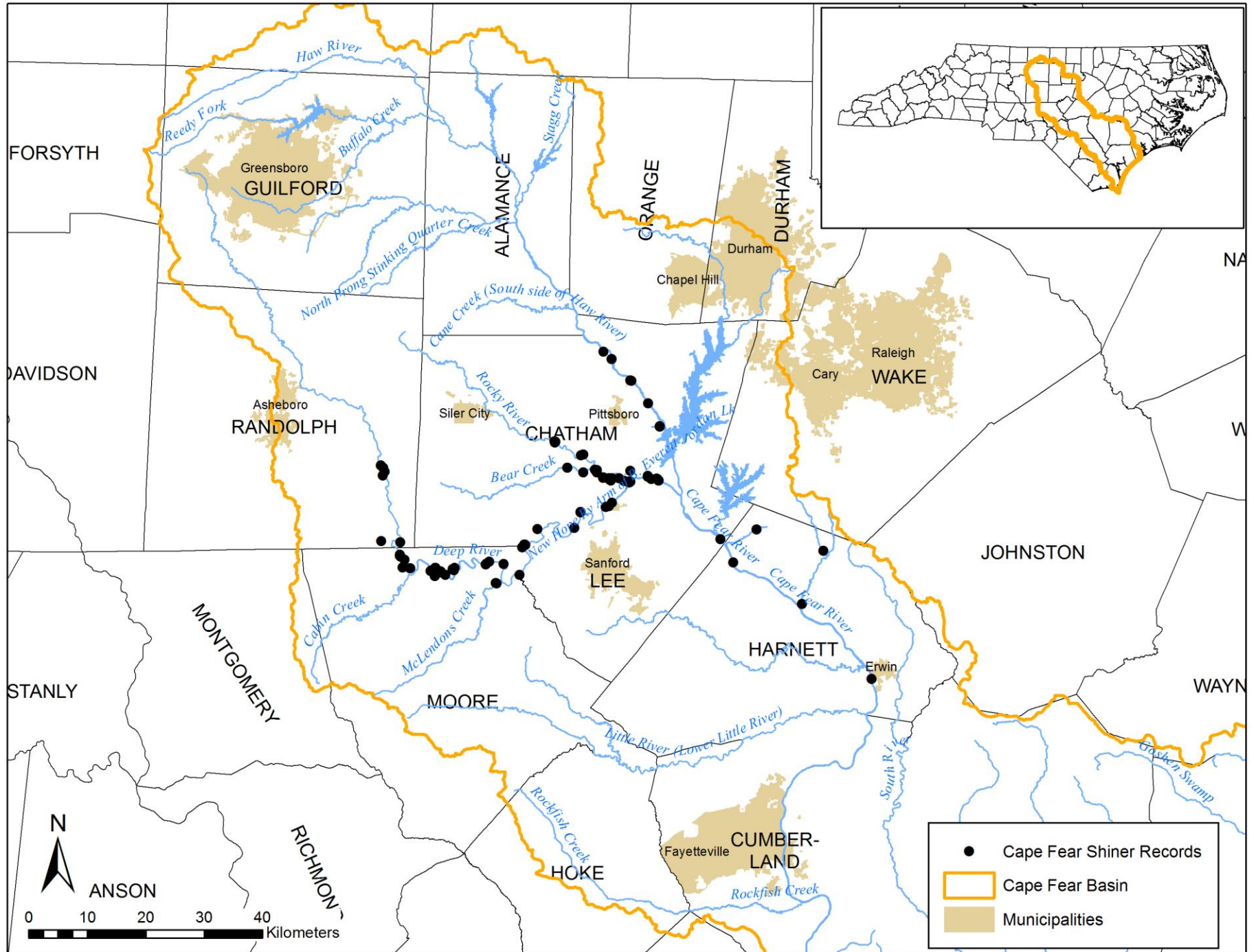


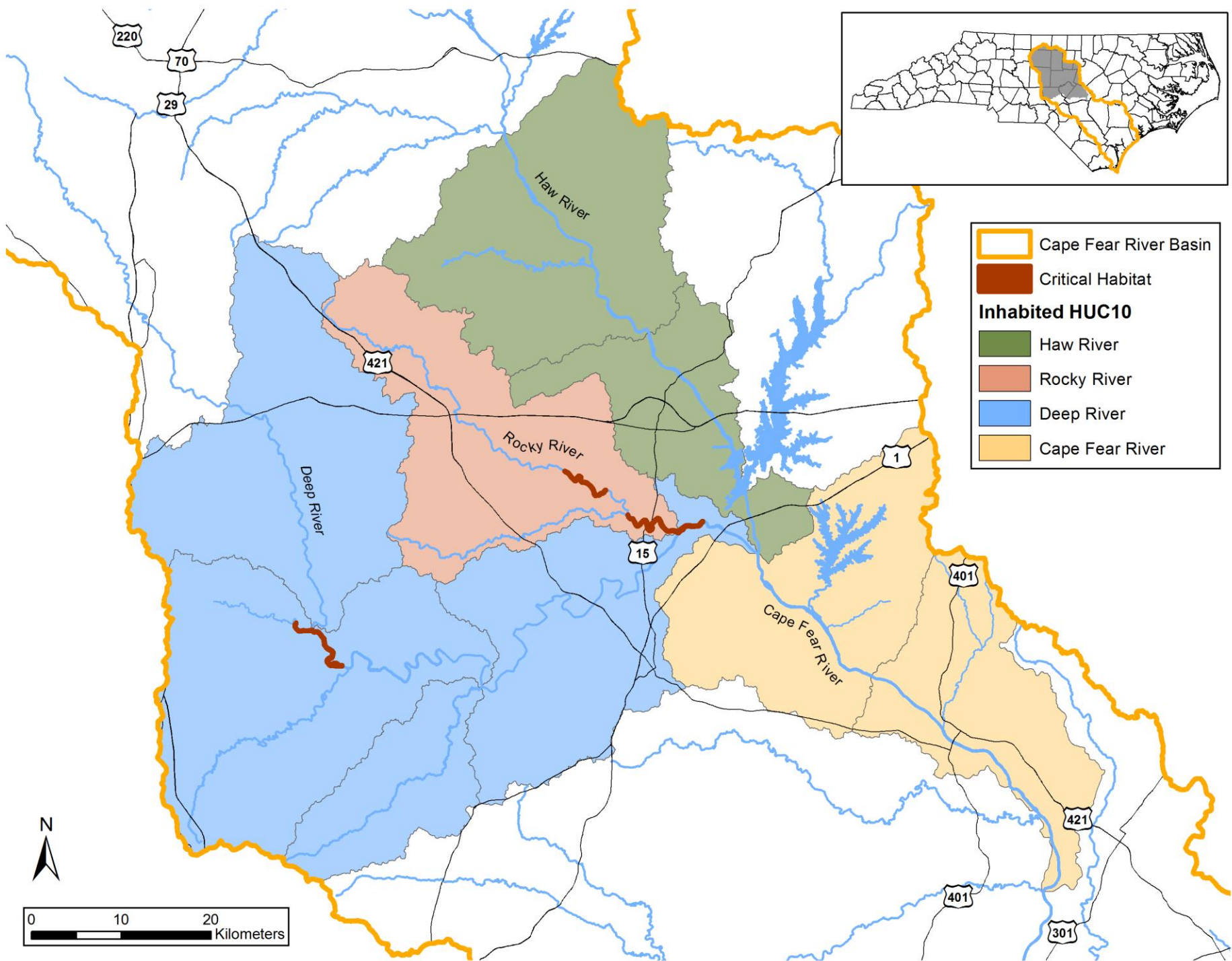
# Cape Fear Shiner

