

Yazoo Darter Road Crossing Survey

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UNIVERSITY OF MISSISSIPPI GEOINFORMATICS CENTER
A MISSISSIPPI MINERAL RESOURCES INSTITUTE PROGRAM



Mississippi Mineral Resources Institute



The University of Mississippi

Background:

- GIS and Field Survey of Stream-Road crossings in the upper Little Tallahatchie River and Yocona River Basins.
- Funded by the United States Fish and Wildlife Service
 - Jackson Mississippi
 - Daniel Drennen

Goal:

To analyze the barriers and pathways to the migration and movement of the Yazoo Darter in its ecosystem in northern Mississippi



Background:

Phase I:

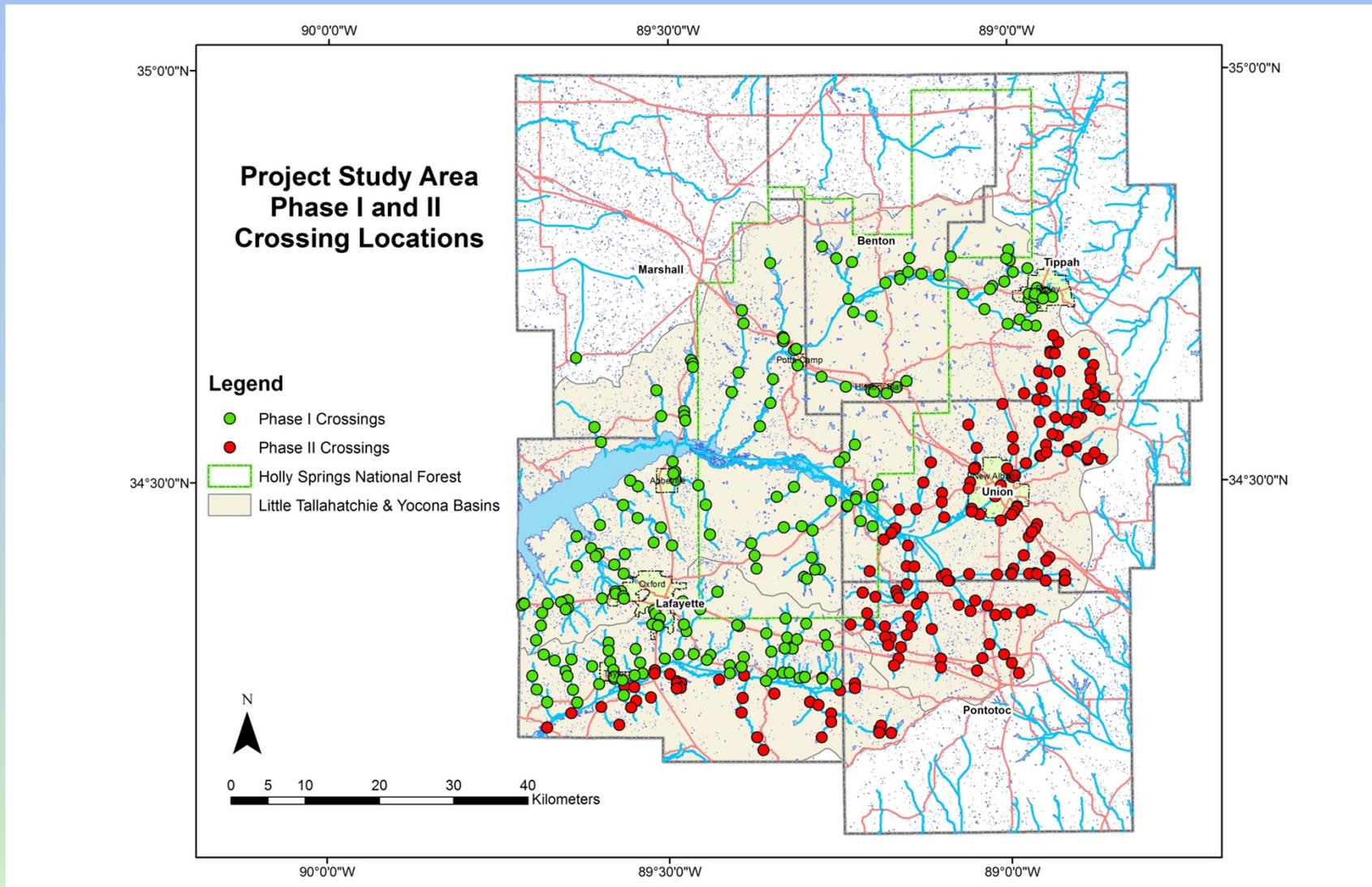
- 234 Potential Crossing Sites
- Lafayette, Marshall, Benton, Tippah and Union Counties
- Little Tallahatchie River and a portion of the upper Yocona River Basins

Phase II:

- 187 Potential Crossing Sites
- Lafayette, Benton, Union, and Pontotoc Counties
- Upper Little Tallahatchie River and Yocona River Basins



Background:



Stream Classification: - Type of Road Crossing

- **Box Bridge** – Road deck fully supported by multi-channel concrete rectangular tunnels with openings typically greater than 6'x6.'
- **Box Culvert** – Road deck partially or fully supported by single channel rectangular concrete tunnel with an opening typically less than 6'x6.'
- **Bridge** – Road deck supported by columns or piles
- **Culvert** – Road deck minimally supported by large circular pipe made of concrete, metal or plastic ranging in diameters up to 8 feet.



Stream Classification: - Type of Road Crossing



Box Bridge
Examples:



Stream Classification: - Type of Road Crossing



Box Culvert
Examples:



Stream Classification: - Type of Road Crossing



Bridge
Examples:



Stream Classification: - Type of Road Crossing



Stream Classification: - Crossing Class and Obstructions

| Class | Explanation |
|-------|---|
| 5 | Passage upstream is uninhibited year around |
| 4 | Passage upstream is uninhibited during the rainy season, but may be blocked during drier conditions |
| 3 | Passage upstream will be blocked during dry season |
| 2 | Passage upstream is only uninhibited during periods of high water levels |
| 1 | Not enough water to allow upstream passage during any season |

| Obstruction | Explanation |
|-------------|---|
| 0 | No obstruction |
| 1 | Small obstruction will inhibit flow only during low water levels but can be easily removed (branches, trash) |
| 2 | Obstruction may block passage during low and maybe high water levels but can be removed (beaver dams, fences, large pieces of garbage, riprap*) |
| 3 | Large permanent obstruction that blocks passage during times of moderate to low water levels (small ledge <2') |
| 4 | Large permanent obstruction that blocks passage during high water levels (large ledge >2') |



Stream Classification: - Crossing Class and Obstructions



- 2.5 foot ledge followed by another 3 feet of Riprap – Class 1 (impassible year-round).
- Obstruction is “permanent” and greater than 2 feet – Obstruction 4.



