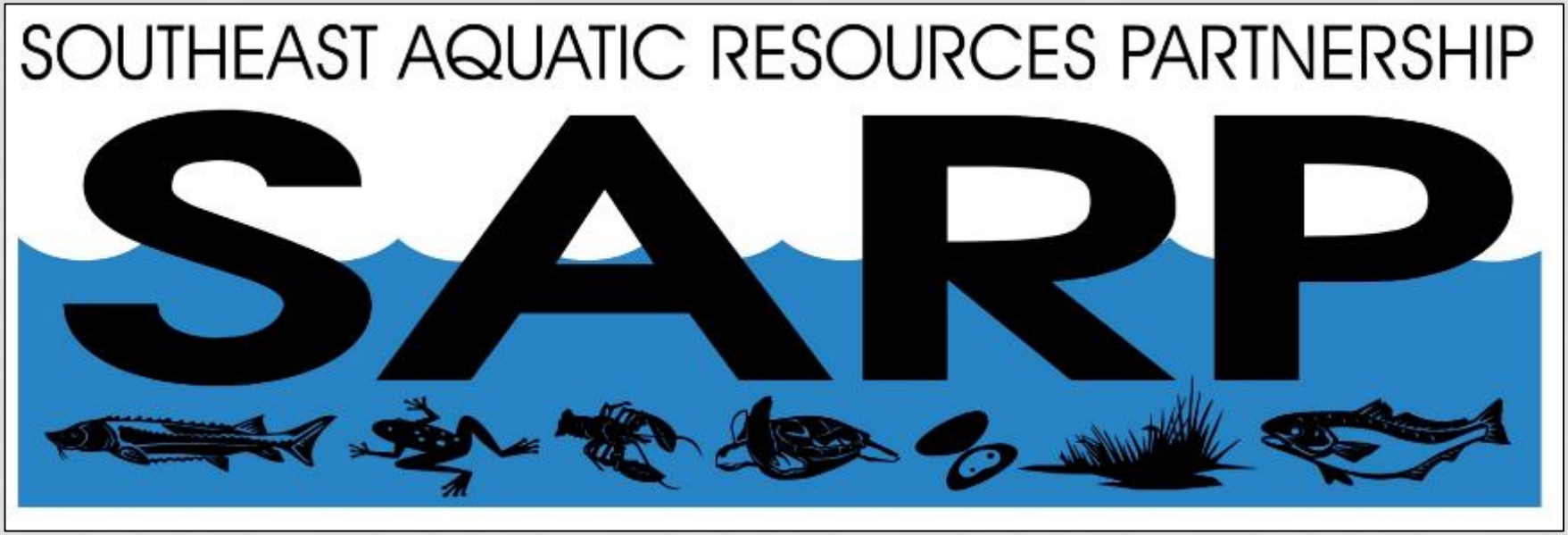


Gulf States Marine Fisheries Commission Meeting Fall 2019

Dr. Jessica Graham

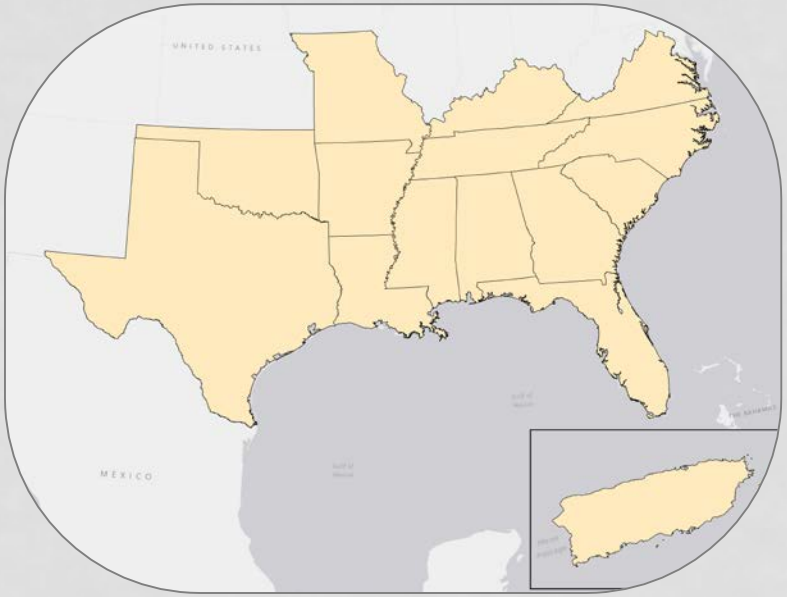
SOUTHEASTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES

NATIONAL FISH HABITAT PARTNERSHIP

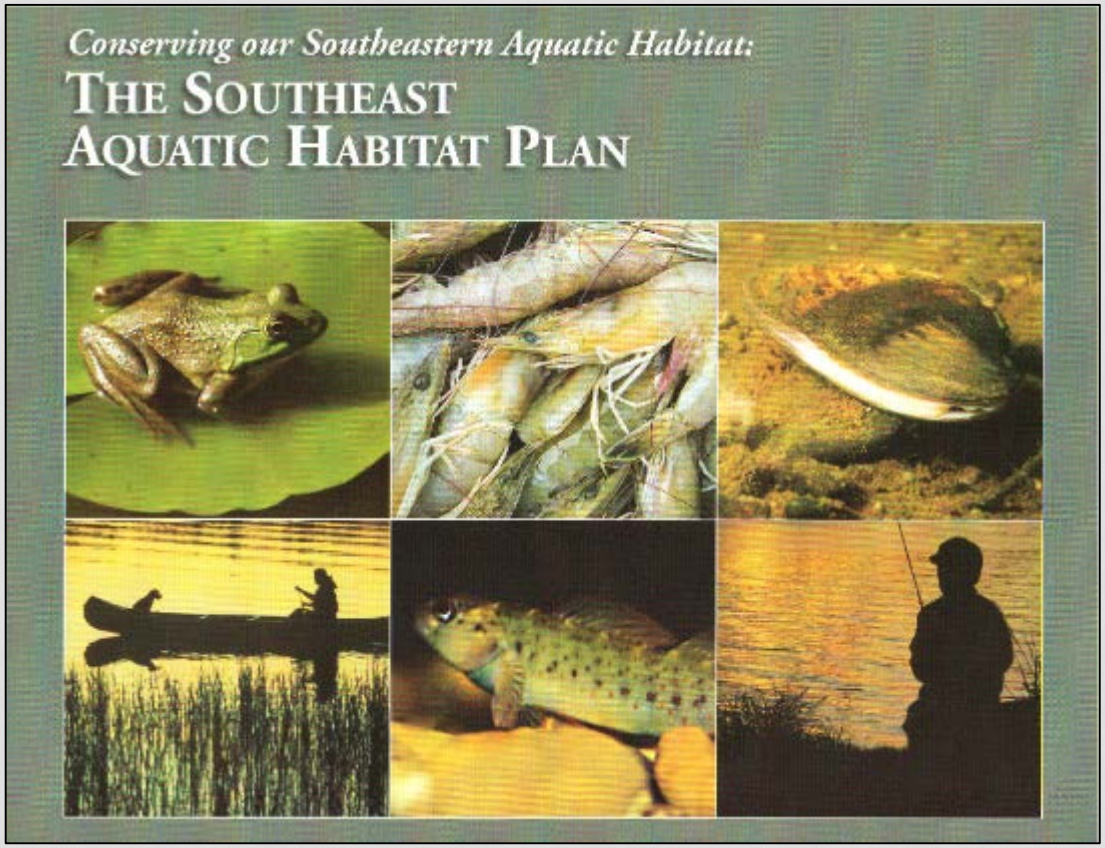
SOUTHEAST AQUATIC RESOURCES PARTNERSHIP

SARP

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.




Conserving our Southeastern Aquatic Habitat:
THE SOUTHEAST AQUATIC HABITAT PLAN
Conserving Fish Habitat From Rivers to the Sea:
The Story of the Southeast Aquatic Resources Partnership
SARP
NATIONAL FISH HABITAT ACTION PLAN
2ND EDITION
COOPERATION
INVESTMENT
STEWARDSHIP
FISH HABITAT
National Fish Habitat Action Plan
Cooperation
Investment
Stewardship
NATIONAL FISH HABITAT ACTION PLAN

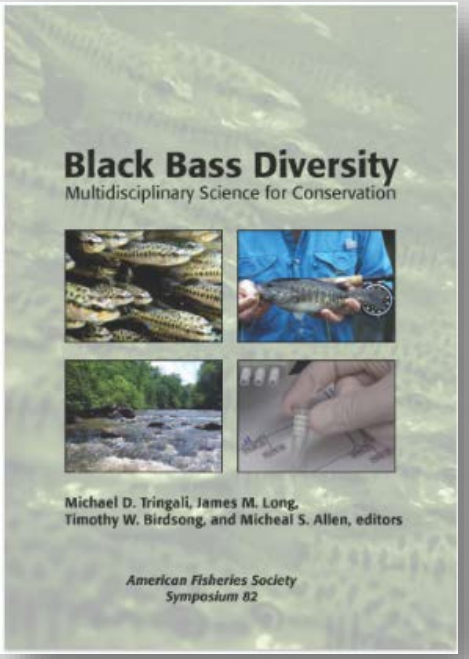


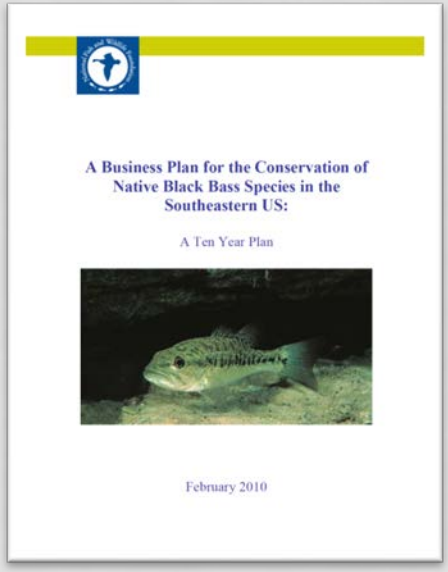
- Native Black Bass Initiative
- Restoration
- Connectivity
- Coastal
- Flow

