

Sustainable Approaches to Evaluating Interbasin Water Transfers in Georgia

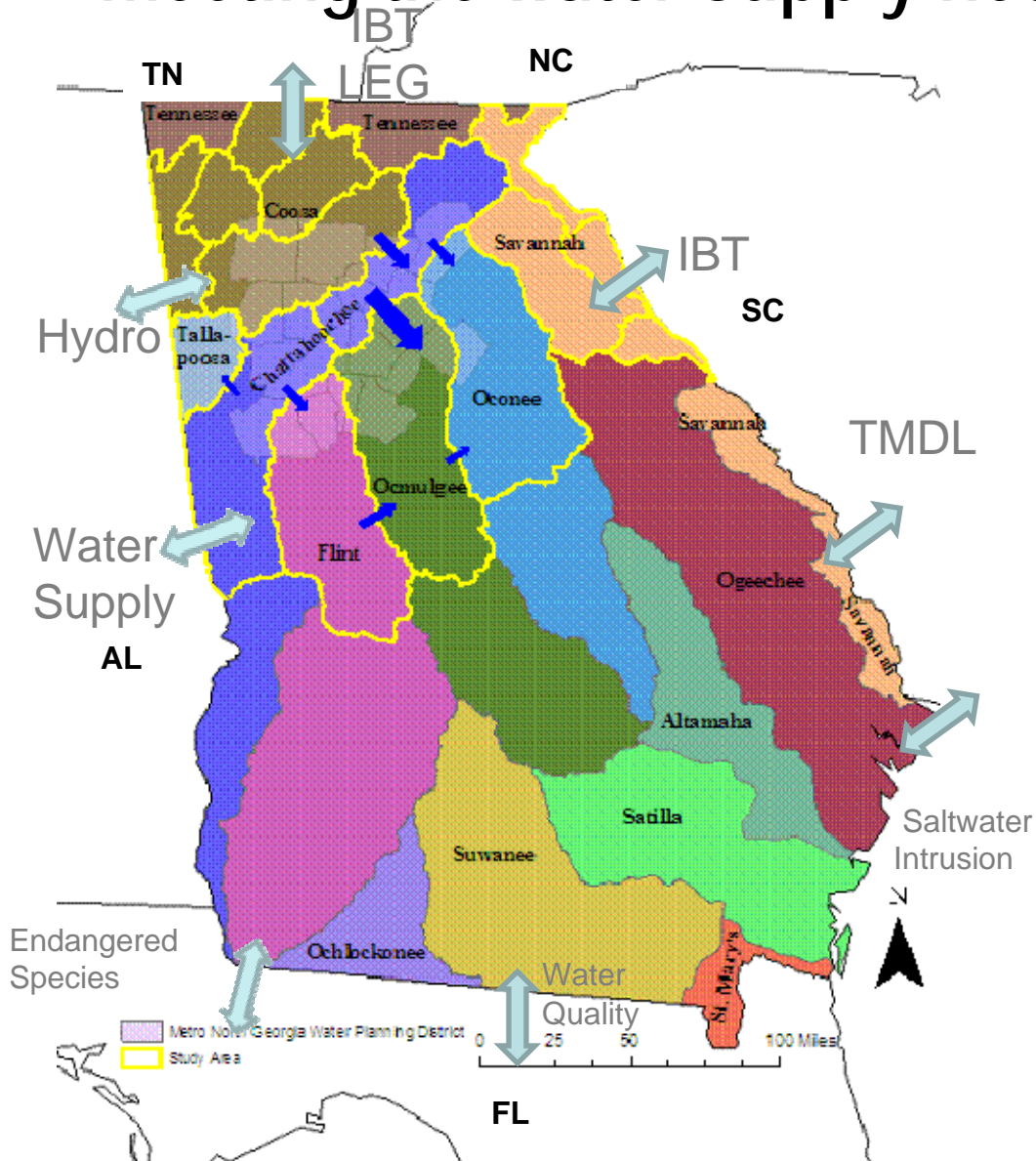
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Interbasin transfer (IBT) plays a crucial role in meeting the water supply needs for the Southeast



- Net losses (mgd):
 - Chattahoochee – 50.5
 - Coosa – 23.1
 - Flint – 12.4
- IBTs to increase in 16-county District
- IBTs being considered beyond District

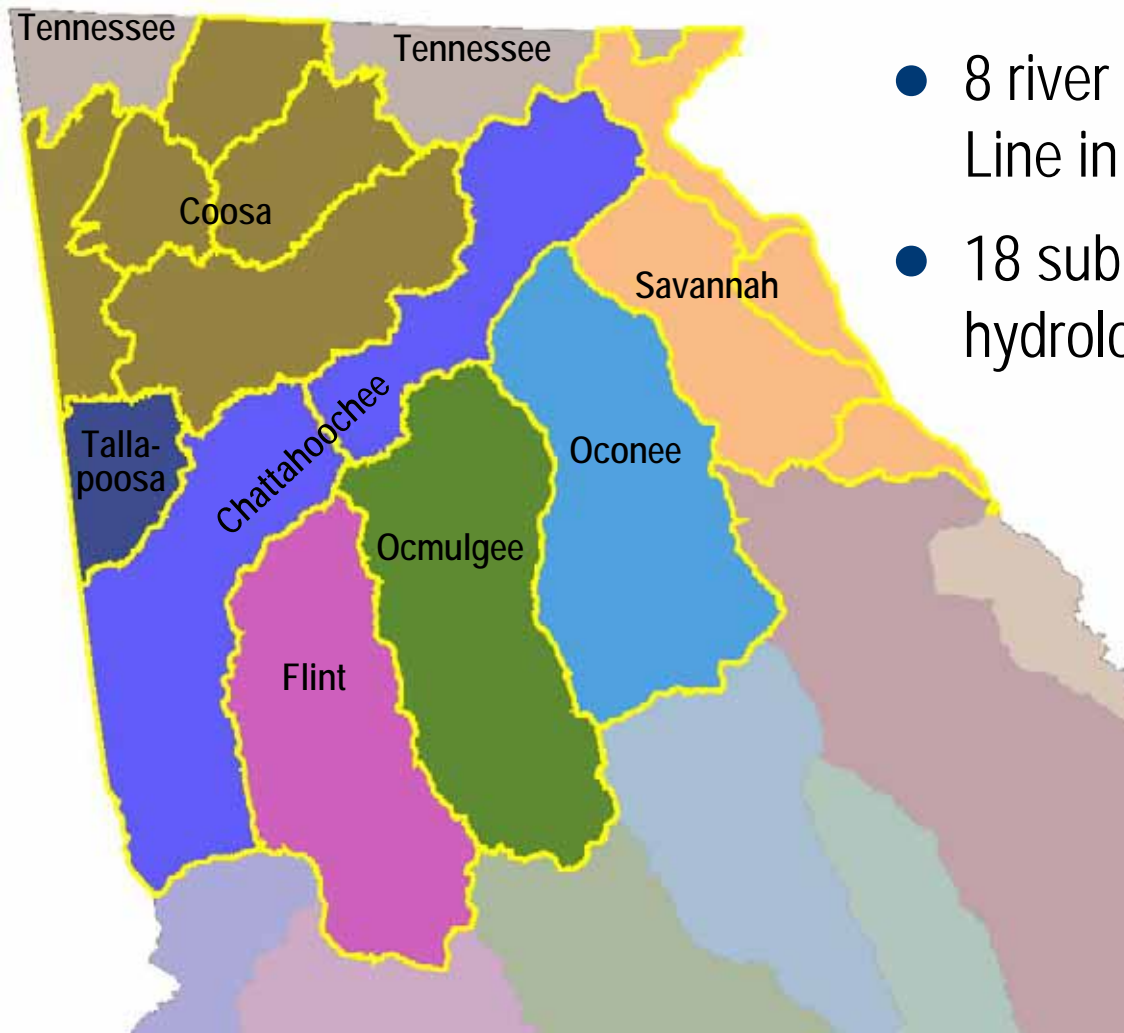
Heightened concern over IBT emphasizes need for sound-science approach