Stream Classification: - Crossing Class and Obstructions



- Trash and limbs could possibly restrict when drier – Class 4.
- Obstruction could can be easily removed and may be temporary - Obstruction 1.



Stream Classification: - Crossing Class and Obstructions



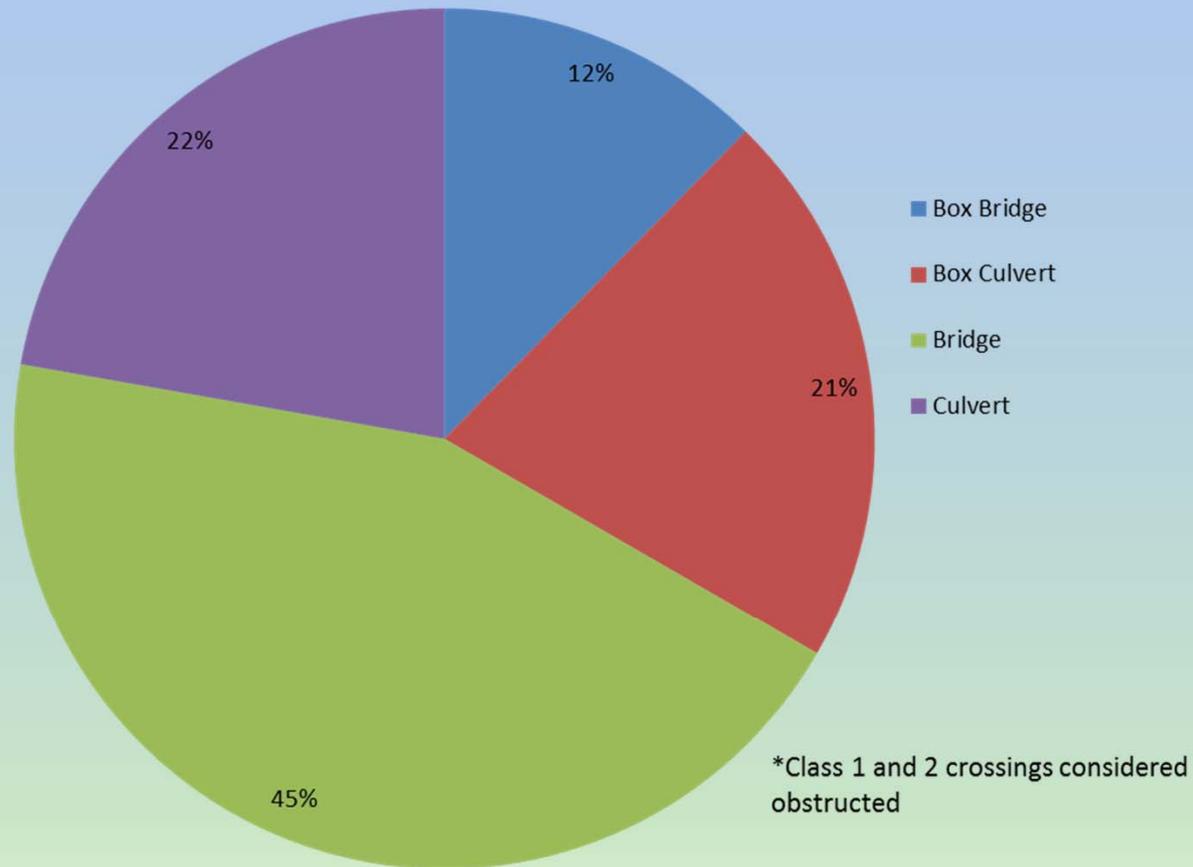
- Sandstone ledge only unobstructed during high water – Class 2
- Obstruction is permanent but less than 2 feet – Obstruction 3