NATIVE BLACK BASS INITIATIVE PHASE I

Redeye Bass

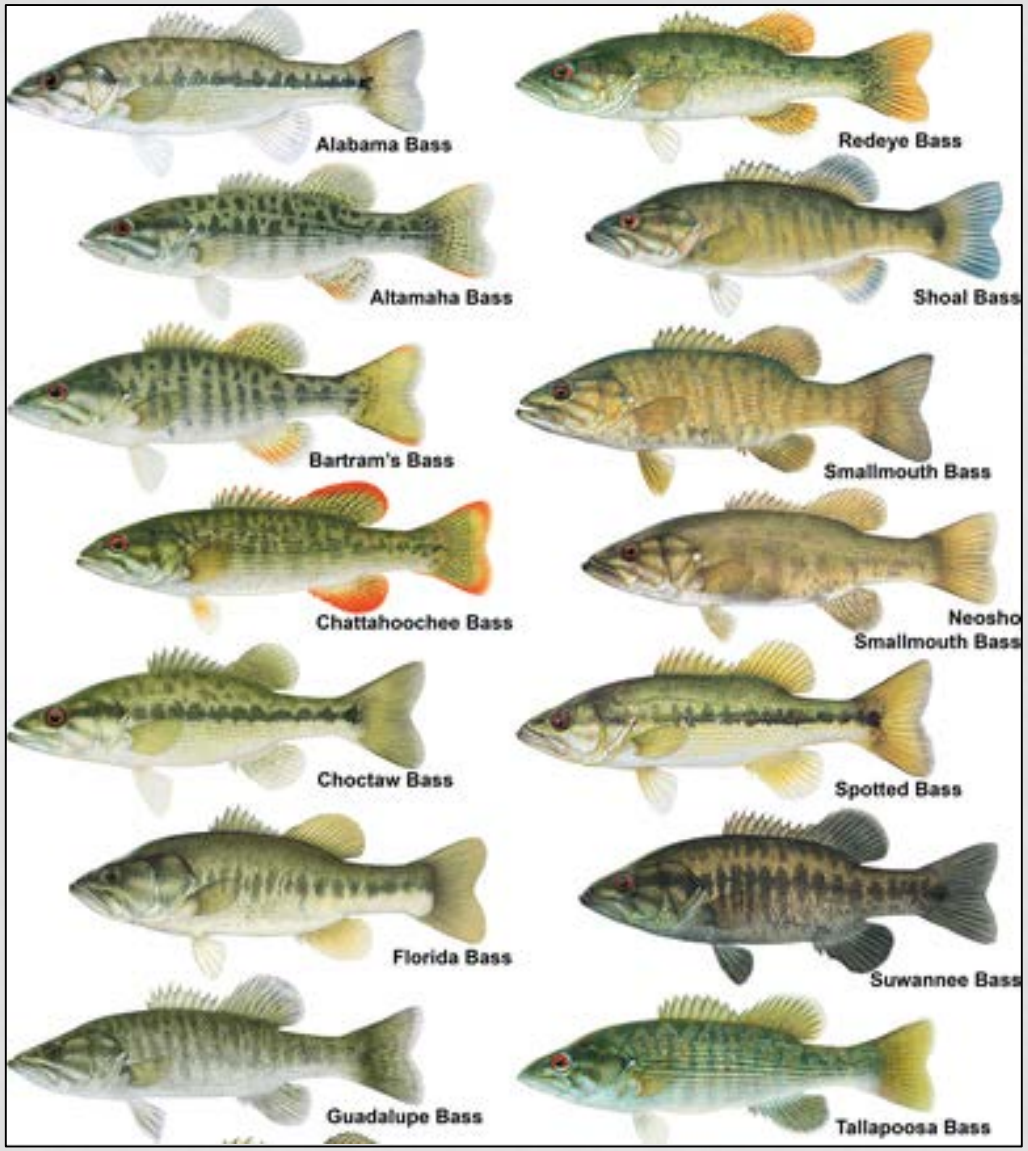
Guadalupe Bass





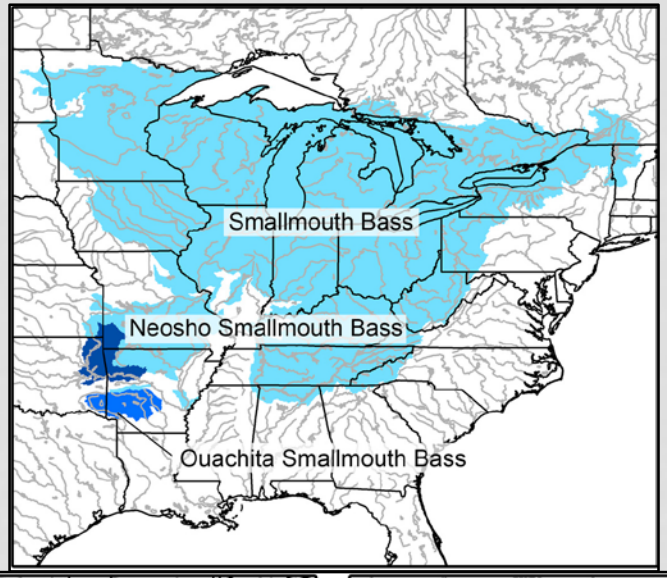
Shoal Bass

NATIVE BLACK BASS INITIATIVE PHASE II

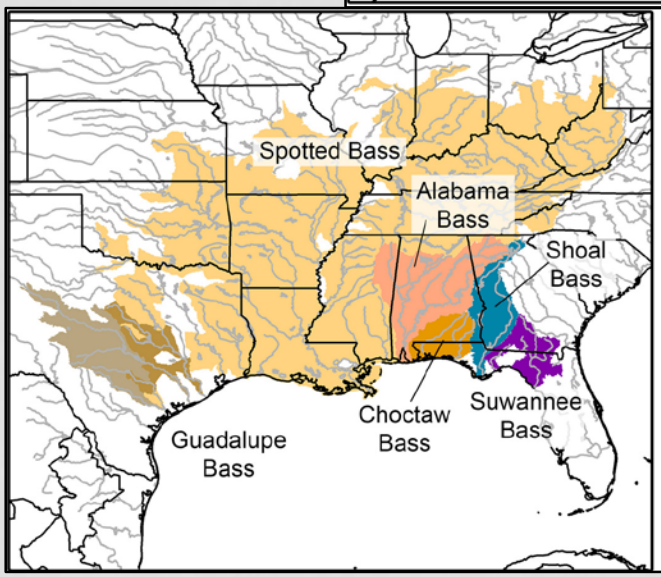


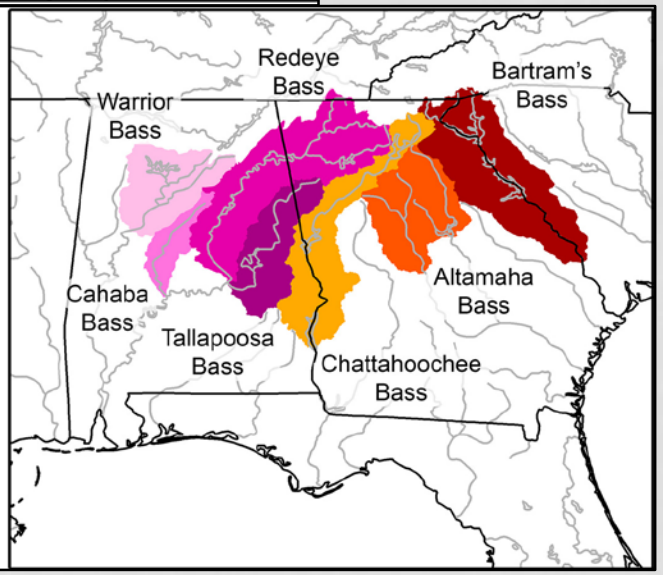
Taylor et al. 2018

NATIVE BLACK BASS INITIATIVE PHASE II



Taylor et al. 2018

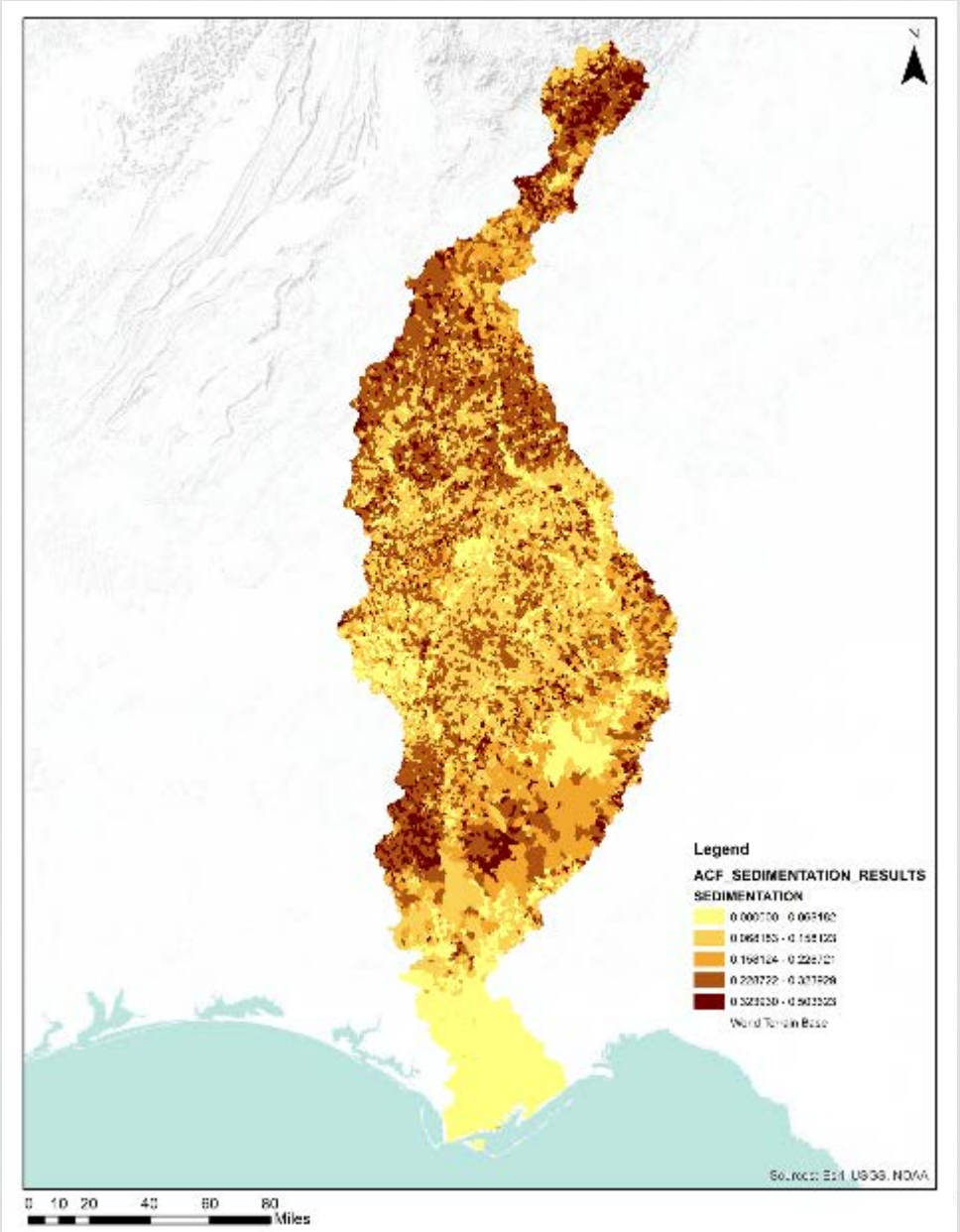




THREATS ASSESSMENT

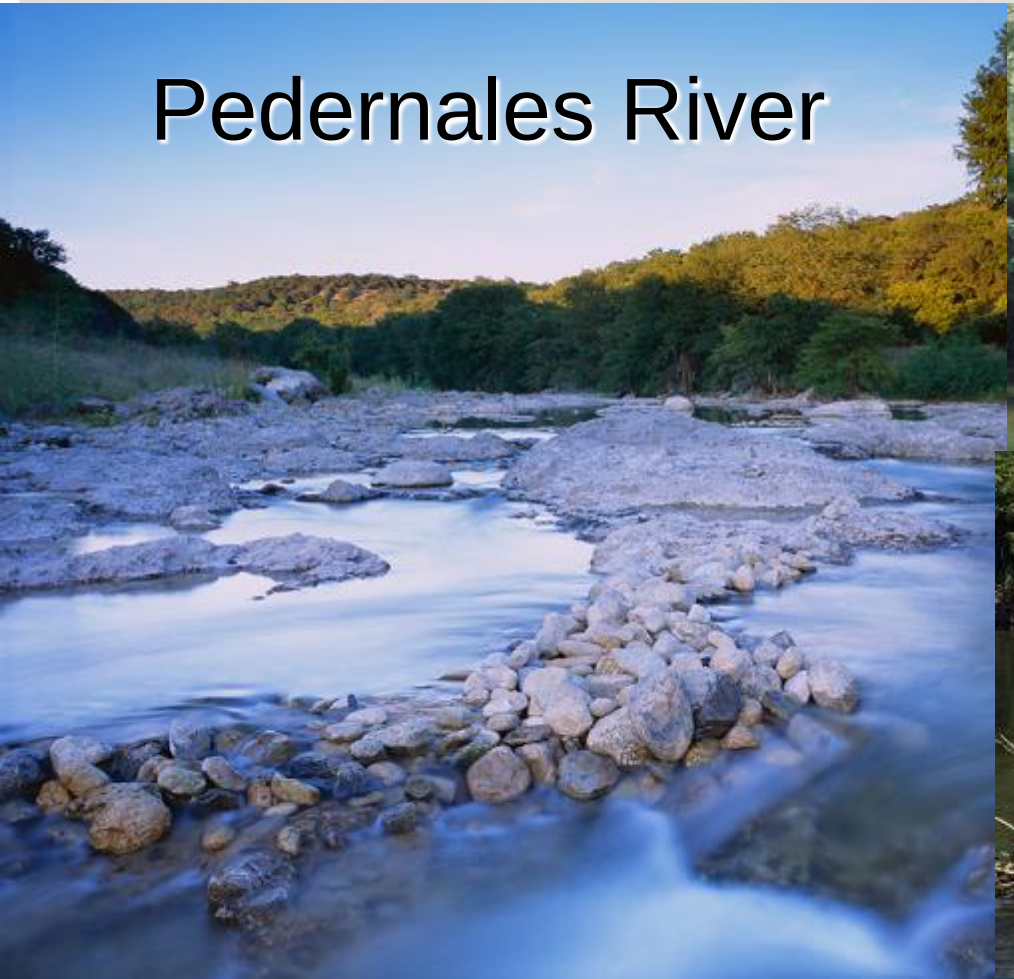
Actionable layers

- Acquisition
- Sedimentation
- Best Management Practices
- Connectivity

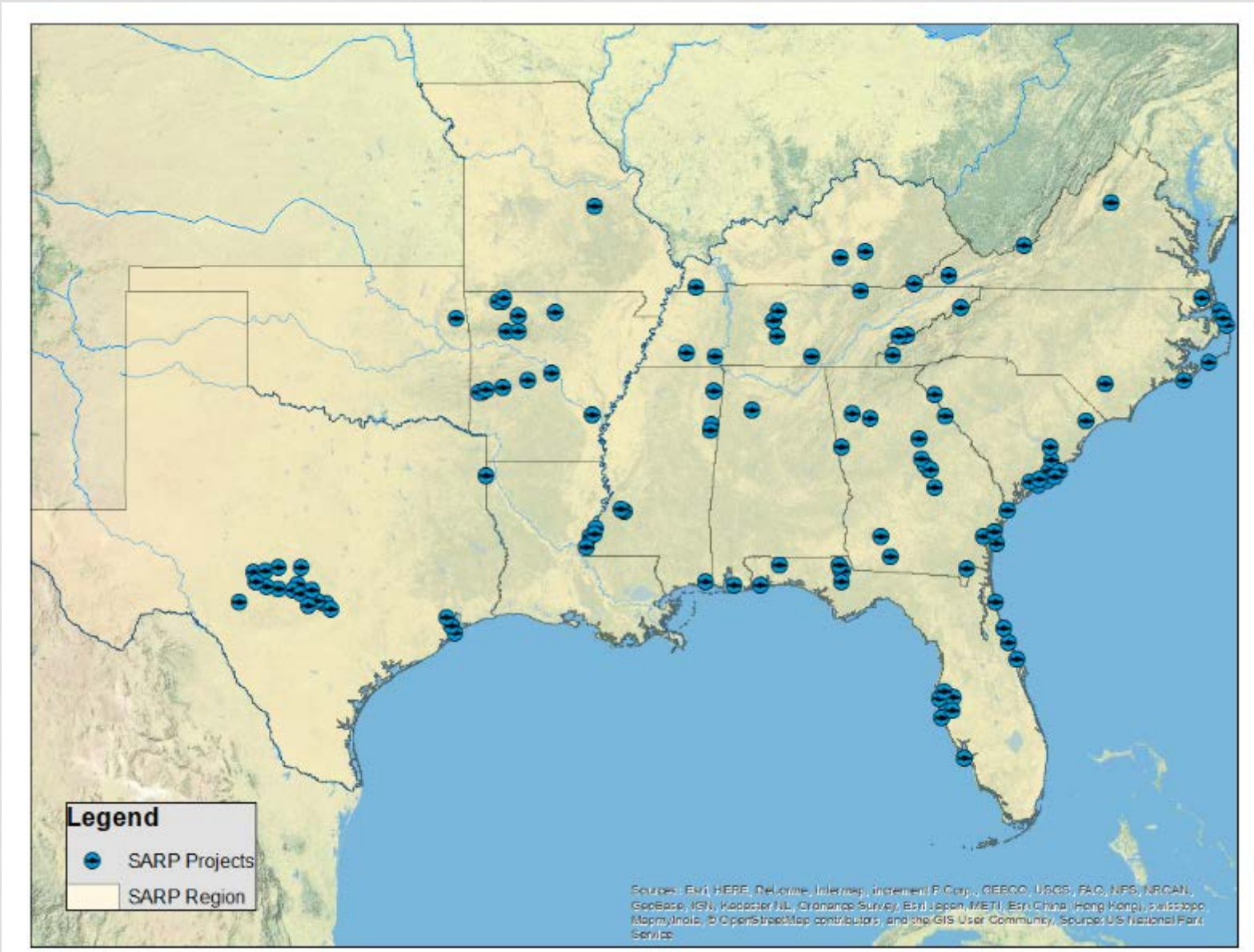


WATER CONSERVATION

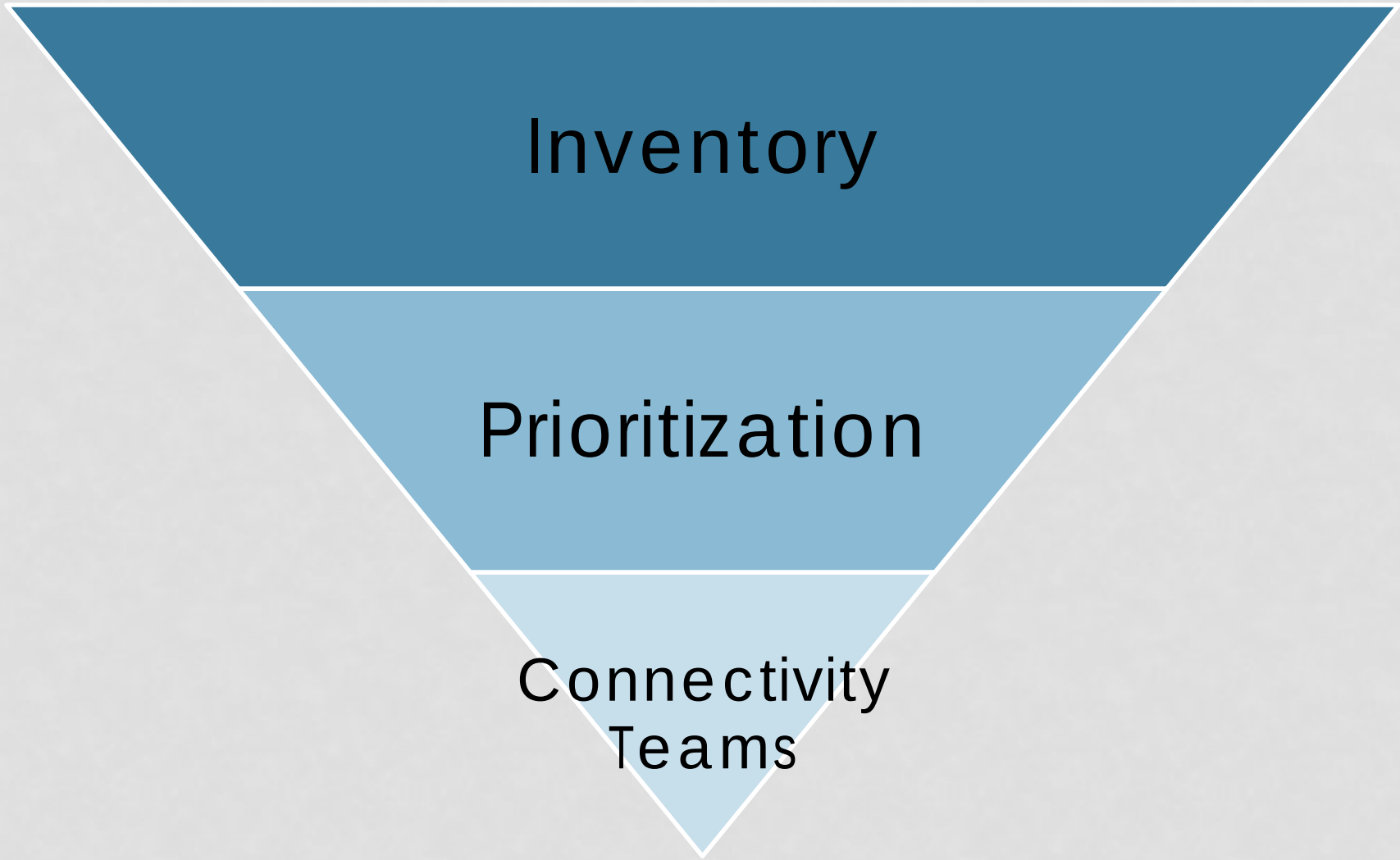
HABITAT RESTORATION



HABITAT RESTORATION



CONNECTIVITY PROGRAM



CONNECTIVITY PROGRAM

Reconnect rivers and streams to support healthier populations of fish and wildlife in ecologically functioning systems.

