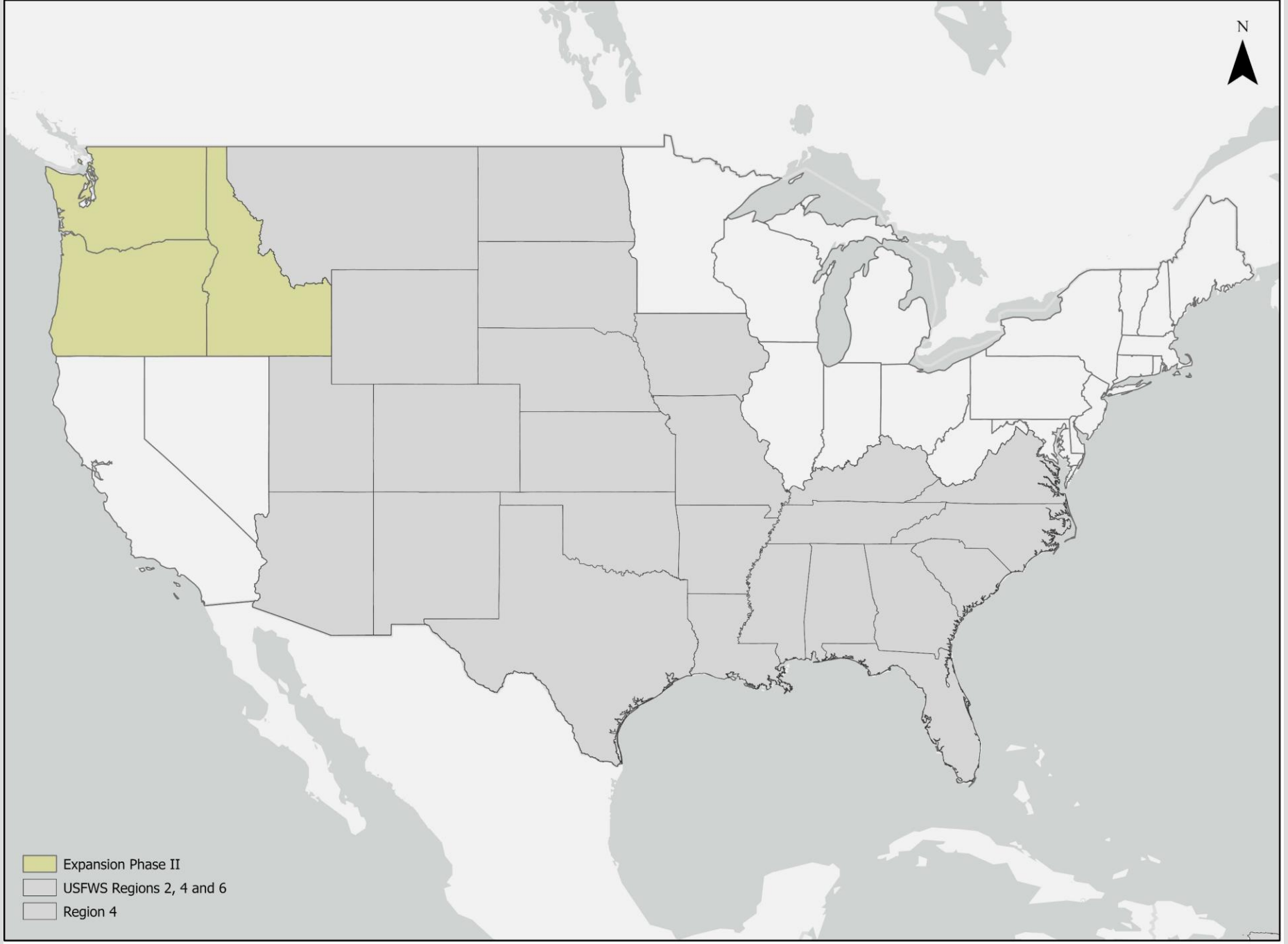


NATIONAL FISH HABITAT PARTNERSHIP



SARP CONNECTIVITY PROGRAM

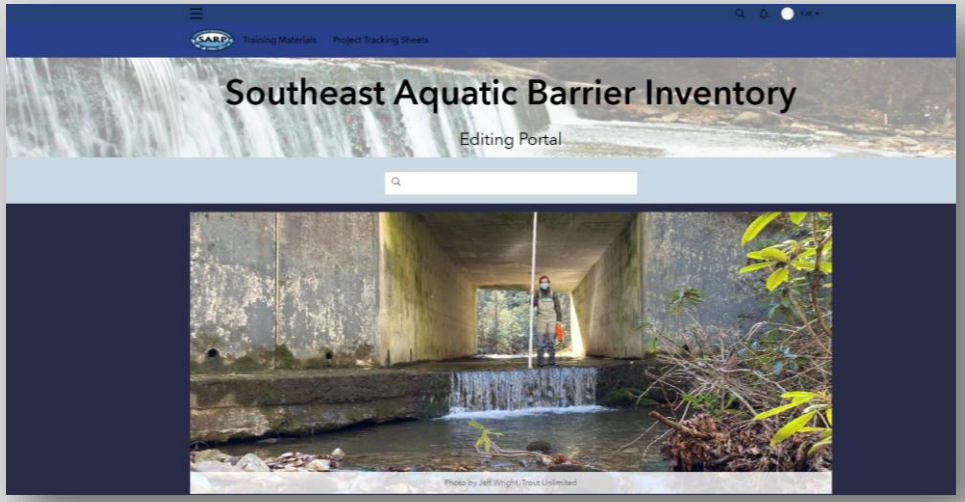


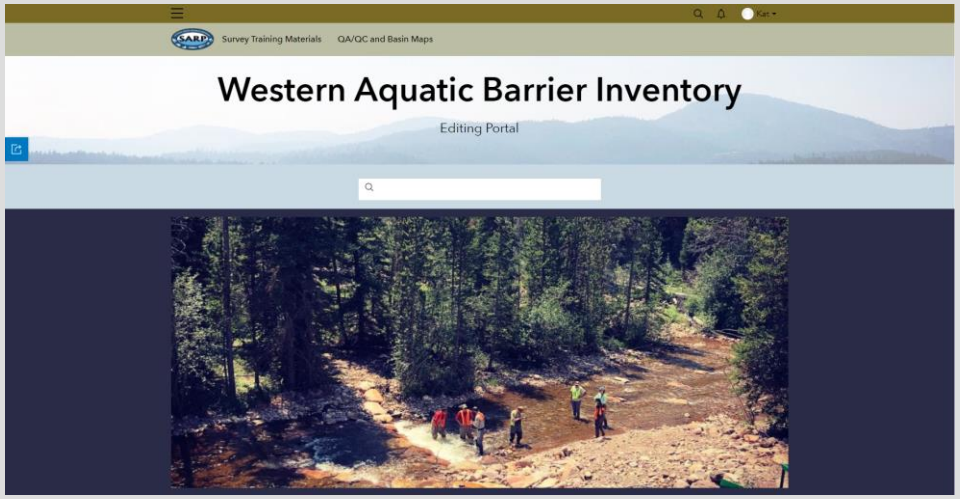

N
Expansion Phase II
USFWS Regions 2, 4 and 6
Region 4
0 180 360 720 1,080 1,440
Miles

