

Hatchery Highlights

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



January – March 2020

Aquatic At-Risk Species Recovery:

Freshwater Mussels Research

Biologist Jessica Radich collaborated with FWS partners for collection of mussels ahead of propagation trials scheduled this year at WSNFH. High water levels are currently limiting access to desired collection sites in GA.

Staff cared for mussel broodstock held for FY 2020 work at Warm Springs. Staff manipulated the water supply to mimic winter river temperatures. They mussels were fed twice daily with two concentrated algae diets formulated for mussels. Host fish are also cultured for propagation work in 2020. Staff switched water supplies for the mussels from spring water to pond water during the spring.

Staff retrieved and downloaded the ONSET submersible temperature data loggers deployed for use with a number of culture programs. This equipment and downloaded data will aid in tuning propagation techniques.

Gopher Frogs

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. WSNFH received four egg masses on February 9th. They were collected from Georgia's Fall Line Sand hill WMA located in Taylor County near Butler, GA.



Biologists Jessica Radich, Ian Paige, and CSU student Michael Landers counting tadpoles for stocking into culture tanks. Credit: Haile Macurdy/USFWS

We maintained the egg masses in spring water filled aquariums. They completed hatching one month later on March 9th. Staff then transferred 75 tadpoles each, (1,875 total) into 25 tanks 6 feet in diameter also filled with spring water, inoculated with dried maidencane and covered with anti-escapement netting. They will be cultured through summer as they continue grow out through transformation into juvenile frogs. At that time, they will be collected for eventual distribution.



Jessica Radich tempering and transferring 75 gopher frog tadpoles into each of the 25 culture tanks.
Credit: Haile Macurdy/USFWS

We have an additional 1,187 tadpoles in excess of the culture tanks capacity. They were distributed across three designated ponds at Fall Line Sandhill WMA on April 1st.

WSNFH staff prepared an updated HACCP plan in a new reporting format for our gopher frog program in March.

Gopher Tortoise



Credit: Jessica Radich/USFWS

Gopherus polyphemus is 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.

The four tortoises hatched at Warm Springs last summer continue to do well. Daily care involves providing vitamin-rich pellets, mixed greens, fresh water, planted rye grass, and heat lamps to maintain optimum temperatures in their habitat enclosure within the Reptile and Amphibian Culture Building. WSNFH hopes to continue cooperative efforts with partners conserving gopher tortoises into the future.

Shortnose sturgeon

Endangered shortnose sturgeon historically ranged along Atlantic Basin Rivers southward from Saint Johns River in FL, north into Canada. WSNFH maintains 22 individuals from several year classes for possible future work with the species. Staff monitored culture conditions for the fish daily and fed them a commercial diet specially formulated for sturgeon. These fish are averaging over 11 pounds per fish and range from thirteen to fifteen years in age.

Pollinator and Native Plants Habitat Project

Habitat managed for pollinators on station include a 1.7-acre pond bottom seeded over several previous years with native southeastern plant species beneficial to pollinators. Staff utilized a grass herbicide early in the growing season in an attempt to open up space for more desirable plant species.

Staff weeded the carnivorous plant display ahead of the spring growing season. We are also head-starting a few native Venus Flytraps for eventual inclusion into this display.



Credit: Jessica Radich/USFWS

Sicklefin Redhorse

Warm Springs NFH staff work in cooperation with state, private, and tribal partners to meet conservation goals established by the Sicklefin Redhorse Conservation Committee. Sicklefin Redhorse are a candidate species whose range is limited to watersheds of the Hiwassee and Little Tennessee River. We continue prioritizing conservation efforts within the Oconaluftee River, North Carolina in partnership with the Eastern Band of Cherokee Nation.

WSNFH maintains sicklefin redhorse from several year classes. At the end of March, we have approximately 850 2-inch long 2019 year-class sicklefin redhorse, 130 5.5-inch long 2018 year-class and 3 2014/2015 year-class fish.

Staff undertook a diet study involving the 2019-year class sicklefin redhorse (SFRH) January through March 27th. The feed trial proved inconclusive and did not show any clear differences or performance advantage of one feed type over the other. Bacterial infections among all test tanks compounded the results affecting growth and survival of the sicklefin. The aim of the trial was to find a superior diet that reduces the development of skeletal deformities observed during the first year of culture. We suspect that the deformities are in part caused by a dietary deficiency. Diets tested included the June sucker, Rio Grande silvery minnow, and an Abernethy formulated diet.