Through:

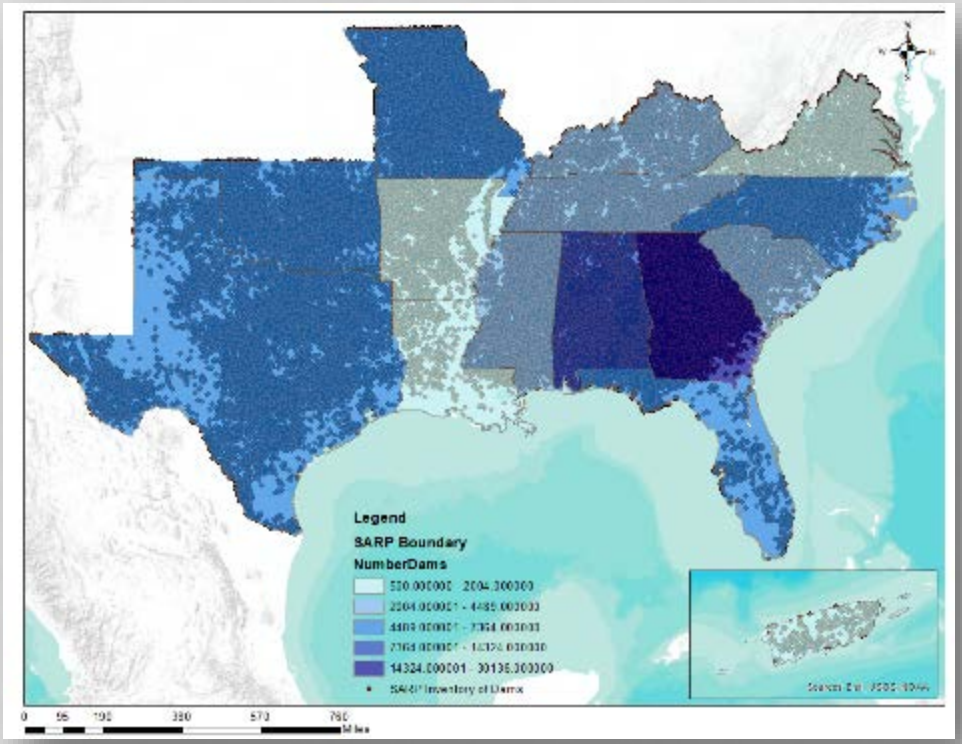
Identifying barriers to aquatic connectivity in the Southeast.

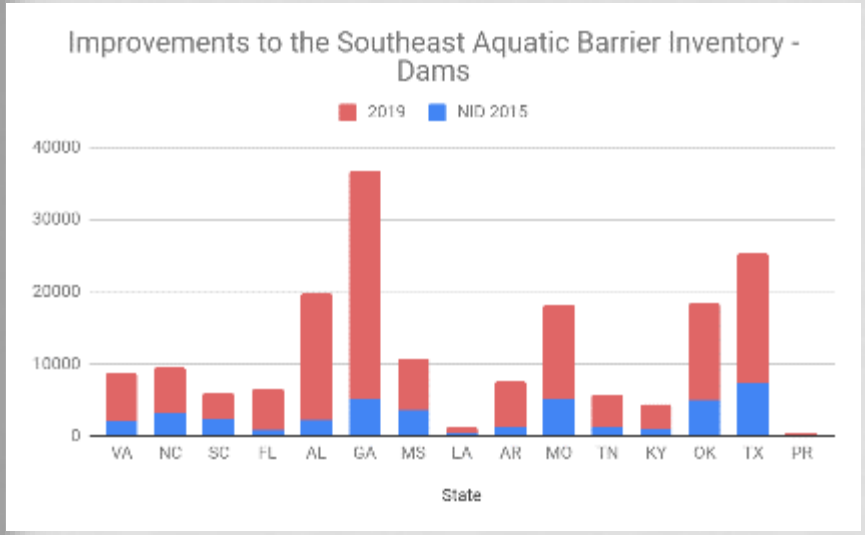
Proactively identify and prioritize sites for stream crossing upgrades/replacements.

Facilitating communication and information sharing among partners in and out of state-based connectivity teams.

CONNECTIVITY PROGRAM

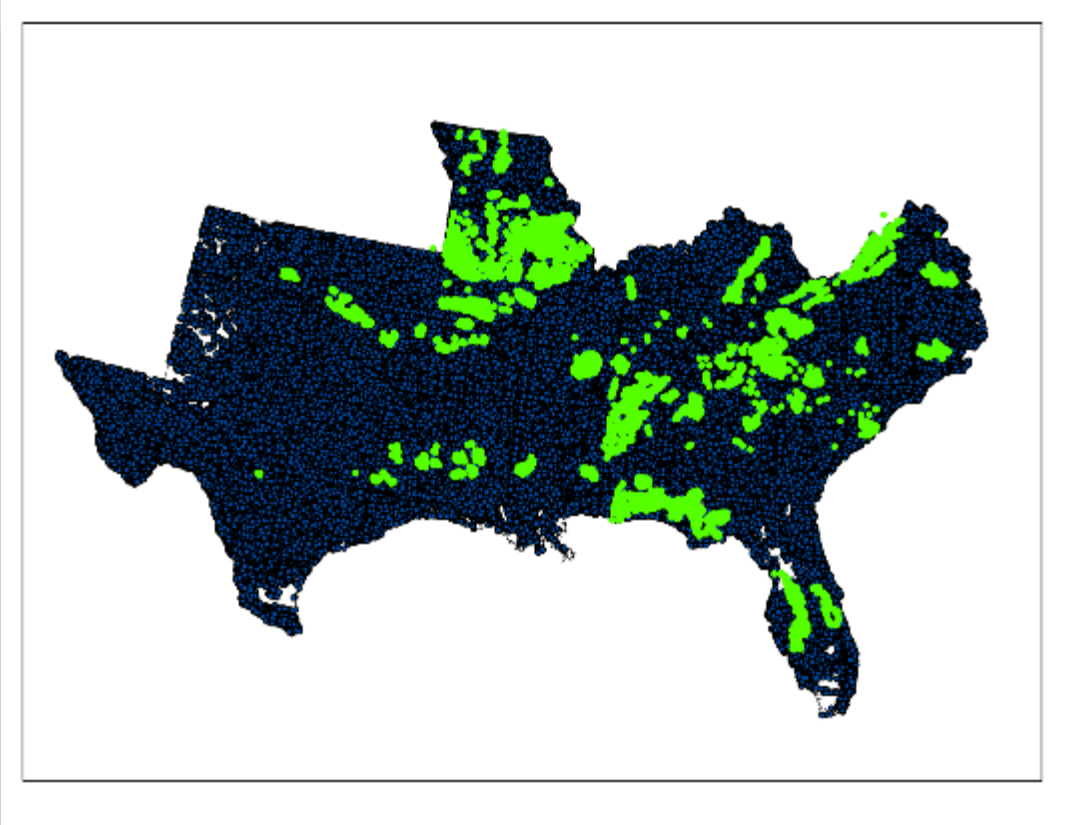
Dams


Legend
SARP Boundary
NumberDams
520.000001 - 2004.000000
2004.000001 - 4488.000000
4488.000001 - 7964.000000
7965.000001 - 14324.000000
14324.000001 - 30136.000000
SARP Inventory of Dams
0
95
190
380
570
760
Miles


Improvements to the Southeast Aquatic Barrier Inventory - Dams
2019
NID 2015
40000
30000
20000
10000
0
VA
NC
SC
FL
AL
GA
MS
LA
AR
MO
TN
KY
OK
TX
PR
State

Inventory

Road Crossings

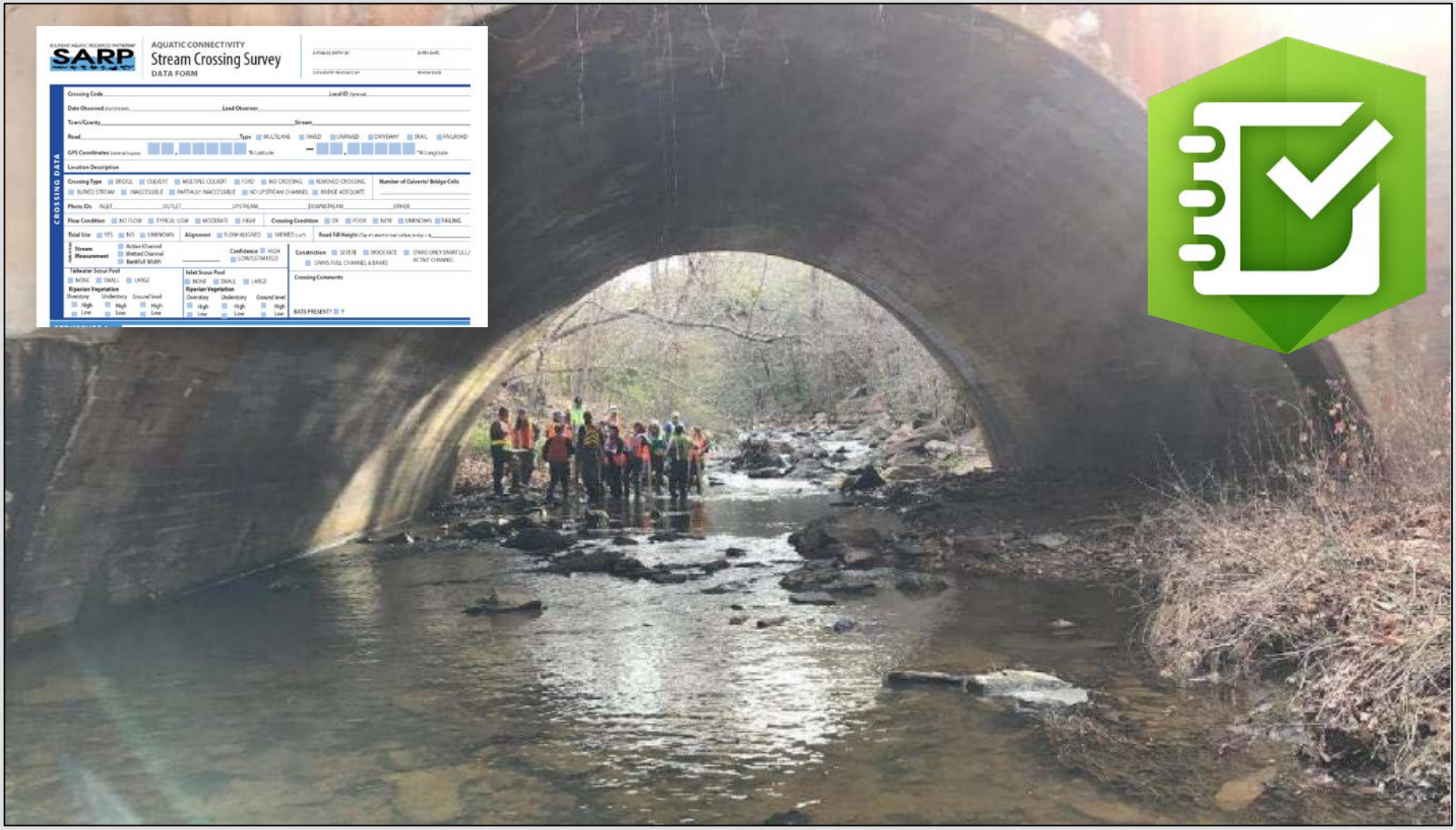


- Crossings are assessed by multiple partners using AOP assessment protocols (green)

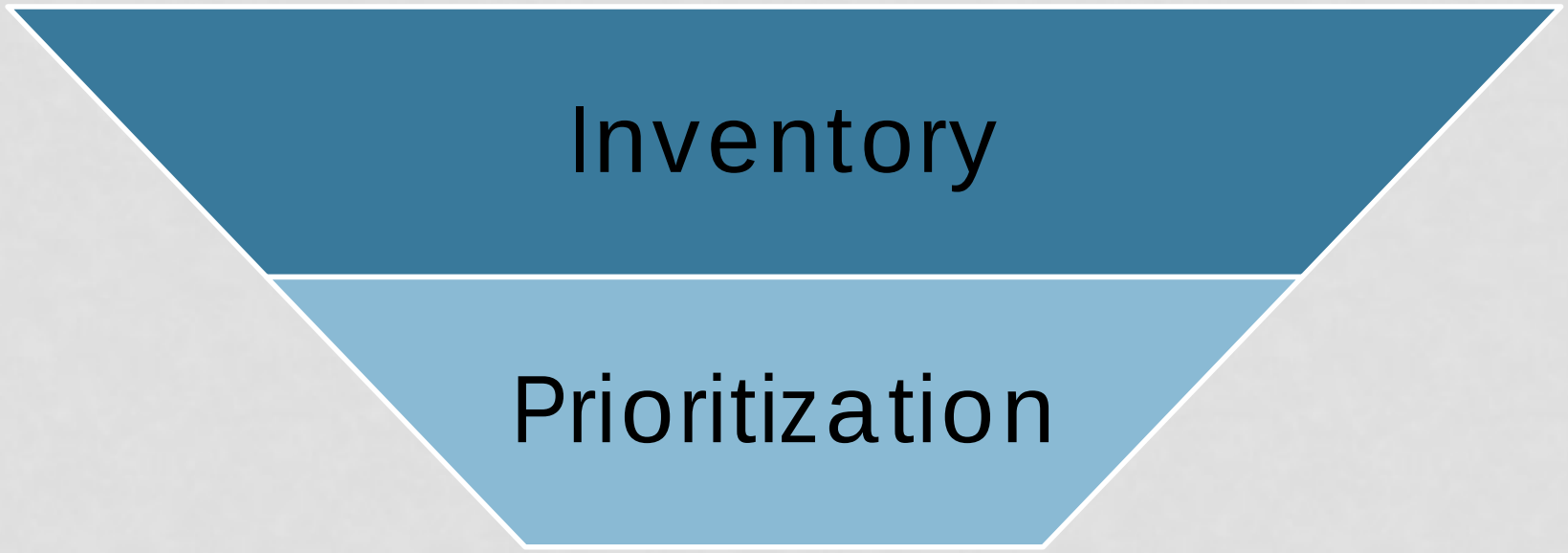
Inventory

Waterfalls

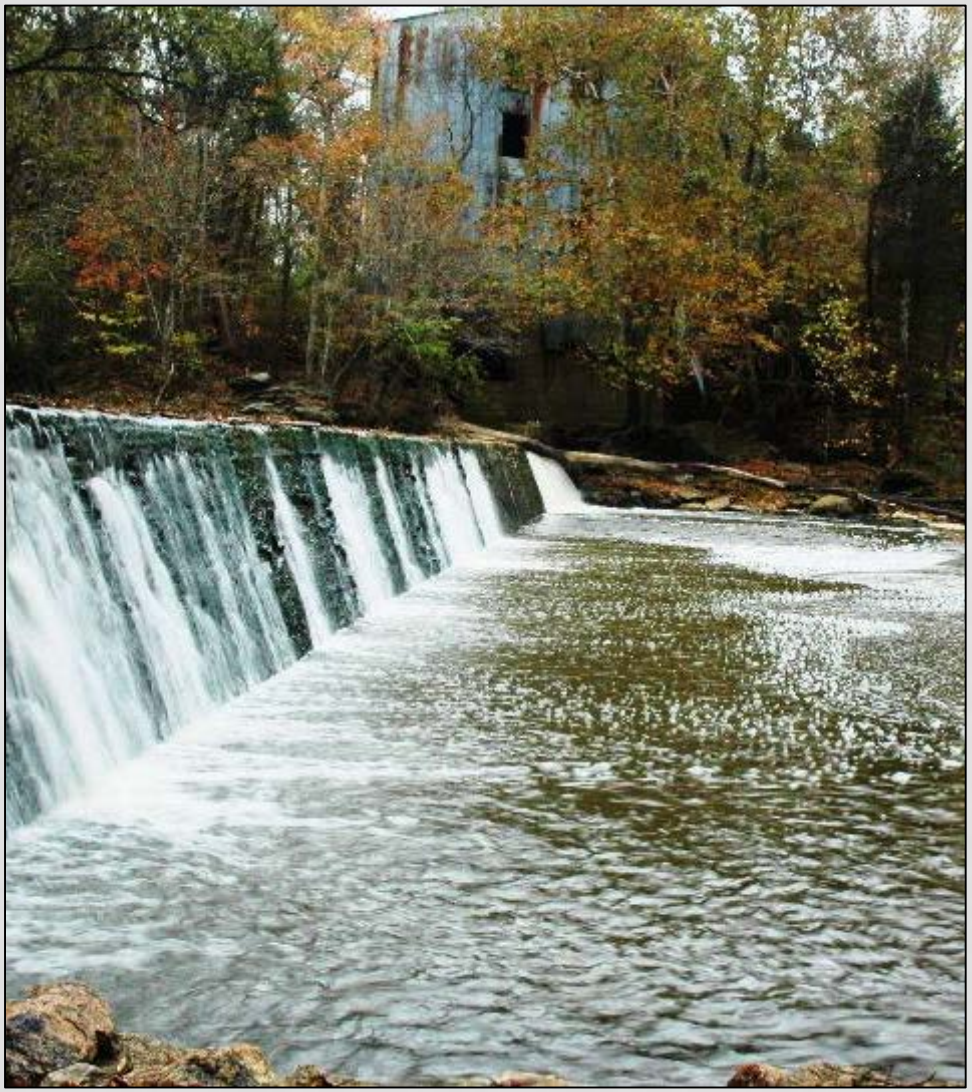
- Sources
  - USGS
  - USFS CATT
  - Local input