- At issue:
 - Environmental & economic impacts to river basins of origin
 - Infrastructure costs to local governments
 - Integrated economies of interstate river basins
- Georgia statewide water planning seeks to maximize water returns to river basins of origin, in part, by managing IBTs
- Sound science needed to help resolve interstate issues and legal actions

Study Objectives

- Investigate the availability and quality of relevant data for assessing environmental impacts to river basins of origin
- Compile environmental data for sub-basins using GIS
- Compare natural resource values among sub-basins
- Identify data gaps and needs for sub-basin planning
- Consider implications for statewide water planning and interstate water issues

Study Area



- 8 river basins upstream of Fall Line in Georgia
- 18 sub-basins defined by 8-digit hydrologic unit codes (HUCs)

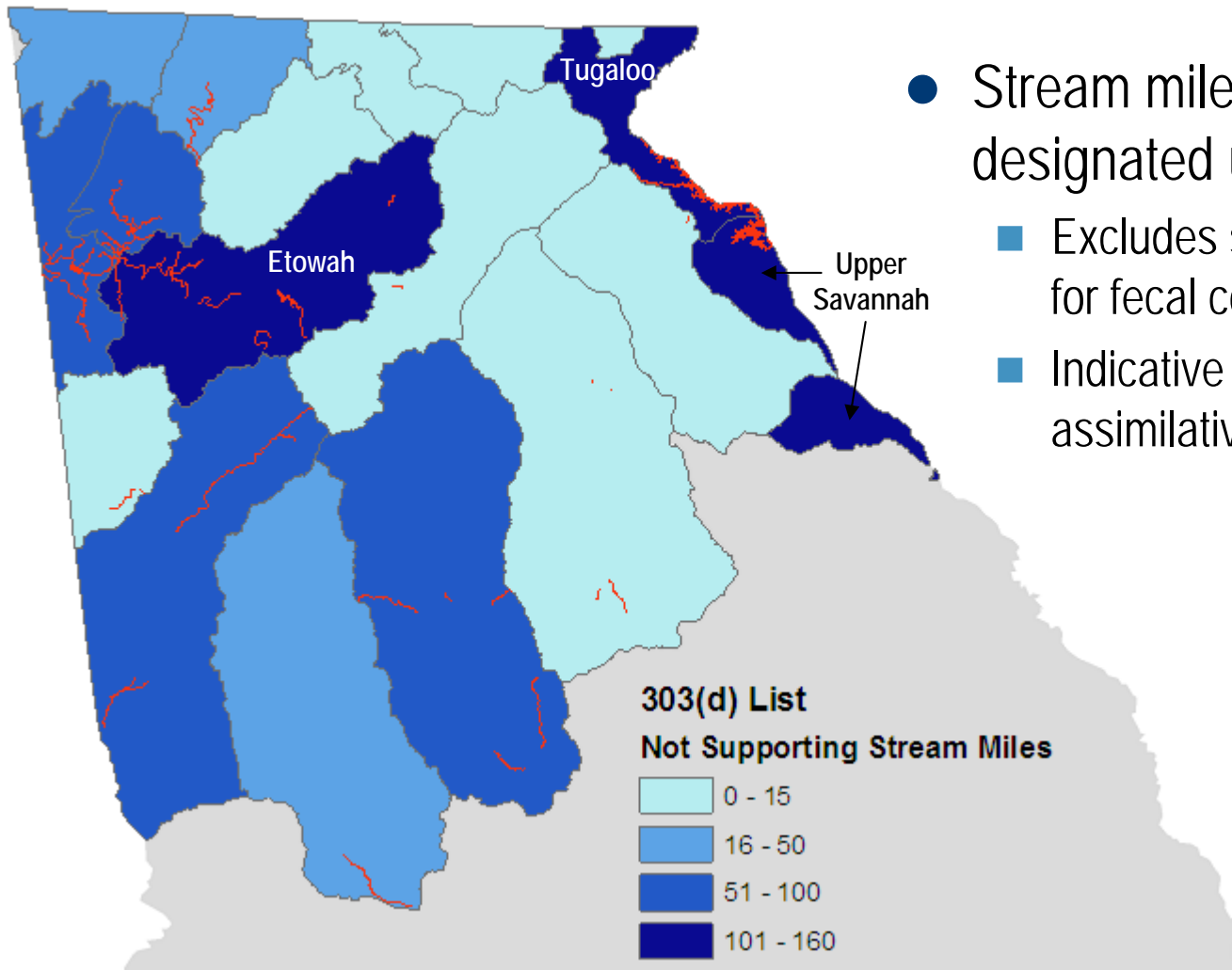
Potential Impacts to Basins of Origin

- Changes to the natural flow regime
- Water quality and assimilative capacity
- Native aquatic communities of fish and wildlife
- Habitat for rare, threatened, and endangered species
- Wetlands and riparian habitat
- Water-based recreation activities
- Visual aesthetic qualities