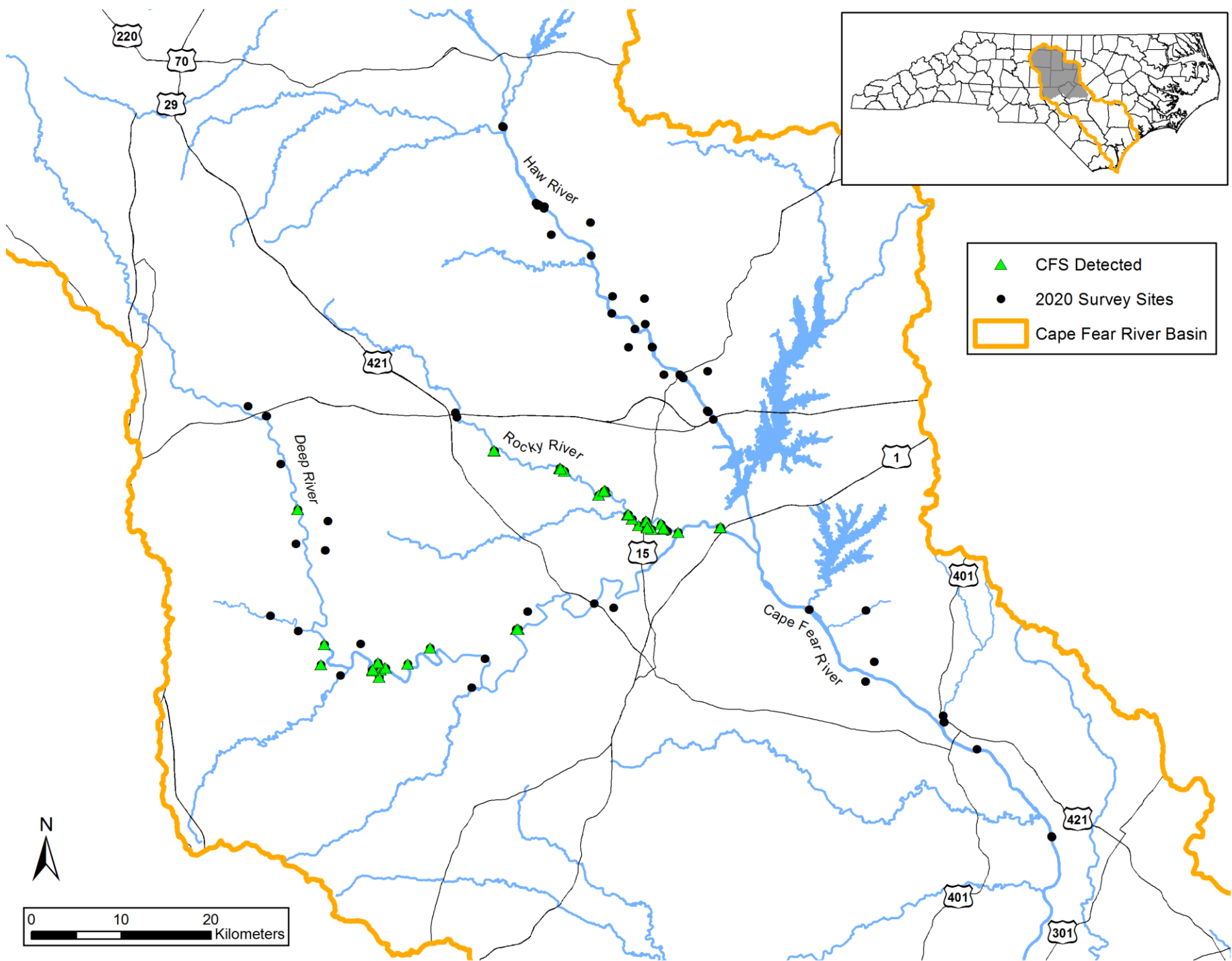
*Notropis mekistocholas*

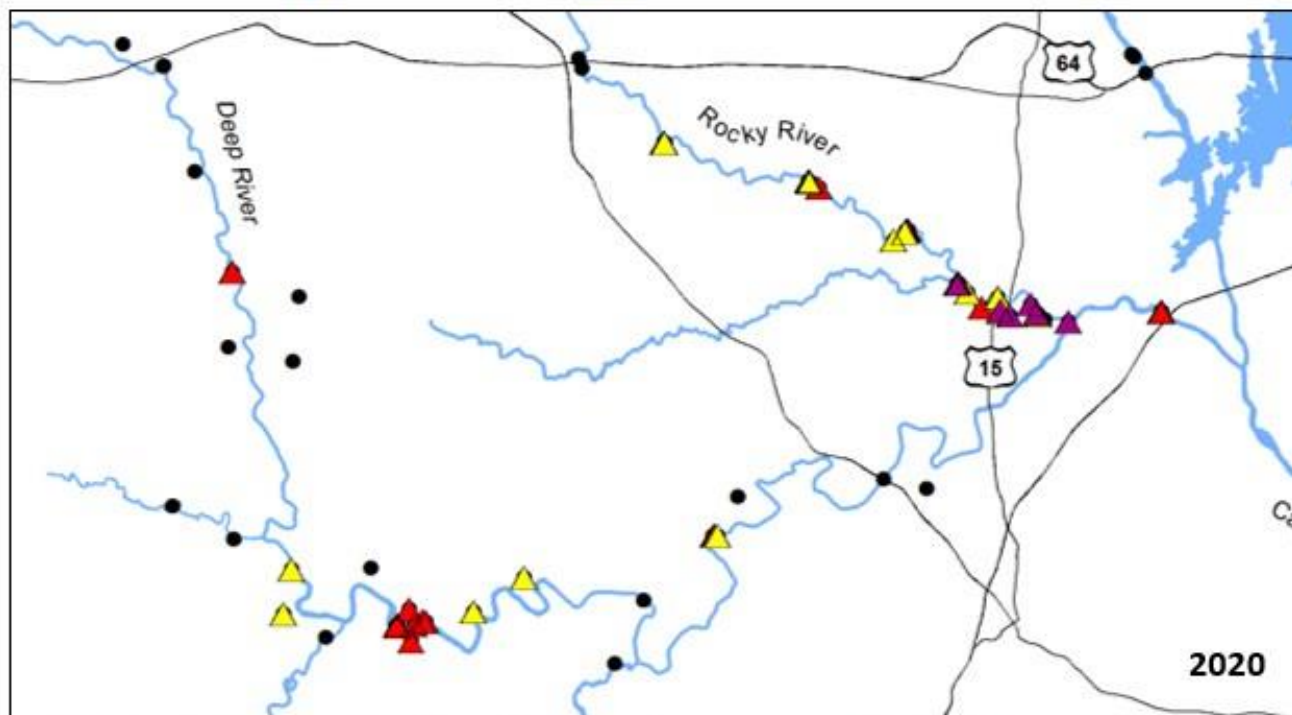
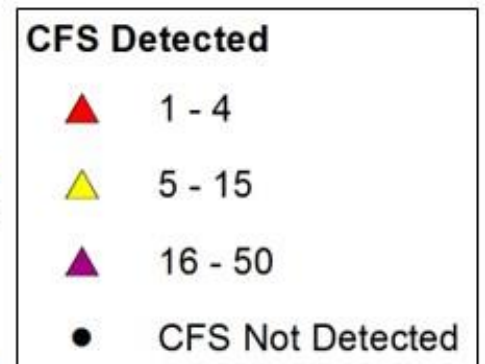