SARP
AQUATIC CONNECTIVITY
Stream Crossing Survey
DATA FORM
CROSSING DATA
Crossing Code
Local ID (Optional)
Date Observed
Lead Observer
Town/County
Stream
Road
Type
MULTILANE
PAVED
UNPAVED
DRIVEWAY
TRAIL
RAILROAD
GPS Coordinates
Location Description
Crossing Type
BRIDGE
CULVERT
MULTIPLE CULVERT
FORD
NO CROSSING
REMOVED CROSSING
BURIED STREAM
INACCESSIBLE
PARTIALLY INACCESSIBLE
NO UPSTREAM CHANNEL
BRIDGE ADEQUATE
Number of Culverts/ Bridge Cells
Photo IDs
INLET
OUTLET
UPSTREAM
DOWNSTREAM
OTHER
Flow Condition
NO FLOW
TYPICAL LOW
MODERATE
HIGH
Crossing Condition
OK
POOR
NEW
UNKNOWN
FAILING
Tidal Site
YES
NO
UNKNOWN
Alignment
FLOW-ALIGNED
SKEWED
Road Fill Height
Stream Measurement
Active Channel
Wetted Channel
Bankfull Width
Confidence
HIGH
LOW/ESTIMATED
Constriction
SEVERE
MODERATE
SPANS ONLY BANKFULL/ ACTIVE CHANNEL
SPANS FULL CHANNEL & BANKS
Tailwater Scour Pool
NONE
SMALL
LARGE
Riparian Vegetation
Overstory
Understory
Ground level
High
Low
Inlet Scour Pool
Crossing Comments
BATS PRESENT?
Y

CONNECTIVITY PROGRAM



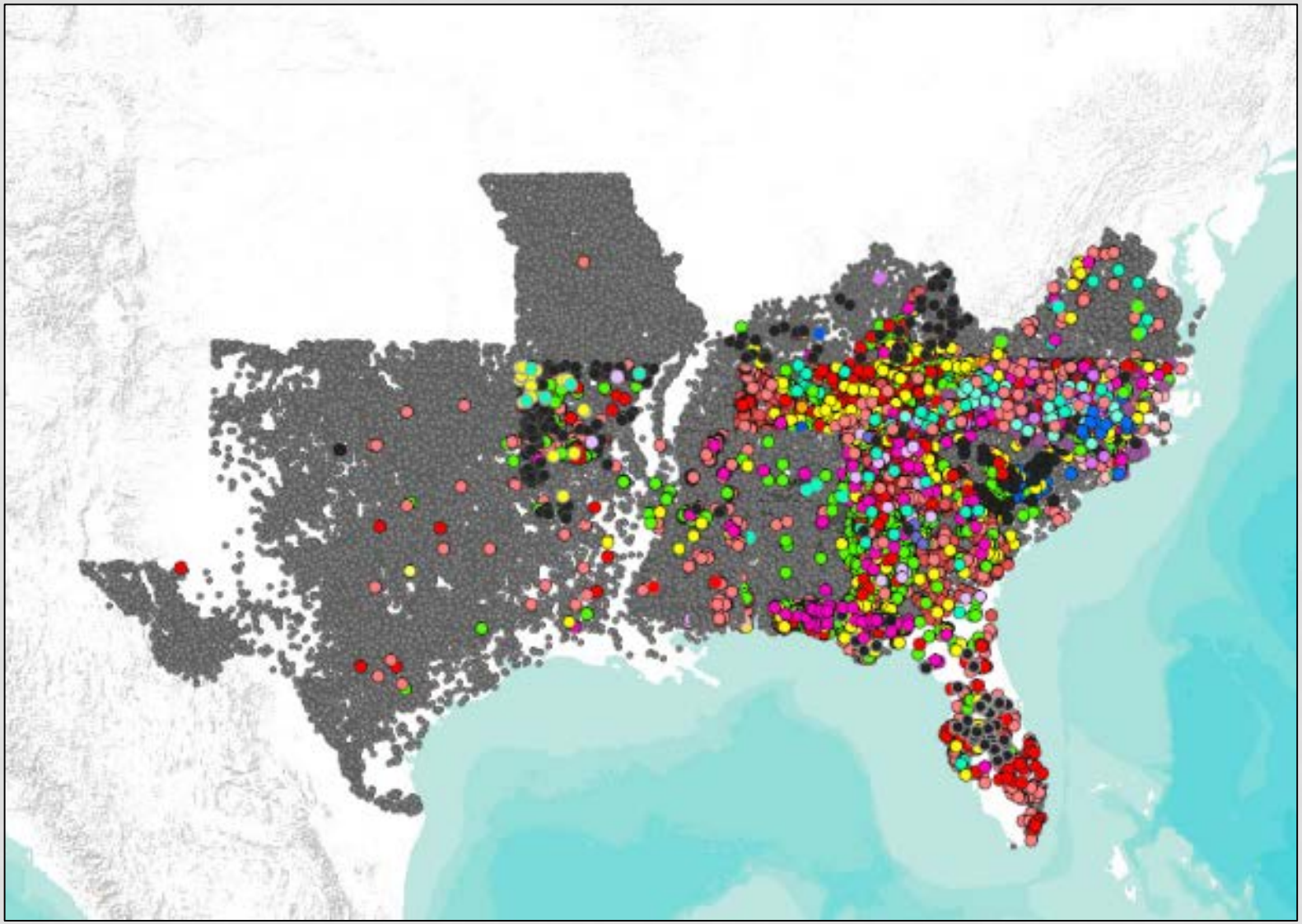
CRITERIA FOR PRIORITIZATION



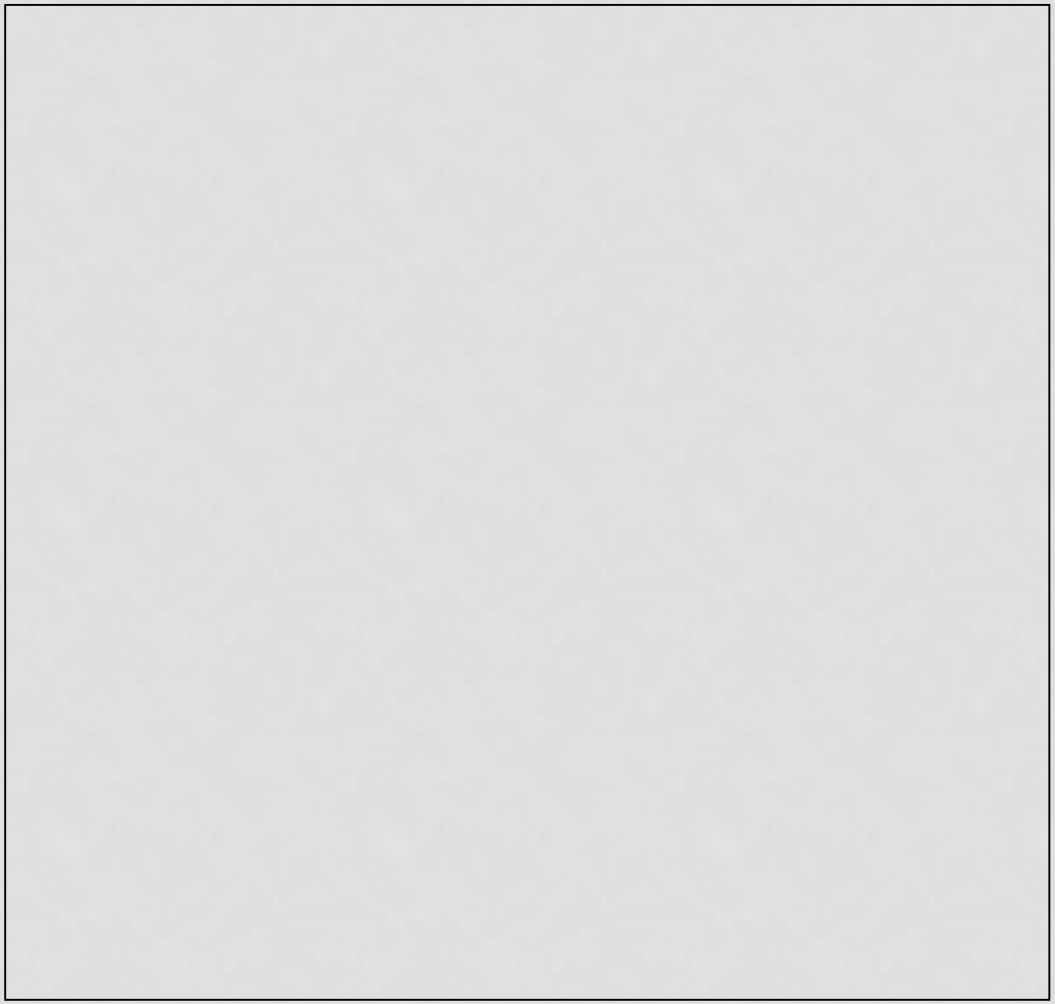
- We considered **3 criteria** to prioritize barriers:
  - **Connectivity:** Removal opens large amounts of habitat
  - **Watershed Condition:** Removal opens access to high quality habitat
    - **Social Feasibility:** Social conditions appear favorable