Carlos participated in the annual Sicklefin Redhorse Conservation Committee meeting on Jan. 22nd at the USDA's Forest Service Asheville, NC office. He also participated in a conference call with GADNR biologists March 9th in part to coordinate work radio tagging sicklefin redhorse within Georgia watersheds this spring.

Aquatic Species Restoration Programs:

Alligator Gar Restoration Program

Carlos participated in a Jan. 9th conference call on upcoming alligator gar work. We also received notice of a scientific article that used some alligator gar supplied from Warm Springs NFH. This work was published in the July 2019 edition of the Journal of Morphology.

Staff setup culture equipment in the holding house ahead of possible alligator gar work later this year.

Staff updated our alligator gar HACCP to the new required format in March.

Gulf Coast Striped Bass Restoration

Warm Springs NFH maintains 7.2 surface acres of production ponds for striped bass production. Kettles in each of the 12 ½ acre ponds and in one 1.2 surface acre pond were cleaned of mud ahead of refilling. We also reinstalled air diffusers on the ½-acre ponds' aeration supply lines. Organic fertilizer is on hand for pending culture operations that typically starts with refilling ponds in April. Rye grass planted last December in the drained ponds is growing vigorously. The grass

serves a two-fold purpose, reducing soil erosion during the winter and as an organic fertilizer that promotes algae and zooplankton growth once the ponds are filled with spring water.

Staff updated our striped bass HACCP to the new required format in March.

Lake Sturgeon Restoration

Carlos participated in the Southeastern Lake Sturgeon Working Group Annual Meeting March 10th at Tennessee Valley Authority's office building in Knoxville, TN. The group discussed 2019 culture and stocking data, egg procurement and fry requests for 2020, field sampling results, genetics, feed trials, and fish health assessments.

Southeastern populations with managed lake sturgeon includes major watersheds of the Upper Tennessee River, Cumberland River, and Coosa River.

Warm Springs NFH was one of several locations targeted to receive an intern working under the FWS Service's Directorate Fellows Program. Our program activity is an Analysis of Culture Protocols of Lake Sturgeon at Five Federal Hatcheries. WSNFH staff Carlos Echevarria, Josh Simmons and WSFTC biologist Jaci Zelco conducted phone interviews with numerous talented students for the proposed three-month detail. Carlos participated in several follow up conference calls as the evaluation and selection process proceeded up until ramifications of the COVID-19 virus impact throughout the country postponed future action with this program.

We received and reviewed a feed study trial conducted at Edenton NFH titled a Comparison of formulated and Chironomid based diet on growth and survival of cultured Lake Sturgeon.

We are currently reviewing spawning, culture, and tissue-sampling protocols as factors in recently reported polyploidy findings among cultured lake sturgeon.

Staff began evaluating options to obtain fertilized eggs from the broodstock sources in Wisconsin. Nationwide impacts of travel restrictions and mandatory social distancing requirements as related to COVID-19 are pushing back travel dates to a point that work crews may not be able to collect lake sturgeon that remain in spawning condition.

Staff updated our lake sturgeon HACCP to a new required format in March.

Smallmouth Bass Restoration Program in Georgia

We are into our 5th year working with Georgia and Tennessee augmenting existing populations to offset the impact of introduced spotted bass throughout the region.

Staff transferred 30 smallmouth bass broodstock into raceways at WSNFH on March 12th. Staff sampled and paired off the fish among three raceways. Staff then optimized water chemistry and temperatures to promote spawning conditions within the raceways. Each raceway has three spawning pans, filled with river rock, spaced across the raceway. Staff monitor the spawning pans daily for presence of eggs among the rocks using a viewing scope. We collected 3 spawns on March 25th, 28th and 29th. Staff transferred the spawning pans with eggs into the adjacent holding house for treatment and hatch out. We used a prophylactic 15-minute treatment with hydrogen peroxide solution during the first two days as a means of limiting development of fungus among the eggs. The brood smallmouth bass may continue spawning through the next month or two. Initial batches of hatched smallmouth bass are scheduled for transfer to Georgia's Go Fish Center. Warm Springs NFH will rear additional fish for eventual distribution to Blue Ridge Reservoir in North Georgia later this year.