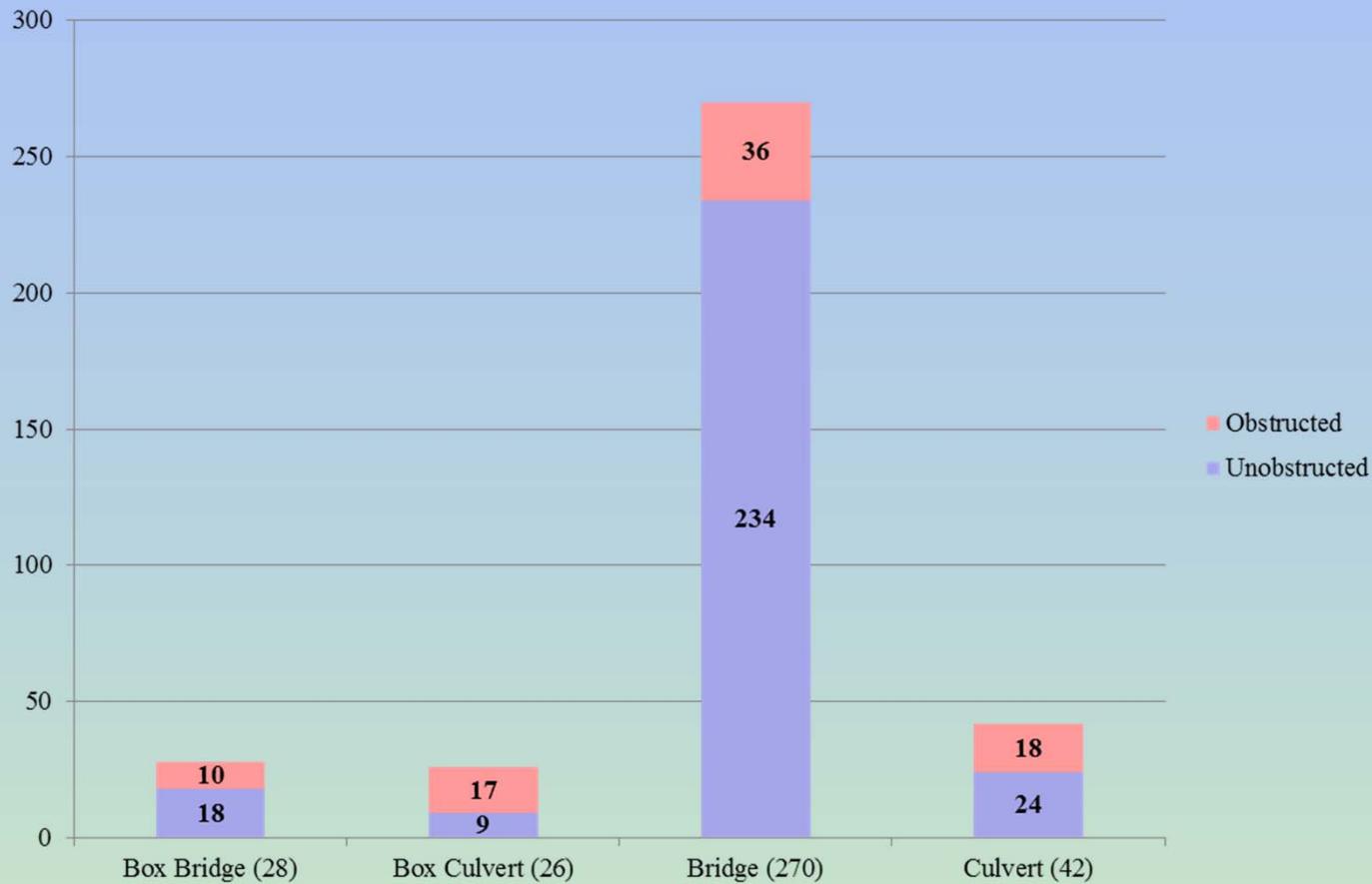
Crossing Analysis:

366 Total Surveyed Crossings - 81 Considered "Obstructed" (22%)

Types of Crossings that had Obstructions*



Crossing Analysis:



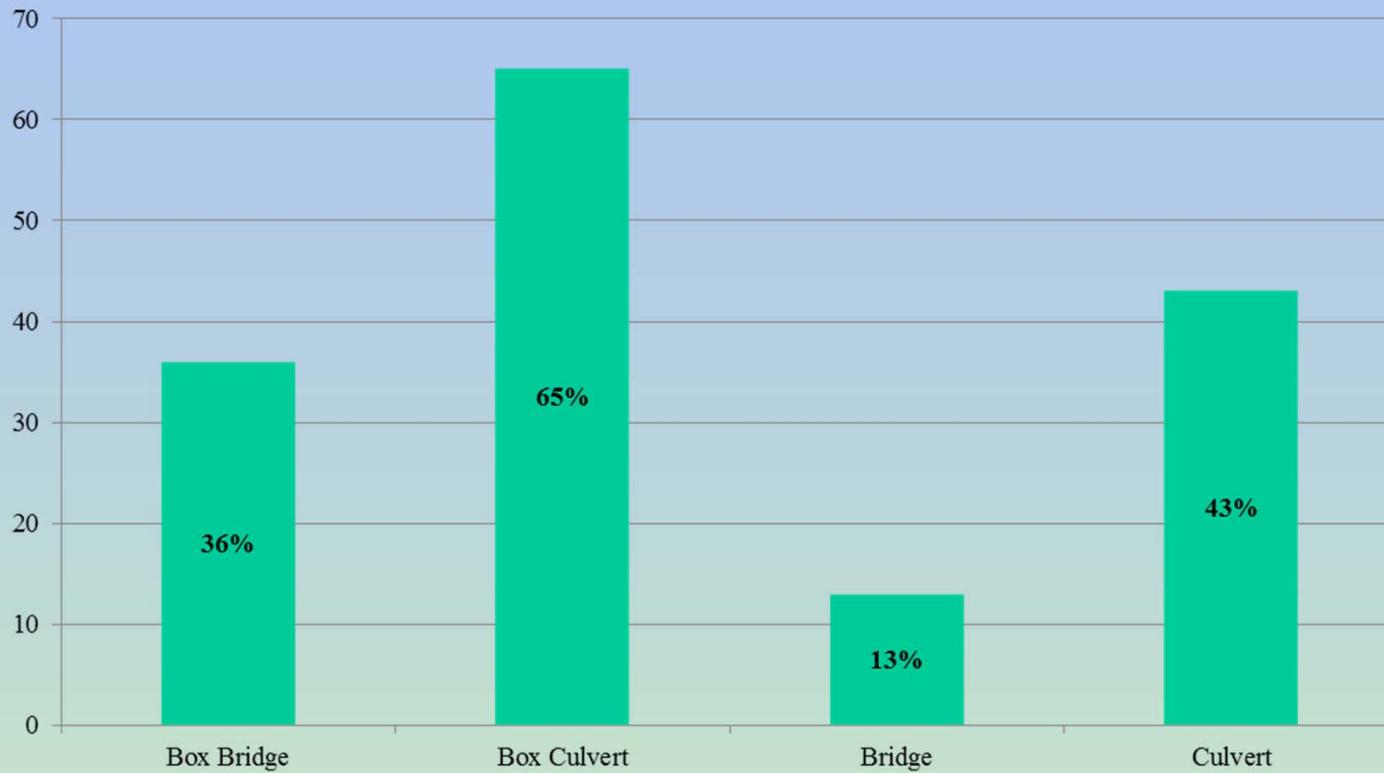
Unobstructed – Classes 3, 4 and 5

Obstructed – Classes 1 and 2

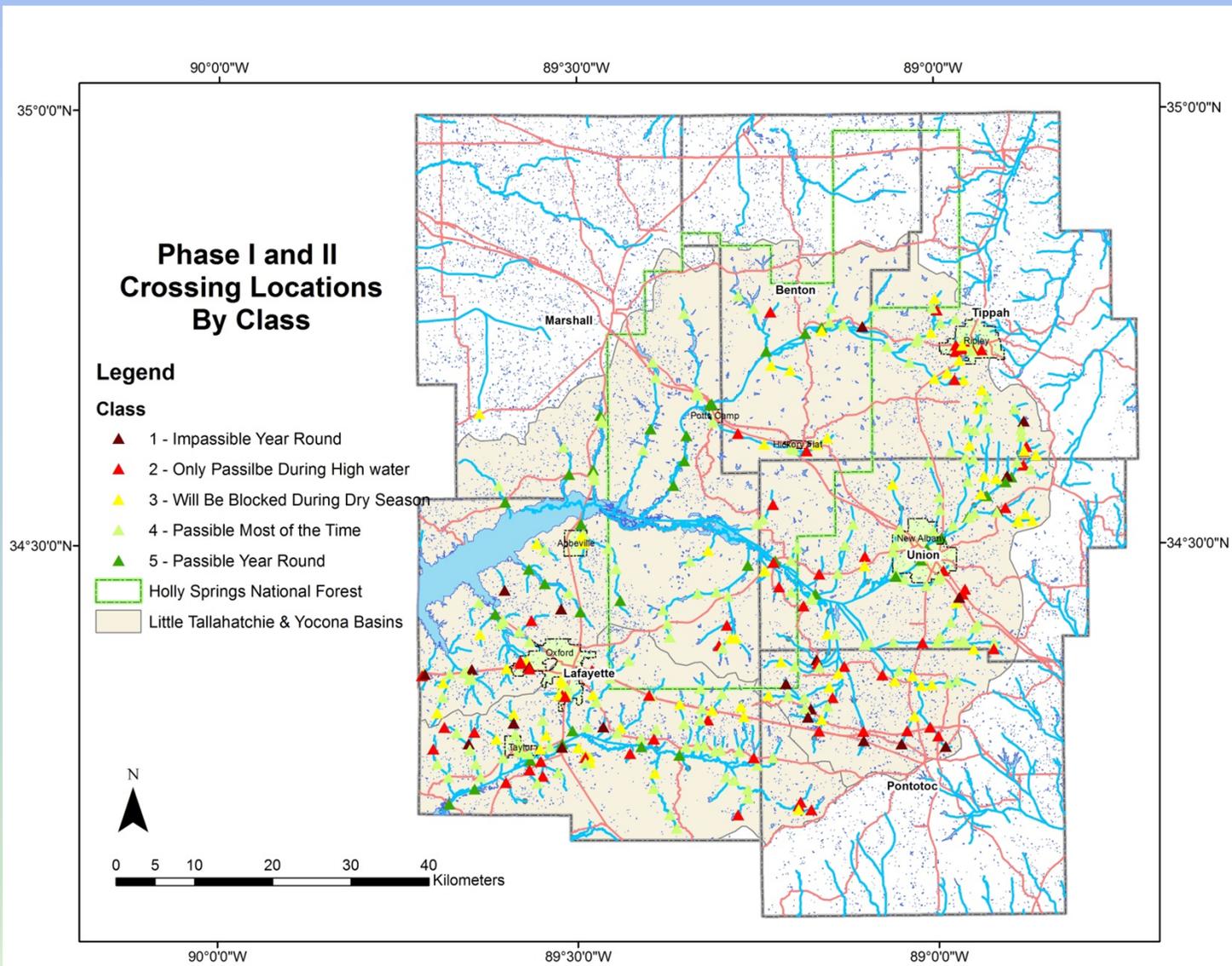


Crossing Analysis:

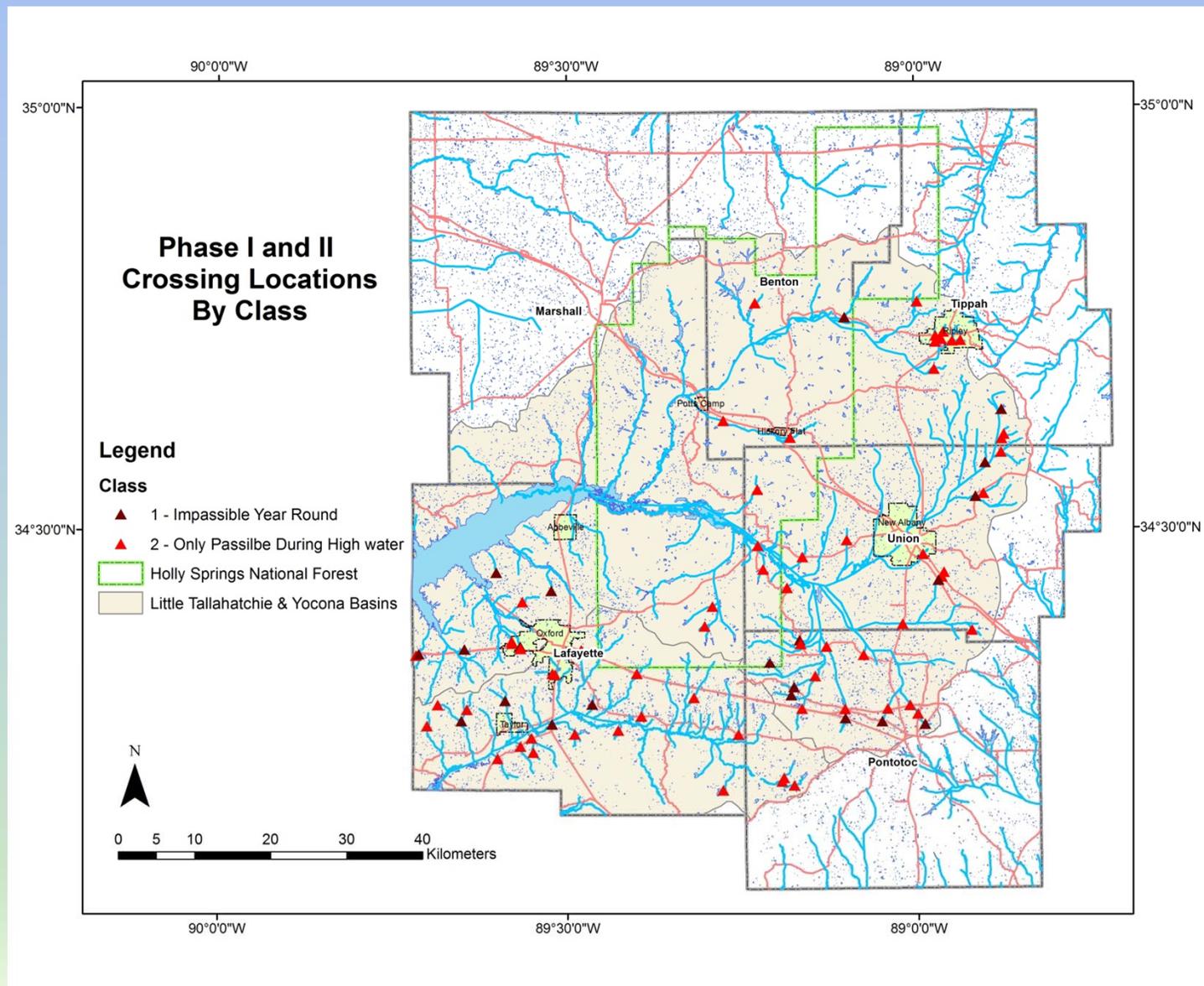
Percent of Crossing Type with Classed as Obstructed