Environmental Data and Sources

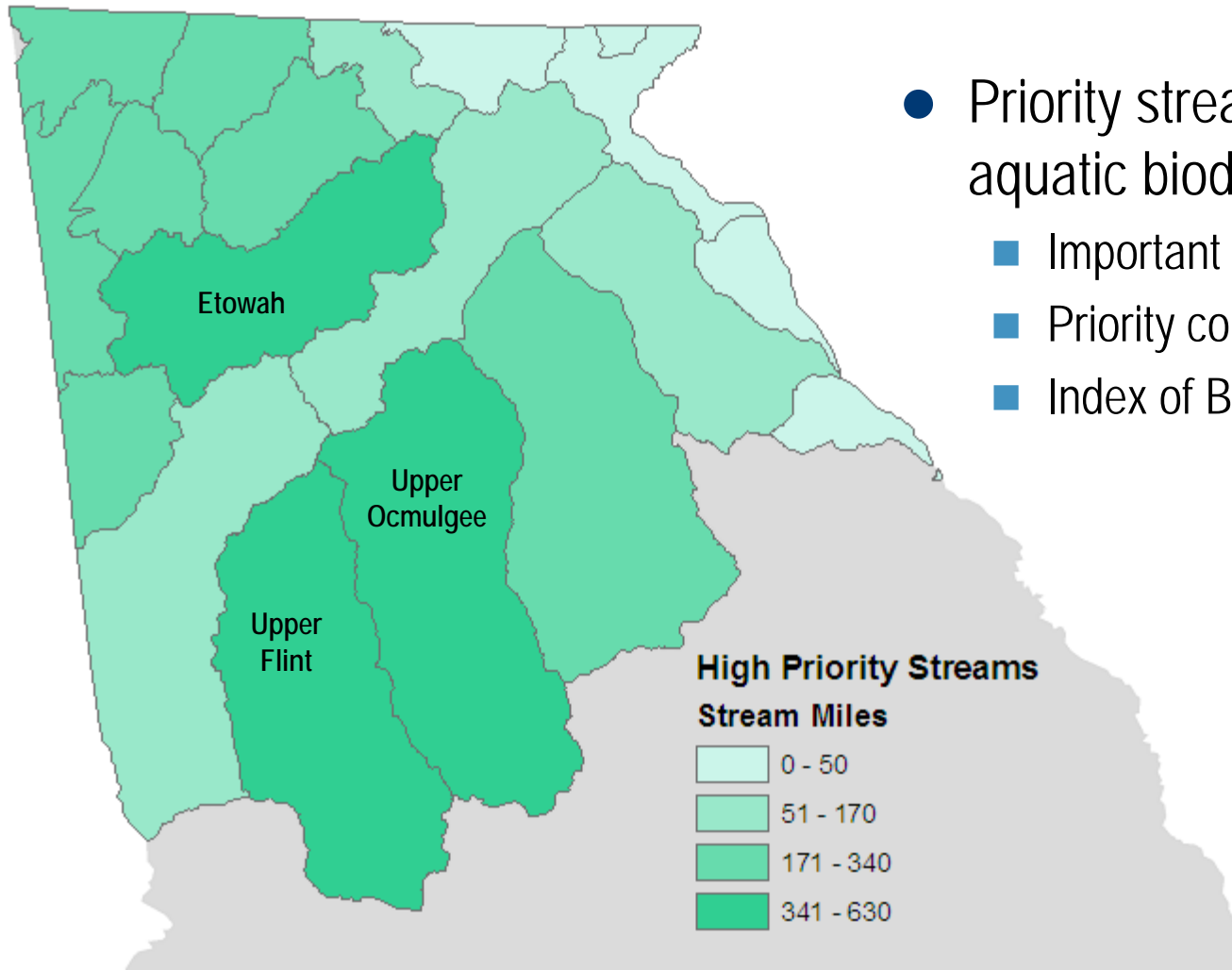
Attribute	Source	Indicator
Water Use Attainment		
1. Stream miles “not supporting”	GDNR EPD	-
Aquatic Biodiversity		
2. Miles of high priority streams	GDNR WRD	+
3. Miles of primary trout streams	GDNR WRD	+
4. Special concern aquatic species	GDNR NHP	+
Protected Species		
5. Federal protected aquatic species	USFWS	+
6. State protected aquatic species	GDNR NHP	+
7. Miles of critical habitat	USFWS; Fed. Reg.	+
Regulated Streams		
8. Acreage of impounded waters	EPA	-
Recreation and Aesthetics		
9. Miles of Wild and Scenic Rivers	NPS	+
10. Wilderness Area acreage	Wilderness.net	+

Georgia EPD 303(d)-Listed Waters



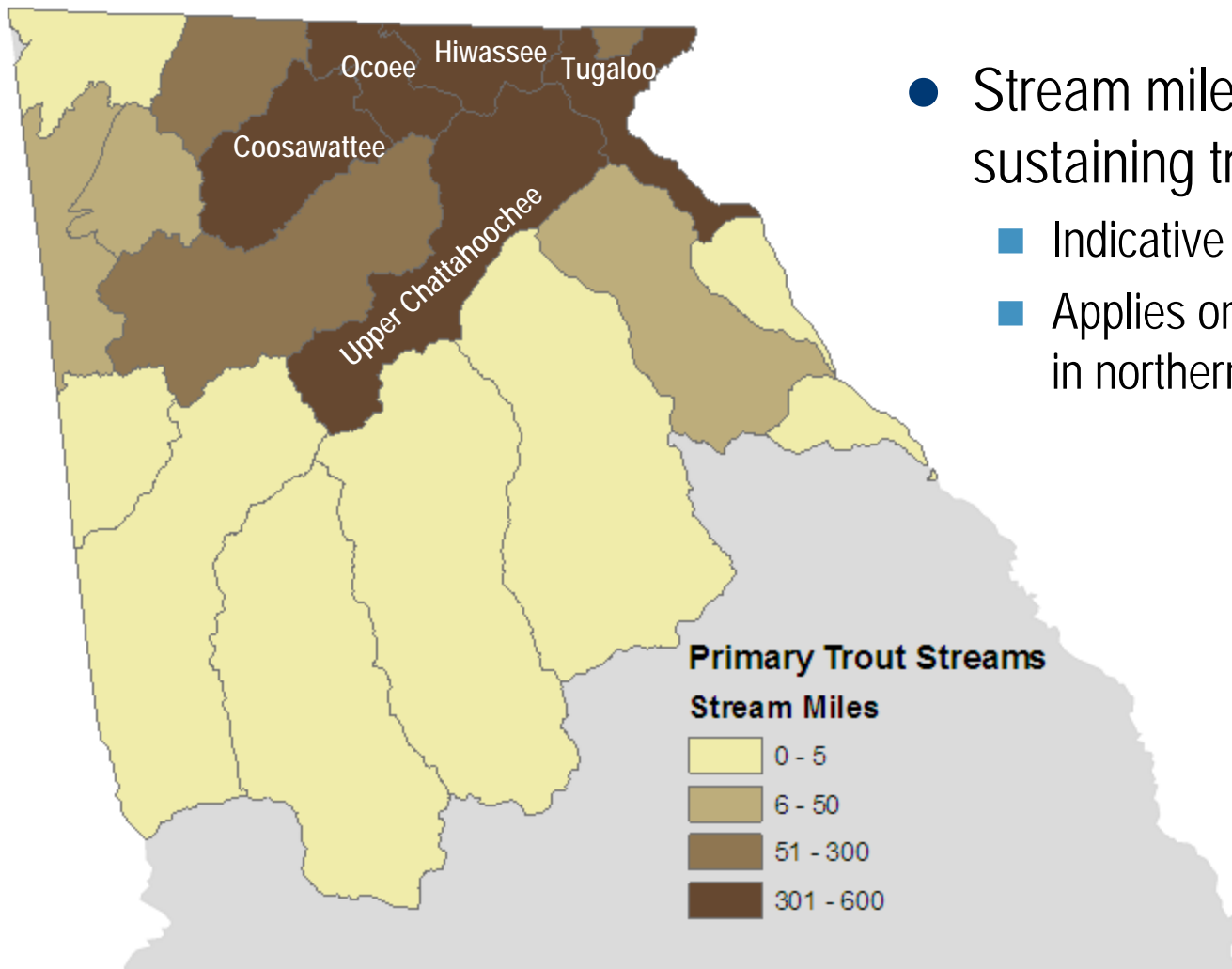
- Stream miles “not supporting” designated uses
 - Excludes segments listed solely for fecal coliform violations
 - Indicative of impaired assimilative capacity or biota