SARP CONNECTIVITY PROGRAM

Inventory

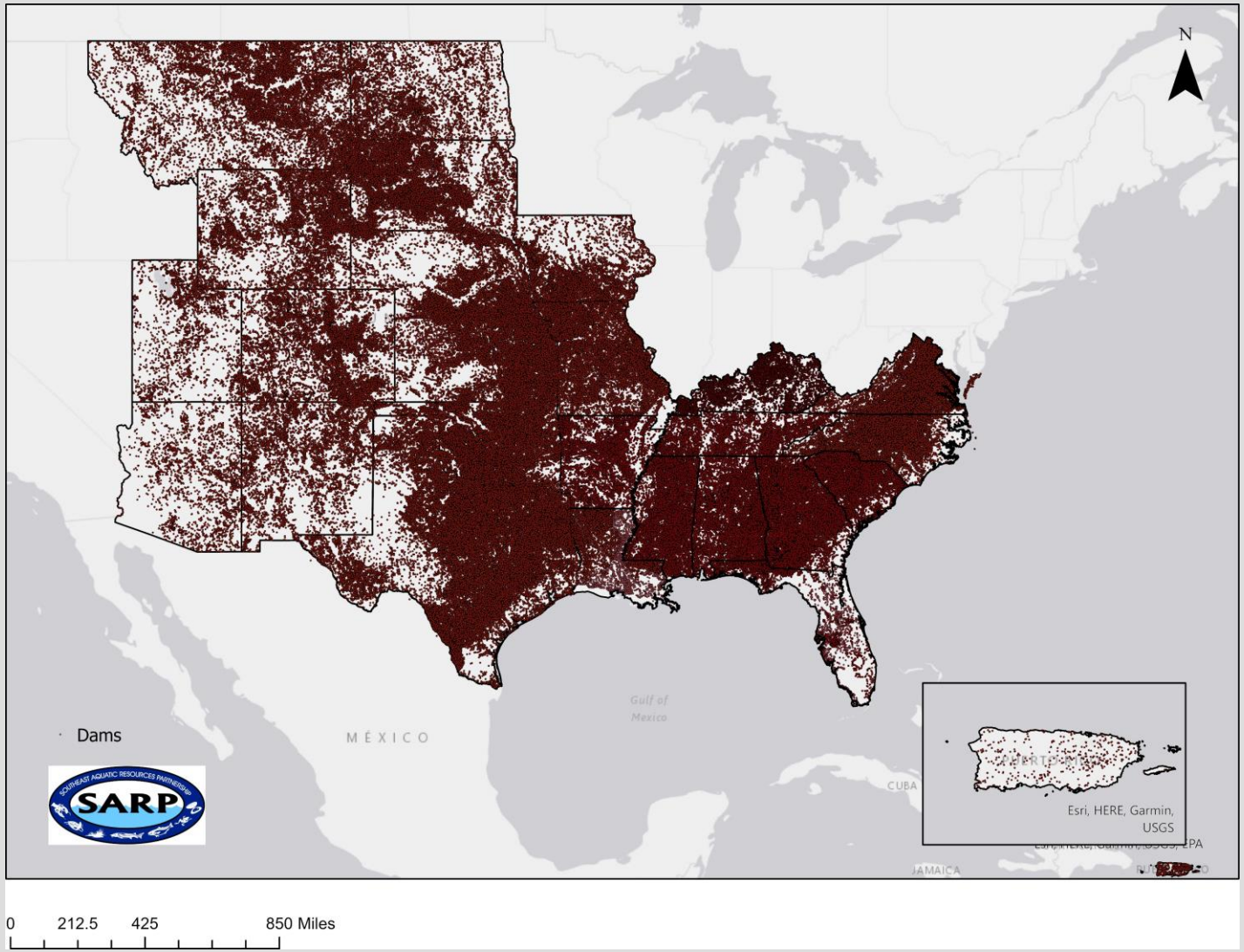
- Dams
- Road Crossings
- Waterfalls

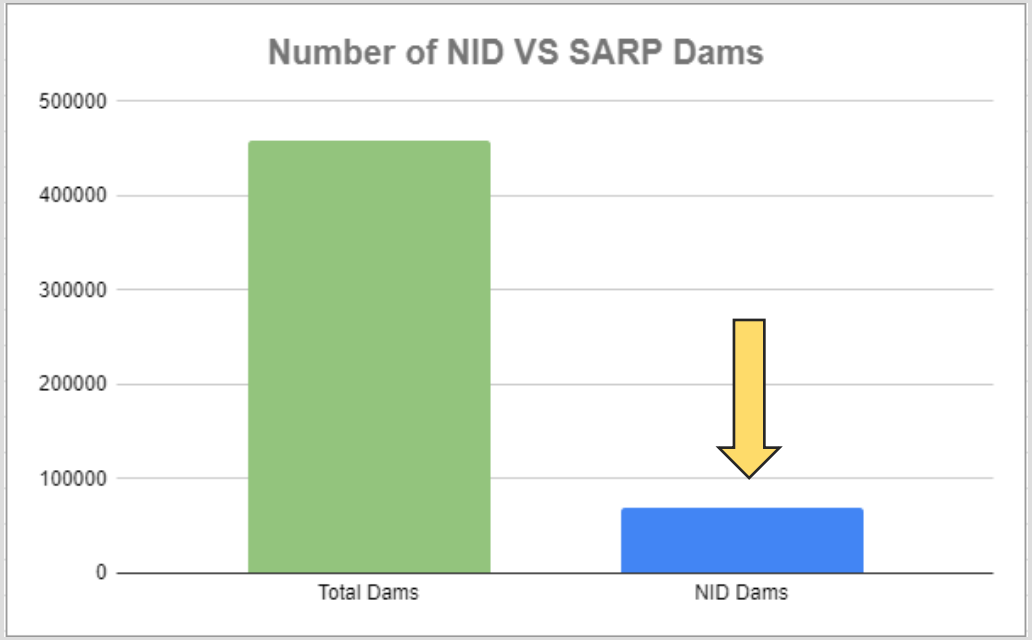




Inventory

Dams

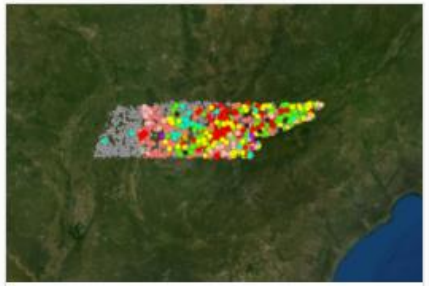




Aquatic Barrier Prioritization Tool

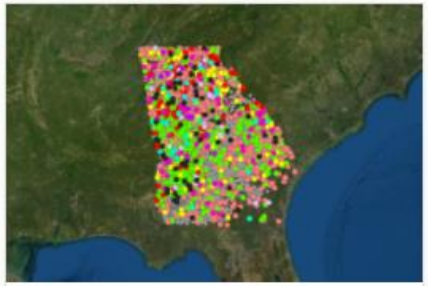
Instructions to Edit Barriers in Each Webmap: 1) Click on the appropriate box below. **2)** When the map opens, select "I want to use this." **3)** Then, click "Open in ArcGIS online." **4)** Now, you will be able to edit individual points. If performing social feasibility reconnaissance, click below to read instructions.

Read Dam Recon Instruction Manual



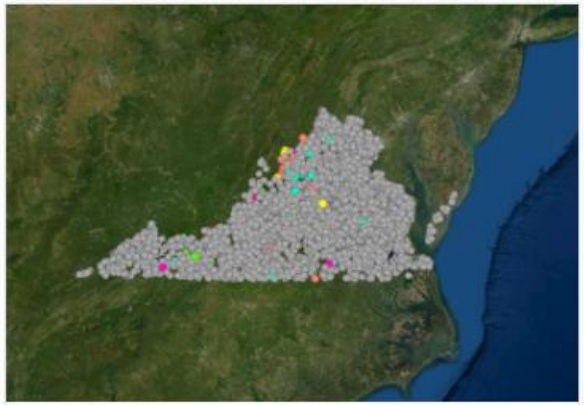
01 Tennessee Aquatic Connectivity Team Map

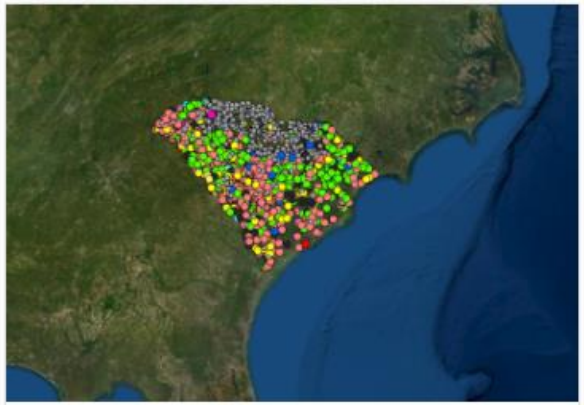
02 North Carolina Aquatic Connectivity Team Map

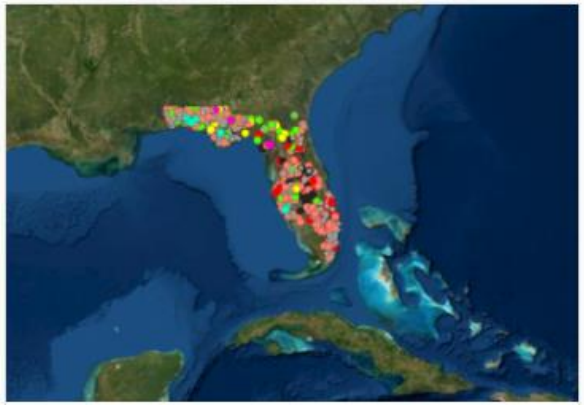


03 Georgia Aquatic Connectivity Team Map

04 Arkansas Stream Heritage Partnership...







modify area of interest

Filter dams

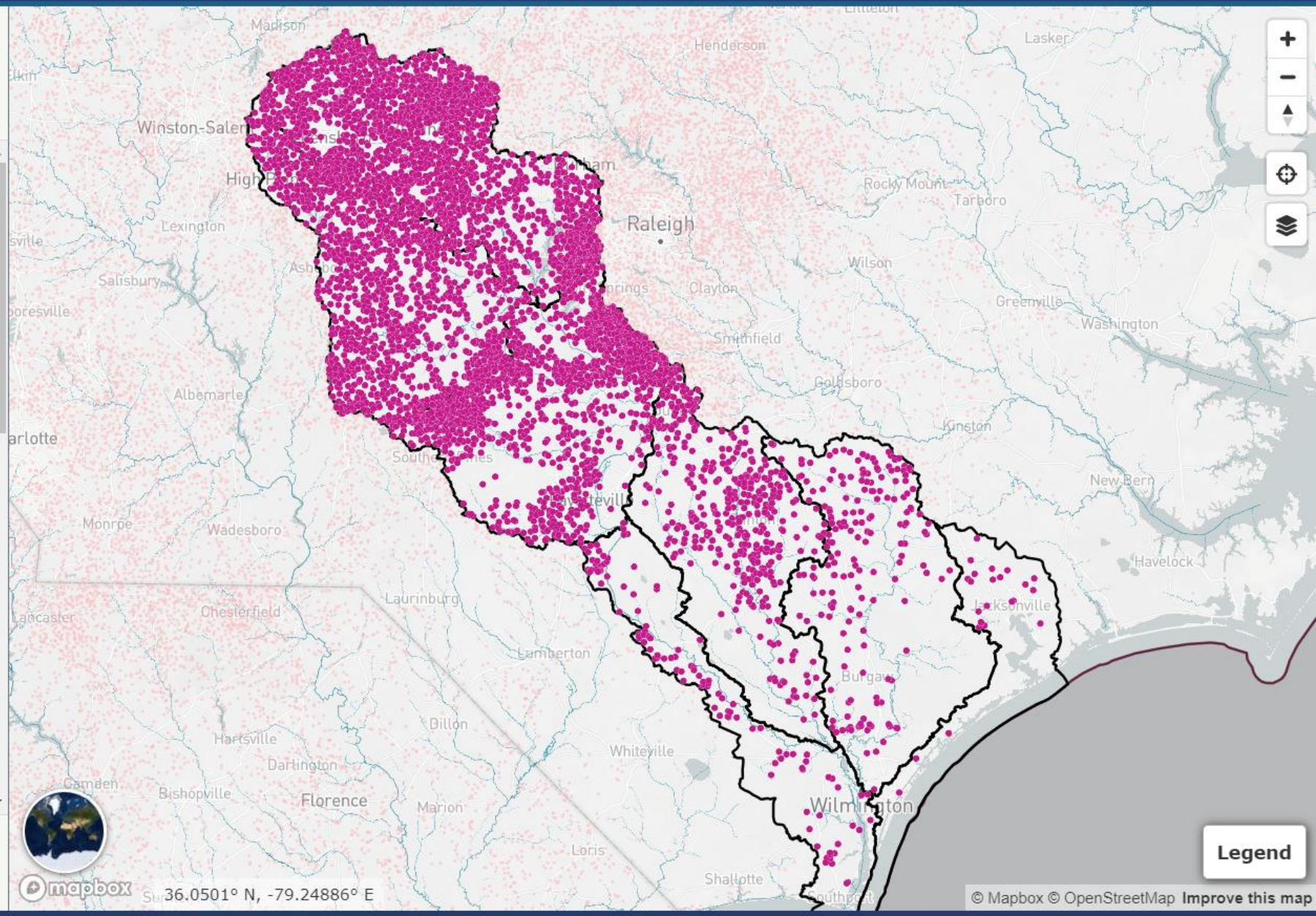
7,998 selected

[OPTIONAL] Use the filters below to select the dams that meet your needs. Click on a bar to select dams with that value. Show more ...