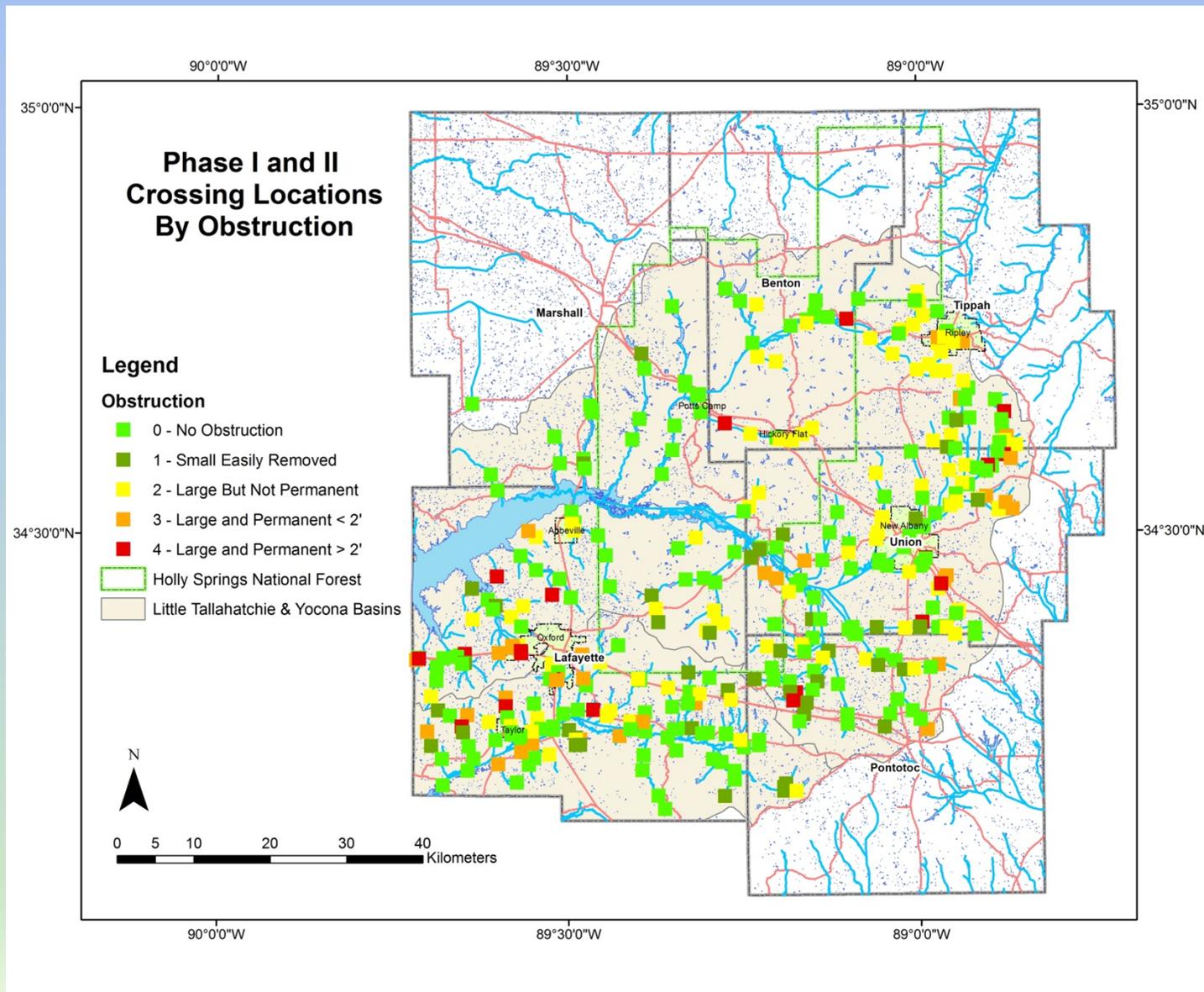
GIS Analysis:



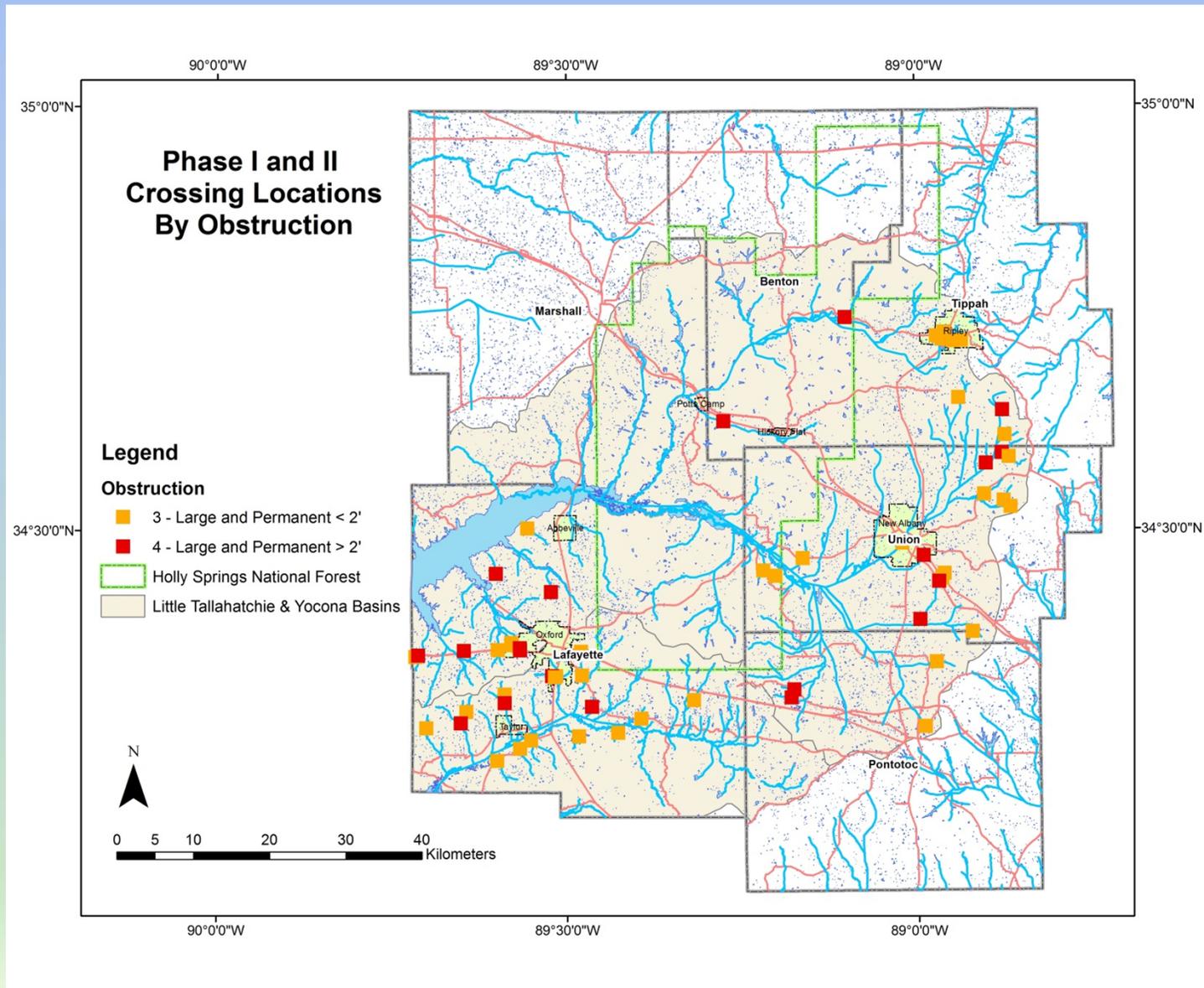
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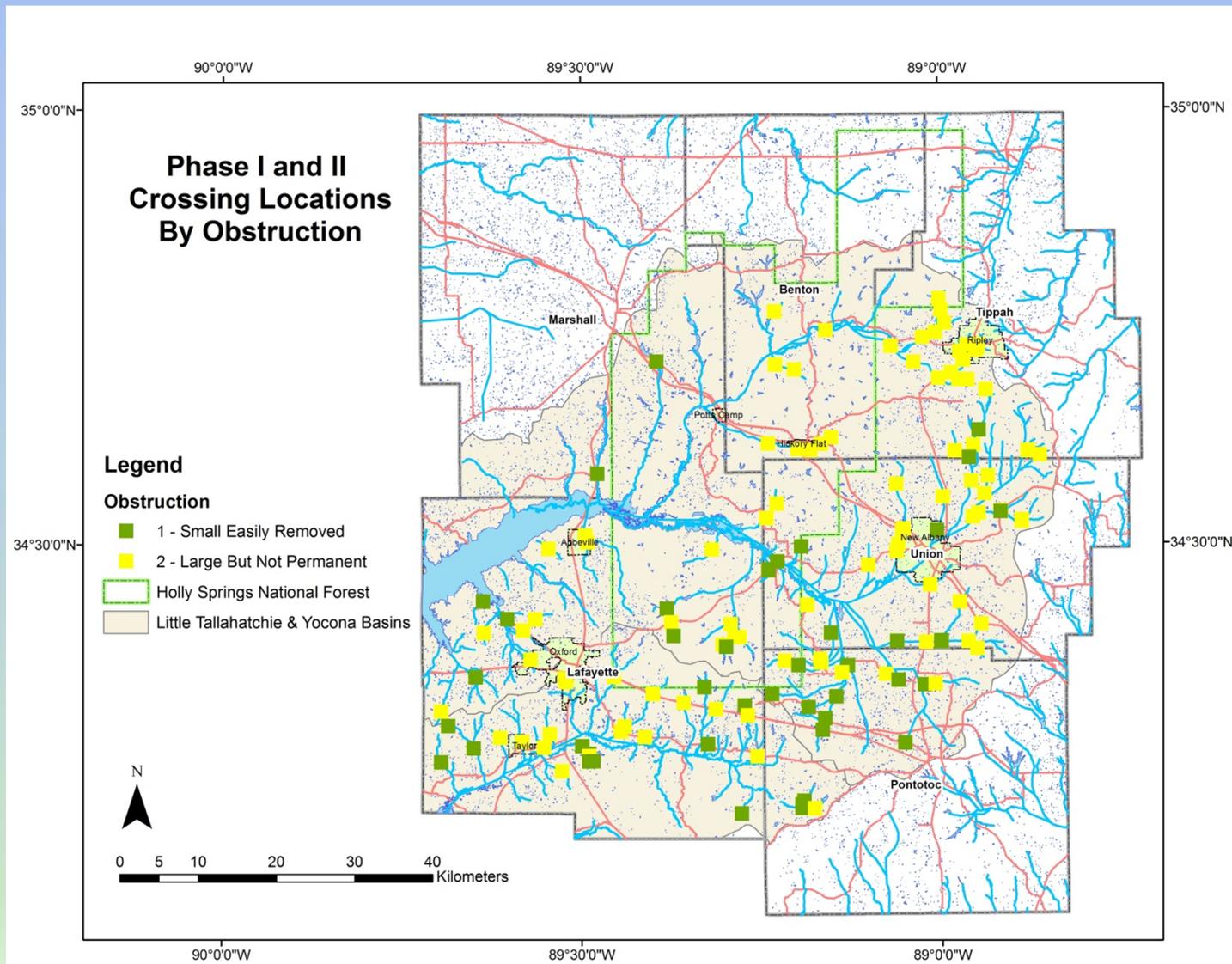
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