WRD High Priority Streams



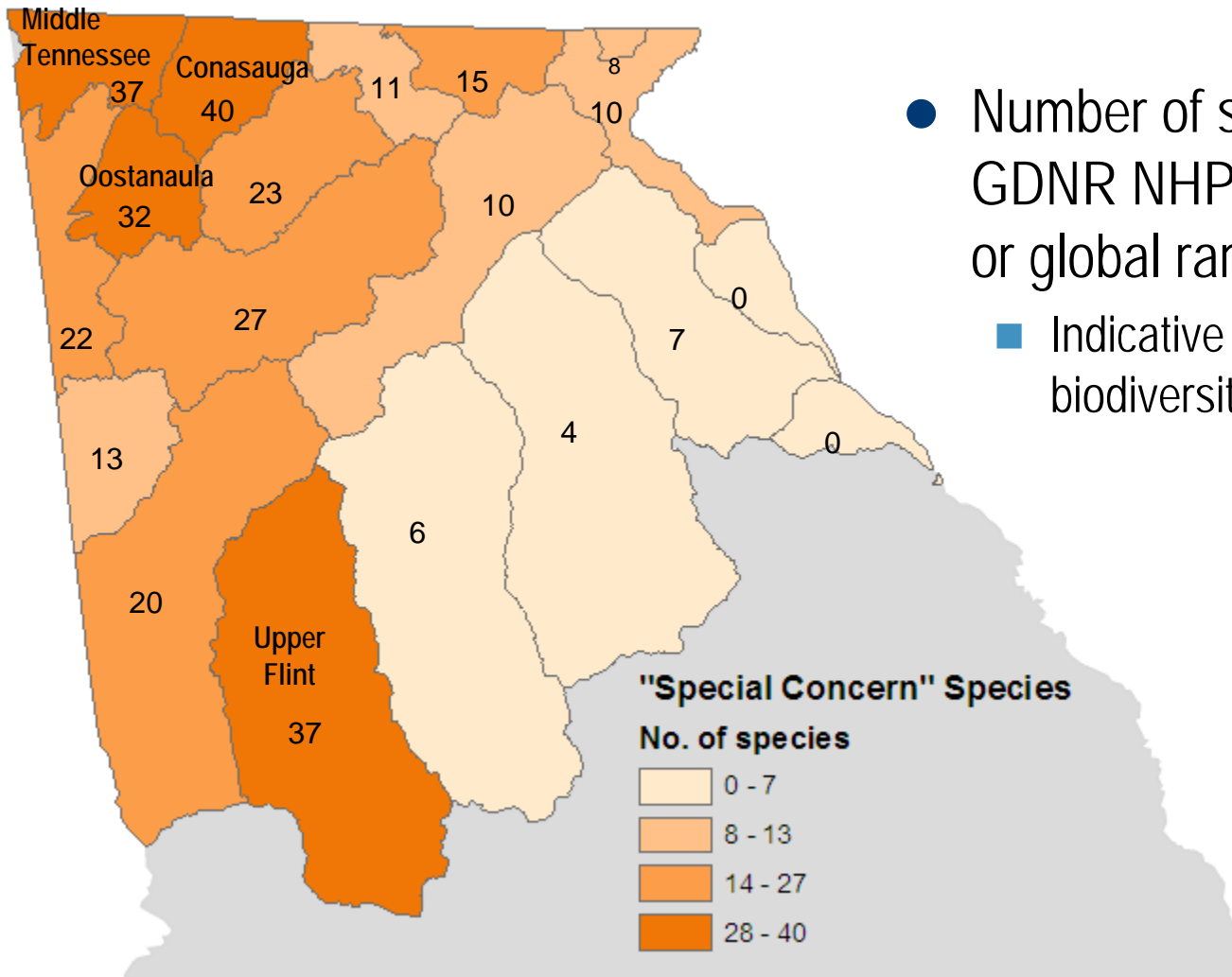
- Priority streams for protecting aquatic biodiversity based on:
 - Important species populations
 - Priority conservation areas
 - Index of Biotic Integrity scores

Primary Trout Streams



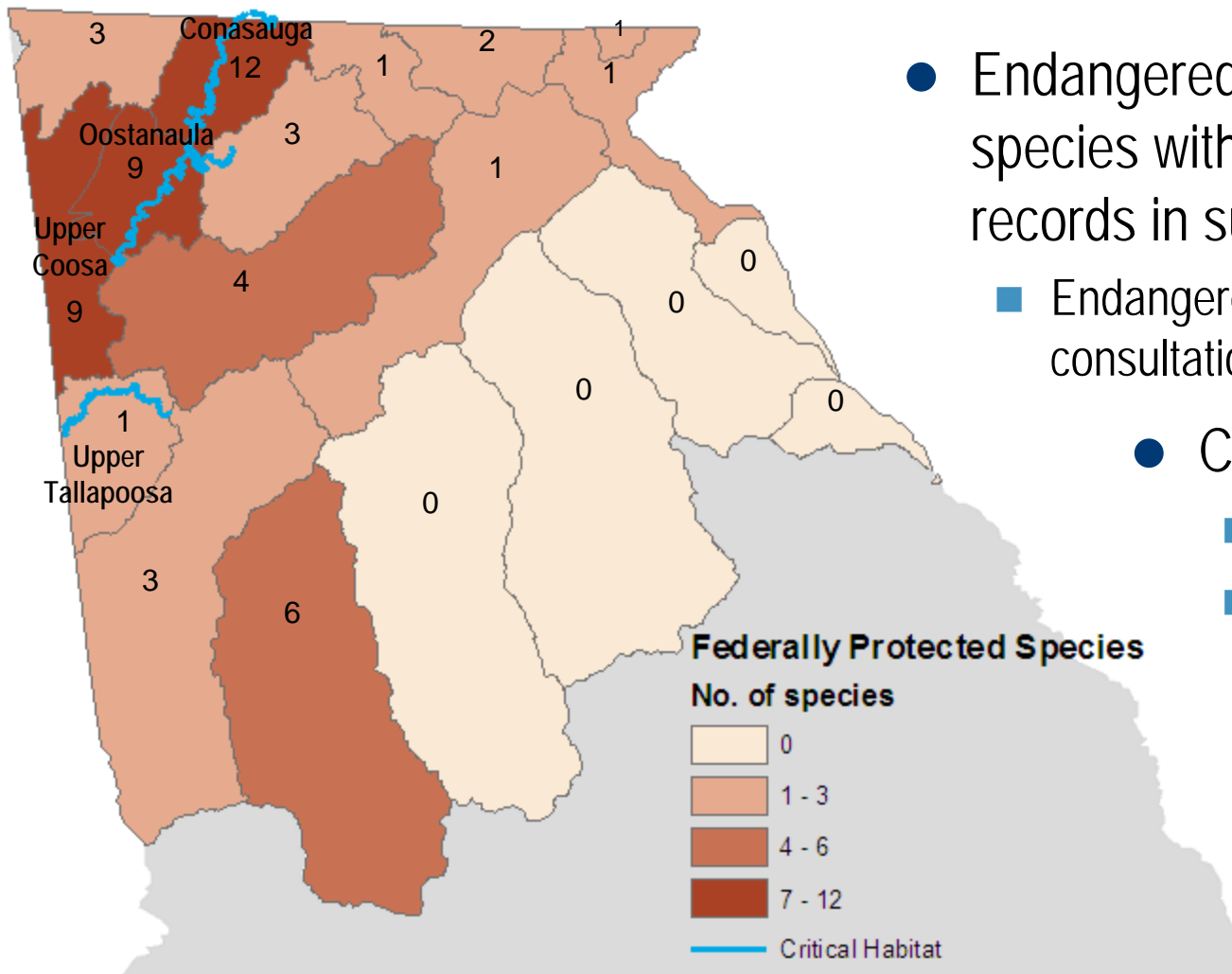
- Stream miles supporting self-sustaining trout populations
 - Indicative of high quality habitat
 - Applies only to cool-water streams in northern study area