⚠ The following filters do not have sufficient unique values to support using them in this area: Trout presence / absence, SARP conservation opportunity areas.

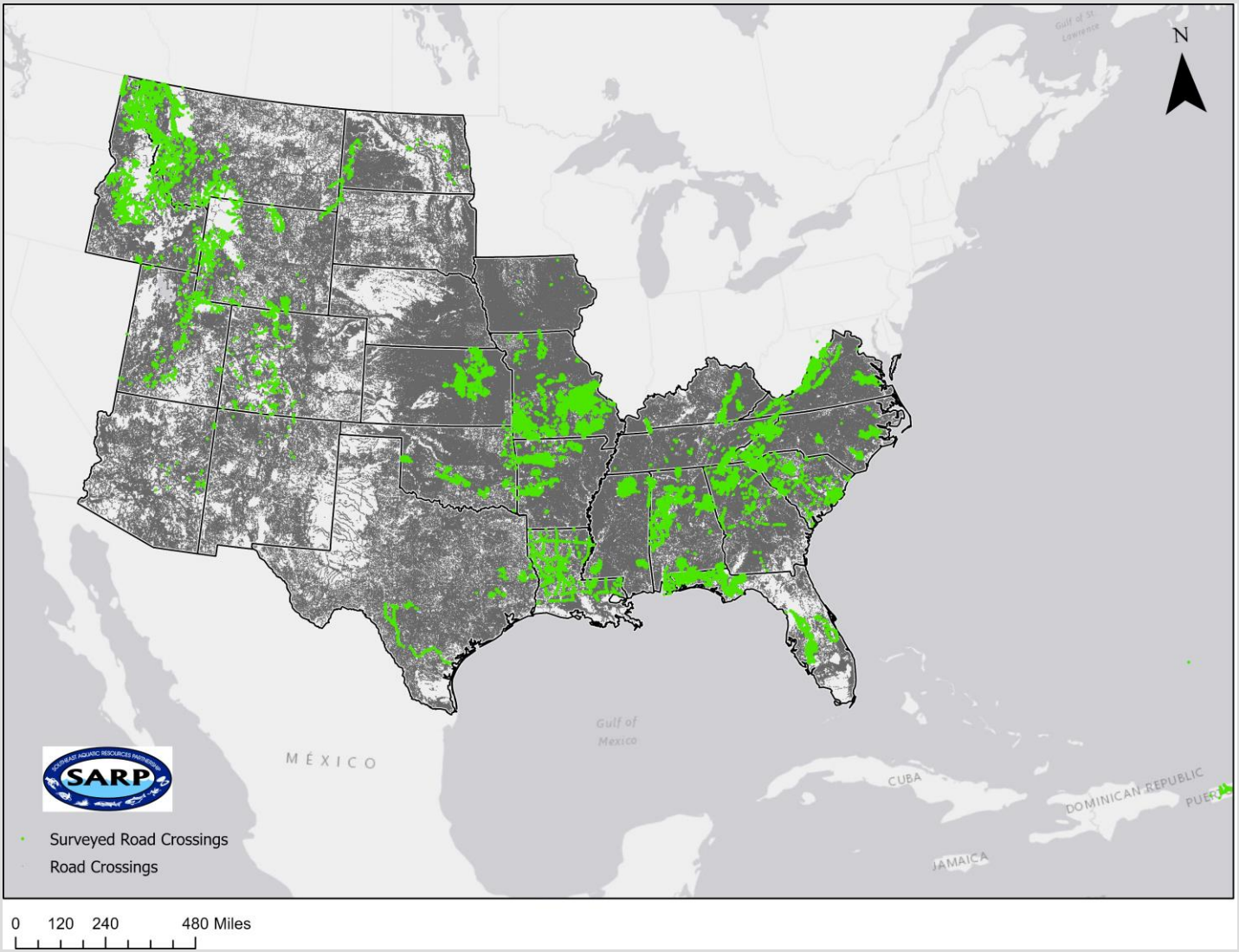
- **Feasibility & Conservation Benefit**
- **Miles Gained**
- **Dam Height**
- **Number of Federally-Listed Threatened & Endangered Species**
- **Number of State-listed Species of Greatest Conservation Need**
- **Stream Order (NHD modified**

Prioritize dams



Inventory

Road Crossings



- 37,801 assessed

- 46% are barriers

Severity	Number	Percent
No Barrier	20222	53%
Moderate Barrier	1536	4%
Barrier Non-Specific	11784	31%
Major Barrier	4259	11%

Inventory

Home ▾ Volunteer AOP Survey123 Results

Open in

Details | Add ▾ | Edit | Basemap | Analysis | Save ▾ | Share | Print ▾ | Directions | Measure | Bookmarks | Find address or