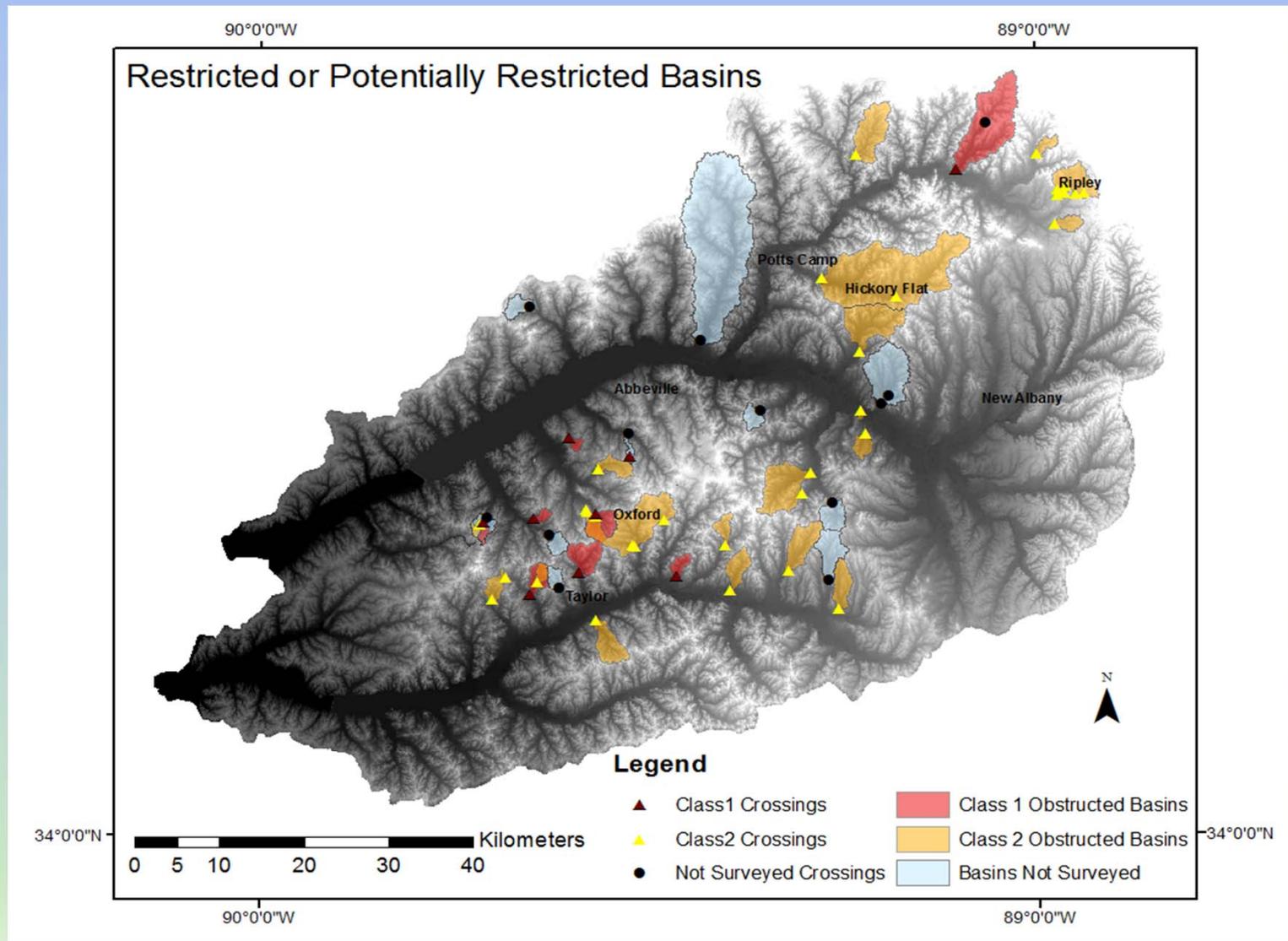
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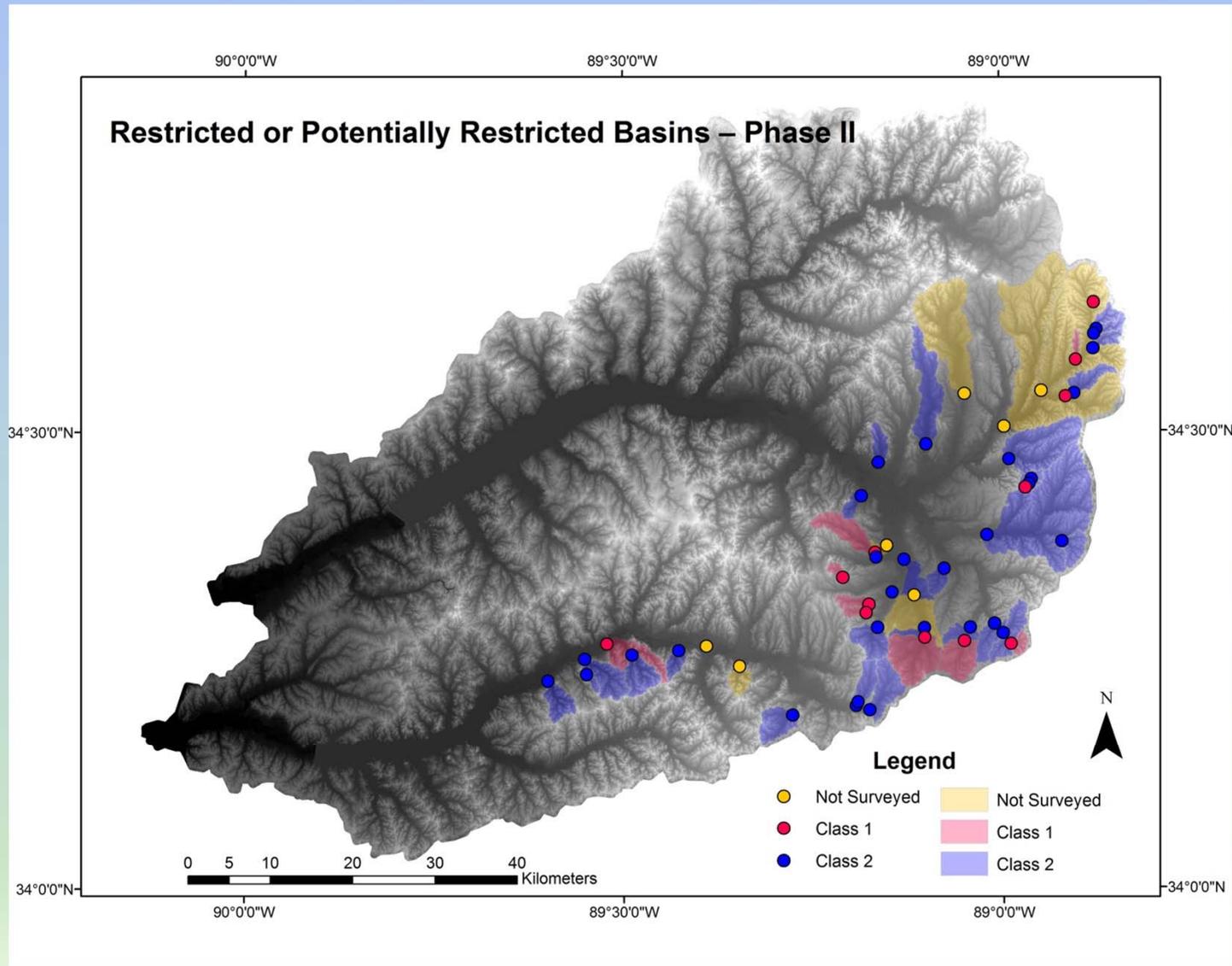
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