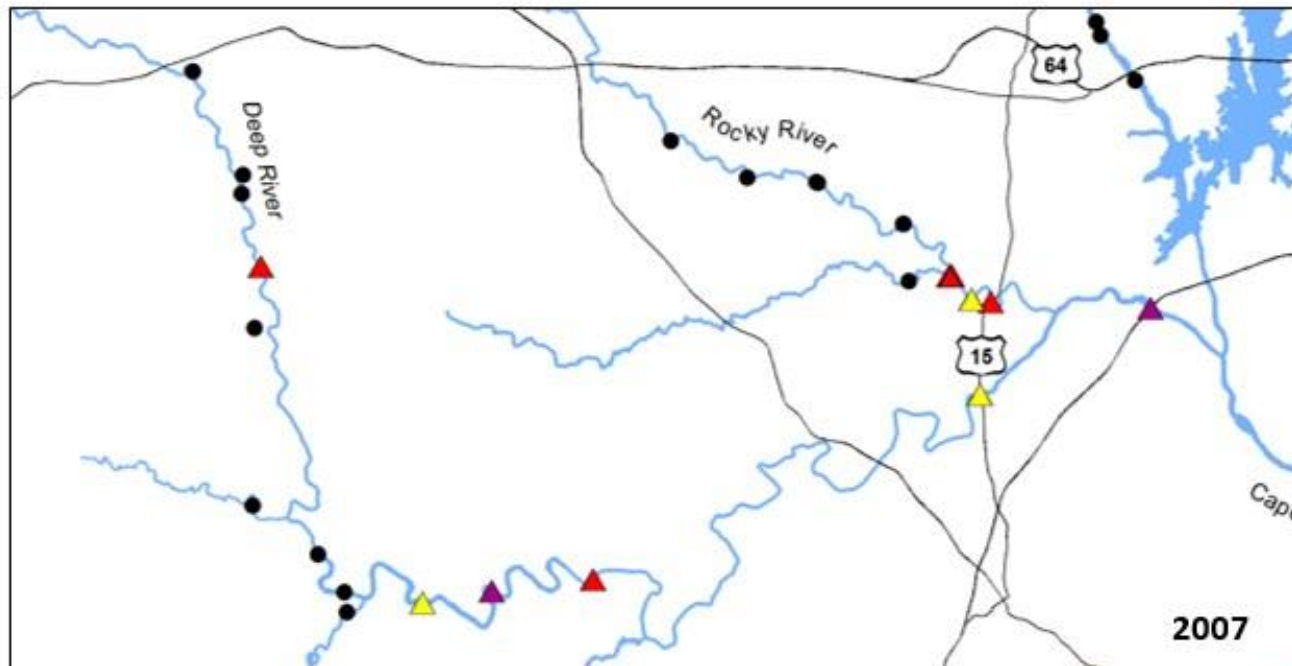
- Endemic to the Cape Fear drainage
- Smallest range of any *Notropis* species
- Inhabits medium to large rivers with riffle/run/pool complexes
- Federally listed as Endangered in 1987