Aquatic Species of Concern



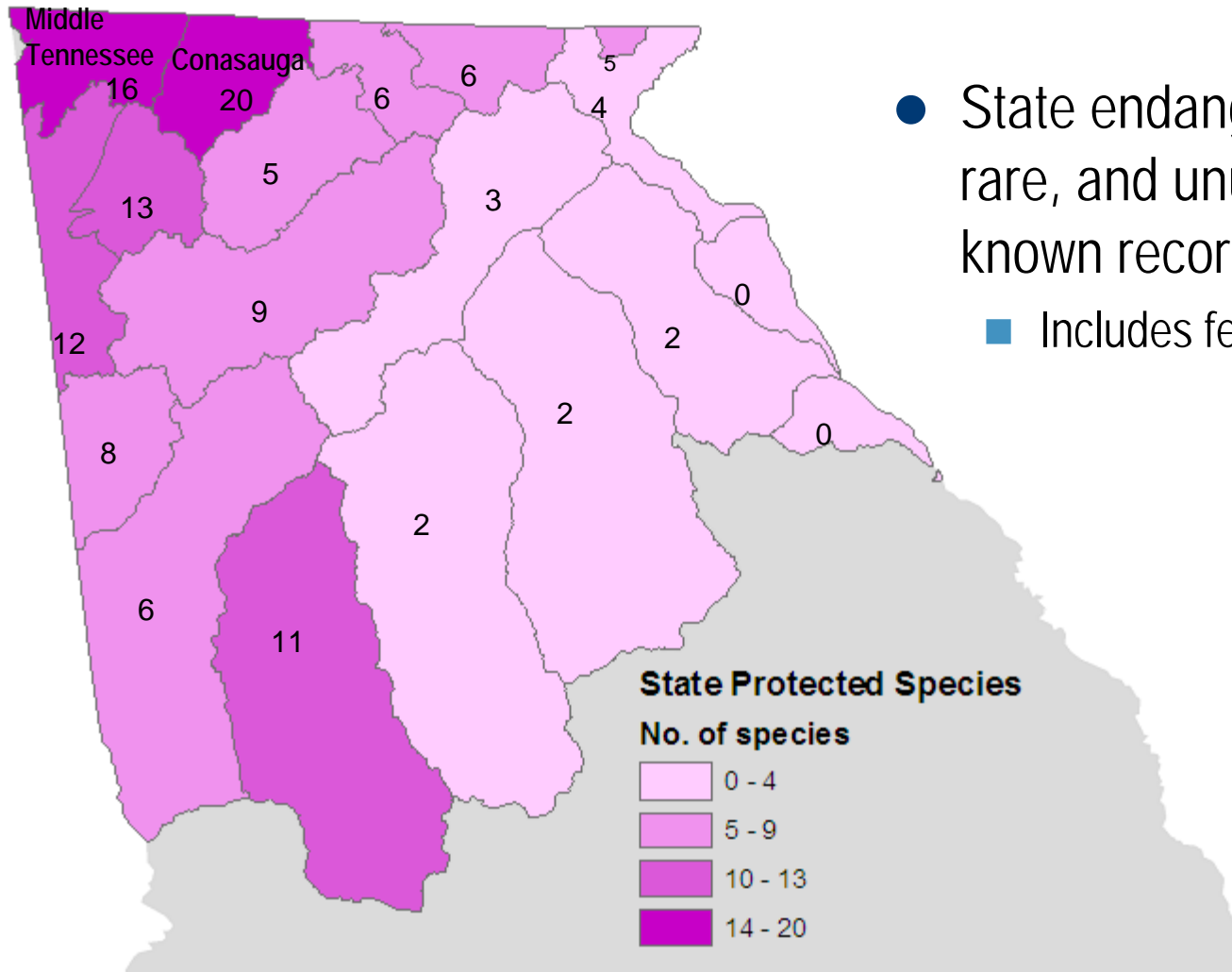
- Number of species tracked by GDNR NHP because of state or global rarity
- Indicative of native aquatic biodiversity