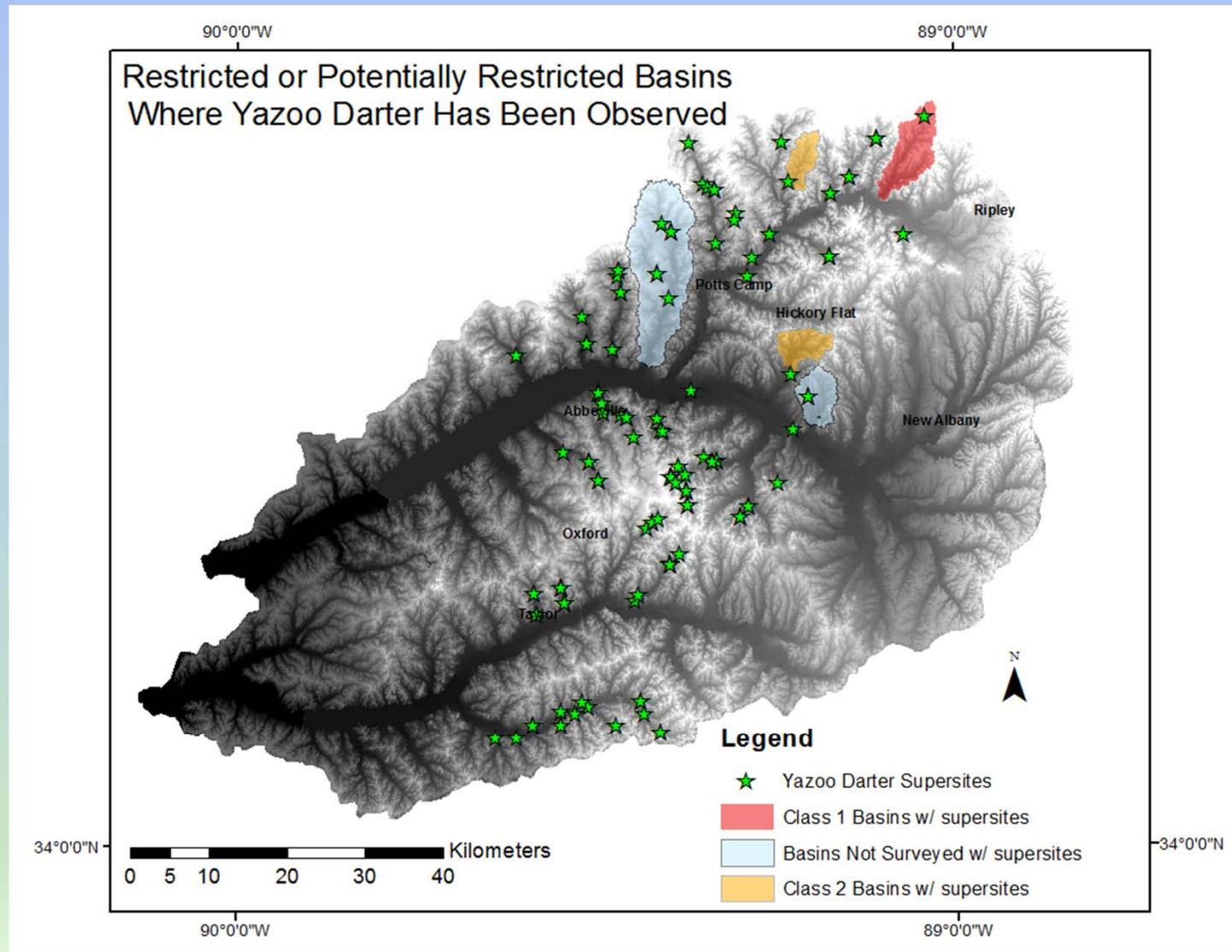
GIS Analysis:



GIS Analysis:



GIS Analysis:



Thank You

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