About | Content | Legend

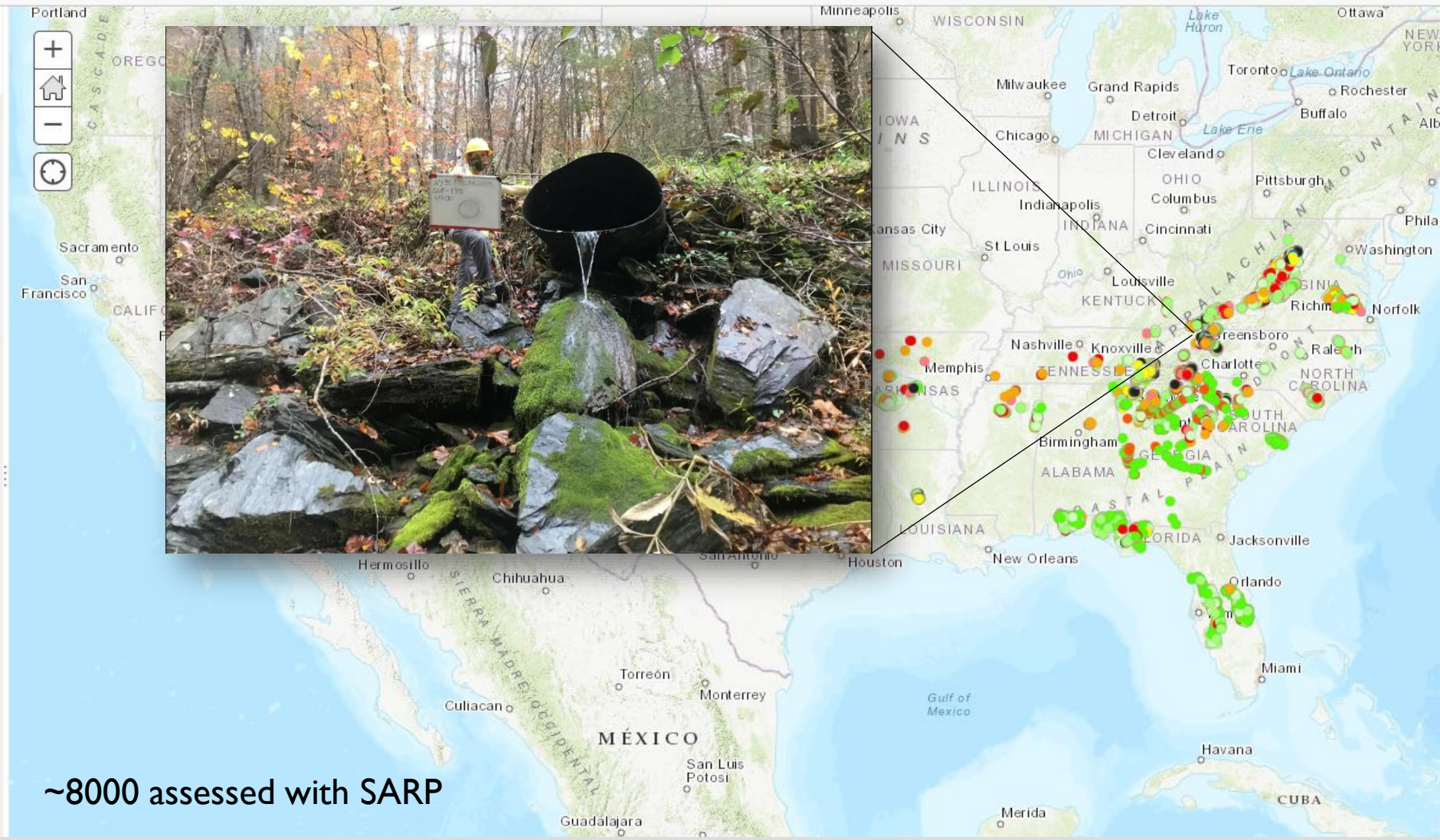
Legend

05012019 SARP AOP Stream Crossing Survey Protocol

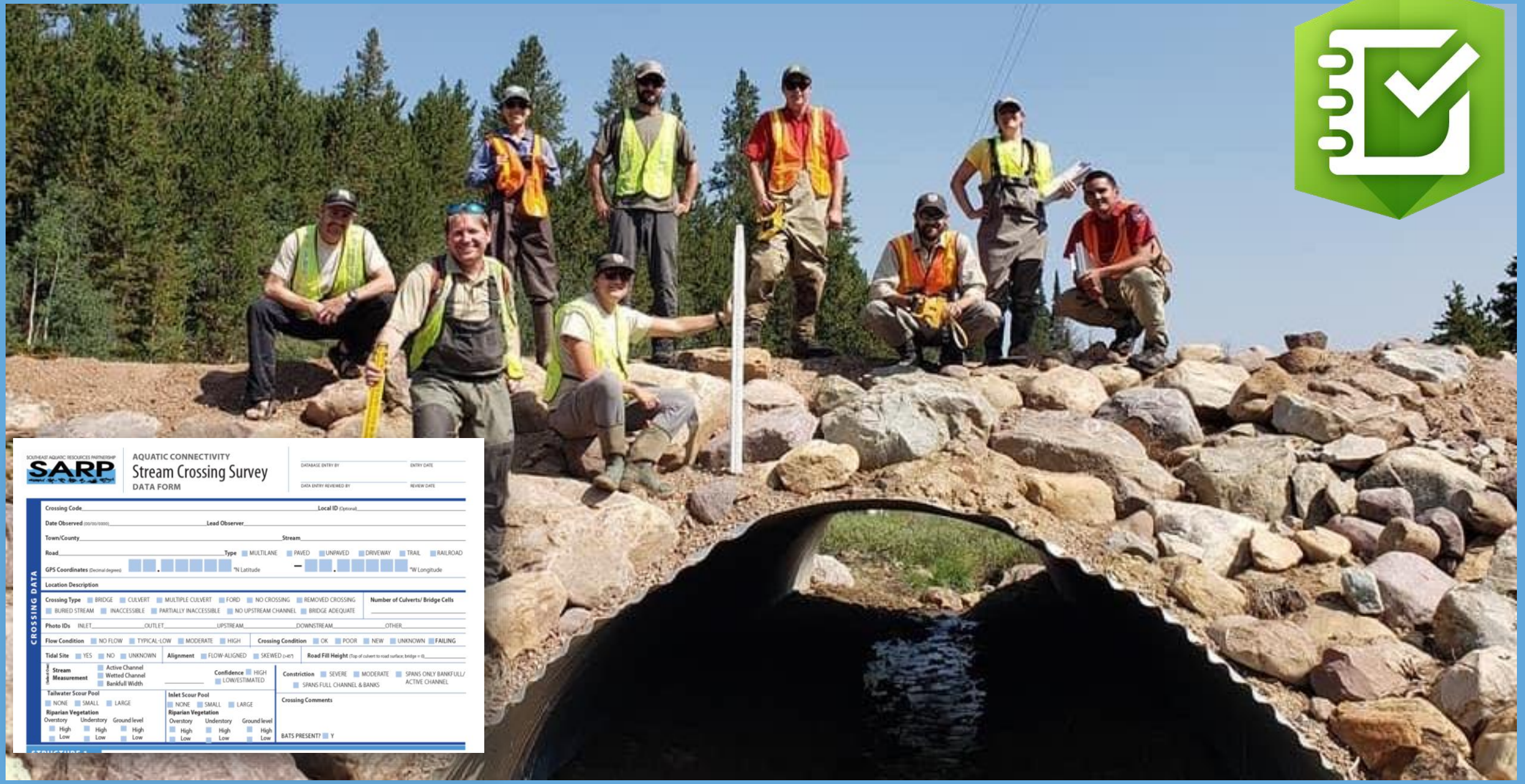
- Severe Barrier
- Minor Barrier
- No Upstream Channel
- Insignificant Barrier
- No Barrier
- Moderate Barrier
- Significant Barrier
- No Crossing
- Inaccessible
- Not Scored
- Buried Stream

SARP AOP Coarse Survey Form

- No Drop
- Severe Drop
- Significant Drop
- Minor Drop
- Insignificant Drop
- Moderate Drop



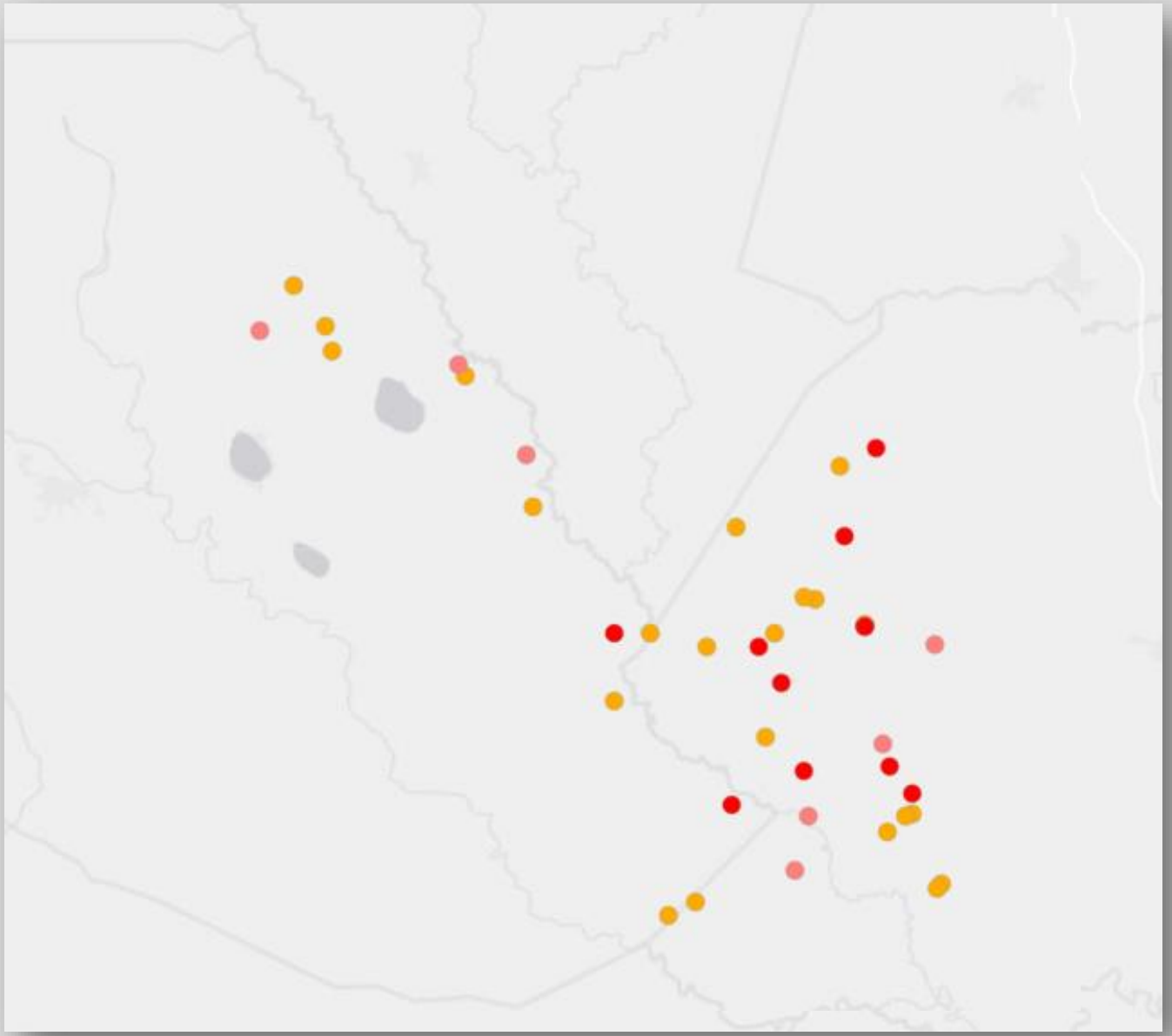
~8000 assessed with SARP



Bear River training

NON-TIDAL AOP IN BLACK RIVER

- Over 200 culverts assessed with non-tidal protocol
- >30 are moderate – severe barriers



NAACC TIDAL

Focuses on:

- Constriction
- Tidal Constriction
- Perch
- Tide Gates
- Physical Barriers

		Crossing Classification			
		Good AOP	Moderate AOP	Poor AOP	No AOP
		If all are true	*If not RED or Orange and any are true*	*If not RED and any are true*	*If any are true*
Metric	**Flow Condition**				
Constriction ratio		≥ 1.5	≤ 1.5		
Tidal constriction		≥ 1.0	≤ 1.0		
Water depth	High tide	≥ 1.0	0.4 – 0.99	< 0.4	
Inlet perch	Low tide	0 ft.	≤ 1.0 ft.		
Inlet perch	High tide	0 ft.	0 ft.	0 < x < 2.5 ft.	> 2.5 ft.
Outlet perch	Low tide	0 ft.	< 0.25 ft.		
Outlet perch	High tide	0 ft.	0 ft.	0 < x < 2.5 ft.	> 2.5 ft.
Tide gate barrier severity		No tide gate	Minor or moderate	Severe	No aquatic passage
Other physical barrier severity		No barrier	Minor or moderate	Severe	No aquatic passage