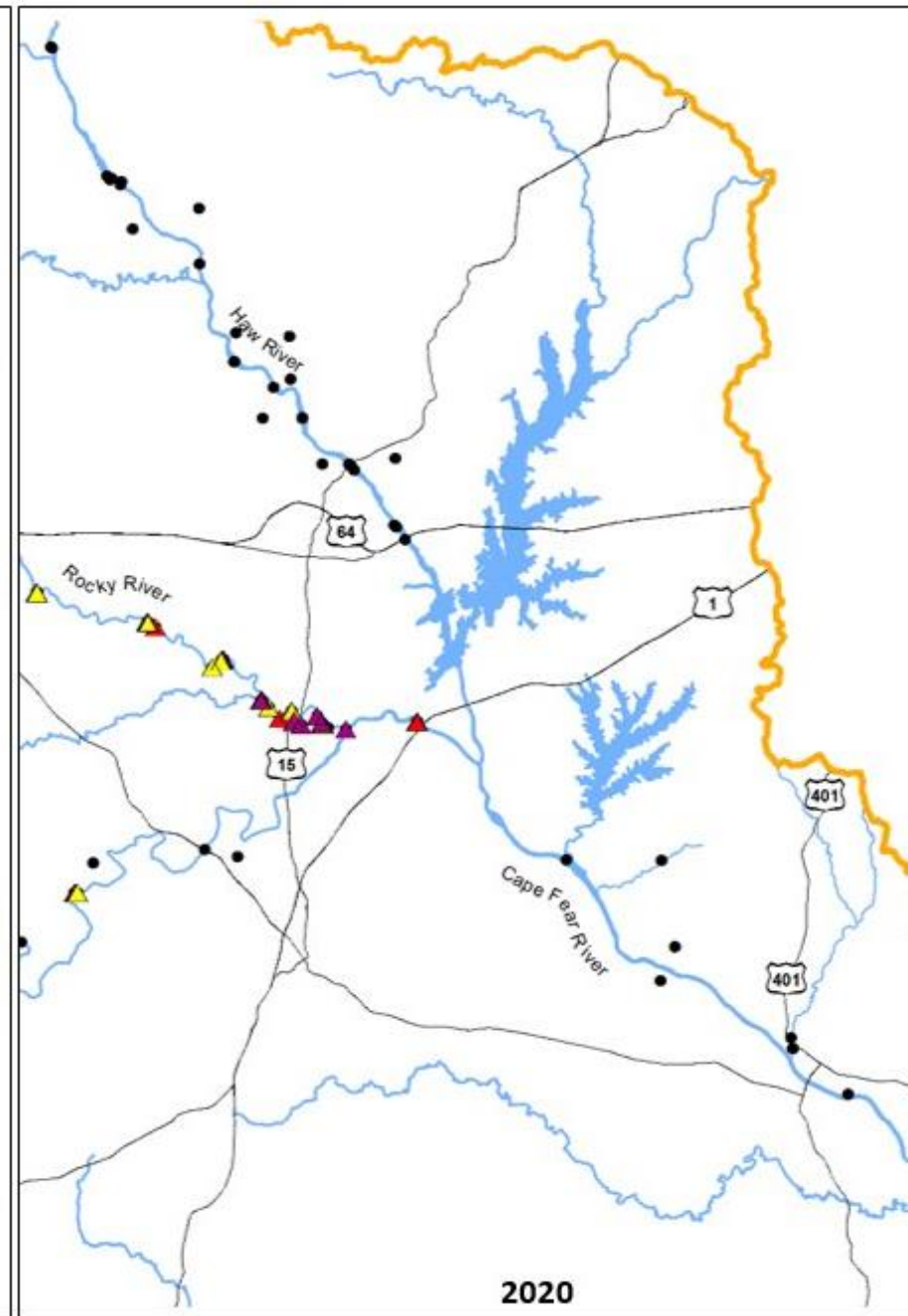