Federally Protected Aquatic Species



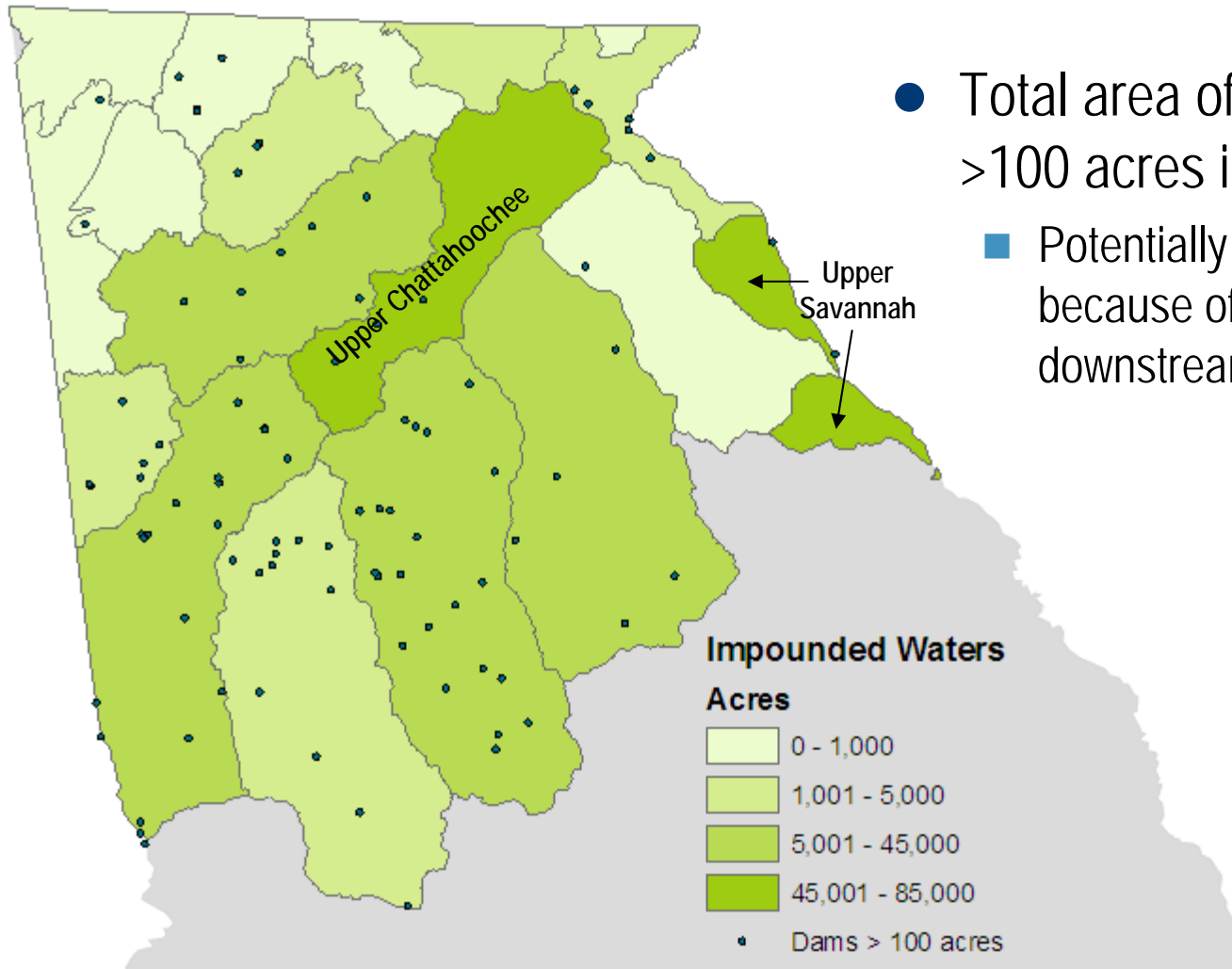
- Endangered & threatened species with known occurrence records in sub-basin
 - Endangered Species Act requires consultation on potential effects
- Critical habitat
 - 5 mussel species
 - 2 fish species

State Protected Aquatic Species



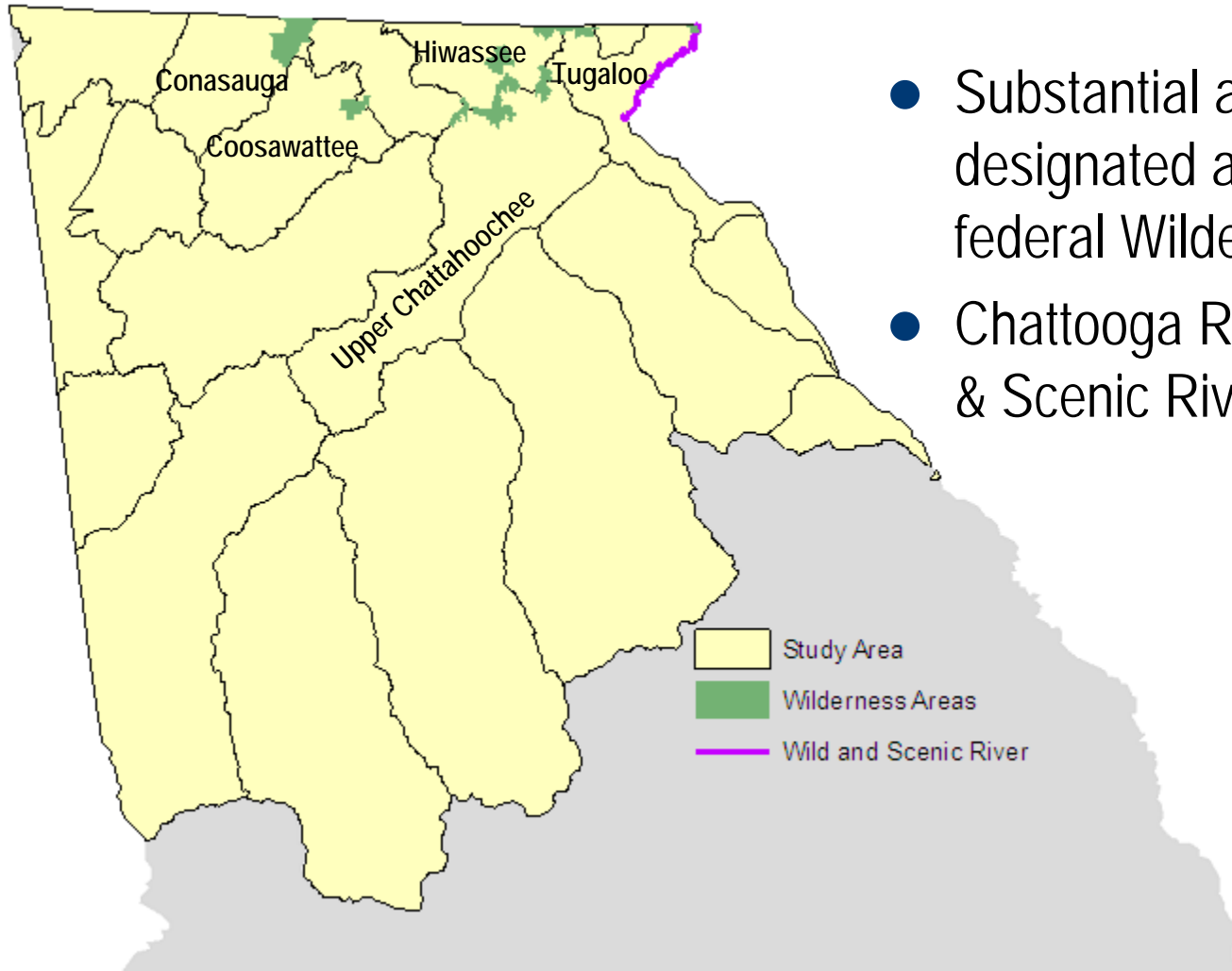
- State endangered, threatened, rare, and unusual species with known records in sub-basin
 - Includes federal T&E species