DETAILED SCORING

- Limiting Factors:
  - Perch
  - Physical Barriers
  - Tide Gates

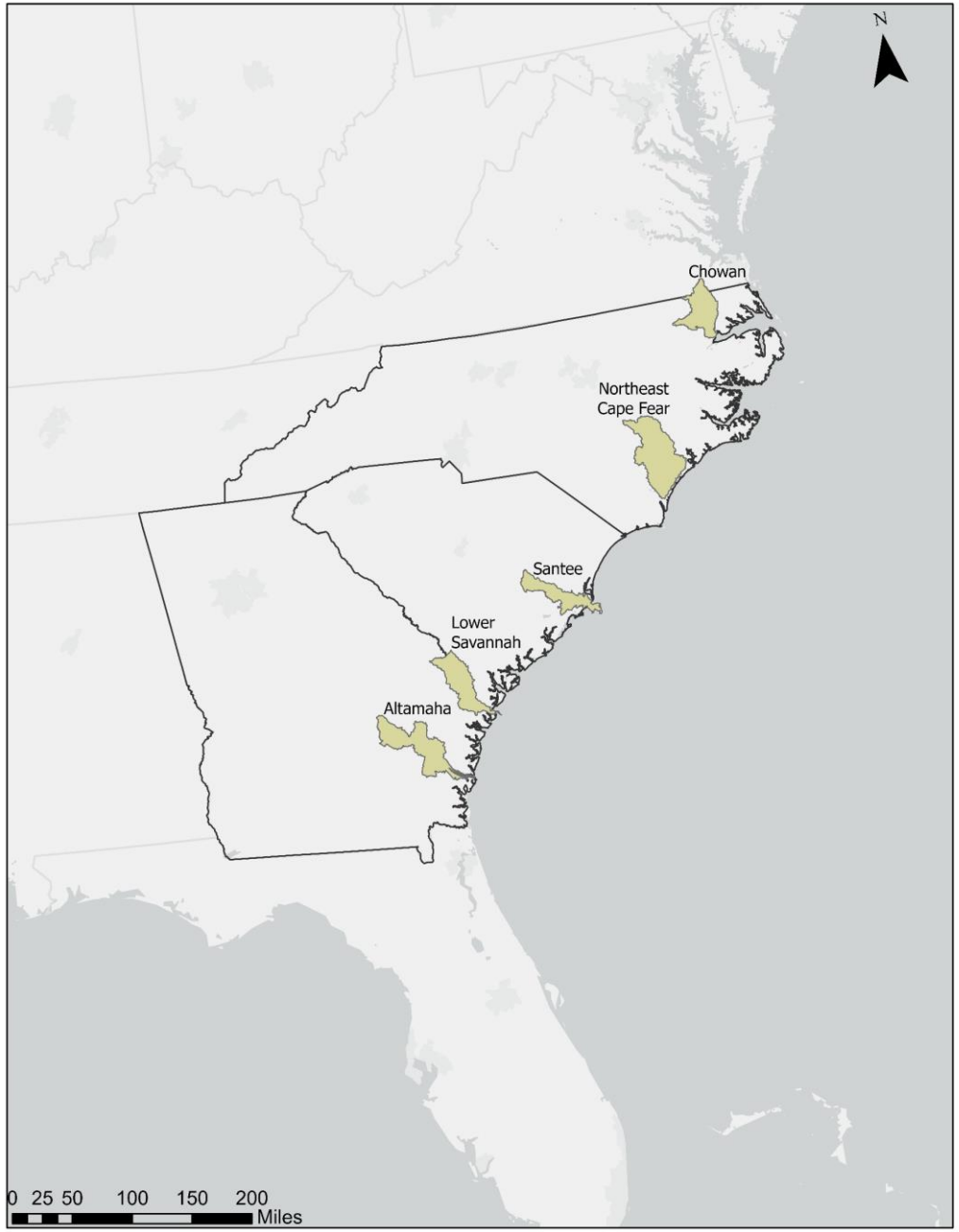
Variable	Salt marsh creek	Salt/brackish flow-through river/stream	Freshwater tidal river/stream
Constriction ratio	11.84	14.93	18.18
Tidal constriction	19.58	20.04	10.49
Vegetation change: upstream vs. downstream	14.32	8.07	4.90
Water depth at high tide	2.41	2.55	2.45
Downstream scour	5.84	6.22	6.64
Upstream scour	5.84	6.22	4.90
Inlet perch at low tide	3.51	5.45	5.94
Outlet perch at low tide	9.81	10.95	11.19
Inlet armoring	4.01	1.47	3.15
Outlet armoring	3.53	1.11	4.20
Crossing openness	9.97	9.51	16.08
Substrate comparability	4.88	7.31	5.94
Substrate coverage	4.47	6.18	5.94
Total	**100**	**100**	**100**

Step 4: Limiting Variables. A limiting variable is one that is so important that its score should take precedence if it is lower than the composite score (weighted average). Limiting variable were identified by consensus of the Technical Advisory Committee. All three tidal crossing types have the same four limiting variables.

- Funded to collect data using tidal protocol at ~200 sites In 5 basins.
  - -Lower Cape Fear
  - -Chowan
  - -Santee
  - -Lower Savannah
  - -Altamaha

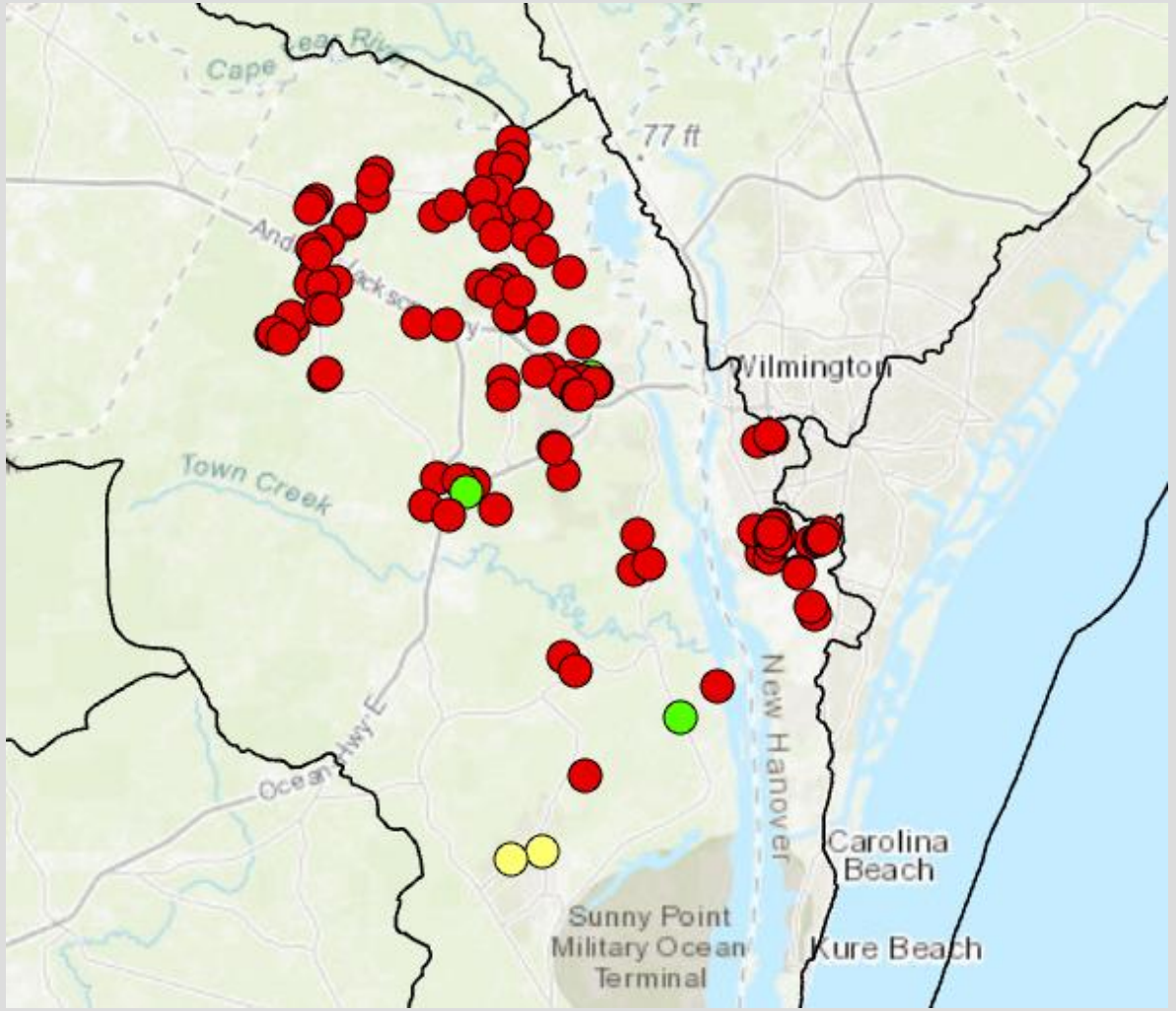
- Use flood model data from TNC to predict constriction at crossing sites to plan surveys

- Prioritize top barrier sites for remediation



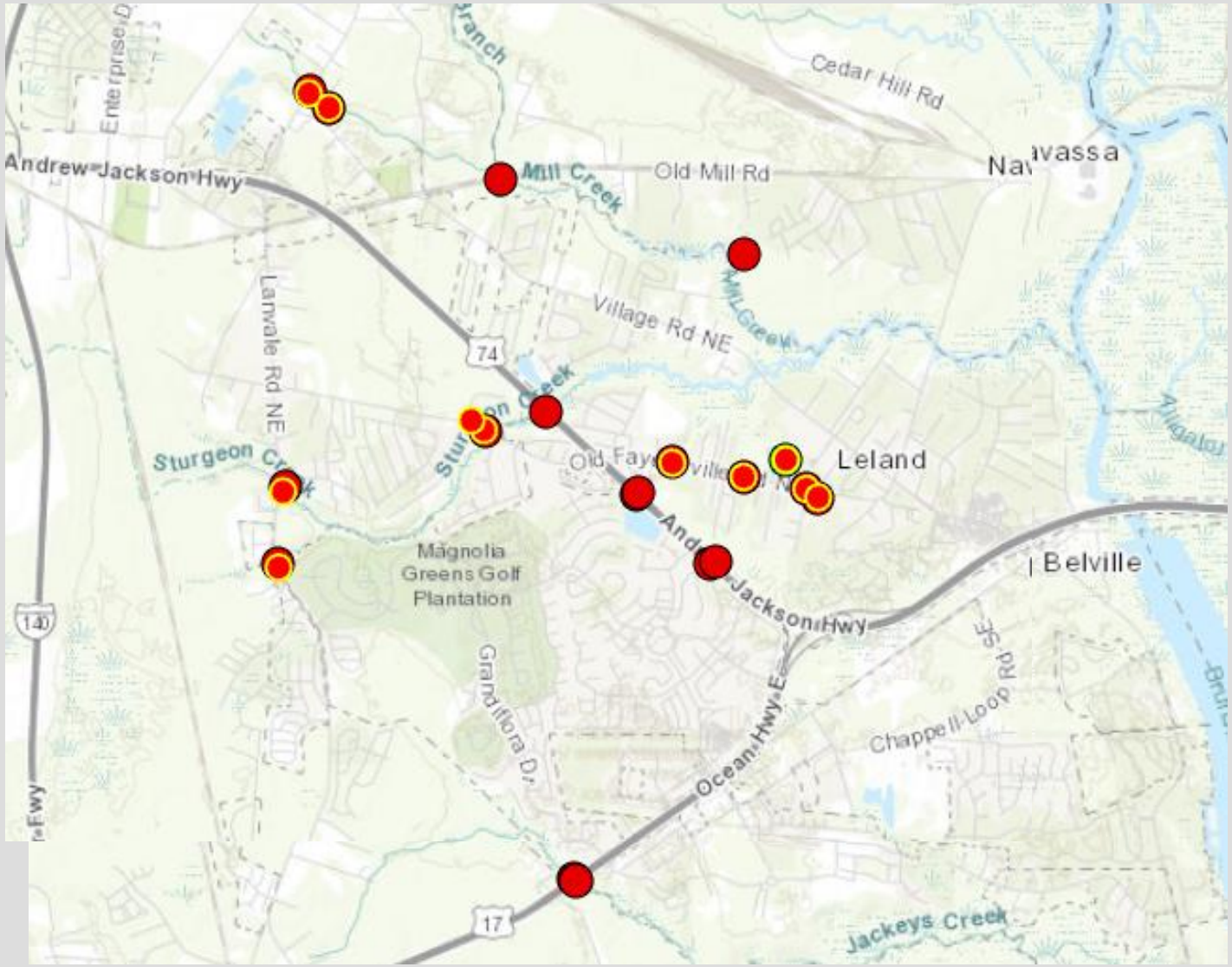
APPLICATION TO CAPE FEAR

- Met with towns of Leland and Nevassa
- Asked for possible problem sites
- Identified ~100 crossings for survey
- Used TNC flood model data to determine which might be problems
- Kris Bass Engineering is performing assessments
- Estimated completion: August 2022