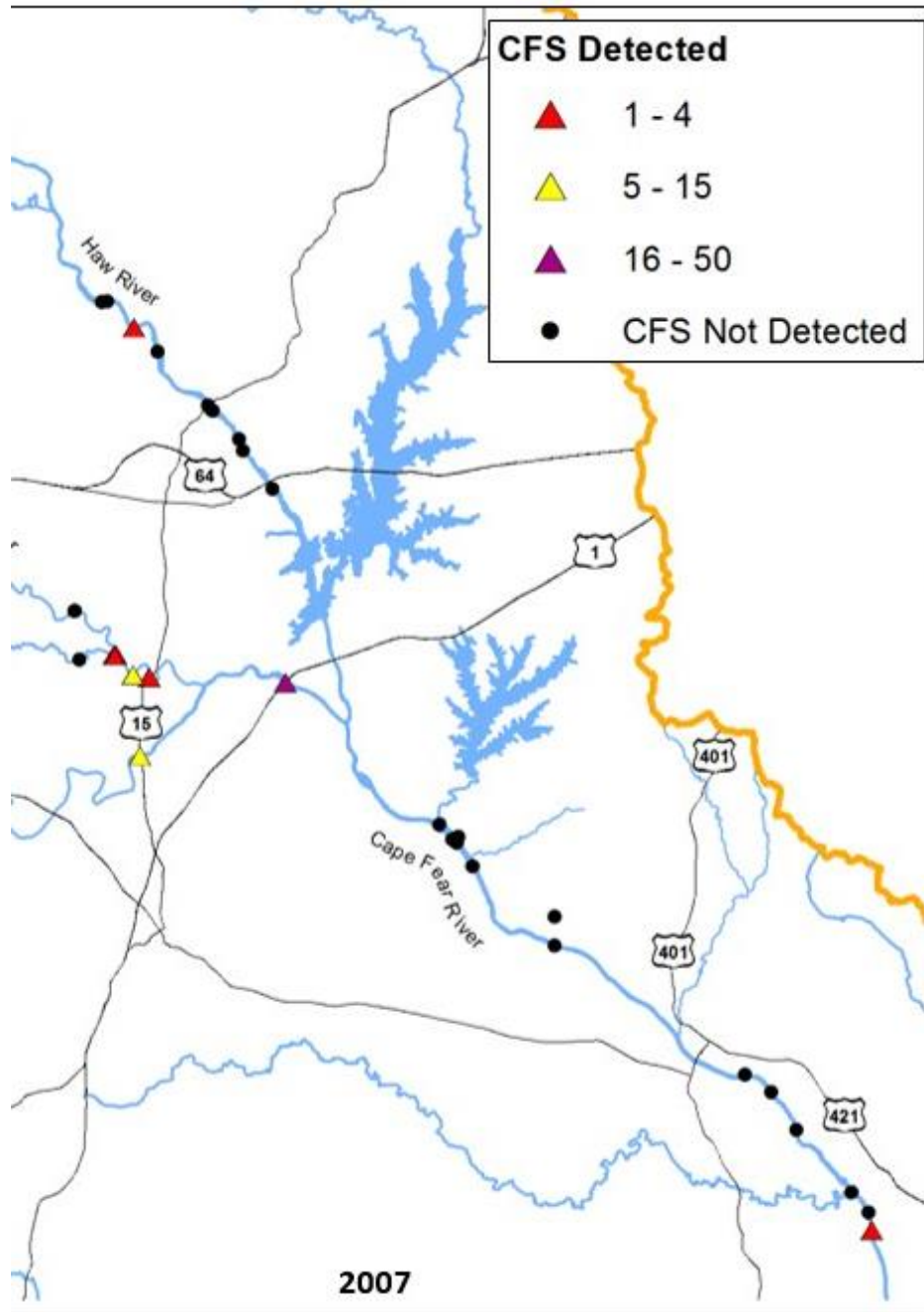