Prioritization

REFINED PRIORITIZATION



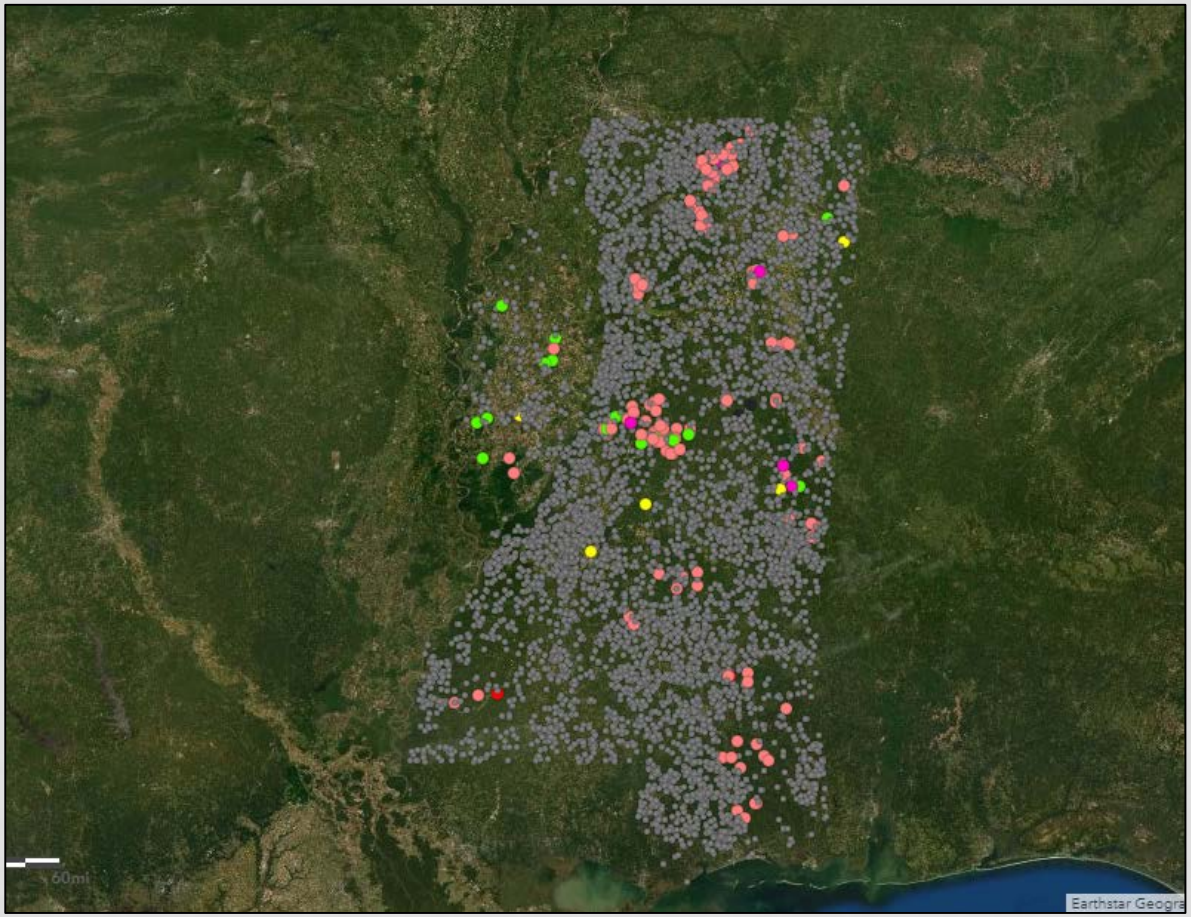
EX 1: REFINED



DAMS in MS: 7129

Prioritization

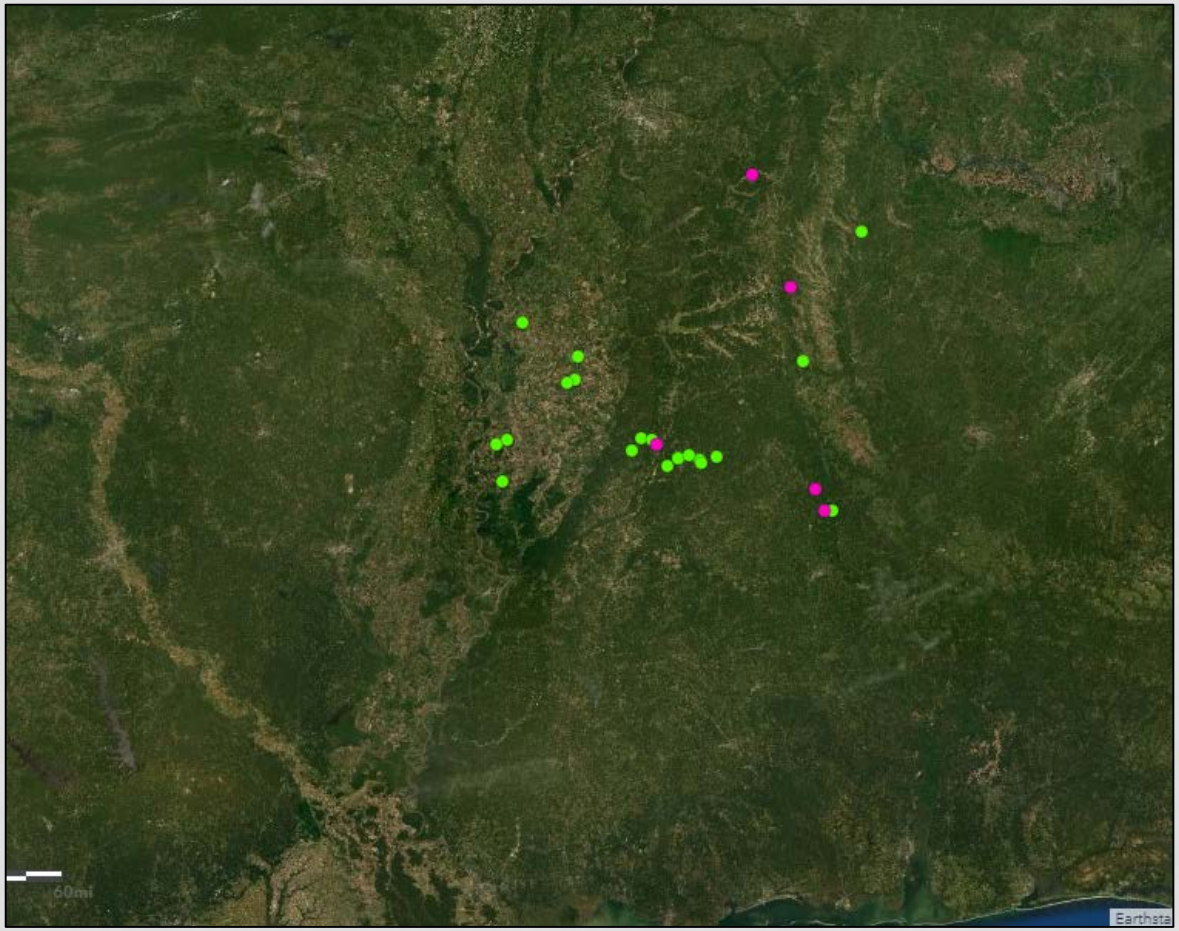
EX 1: REFINED



Reconned in MS: 179

Prioritization

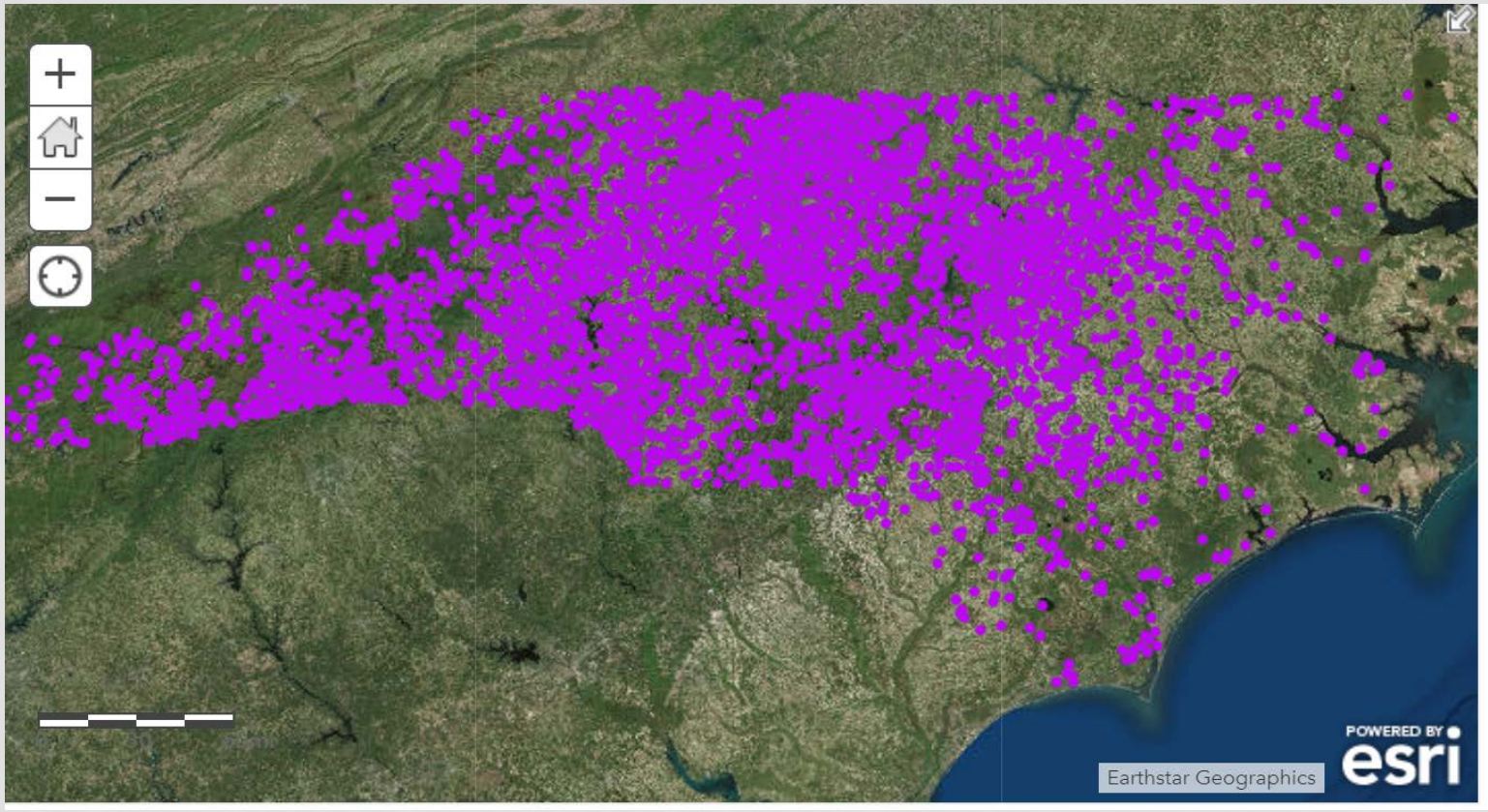
EX 1: REFINED



Reconned as potential projects: 26

Prioritization

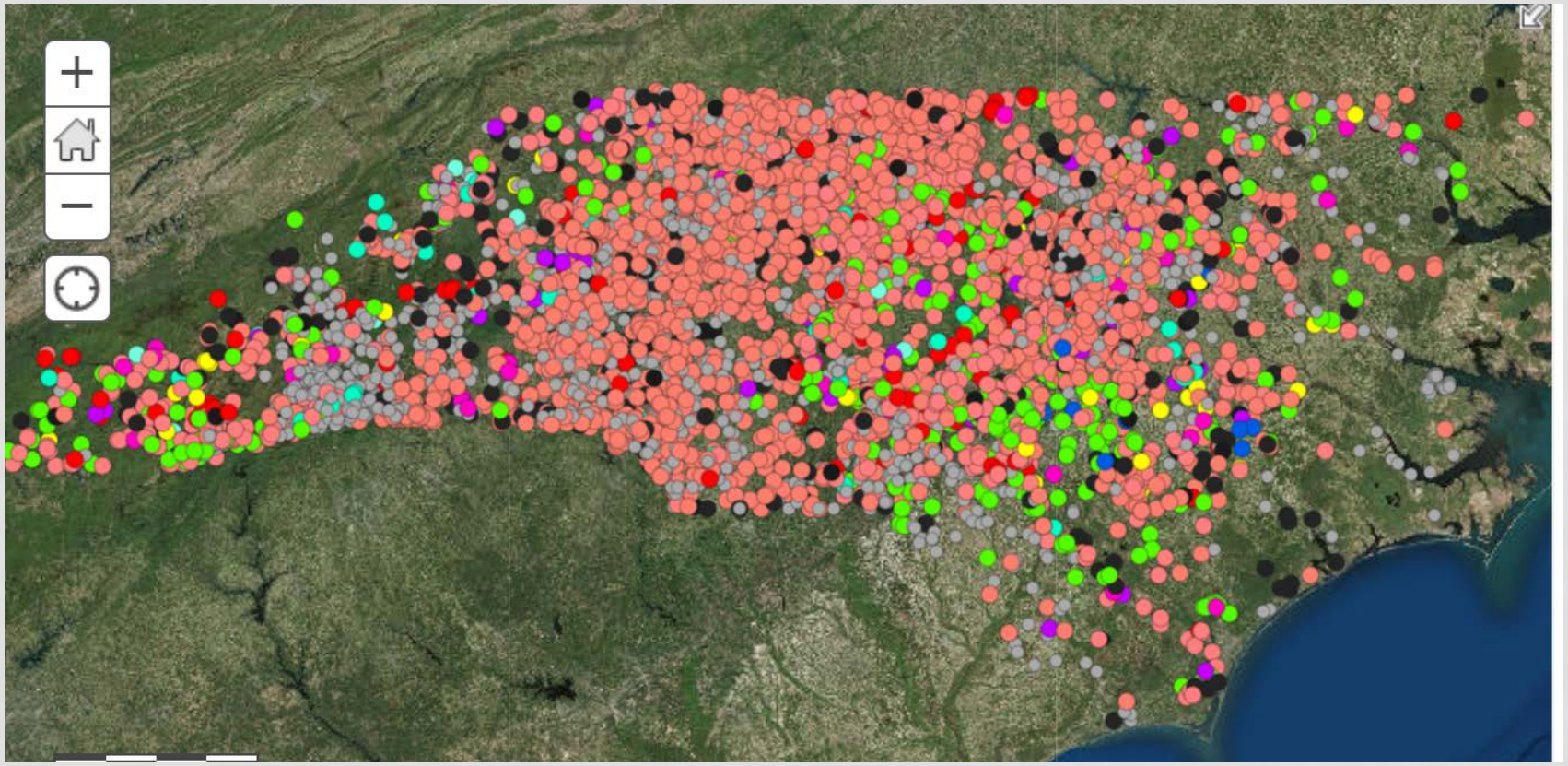
EX 2: REFINED



DAMS in NC: 6283

Prioritization

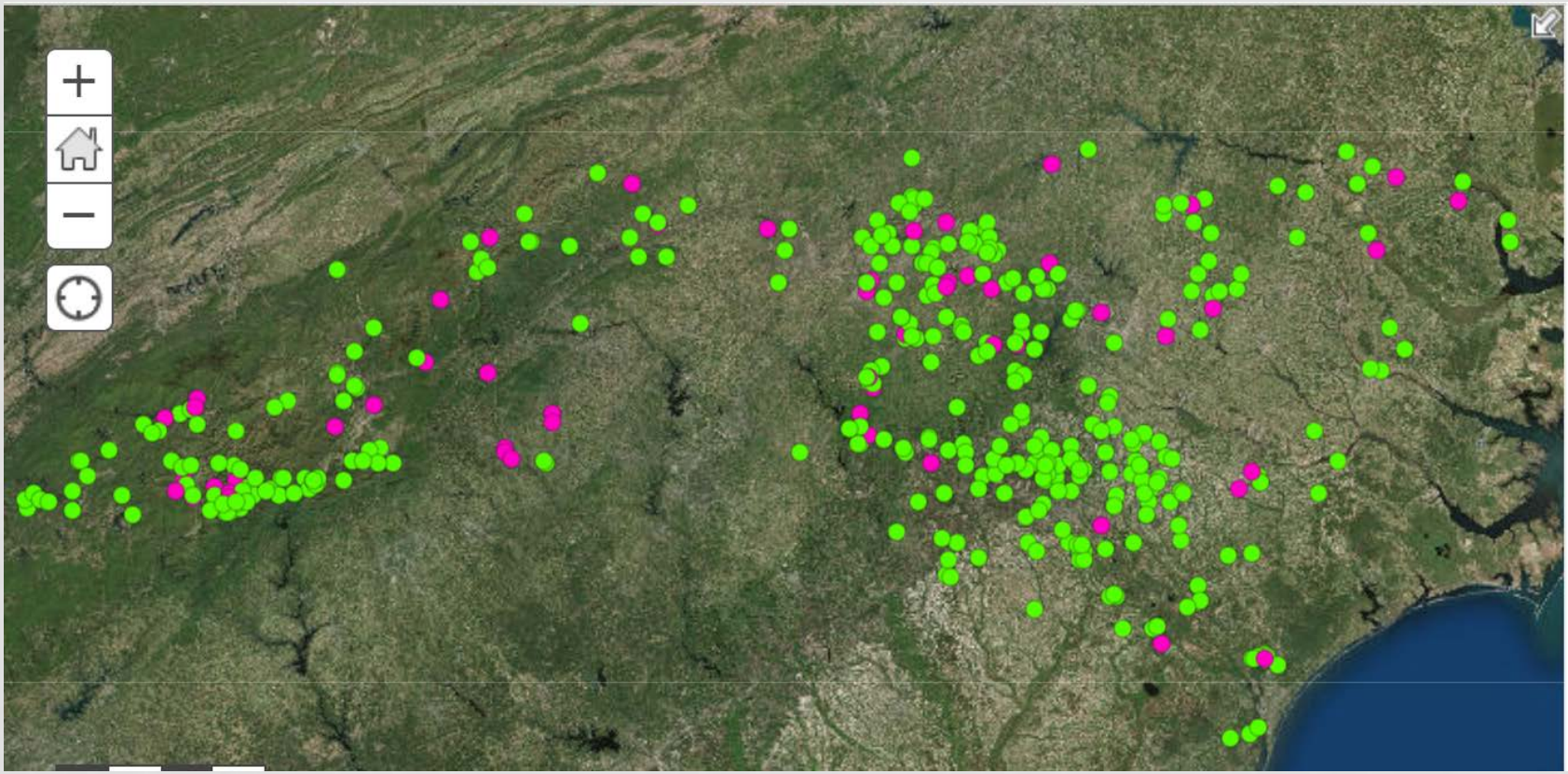
EX 2: REFINED



Reconned in NC: 4603

Prioritization

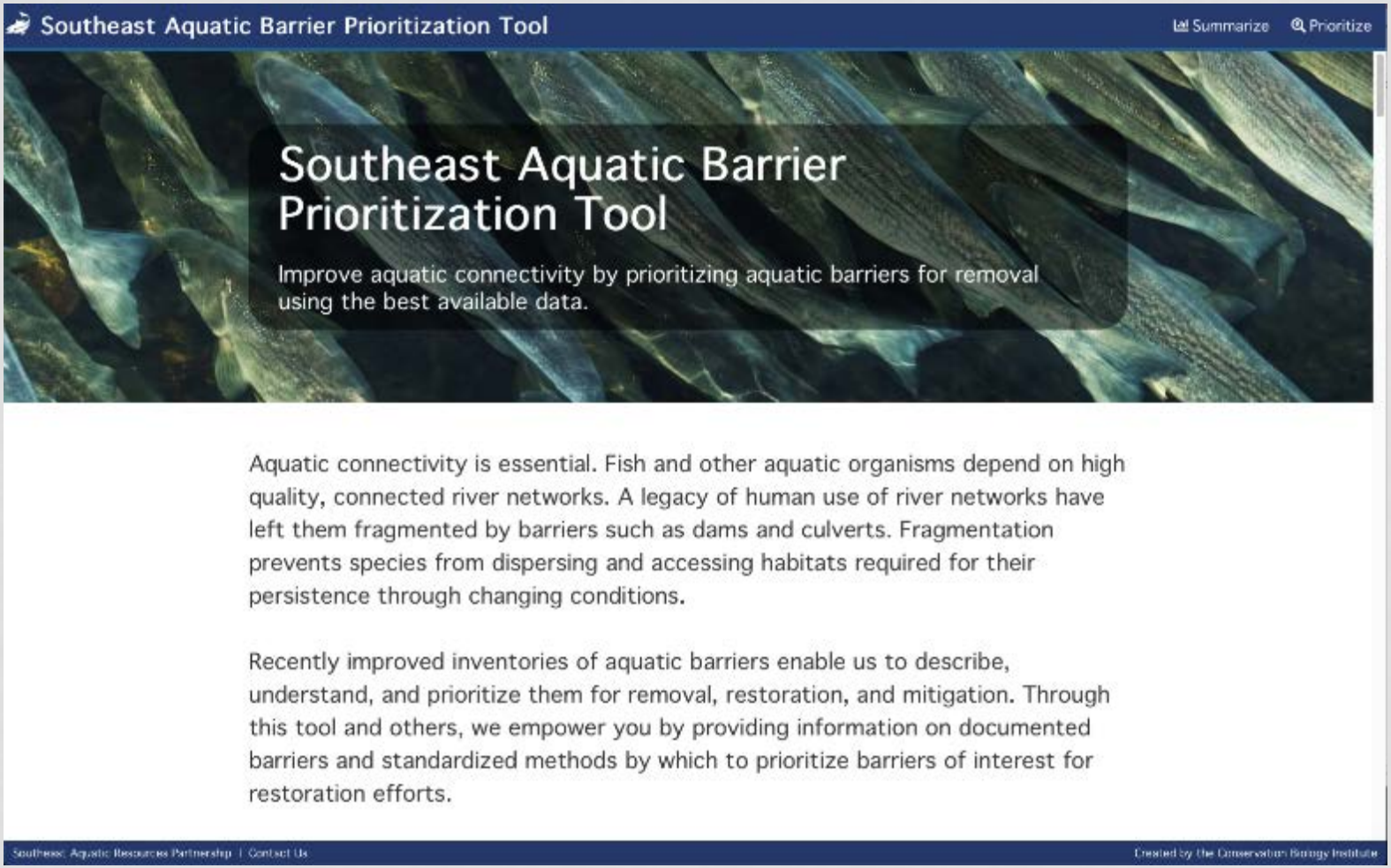
EX 2: REFINED



Reconned as potential projects: 455

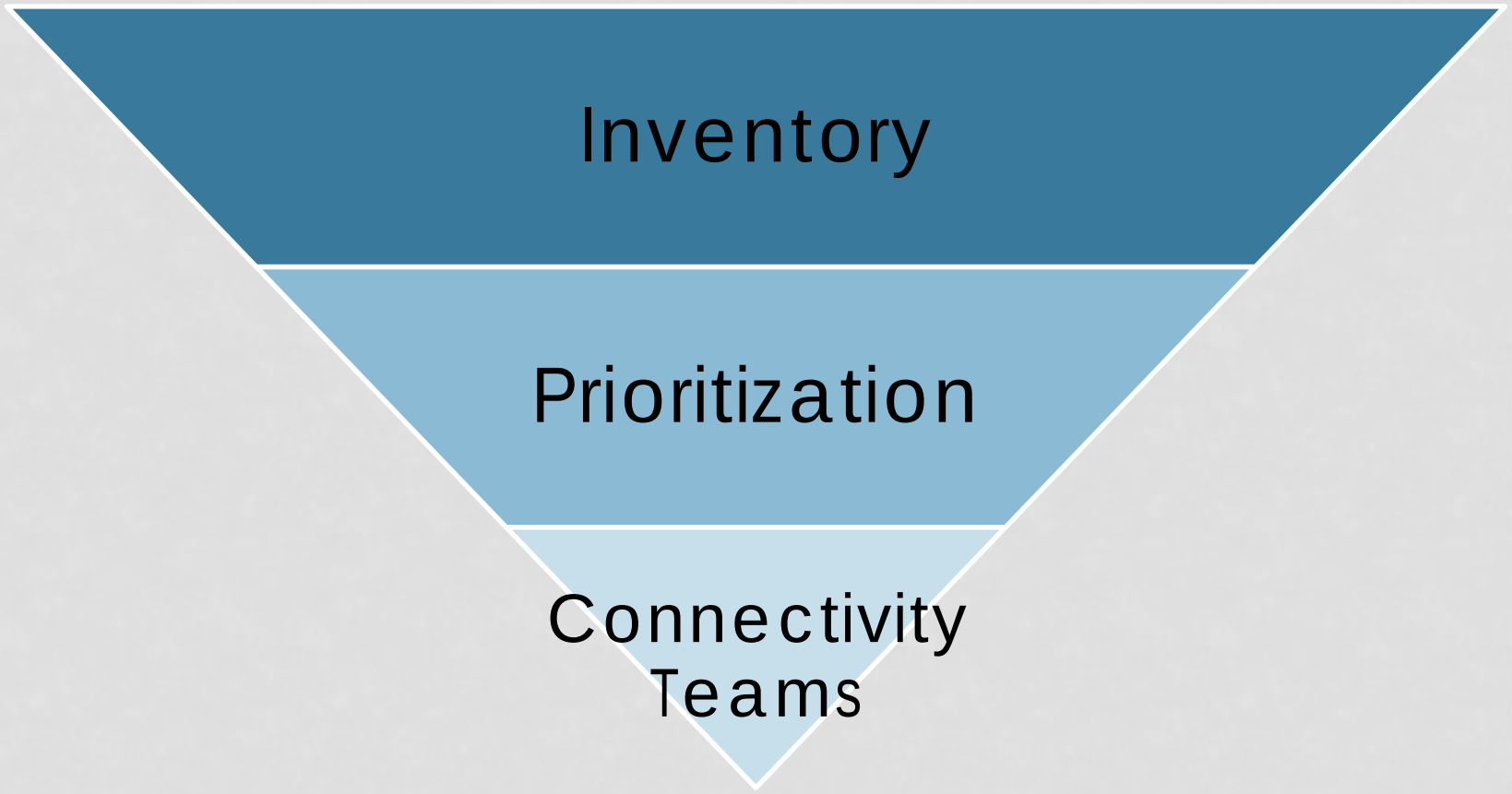
Prioritization

ONLINE BASED TOOL



connectivity.sarpdata.com

CONNECTIVITY PROGRAM



Connectivity Teams

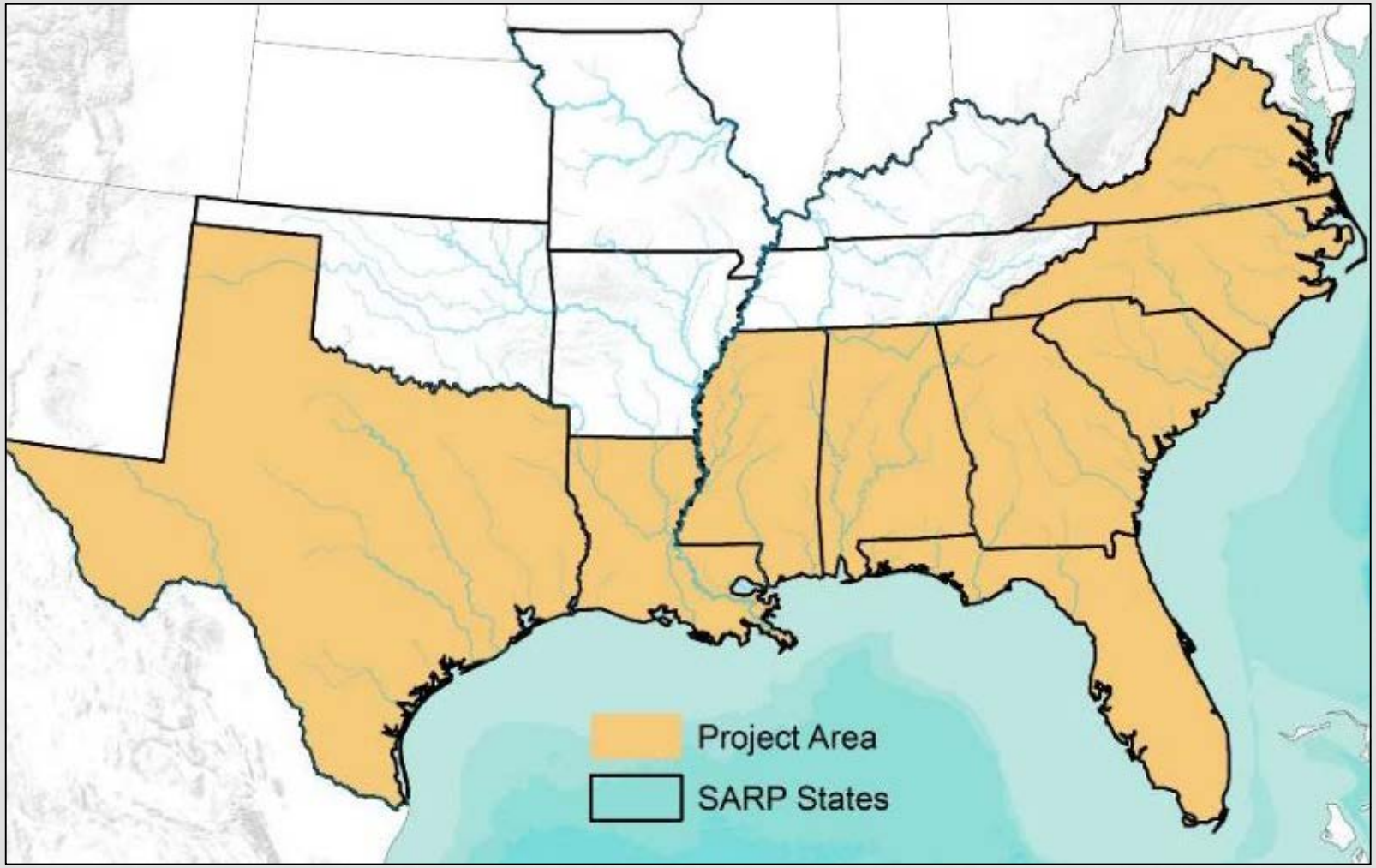
SCIENCE TO MANAGEMENT

Projects implemented or on deck

