

Hatchery Highlights

U.S. Fish & Wildlife Service Warm Springs NFH News and Updates



January - March 2019

Aquatic At-Risk Species Recovery:

Gopher Frog

Warm Springs NFH works in partnership with the University of Georgia (UGA), Zoo Atlanta, Georgia Department of Natural Resources (GADNR), Amphibian Foundation Inc., and others to expand conservation efforts for gopher frogs within their historical native range. We are currently into the 3rd year of a multi-year project working to establish a self-sustaining breeding population on protected land at the Nature Conservancy's Williams Bluff Preserve in Early County, GA. Gopher frogs are native to upland longleaf pine ecosystems and currently limited to fewer than 10 sites in Georgia. The loss of longleaf pine habitat is a primary threat for this rare species. They are under review for formal listing by USFWS, and listed as vulnerable in Georgia.



Newly hatched gopher frog tadpoles awaiting transfer to rearing tanks



UGA graduate student Angela tempering and releasing gopher frog tadpoles

Work with the species got off to a great start this year following collection and transfer of three egg masses from Fall Line Sandhill WMA on Feb. 7th to Warm Springs NFH. Preliminary reports suggest a good spawn this year at the WMA. We placed the received egg masses into aquariums filled with spring water until hatching was completed.

These eggs began hatching on February 18th. Once all the tadpoles hatched, they were transferred on March 4th into covered culture tanks previously inoculated with dried maidencane and filled with spring water. We stocked 75 tadpoles per tank and continue daily monitoring of growth and transformation.

In addition to the frogs we are raising through transformation, Jessica Radich distributed 1,939 tadpoles to the Fall Line Sandhill WMA on March 12th along with UGA graduate students and their excess tadpoles. The tadpoles were tempered and released into a wetland pond at the WMA.

Gopher Tortoise

Warm Springs NFH supports conservation efforts for Georgia's gopher tortoises. Gopher tortoises (*Gopherus Polyphemus*) are a federally listed "candidate species" for populations east of the Mobile and Tombigbee Rivers; they are also state listed by Georgia as "threatened." Gopher tortoises are an indicator of longleaf pine ecosystem health; their burrows provide vital habitat and shelter to other imperiled species such as gopher frogs and indigo snakes.

Our conservation strategy utilizes a head-starting program to raise larger juveniles through their first two years before marking and releasing them within known Georgia habitats. Partners in this expanding effort currently include GADNR, The Georgia Conservancy, and Zoo Atlanta. Head-starting the tortoises should produce larger individuals with harder shells before their release within Georgia habitat.

Techniques documented in part by DeSha J., Paden L., Andrews K. in their PowerPoint presentation Head starting Gopher Tortoises from a Heavy Mineral Mine Site in Southeast Georgia, Odum School of Ecology, University of Georgia Marine Extension, Brunswick, GA are widely used in our program.



Jessica Radich, Ian Paige, and volunteer Bennie Maynard beginning the process of renovating the old Lake Sturgeon building for future gopher tortoise culture work

Jessica Radich, Ian Paige and volunteer Marsha Maynard handled most of the tortoises' daily care including, rations of fresh greens with enriched commercial rations prepared especially for the tortoises, fresh water and weekly baths. Rye grass planted in each container allows the tortoises to graze between feedings.

Carlos and Jessica participated in a Brunswick, GA Gopher Tortoise facility tour and meeting February 20th sharing insights as the program progresses.

We are currently rearing a total of 21 2017-year class tortoises, 35 2018-year class tortoises, and 4 tortoises of an undetermined age. Jessica sampled all 60 tortoises on March 29th to monitor their growth. The 35 tortoises of the 2018-year class increased their weight 84% from Sept. 2018, with an average increase in weight of 58 grams each. The additional 21 tortoises sampled in the 2017-year class grew 40% between Nov. 2018 and March 2019, gaining on average 117 grams per turtle.