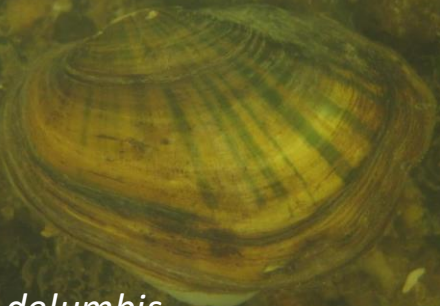




# Rocky R. Mussel Species



*T. pullus*



*V. delumbis*



*S. undulatus*



*A. varicosa*

- Savannah Lilliput, *Toxolasma pullus* (SE)
- Brook Floater, *Alasmidonta varicosa* (SE)
- Carolina Creekshell, *Villosa vaughaniana* (SE)
- Notched Rainbow, *Villosa constricta* (ST)
- Creeper, *Strophitus undulatus* (ST)
- Triangle Floater, *Alasmidonta undulata* (ST)
- Eastern Creekshell, *Villosa delumbis* (SGCN)
- Chameleon Lampmussel, *Lampsilis* sp. (SGCN)
- Florida Pondhorn, *Unio merus carolinianus*
- Lance Elliptio, *Elliptio* sp. lance
- Eastern Elliptio, *Elliptio complanata*
- Floater, *Pyganodon cataracta*
- Paper Pondshell, *Utterbackia imbecillis*



- Clean substrate for spawning
- Water quality
  - Dissolved oxygen
  - pH
  - Ammonia
  - Contaminants
- Food supply – invertebrates and vegetative material
- Physical habitat complexity
  - Including ability to move with seasons and water levels

A photograph of a shiner fish swimming in a stream. The fish is positioned in the lower center of the frame, facing right. It has a slender body with a prominent dark lateral stripe and a lighter dorsal area. The water is clear, and the rocky substrate is visible below the fish. The background shows the surface of the water with some ripples.

## Shiner Habitat Needs



- Stable substrate
- Water quality – larvae & juveniles often more sensitive than adults
  - Dissolved oxygen & pH
  - Ammonia
  - Nitrates
  - Turbidity
  - Contaminants
- Correct native fish hosts
- Food supply
- Hydrologic refugia
- Reproductive timing can vary
  - Short vs. long-term brooders



## Mussel Habitat Needs