- White Hall Dam – Georgia
- Mine Creek Dam – Arkansas
- Saupaw Dam – Tennessee
- Sweetwater Creek – Florida

COASTAL PROGRAM

"Sustainable coastal habitats and associated fisheries to increase coastal resiliency and economies across the Gulf of Mexico and South Atlantic Regions."



COASTAL PROGRAM

- SARP aims to be value added
  - Connect Gulf and South Atlantic regions
    - Coordination and Science support
  - Topical Workshops
    - Coastal Hydrological Impairments (FW inflows/upstream connectivity)
    - Derelict Crab Trap removals and recycling
    - Aquaculture

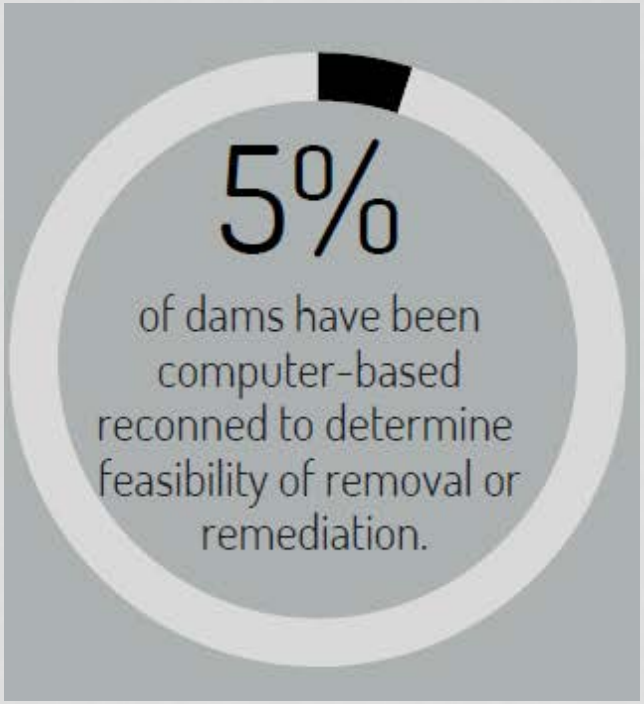
COASTAL PROGRAM

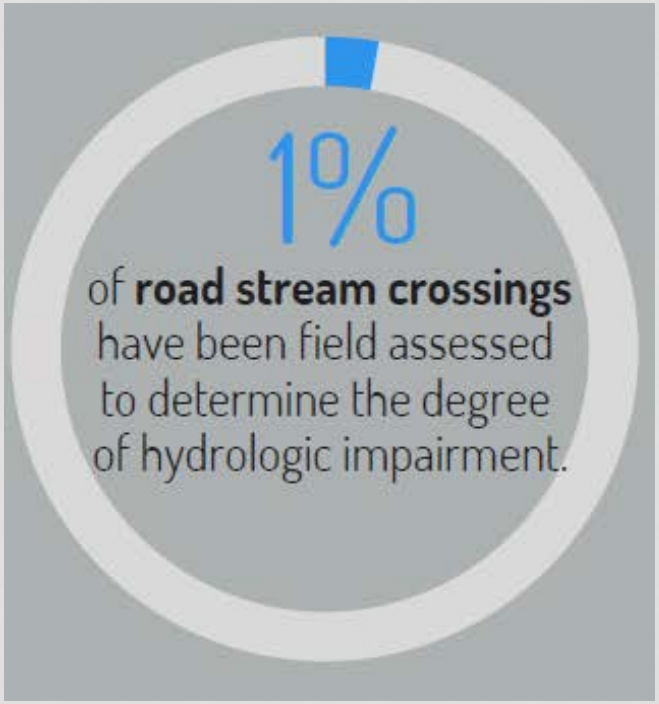
HYDROLOGIC IMPAIRMENTS

Connecting Coastal and Connectivity Programs

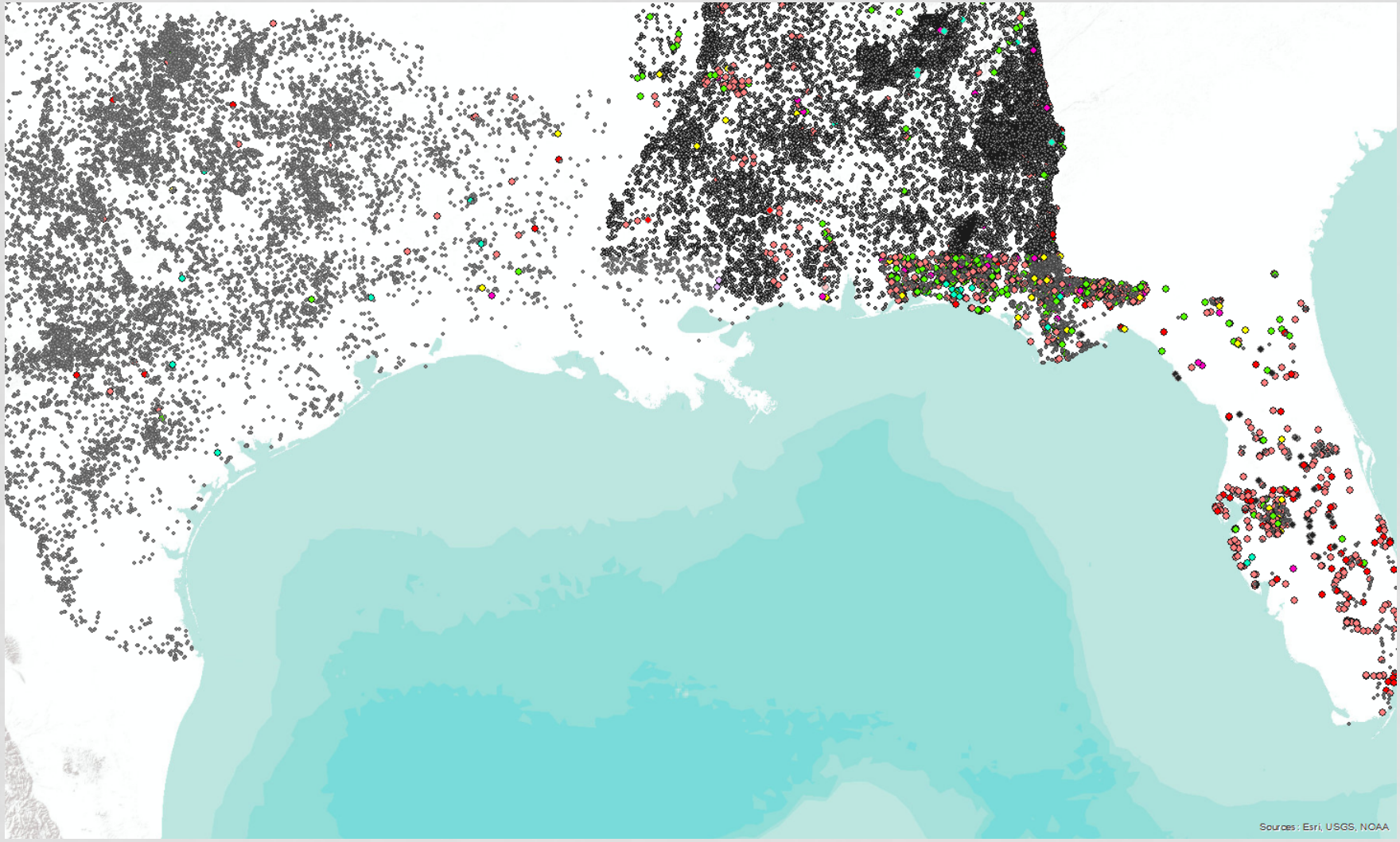
What Do We Know

about hydrologic impairments to the Gulf of Mexico?

