

Working independently and with ARSN and other partners GSA staff participated in numerous Strategic Habitat Unit (SHU) projects using Cawaco RC&D, USFWS, GSA, and other resources during the past year. Cooperators among these various projects include ADEM, ADCNR Division of Wildlife and Freshwater Fisheries and State Lands Division, Alabama Power Company, Conservation Fisheries, Inc., USFWS, USFS, University of Alabama, University of North Alabama, University of West Alabama, Auburn University, Mississippi State University, University of Mississippi, Appalachian State University, Yale University, Florida State University, The Nature Conservancy, The Tennessee Aquarium Research Institute, TVA, and private landowners.

Accomplishments

GSA activities in SHUs over the past year or so:

- Created a promotional video for ARSN with Hunter Nichols, USFWS, Cawaco, etc.
- Assisted ADCNR Fisheries Section with quantitative sampling for Anthony's Riversnail in the Limestone/Piney/Beaverdam Creek SHU (TN River).
- Assisted Carla Atkinson's lab to secure access and with logistics for qualitative and quantitative sampling for *Epioblasama penita* in the Buttahatchee River SHU (Upper Tom) for a Section 6 project.
- Assisted Carla Atkinson's lab with quantitative mussel sampling in the Sipsey River SHU (Upper Tom).
- Assisted USFWS with qualitative mussel sampling in the Hatchet Creek SHU (Coosa River).
- Assisted USFWS, ADCNR, ADEM, etc., with a quantitative fish survey in the Choccolocco Creek SHU (Coosa River).
- Assisted USFWS et al. with Coal Darter assessments in Cahaba River, Locust Fork, and Hatchet Creek SHUs.
- Assisted USFWS, APCO, Conservation Fisheries, Inc., forest industry, etc. with Trispot Darter population assessments in the Big Canoe Creek SHU (Coosa River).
- Completed Fish Index of Biotic Integrity (IBI), crayfish, and mussel sampling and completed stream-road crossing assessments utilizing the SRI method in the Trussells Creek SHU (Upper Tom) with assistance from ADEM, UA, and ADCNR; along with staff from GSA's Groundwater Assessment Program we installed groundwater observation wells and surface water monitors at two stations to monitor surface water – groundwater interactions and will continue monitoring water quality for another year hoping to determine why mussels are declining there.
- Completed our annual Fish IBI for Mill Creek of the Cahaba River SHU at Tannehill Ironworks Historical State Park as part of a long-term data set.
- Assisted USFWS et al. with targeted quantitative mussel surveys in the Luxapallila Creek SHU (Upper Tom).

- Assisted ARSN partners in conducting road-stream crossings assessments in the Five Runs Creek (Yellow River) and Big Flat Creek (AL River) SHUs in extreme south Alabama.
- Assisted UA biology department with Tennessee Dace surveys in the Locust Fork SHU (Black Warrior River).
- Assisted Yale University post-doc and graduate students obtain access to streams and adjacent lands and coordinated assistance from local researchers and landowners in the Locust Fork SHU for a project related to fish transfers between the TN and MRB.
- Completed data interpretation through training, assisting, and supervising interns for road crossing assessments (SHU Internships), providing expertise in field methodologies to ensure the efficiency and safety of interns; evaluated, reviewed, and processed data collected in the field to safeguard data consistency and integrity; oversaw uploading of new data to the designated database and SHU Mapper (hosted by USGS); and provided analytical assistance in data analysis and interpretation.
- Participated in streamside fish id workshops in several SHUs, including the Cahaba River, Choccolocco Creek and Terrapin Creek (Coosa River), and Cypress Creek (TN River), with attendees from many organizations including APCO, TNARI, ADCNR, USFWS, USGS, ADEM, UWA, UNA, TWRA, and others.
- Co-hosted habitat training workshops on Turkey Creek (Black Warrior) and in the Uphapee Creek SHU (Tallapoosa River) with USFWS, ADEM, TNC, and AWRC/AU.
- Collected river bottom sediments for toxicity screening in the Lower Alabama and Lower Tombigbee SRRUs and Mobile-Tensaw River Delta SHU.
- Identifying springs and assessing factors affecting their quality in the Cahaba River SHU on behalf of the Oblong Rocksnail and other spring-adapted fauna there.
- Working with AFA in stream crossing replacements in Winston County, including some in the Upper Sipsey Fork SHU (Black Warrior).
- Working with TNC in stream rehabilitation projects in the Paint Rock River SHU (TN River).
- **Made presentations or otherwise participated in multiple meetings/conferences**
 - Freshwater Mollusk Conservation Society workshop on the Duck River and nearby Henry Horton State Park, TN: to receive training in mussel survey techniques.
 - ARSN annual meeting: updates on GSA projects in SHUs and an introduction to upcoming launch of ARSNiC.
 - Mollusk and Crayfish Working Group annual meeting: updates on GSA projects in mollusk and crayfish surveys.
 - Alabama Water Resources Conference: ARSNiC: A New Approach for Prioritizing Aquatic Organism Passage and Infrastructure in Alabama.

- Tennessee River Basin Network annual meeting in Knoxville, TN: introduction to ARSNiC and shared SHUs between AL and TN.
- American Fisheries Society (Southern Division) annual meeting in Charleston, SC: Stream Connectivity: Crossing Structure and Landscape-level Influence on Aquatic Organism Passage in Alabama (poster), panel participant on in-stream barriers and the formation of a state aquatic connectivity team.
- ADEM State Agency Water Quality Meeting: ARSNiC overview and how partnerships benefit efforts.
- Co-authored a poster presented at the October AGU meeting in Chicago summarizing preliminary work on the mechanisms that allow fishes to cross the TN/MRB divide in the upper Locust Fork SHU with an FSU professor and Yale and UWA graduate students.
- Elk River Multiple Species Recovery Group with CFI, USFWS, TTU, TVA, TWRA, ADCNR, ADEM, etc.
- Met with USGS regarding future long-term passive data collection project in the Mobile River basin.
- Assisted UA Museums install a long-term crayfishes of Alabama display.

Future Activities

- Complete projects in the Trussells Creek SHU and continue monitoring groundwater-surface water interactions.
- Assist USFWS et al. with targeted, quantitative mussel surveys in the Bull Mountain Creek SHU.
- Assist UNA, ADEM, TWRA, NRCS, TDOT, TDEC, etc., with habitat improvement projects in the Shoal Creek SHU (TN R) related to failing streambanks and a county road bridge replacement along the AL/TN state line.
- Assist with Elk River Multiple Species Recovery Group activities.
- Possibly flesh out fish records in the Hatchet and Chewacla Creek SHUs.
- Continue assisting USFWS with Trispot Darter assessment.
- Coordinate with partners in other SHUs as opportunities arise/evolve.
- Continue working with Jennifer Grunewald of USFWS to update SHU/SRRU database of accomplishments to guide future efforts.
- Continue working with UA Printshop to publish a bulletin on the Trispot Darter summarizing flow responses and a circular summarizing long-term monitoring data on selected springs across the state, some of which are in SHUs.
- Continue assisting Jeff Ray of UNA and Cal Johnson of ADEM to prepare a GSA bulletin on the fishes of the Butler Creek system within the Shoal Creek SHU, TN and AL (*Percina burtoni* was documented there for the first time in decades).