Shortnose Sturgeon

We are holding several year classes of Shortnose Sturgeon for future use. We feed the shortnose sturgeon a 10.5 mm diameter pellet produced specifically for sturgeon and monitor them daily to ensure continued good health and growth. Shortnose sturgeon are an endangered species with a historical range along Atlantic Basin Rivers southward from Saint Johns River in FL north into Canada.

Freshwater Mussels Research

Staff filled and fertilized two water supply ponds dedicated for use with the mussel program and restarted culture systems inside the mussel building in preparation for culture work this summer.

Pollinator and Native Plants Habitat Project

Volunteers Marilyn Kircus, Marsha and Benny Maynard maintained habitat islands within the wetlands demonstration pond, removing undesired grasses, trees, and shrubs that crowd out desired plantings. Marsha also coordinated adding additional plantings into landscaped portions of the pollinator habitat area, increasing the diversity of plants at the site. Staff plowed portions of the habitat area in February ahead of reseeding with annual and perennial southeastern plant species considered beneficial for pollinators.



Marsha and Marilyn pausing during their work in the wetland habitat area

Sicklefin Redhorse

Warm Springs NFH continues work with partners to meet conservation goals established by the Sicklefin Redhorse Conservation Committee. The USFWS currently lists Sicklefin Redhorse as a Candidate Species throughout its entire range.

Carlos participated in the annual Sicklefin Redhorse Conservation Committee Meeting January 30-31, 2019 in Asheville, NC. Information shared included annual production data, goals for 2019 and a draft Sicklefin Production Protocol we developed for review and comment.



We are currently rearing Sicklefin Redhorse for distribution during 2019. We maintain the fish at seasonal temperatures to mimic conditions at targeted distribution sites in North Carolina. The sicklefin are cultured in two 6 ft. diameter tanks that provide ample swimming room and are equipped with belt feeders that allow continuous feeding. Ian sampled the fish monthly to evaluate their growth. A portion of these fish will be coded wire tagged in cooperation with tribal, university, and state partners later in the year.

March sampling showed an increase in length of approximately 31% during the past three months among the 2018-year class sicklefin as they reached an average length of 78 mm. The fish increased almost 259% in weight during the same period, averaging 5.93 grams per fish at the end of March.

Aquatic Species Restoration Programs:

Alligator Gar Restoration Program

Following completion of the new holding house and raceways, staff began installing culture systems dedicated for use with alligator gar. Staff also harvested two Goldfish forage production ponds during the quarter. We raise goldfish in part to acclimate cultured gar to live forage before distribution later this year.

Gulf Coast Striped Bass Restoration

Preparation of ponds used to rear Striped Bass continued through the quarter. Crushed limestone was applied to empty ponds at 1.7 tons per acre in order to mediate the mildly acidic soils and water supply onsite. Staff

repaired a cracked pressurized air delivery manifold and replaced a regenerative blower used to supply air to the ponds during culture operations. Staff reinstalled air stones to the aeration distribution lines within the ponds and cleaned harvesting basins before filling the ponds in April.

Josh Simmons participated in a teleconference of partners involved in 2019 Gulf Coast Striped Bass restoration work in February. Carlos participated in Georgia's warm water hatchery meeting held at the meeting room at Dodge County Public Fishing Area, GA on February 12th.



Regenerative blowers and repaired delivery manifold leading to production ponds

Lake Sturgeon Restoration

Carlos participated in the Tennessee Lake Sturgeon Reintroduction Working Group's regional meeting held at Knoxville, TN, March 21st and 22nd.

Priority one for system setup in the new holding house was reassembling the egg incubation and fry culture room dedicated for Lake Sturgeon work. Staff connected aquariums, brine shrimp feeders, biofilters, pumps, filters, and pipework for use later this spring.

Freshwaters Illustrated, a 501(C)(3) group that "raises aquatic awareness through photo, video and film", is premiering **Hidden Rivers** a film narrating aquatic conservation efforts of imperiled aquatic species throughout southern Appalachian rivers. The movie will feature conservation efforts of the Lake Sturgeon Working Group and WSNFH efforts to help restore lake sturgeon through the southern part of their historical range. The movie when released will also highlight conservation efforts for other imperiled aquatic life in the river systems such as mussels and darters.