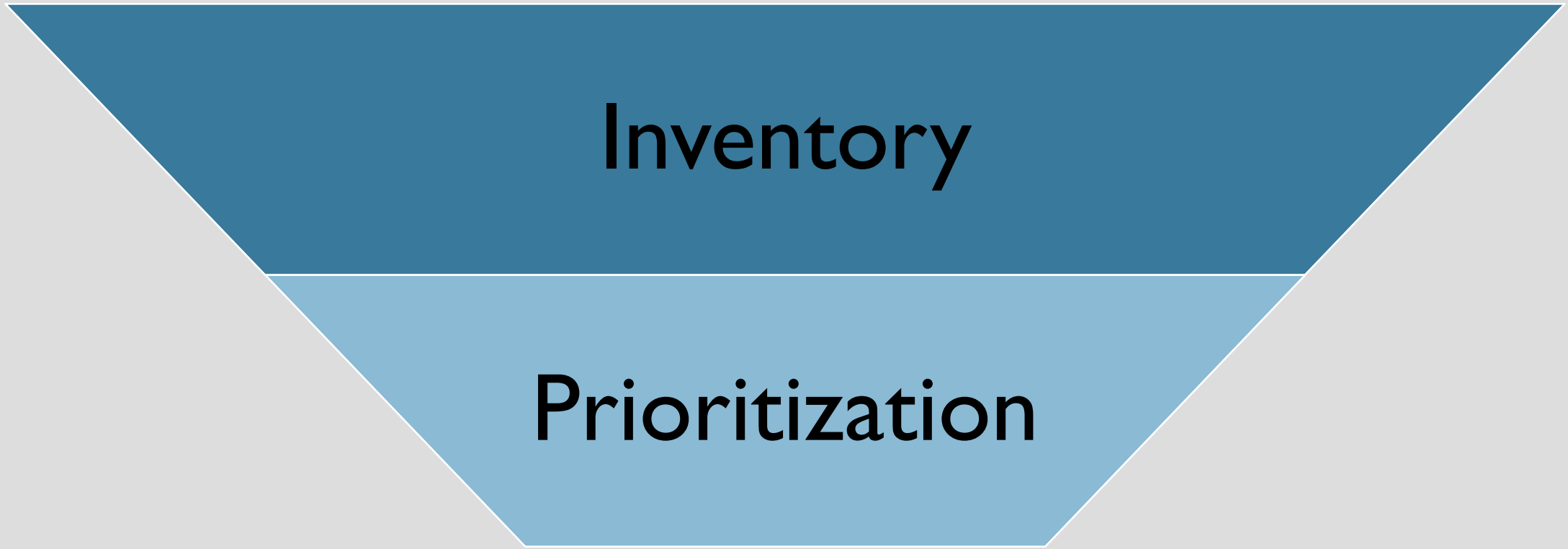


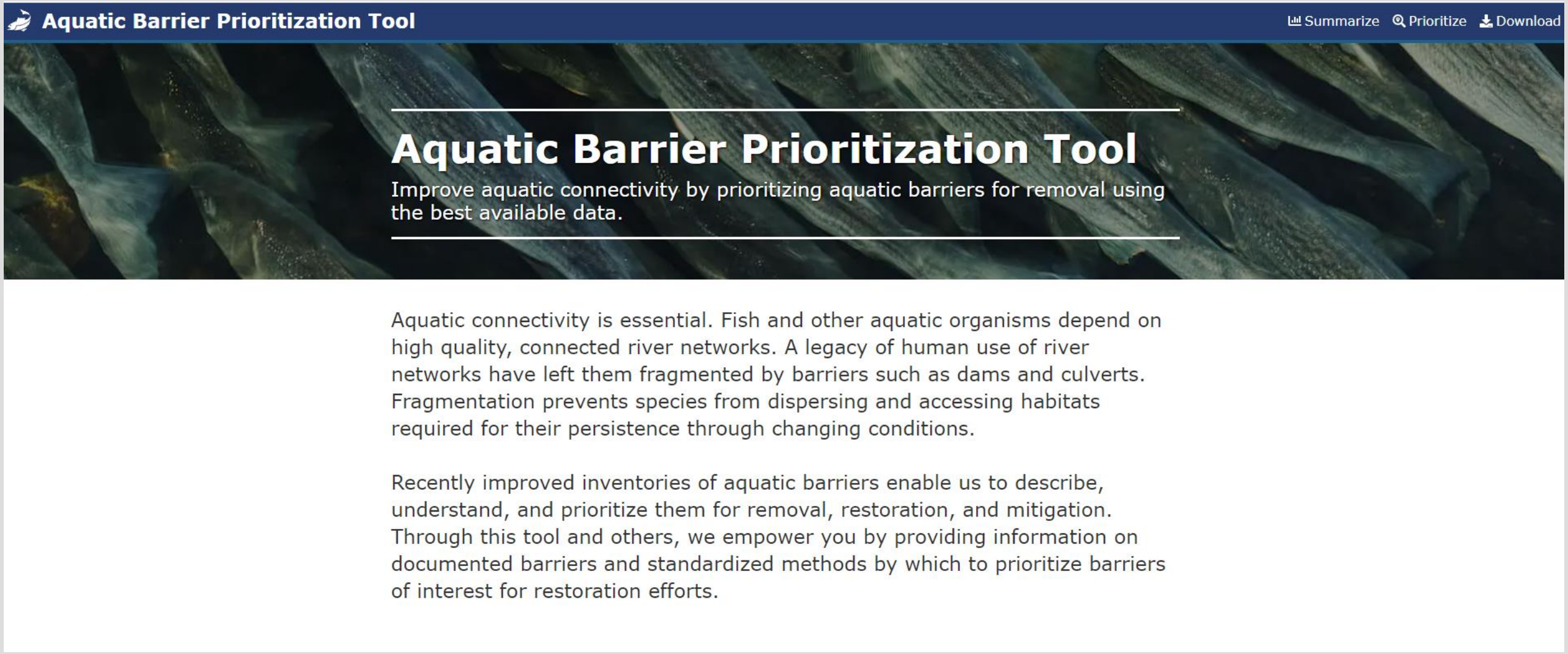
SO FAR…..

- 11 sites surveyed
- QAQCing survey scores



SARP CONNECTIVITY PROGRAM

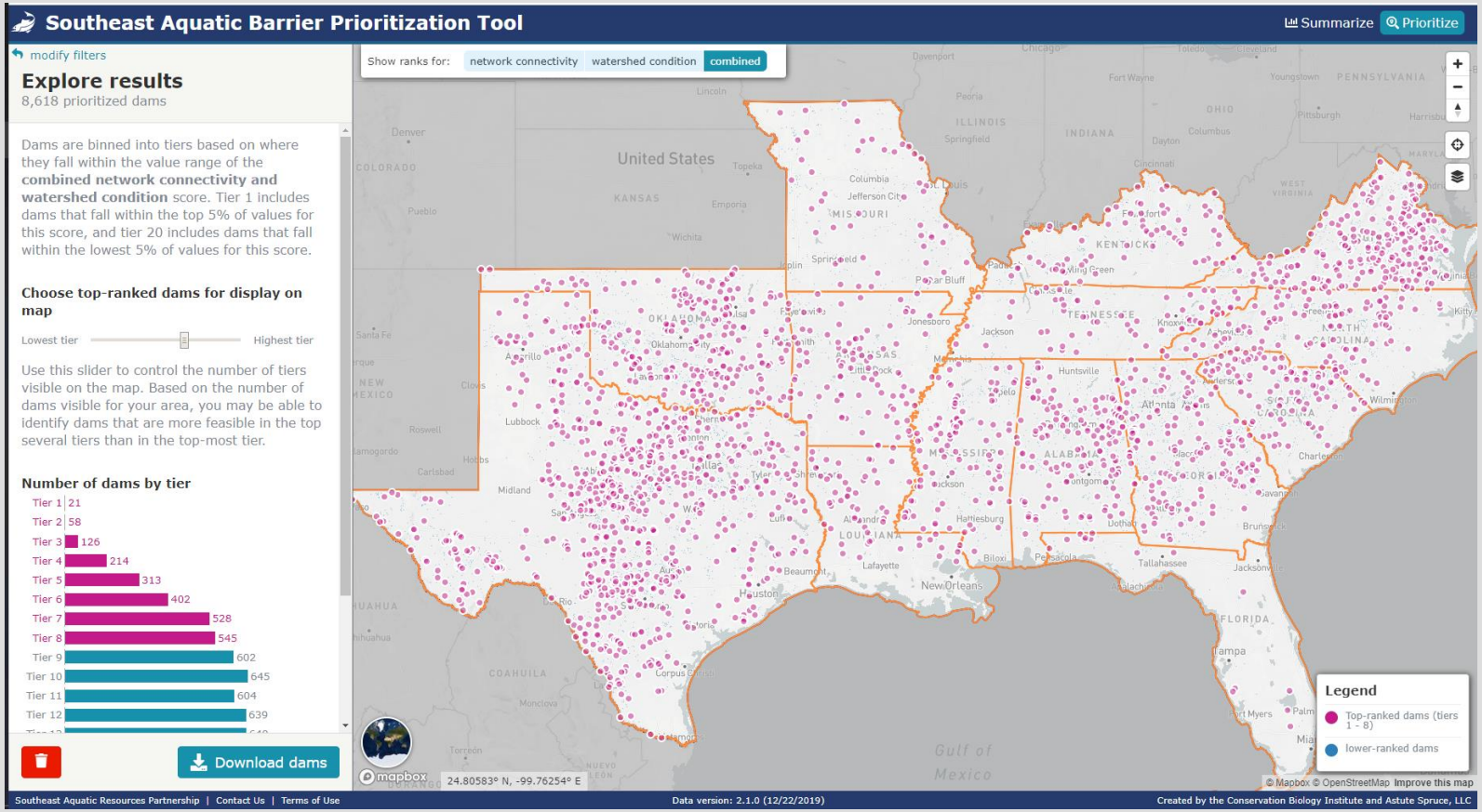




connectivity.sarpdata.com

PRIORITIZATION

- Improve or maintain watershed connectivity
- Move from opportunistic to a strategic approach to barrier removal fish passage improvement
- Support management decisions