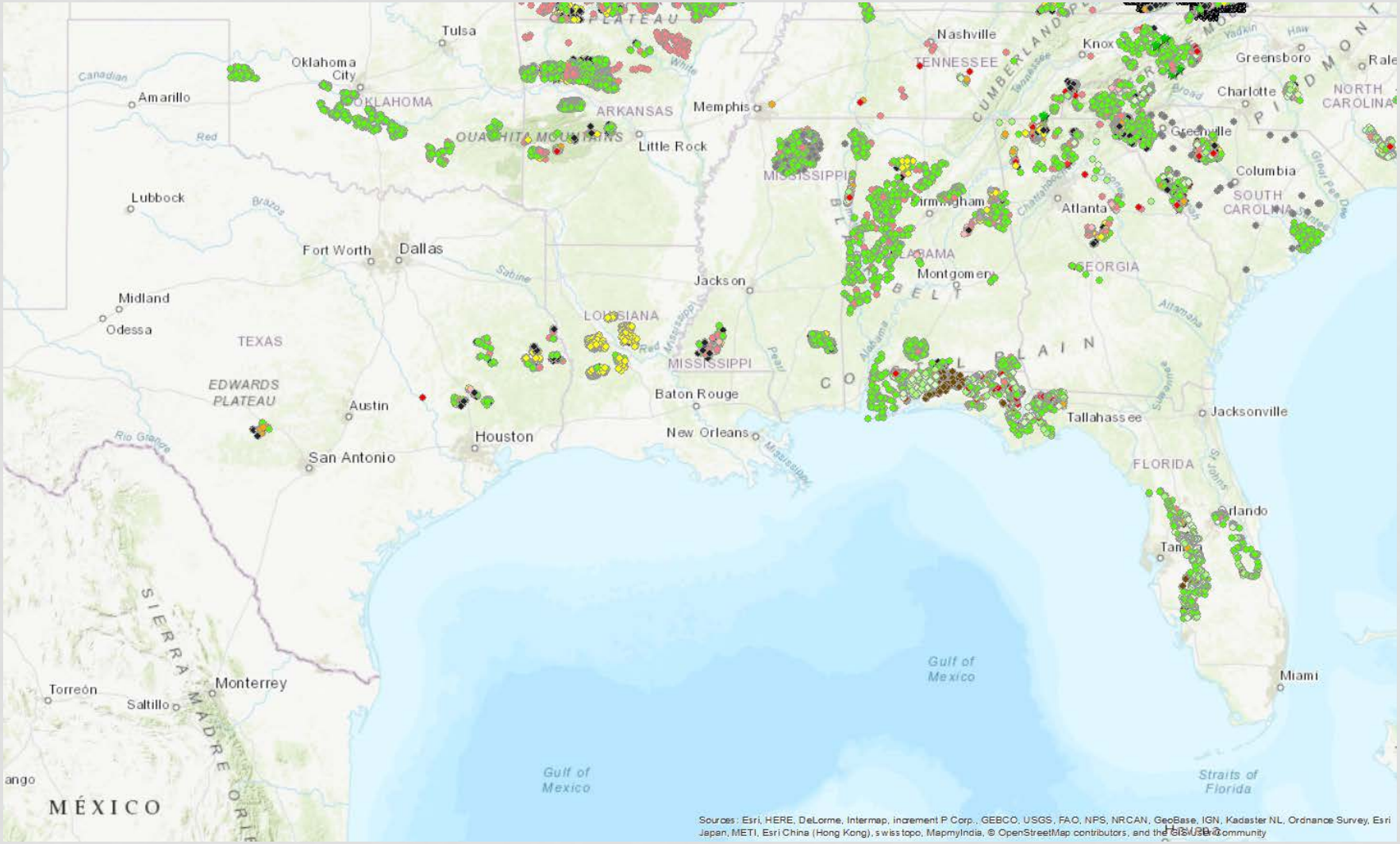




FILLING IN GAPS



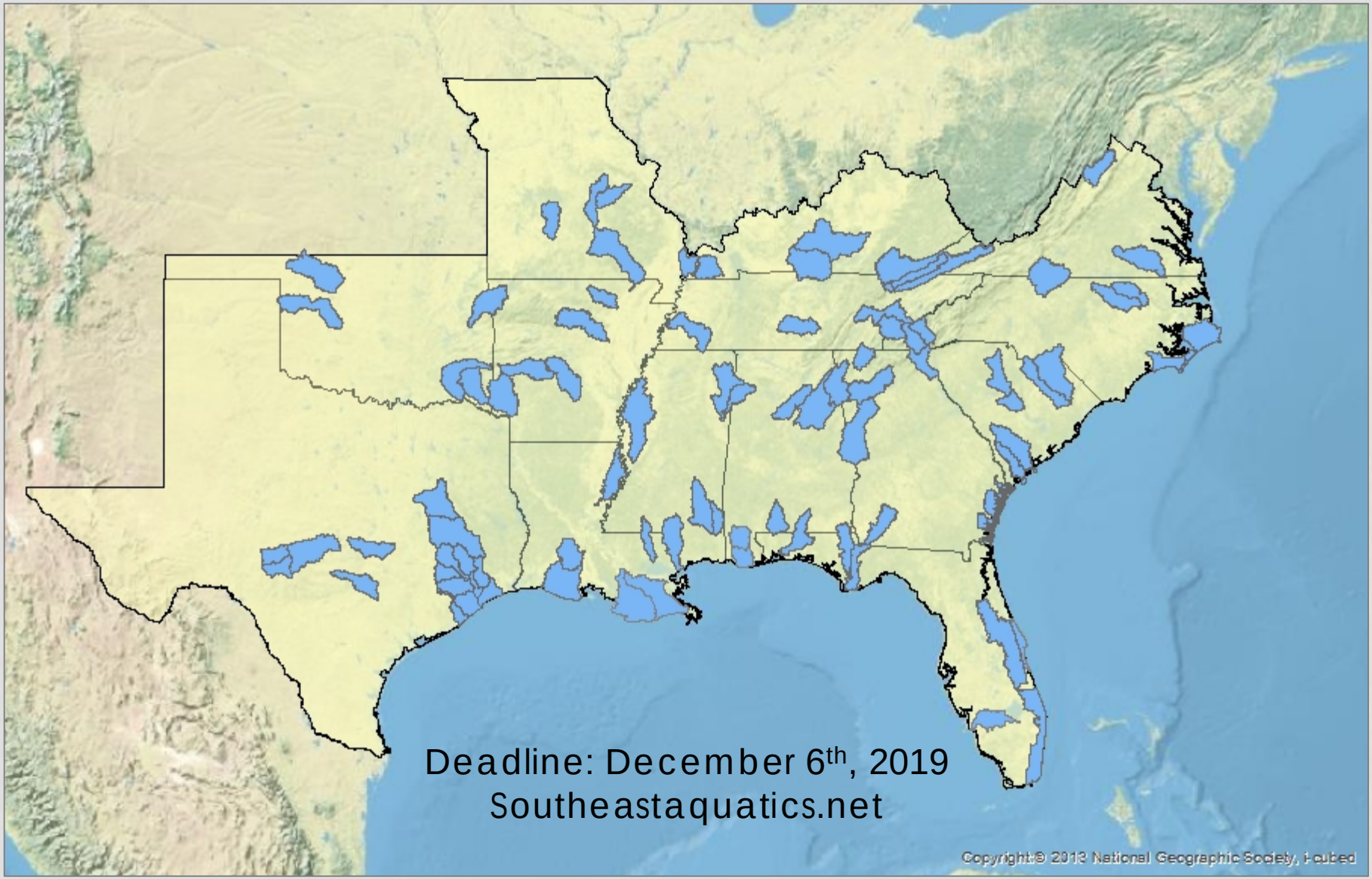
FILLING IN GAPS



SOUTHEAST AQUATIC RESOURCES PARTNERSHIP

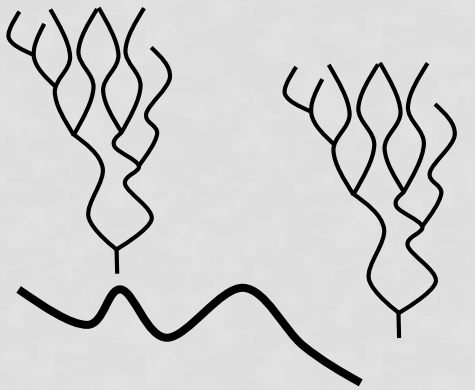
SARP

NATIONAL FISH HABITAT PARTNERSHIP



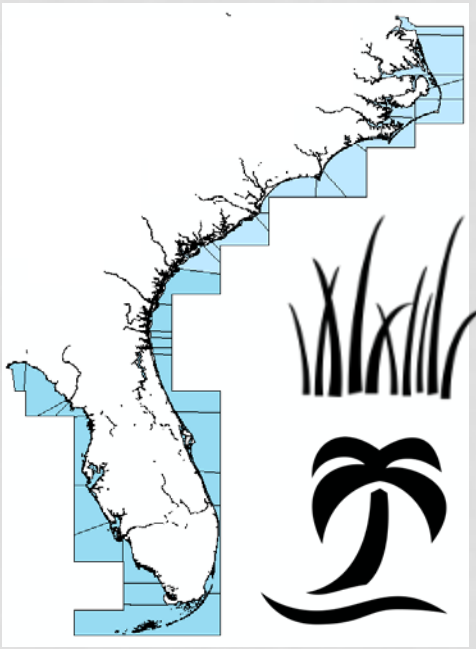
Jessica Graham
Jessica@southeastaquatics.net
850-769-0552 ex. 229

A CROSS-SCALE APPROACH TO MODELING COASTAL HABITAT & BIOTA



Watershed-scale variables

Hierarchical Bayesian & structural equation modeling

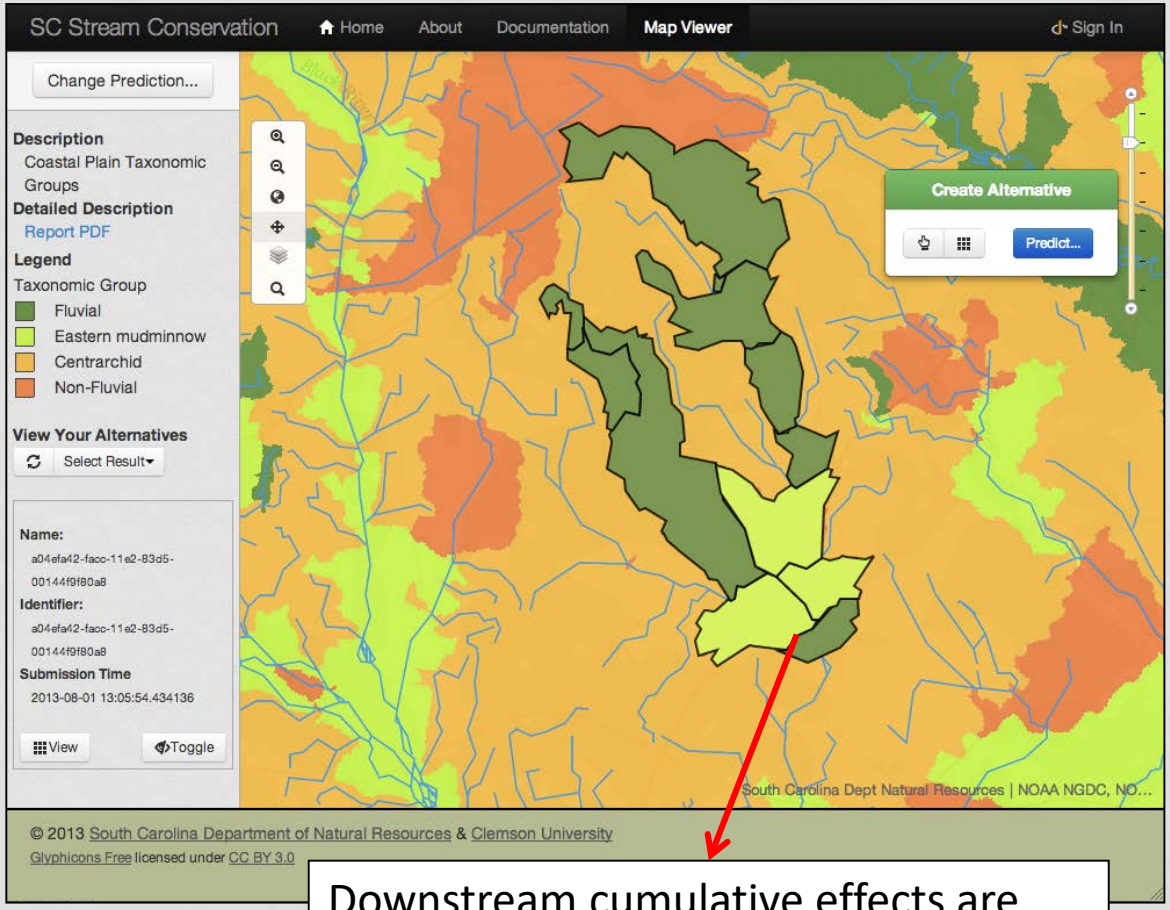


Coastal habitat

Coastal biota

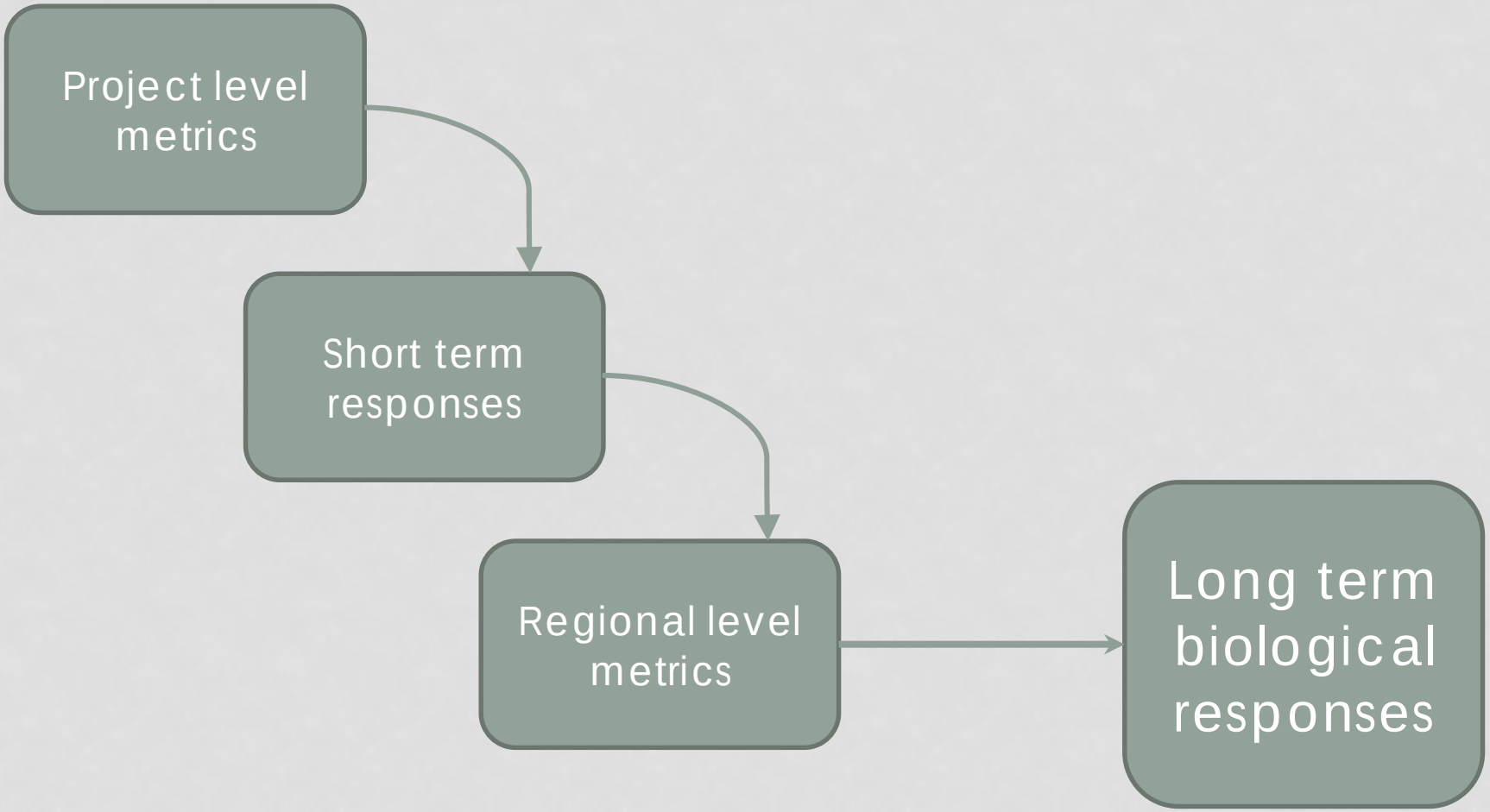
INTERACTIVE CONSERVATION PLANNING

- Server process *dynamically executes a random forest prediction* inside an R statistical computing environment
- Results are returned and displayed in the map viewer.