Smallmouth Bass Restoration Program in Georgia

We are entering our fourth year working in cooperation with Georgia and Tennessee to augment Smallmouth Bass populations in Blue Ridge and Chatuge reservoirs. Introduced nonnative Spotted Bass throughout the region

have affected populations of Smallmouth Bass in Georgia. Following a successful year in 2018, staff began the process of transferring our Smallmouth Bass broodfish into new quarters, our newly built raceways. We maintained the fish over winter on a ration of goldfish to facilitate gamete development.

Staff placed spawning pans with river rock into each of the four covered raceway sections of the larger raceway. This year differentially colored floy tags were placed on each fish to help determine successful spawning pairs. The raceway in use provides uniform spawning conditions across all four sections. The two raceways used in prior years experienced differential lighting and water temperature profiles. The current system also allows us to pair broodfish to a greater degree.



Smallmouth Bass broodstock being transferred to raceways



Ian, Jessica, Josh, Carlos, and volunteers Marsha and Bennie sampling and tagging Smallmouth Bass

Aquatic Habitats:

Nothing to Report

Aquatic Invasive Species:

Nothing to report.

Recreational Fishing and Public Use:

Warm Springs NFH maintains two production ponds stocked with Channel Catfish obtained during the prior year. We are arranging to receive additional catfish from Pvt. John Allen NFH, Tupelo, MS for a third pond in support of National Fishing Week activities and facilitate fishing derby stocking requests.

Educate and Engage Public & Partners:

Haile and volunteer Marilyn Kircus participated as judges for Pike County High School's STEM Science Fair. The students' projects often involved aquaponics and fish culture. This was a welcomed opportunity to meet the engaged students and provide feedback to their projects.

Staff facilitated a visit of Department of the Interior diversity agents to Warm Springs on February 13th.

Dr. Jennifer Newbrey, Deptment of Biology, Columbus State University brought a vertebrate diversity class to tour the site and meet staff February 22nd. We provided overviews to the students of activities undertaken by the collocated Fisheries Programs at Warm Springs.

Marsha and Benny Maynard submitted a grant proposal to enhance our walking trail.

We responded to requests for educational materials and scheduling school, scout, and civic groups visits this spring to the hatchery.

Volunteers:

Marilyn Kircus concluded a volunteer stint with us on February 6th after putting in 256 hours with us during FY 2019. Our thanks for all the landscaping, wetland demonstration area care, and pollinator database work! Cherish Jordan is another returning volunteer from 2017, rejoining us February 27th for a short while, volunteering 16 hours per week through May, 2019. Working in conjunction with Benny and Marsha, she is ensuring fish in ponds remain well fed and the nature trail is wide open.

Our thanks again to our volunteers who take great care of our public access facilities and station visitors. They maintain the public aquarium building, display pool area, keep restrooms clean, remove trash, feed fish and oversee the multitude of other tasks involved in taking care of the site. The pollinator habitat area continues to improve through their efforts. They removed downed pine trees along the hiking trail improving visitor access and use. Marsha and Benny also assisted with harvesting a couple of goldfish ponds, the assistance was greatly appreciated! They continue assisting with our Gopher Tortoise Program and construction projects related to moving programs into the new holding house.

General Maintenance and Operations:

Culture system development within the new holding house was the single largest project undertaken this quarter as we work to setup in preparation of spring production. Carlos participated in a March 26th meeting to establish a final punch list for the project.



Setup of tank systems underway in the new holding house

The two outside raceways had rough surfaces, uneven interior sides, irregular slots for tank screens and leaks through the sidewalls. Corrective actions on the slots to remove high spots and coating with fiberglass greatly improved the functionality of the tanks.



Concrete raceways coated in fiberglass to stop leaks through the walls, fiberglass coated raceway on the right



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