Acres of Impounded Waters



- Total area of impounded waters >100 acres in size
- Potentially less affected by IBT because of ability to re-regulate downstream flows

Recreation and Aesthetics



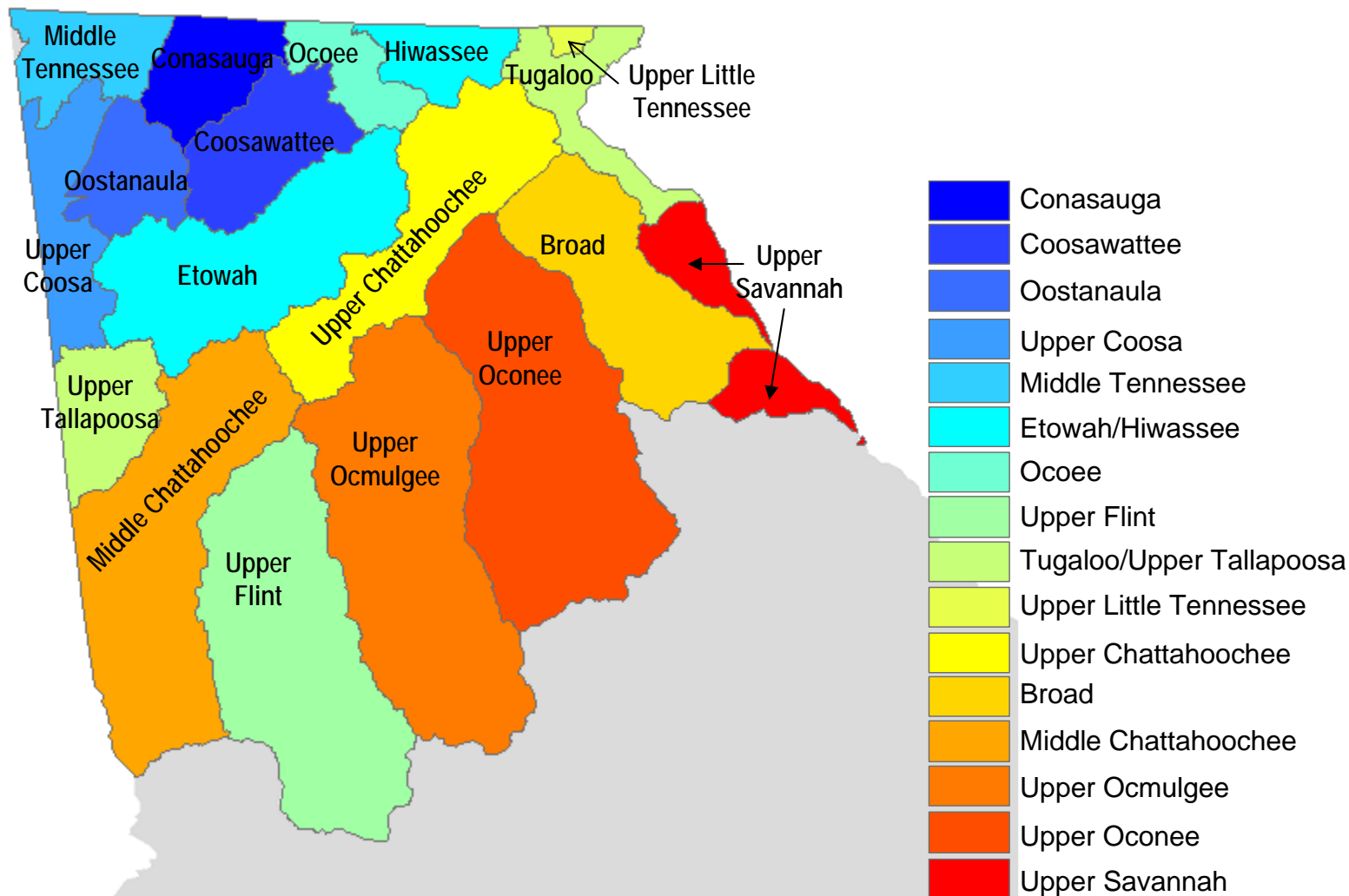
- Substantial areas of North GA designated as wilderness under federal Wilderness Act
- Chattooga River in National Wild & Scenic Rivers System

Sum-of-Ranks Scoring

- Sub-basins were ranked for each attribute in order of increasing resource value
 - 1 (lowest) to 18 (highest)
- Ranks were summed for each sub-basin to yield a sum-of-ranks score
 - Higher scores indicated higher natural resource value
 - Sum-of-rank scores ranged from 12 to 137
- Higher scores suggest higher potential for adverse environmental effects as a basin of origin for IBT

Sub-basin Ranking

(Highest to lowest natural resource value)