Prioritization

INDICATORS

Network Length

Network length measures the amount of connected aquatic network length that would be added to the network by removing the barrier. Longer connected networks may provide more overall aquatic habitat for a wider variety of organisms and better support dispersal and migration.

Read more...

Network Complexity

Network complexity measures the number of unique upstream size classes that would be added to the network by removing the barrier. A barrier that has upstream tributaries of different size classes, such as small streams, small rivers, and large rivers, would contribute a more complex connected aquatic network if it was removed.

Read more...

Channel Alteration

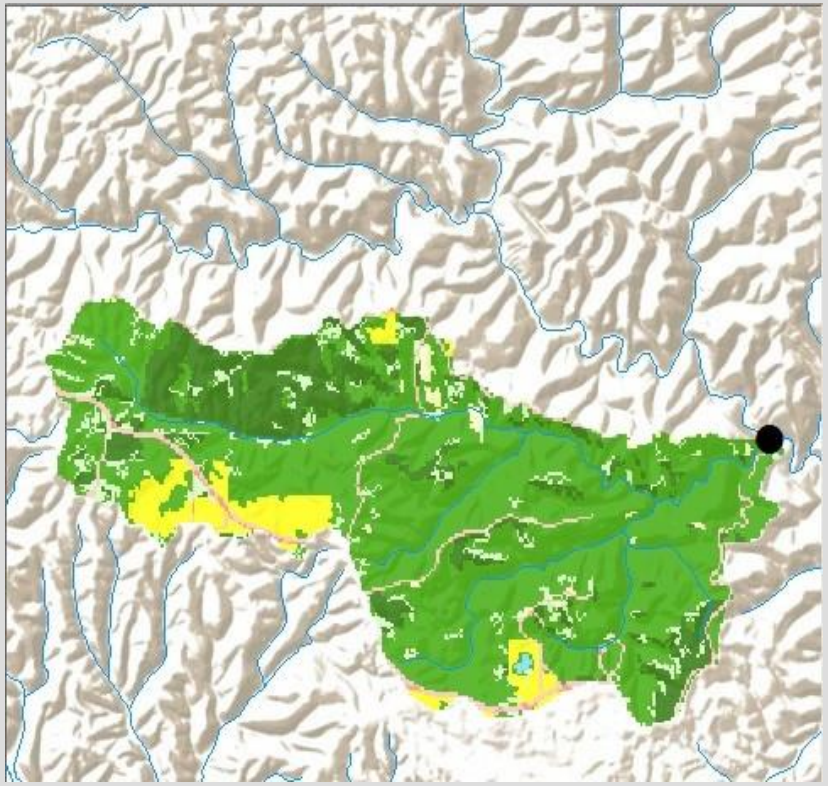
Altered river and stream reaches are those that are specifically identified as canals or ditches. These represent areas where the hydrography, flow, and water quality may be highly altered compared to natural conditions.

Read more...

Natural Landcover

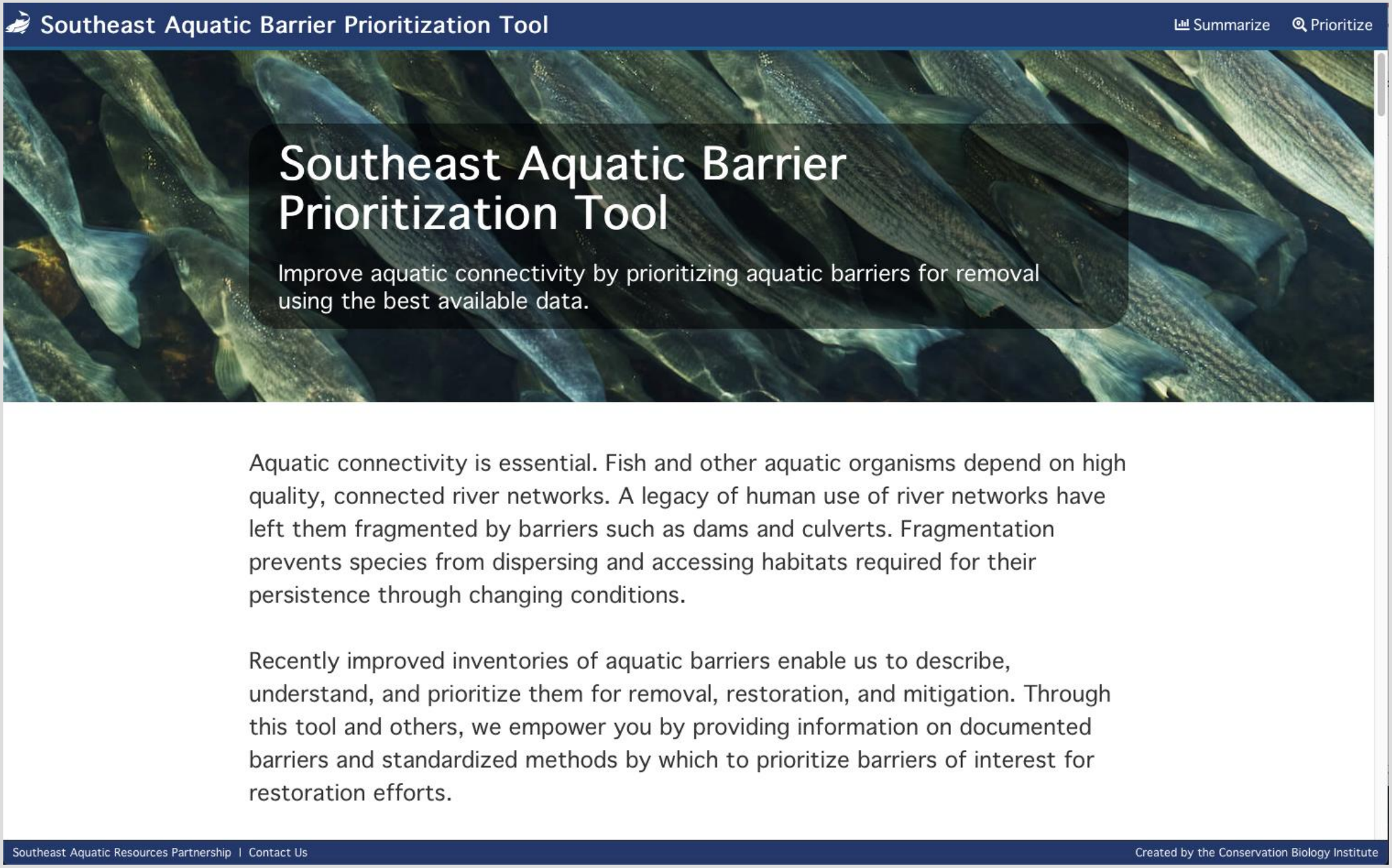
Natural landcover measures the amount of area within the floodplain of the upstream aquatic network that is in natural landcover. Rivers and streams that have a greater amount of natural landcover in their floodplain are more likely to have higher quality aquatic habitat.

Read more...



The landcover types present in a contributing watershed of a dam on the Ozark National Forest.