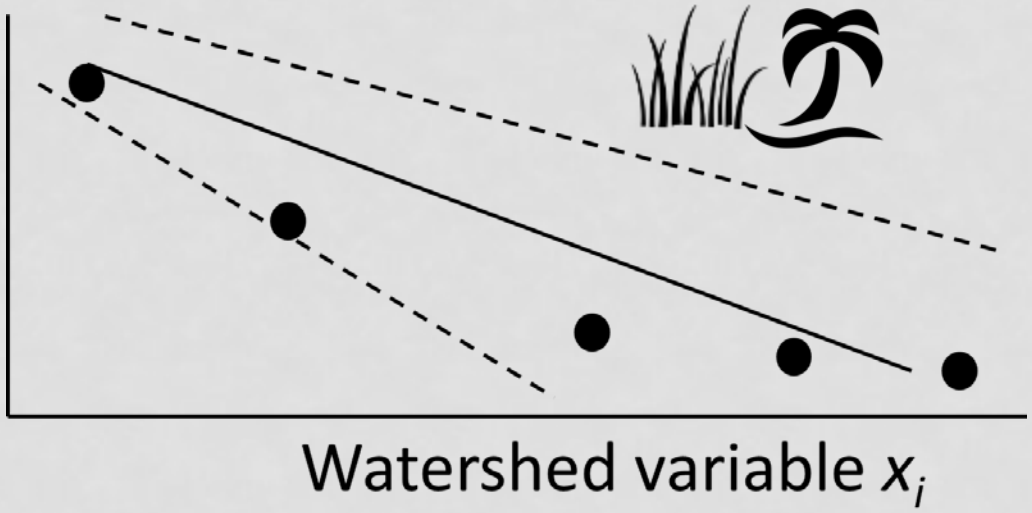
Downstream cumulative effects are automatically calculated and incorporated into prediction.

LONG-TERM INTERESTS



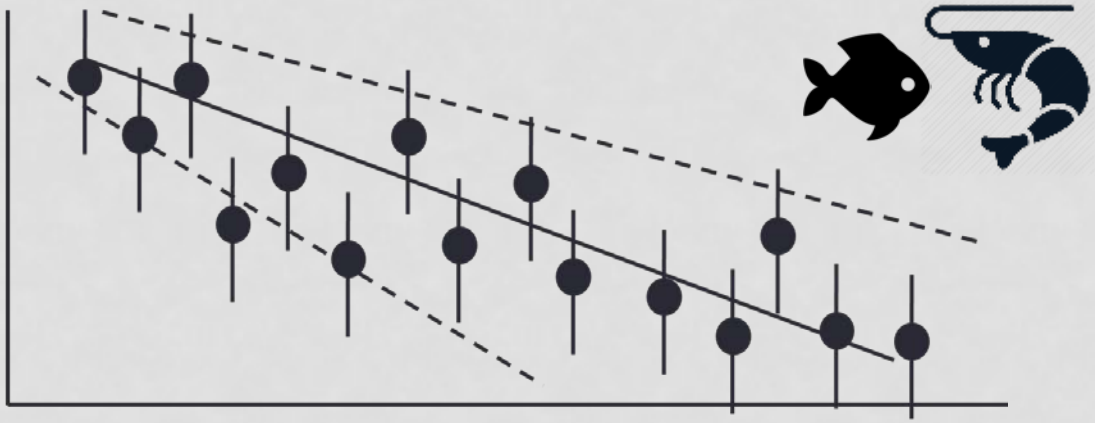
Level 1: estimate effects of watershed attributes on coastal habitat

Coastal habitat variable y_i



Watershed variable x_i

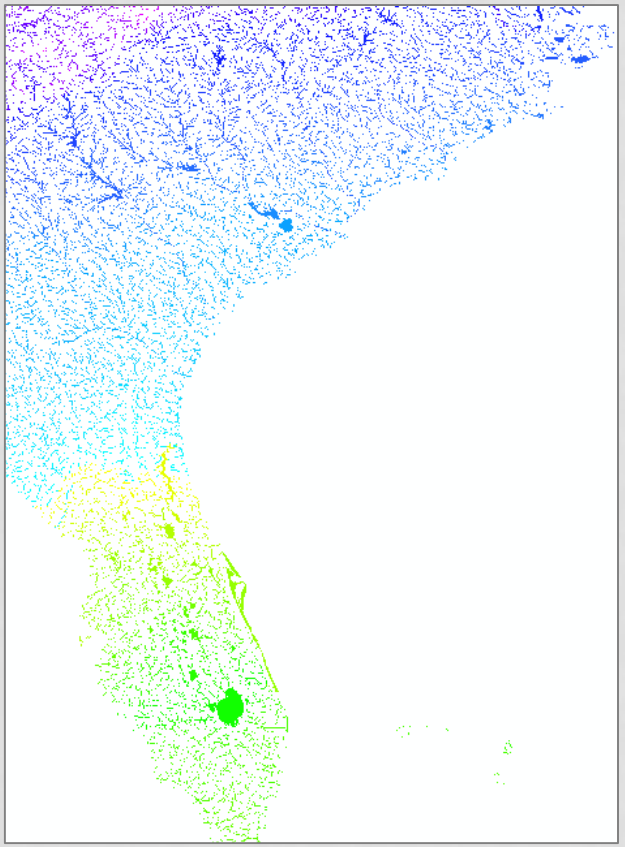
Biotic variable y_i



Coastal habitat variable x_i

WATERSHED-LEVEL FACTORS & DATASETS

- **Anthropogenic land use**:
  - National Land Cover Database
- **Human population size**:
  - US Census
- **Water quality etc:**
  - US EPA StreamCat dataset
- **Natural attributes**
  - (precip, streamflow, etc): Earth-Env dataset



COASTAL HABITAT VARIABLES: LEVERAGING EXISTING SARP WORK

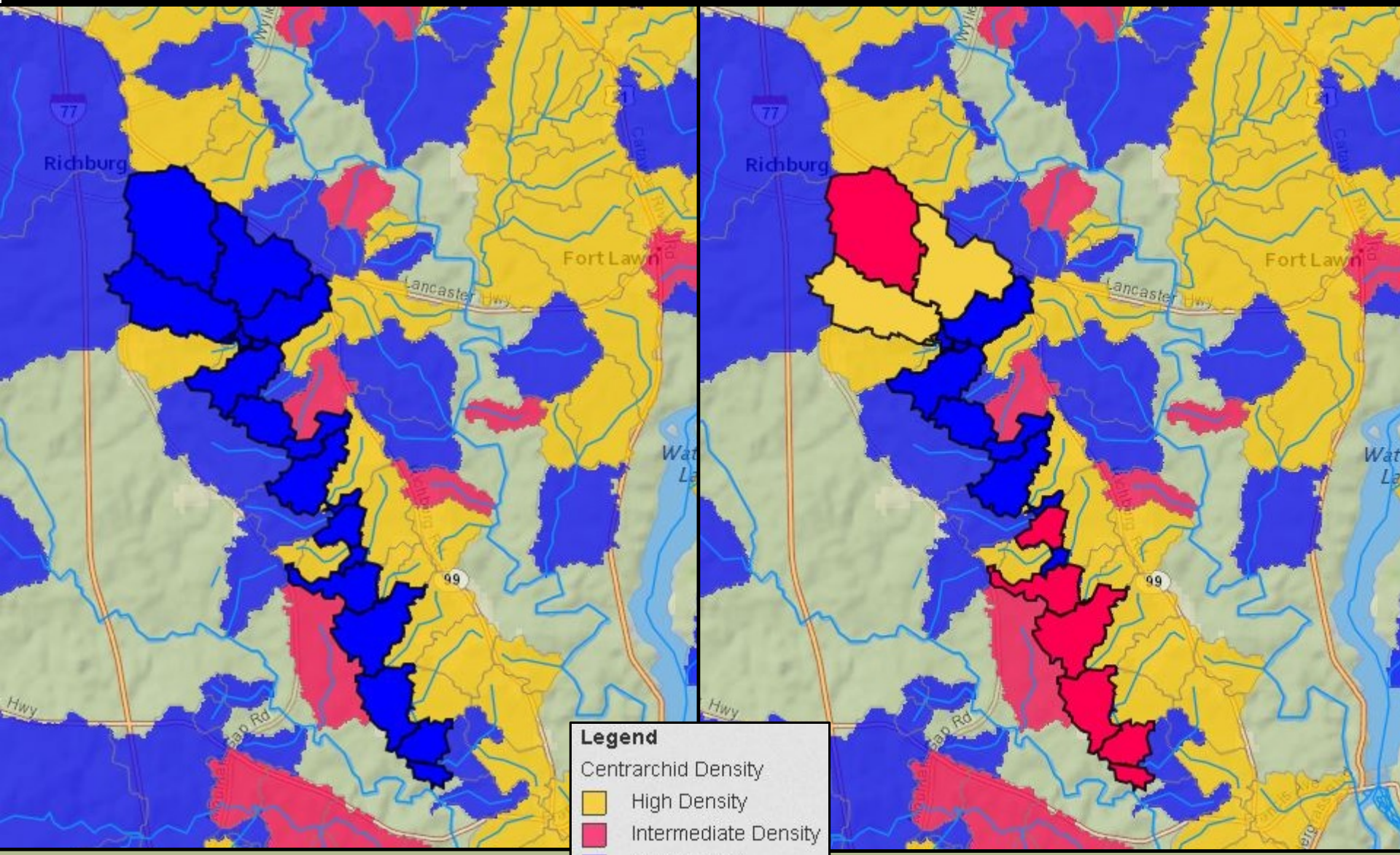
- **Seagrass & oyster reef habitat**:
  - TNC South Atlantic Bight Marine Assessment
- **Wetland habitat coverage**:
  - National Wetlands Inventory
- **Habitat areas of particular concern**:
  - NOAA

COASTAL BIOTIC DATA

- **Southeast Area Monitoring and Assessment Program—South Atlantic (SEAMAP-SA)**
  - **Abundance, biomass & size structure of key species**
  - **Trawl & longline surveys**

Initial

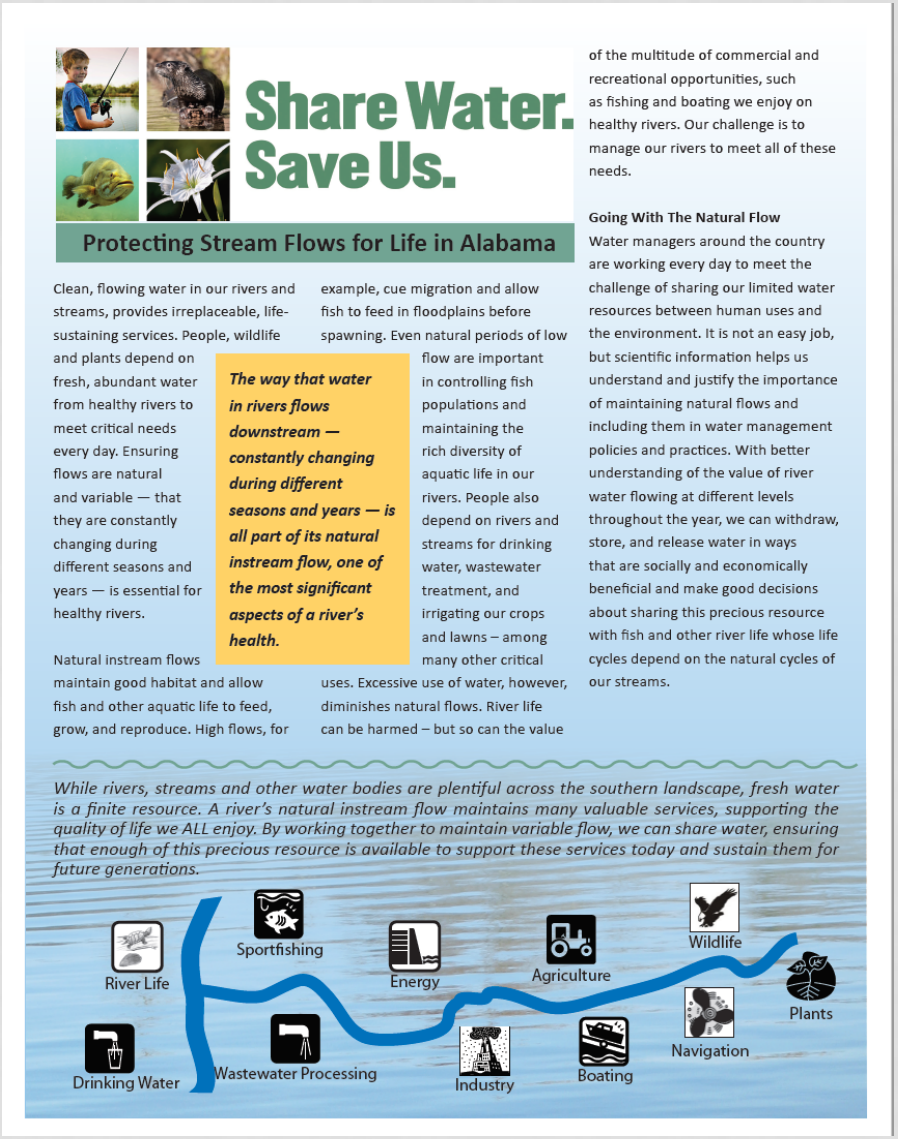
↓ Forest 30% ↑ Urban 30%




THE
ARBOR ROOM
SOUTHEAST AQUATIC RESOURCES PARTNERSHIP
SARP
Our Programs:
Coastal Connectivity
Native Black Bass Initiative
Watershed Restoration
Instream Flow
CONSERVING AQUATIC RESOURCES THROUGH SUSTAINABLE LAND MANAGEMENT PRACTICES
SOUTHEAST AQUATIC RESOURCES PARTNERSHIP
SARP

INSTREAM FLOW

- Research Agenda
  - Long term goals
    - Promote Instream Flow Research
    - Disseminate Information
    - Facilitate Communication
    - Promote Instream Flow Regime Standards



Share Water. Save Us.

Protecting Stream Flows for Life in Alabama

Clean, flowing water in our rivers and streams, provides irreplaceable, life-sustaining services. People, wildlife and plants depend on fresh, abundant water from healthy rivers to meet critical needs every day. Ensuring flows are natural and variable — that they are constantly changing during different seasons and years — is essential for healthy rivers.

The way that water in rivers flows downstream — constantly changing during different seasons and years — is all part of its natural instream flow, one of the most significant aspects of a river's health.

Natural instream flows maintain good habitat and allow fish and other aquatic life to feed, grow, and reproduce. High flows, for example, cue migration and allow fish to feed in floodplains before spawning. Even natural periods of low flow are important in controlling fish populations and maintaining the rich diversity of aquatic life in our rivers. People also depend on rivers and streams for drinking water, wastewater treatment, and irrigating our crops and lawns – among many other critical uses. Excessive use of water, however, diminishes natural flows. River life can be harmed – but so can the value of the multitude of commercial and recreational opportunities, such as fishing and boating we enjoy on healthy rivers. Our challenge is to manage our rivers to meet all of these needs.

Going With The Natural Flow

Water managers around the country are working every day to meet the challenge of sharing our limited water resources between human uses and the environment. It is not an easy job, but scientific information helps us understand and justify the importance of maintaining natural flows and including them in water management policies and practices. With better understanding of the value of river water flowing at different levels throughout the year, we can withdraw, store, and release water in ways that are socially and economically beneficial and make good decisions about sharing this precious resource with fish and other river life whose life cycles depend on the natural cycles of our streams.

While rivers, streams and other water bodies are plentiful across the southern landscape, fresh water is a finite resource. A river's natural instream flow maintains many valuable services, supporting the quality of life we ALL enjoy. By working together to maintain variable flow, we can share water, ensuring that enough of this precious resource is available to support these services today and sustain them for future generations.