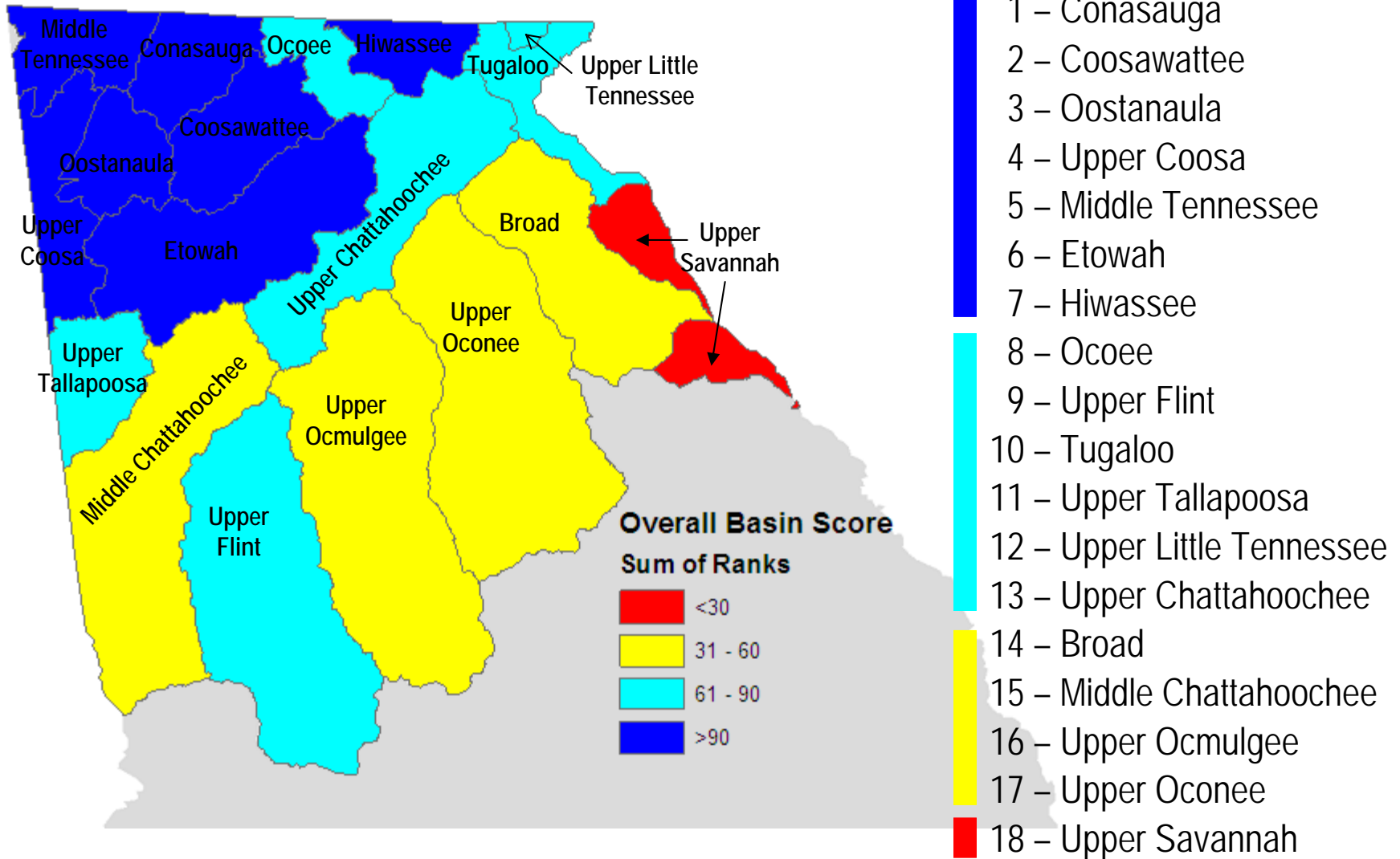


Data Trends and Observations

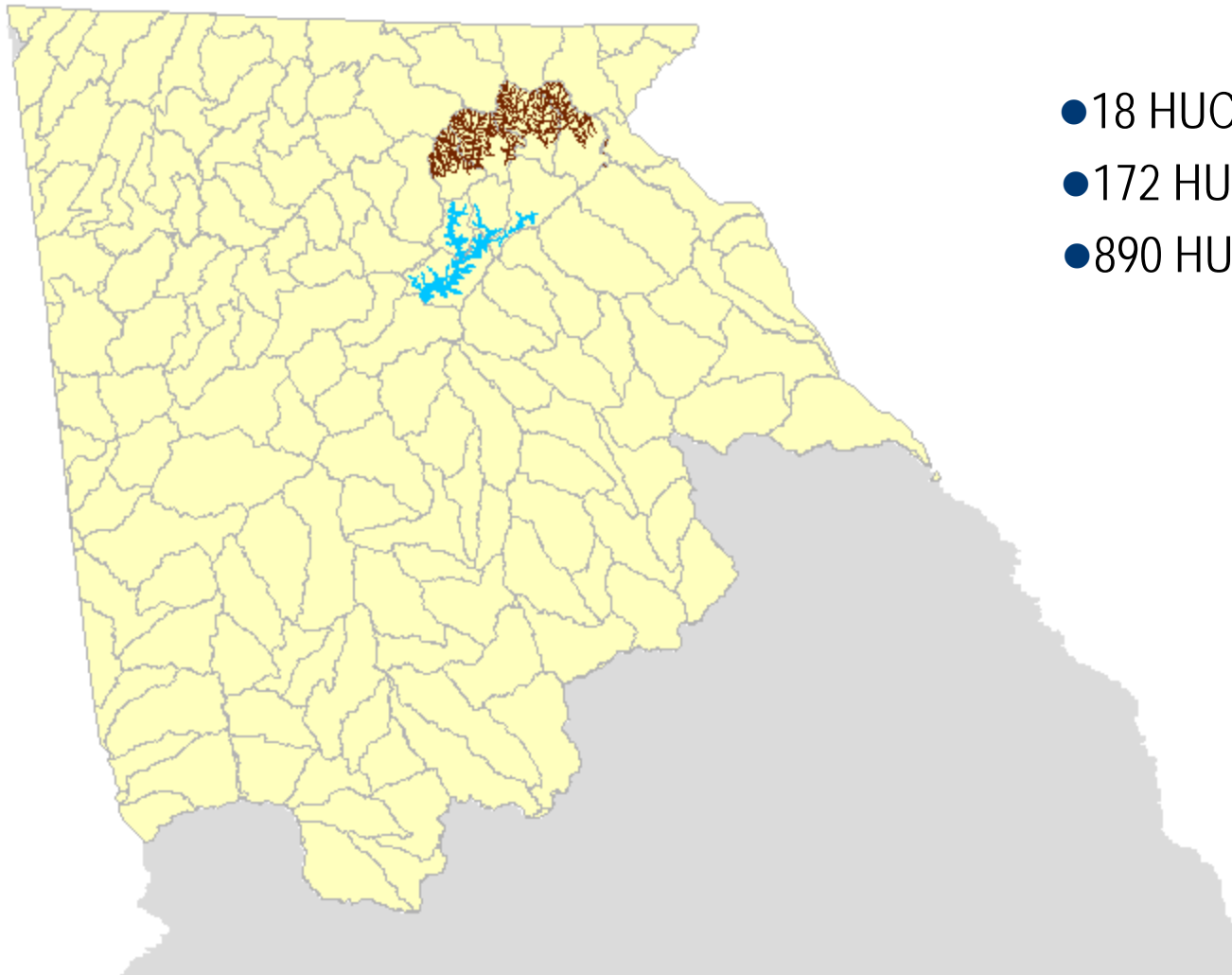
- Conasauga sub-basin potentially most sensitive because of high aquatic biodiversity and critical habitat
- Top 4 scoring sub-basins located in Coosa (ACT) basin
- Upper Savannah potentially least sensitive due to large area of impoundments and lower aquatic biodiversity
- Economic feasibility, cost effectiveness, navigation, etc. not addressed by this study (e.g., Lower Savannah)
- Additional attributes and/or differential weighting of attributes would likely alter sub-basin rankings

Sub-basin Grouping

(Highest to lowest potential sensitivity to IBT impacts)



Variation within sub-basins suggests need to manage data at smaller scale



- 18 HUC-8 sub-basins
- 172 HUC-10 watersheds
- 890 HUC-12 sub-watersheds

Data Gaps Suggested by Analysis

- Water quality monitoring and modeling
- Instream flow needs of native aquatic communities
- Water-based recreational use
- Distribution and quality of riparian wetlands
- Other?

Value of Environmental Resource Data to Comprehensive Water Planning

- Assist decisions regarding IBT at sub-basin level
- Guide state planning concerning policies and management tools appropriate to:
 - Specific sub-basin environmental issues & constraints
 - Prioritizing sub-basins for additional data collection & research
 - Decisions regarding use of existing or expanded watershed impoundments for local government water supply
 - Enhancing monitoring programs
- Assist understanding & resolution of interstate conflicts

Conclusion

Environmental resource data analyzed at an appropriate watershed scale, when combined with analyses of economic impacts and other pertinent factors, are essential to making better decisions regarding the use of IBT as a management tool