A scheduled trip to obtain additional smallmouth bass broodfish from Tennessee's Eagle Bend SFH in late March was delayed due to high water at the collecting site.

Staff updated our smallmouth bass HACCP to a new required format in March.



Carlos and Josh anesthetizing smallmouth bass, as Jessica measures a fish ahead of transferring it to spawning raceways. Credit: Ian Paige/USFWS

Educate and Engage Public & Partners:

Pike County High School held their 4th annual STEM EX program January 9th. The activity provides high school students an opportunity to demonstrate skills and knowledge in the arena of scientific research and experimentation. Haile Macurdy participated as a judge for the 10th grade class presentations.

Jessica prepared an excellent PowerPoint and a video presentation on WSNFH hatchery priority programs. She modified it for a presentation to a US Aquaculture Society Auburn University Chapter meeting at Auburn, AL on January 14th. Jessica also presented at the annual Georgia AFS meeting held this year in Augusta, GA January 28-30. She also participated in FWS Fisheries Academy training at NCTC February 24th through March 6th and presented a video on the stations programs while there.

Staff responded to folks requesting tour information and scheduling information for future station visits. Staff completed an EXCEL spreadsheet in March for pending significant outreach events and activities scheduled for 2020.

General Maintenance & Operations:

Warm Springs National Fish Hatchery gladly welcomes the arrival of our new Administrative Officer Linda Davidson!

Linda joined us March 30th. Linda brings 20 years of federal government experience to our station. She has great experience to contribute built from years working with the USAF and CDC here in Georgia. Her knowledge and skills in administration, desire to learn new assignments, having great people skills, and an eye on emphasizing safety and quality control ensures she will remain very busy here at Warm Springs!



Staff replaced an existing and undersized outflow filter box from the holding house into the effluent control pond in March. The new containment box provides greater filter capacity for our work with out of basin species. This box is one of several control points utilized on station while culturing smallmouth bass, sicklefin redhorse and lake sturgeon. The adjacent bank was stabilized with riprap afterwards.



New aluminum framed and rock filled containment box installed in effluent control pond.
Credit: Haile Macurdy/USFWS

Staff initiated annual station safety reviews and updating plans for 2020. Other work included digitizing station maps and plans for eventual uploading on the new Safety & Occupational Health SharePoint site.

Chad Shirey assisted Eufaula NWR with road and levee maintenance March 9th-13th. He worked on up to 23 miles of roads during this time. Chad also participated in a Heavy Equipment Instructor Refresher training course held at Sand Hills NWR, SC on March 16-20.

In March, we plumbed and positioned a 1,000-gallon capacity insulated plastic storage tank built to store sodium hydroxide. A custom-made tank stand was fabricated to position the tank at the correct high in order to connect with existing discharge pipes. The tank is equipped with an internal heating system and external sight gauge. This tank assembly replaces a larger fiberglass tank that was removed from service due to leakage issues. Sodium hydroxide is utilized to remove CO₂ from water supplies at the wetlab, which originates from South Spring.

Repairs were made to clogged septic lines at the aquarium building.

Staff provided information on annual reporting requirements for GA permitting purposes.

Carlos and Josh participated in the Georgia Warm Water Fish Hatchery meeting held at the Evan's County PFA.

Haile submitted information for anticipated hatchery reared animal distributions and transfers April through July.



1,000 Gallon NaOH storage tank, support frame and connecting pipework.
Credit: Haile Macurdy/USFWS

Vehicle and heavy equipment spreadsheets were updated to reflect all equipment on inventory and on station.

In response to COVID-19, staff increased surface disinfection routines, practiced social distancing, and closed the aquarium building due to limited space accessing and exiting the building. The outside grounds of the station remain open for visitation. We provided daily updates on station conditions and staff health through the event as required.

Station personnel observed a demonstration of a nano-bubble airlift system produced by Moleaer Inc. February 19th. Sales representative Lewis Malone demonstrated the system's ability to reduce carbon dioxide super-saturation in the ground waters suppling our station. The desired benefit of such a system would be an immediate increase in pH of the source waters and a reduced need for supplemental chemical treatment in order to bring the waters to a near neutral pH.

Staff continued taking annual required refresher training during the quarter.

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