Prioritization



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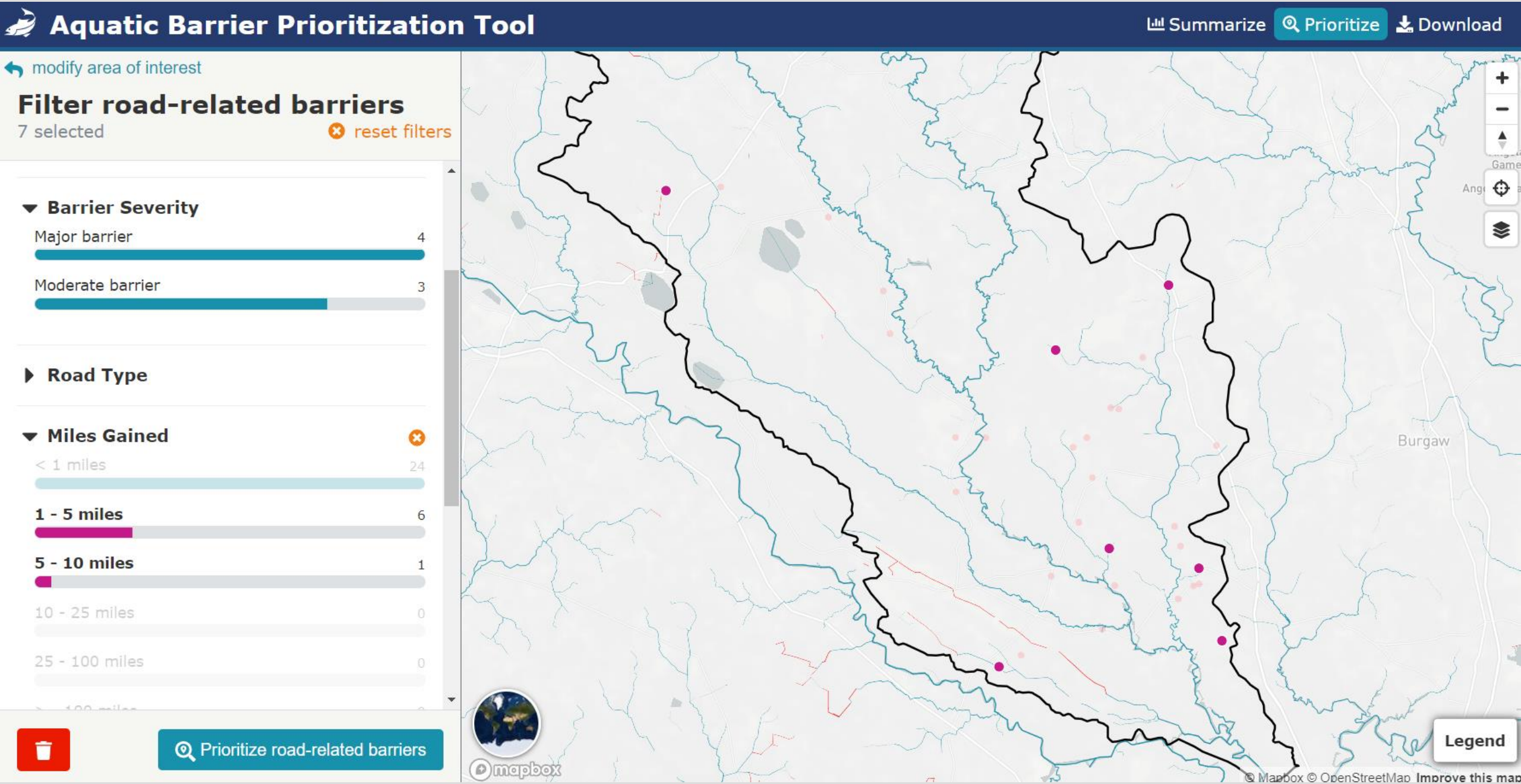
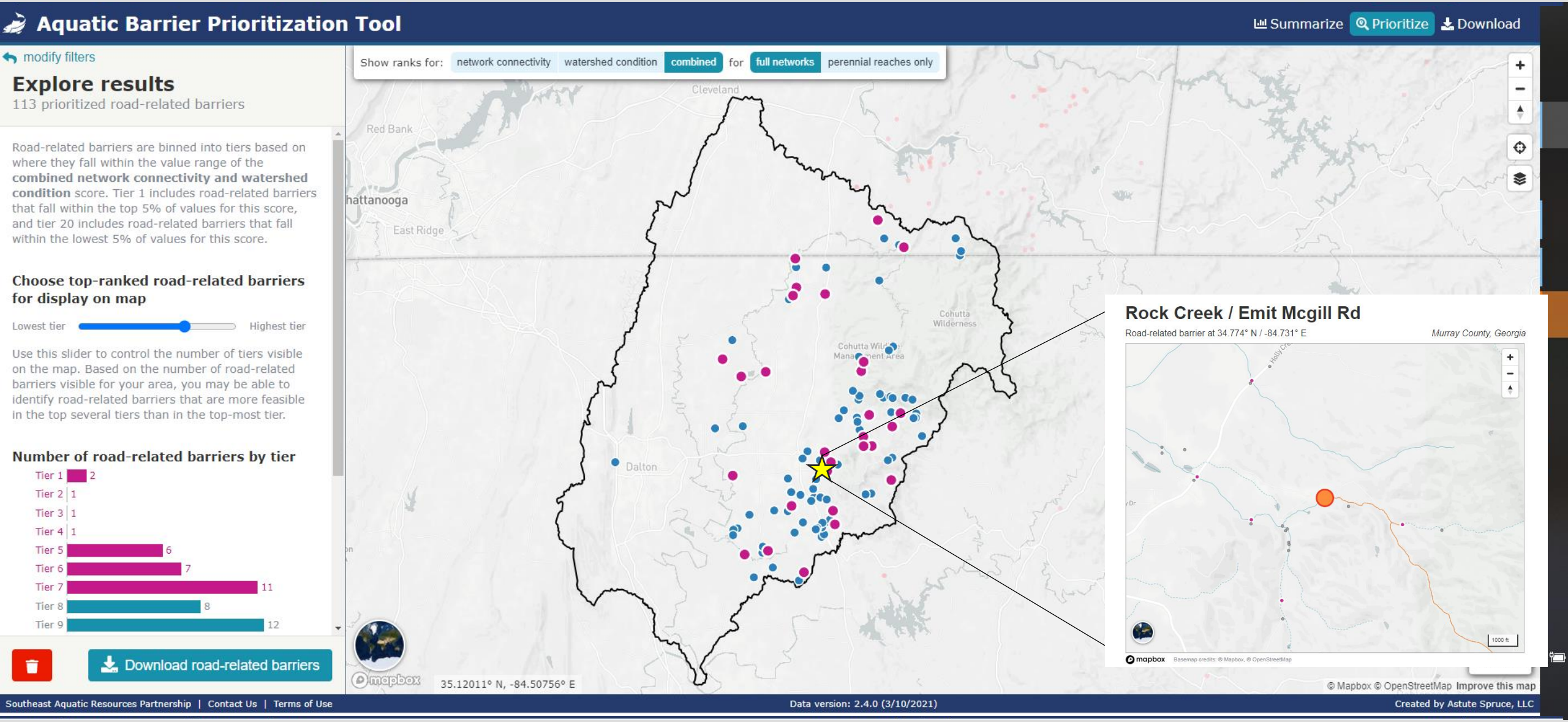

Aquatic Barrier Prioritization Tool
Summarize
Prioritize
Download
modify area of interest
Filter road-related barriers
7 selected
reset filters
Barrier Severity
Major barrier 4
Moderate barrier 3
Road Type
Miles Gained
< 1 miles 24
1 - 5 miles 6
5 - 10 miles 1
10 - 25 miles 0
25 - 100 miles 0
Prioritize road-related barriers
Burgaw
Legend
mapbox
© Mapbox © OpenStreetMap Improve this map

ROAD BARRIER PRIORITIZATION

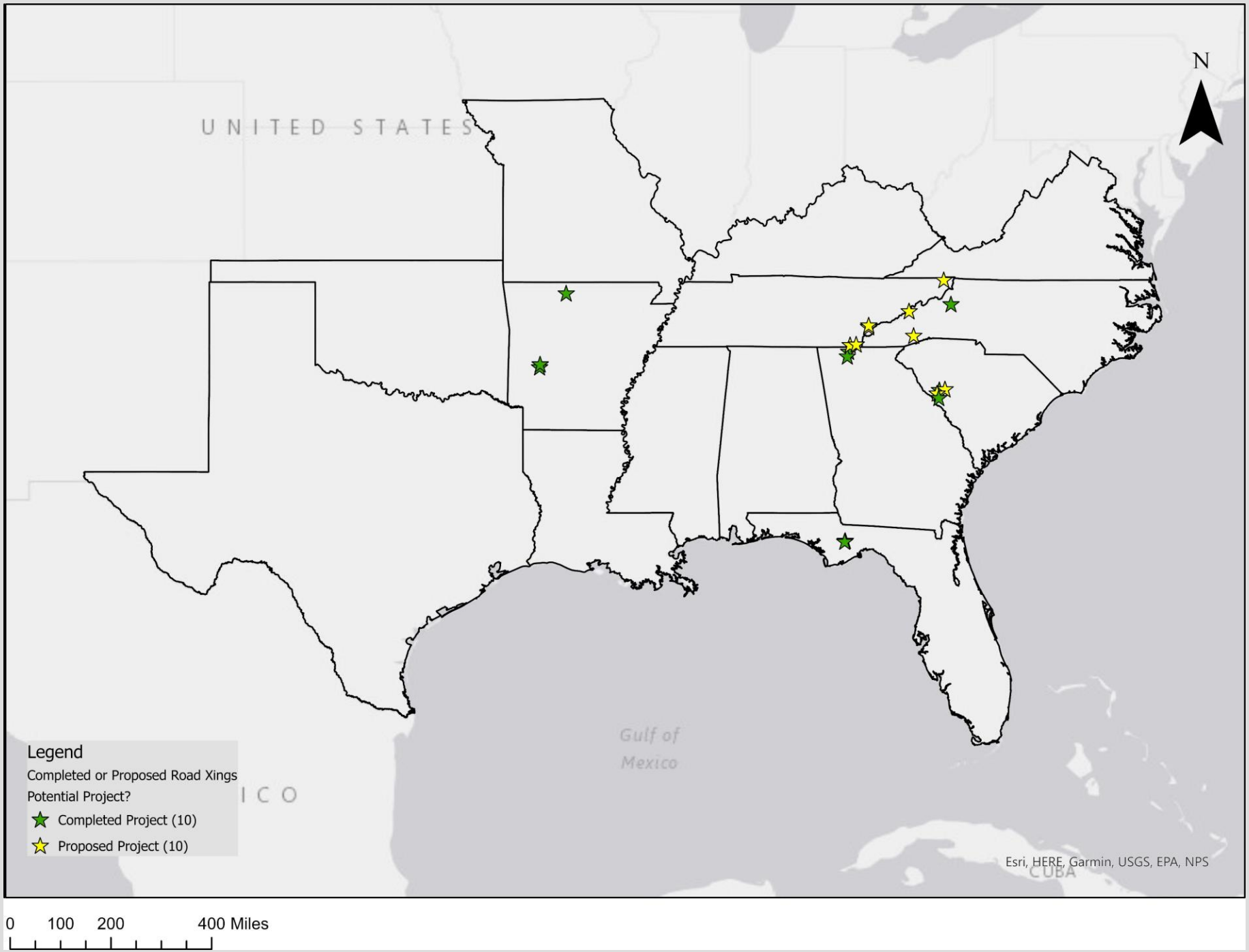


HOLLY CREEK, GA
EARTH DAY 2021

ROAD XING REPLACEMENTS

- **275** completed or proposed

- **20** of these influenced by inventory and tool




QUESTIONS?