

Hatchery Highlights

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

July - September 2017



Aquatic At-Risk Species Recovery:

Gopher Frogs

Warm Springs NFH is working in partnership with the University of Georgia, Zoo Atlanta, Georgia Department of Natural Resources, The Amphibian Foundation, Inc., and others to expand conservation efforts for gopher frogs within its historical native range. The main goal of this multi-year project is to establish a self-sustaining breeding population on protected land of gopher frogs at the Nature Conservancy's Williams Bluff Preserve in Early County, GA. This rare species is currently under review for formal listing by USFWS, and Georgia documents the species as vulnerable. They are native to upland habitat particularly longleaf pine ecosystems in Georgia and elsewhere in the southeast. They hide under logs and stumps. Loss of longleaf pine habitat is the primary threat for this species. They are limited to fewer than 10 sites in Georgia.



Juvenile gopher frog sitting on fallen log after stocking. Credit: USFWS

We distributed the last of our gopher frogs on July 7th at the Fall Line Sandhills Wildlife Management Area, GA. Warm Springs NFH distributed or transferred a total of 855 gopher frogs during this first year of production.



Gopher frog wetland and longleaf habitat at Fall Line Sandhills near Butler, GA. Credit: USFWS



Juvenile gopher frogs after release. Credit: USFWS

Freshwater Mussels Research

Trent Mitchell produced a video of Purple Bankclimbers, *Elliptoideus sloatianus*, releasing glochidia as part of fish host trials conducted at the hatchery this year. The adult mussels were collected earlier this year from Flint River near Albany, GA a tributary to the ACF basin in southwestern Georgia. Trent was able to produce approximately 500 and 2000 transformed juveniles from 7 inch and 18 inch hatchery

reared lake sturgeon, respectively. This was with a medium-light inoculation rate and we feel that during future trials we can inoculate at a much higher rate while still maintaining fish health.



Checking for attached glochidia on the gills of an inoculated lake sturgeon. Credit: USFWS



Lake sturgeon were in inoculation tanks for two weeks during metamorphosis of juvenile mussels. Credit: USFWS

While lake sturgeon appear to be the most successful host fish during our 2017 inoculations, the blackbanded darter also proved successful yielding 1600 transformed juveniles from nine wild caught darters collected from Hannahatchee Creek in April of this year. Trials with speckled madtoms and various shiners yielded no transformed mussels post inoculation with purple bankclimber larvae.

Juvenile mussels collected from host fish trails fish were fed daily and inventoried to evaluate survival of the young mussels through August.

The adult mussels were then returned to the collection sites after the work with them was completed.



Glochidia release from adult female purple bankclimber. Credit: USFWS



**Blackbanded darters and shiners housed in AHAB tanks during inoculation period.
Credit: USFWS**

Trent attended the Freshwater Mussel Propagation for Restoration course at the National Conservation Training Center, Shepherdstown, WV September 18th - 22nd.

Pollinator Habitat Project

Establishing native plants beneficial to monarch butterflies and other pollinators is a continuing goal of Warm Springs NFH. The habitat area which was replanted earlier this year with butterfly milkweed plants began blooming; monarch and other butterfly species have been observed onsite. Alex Londono cared for the newly planted area on a weekly basis, greatly assisting the plants establish themselves.



Monarch and Gulf fritillary butterflies on stands of butterfly bush and weed in the pollinator habitat. Credit: USFWS

Sicklefin Redhorse

Sicklefin Redhorse are a *Moxostoma* species currently listed by USFWS as a Candidate species. We work to address conservation goals established within the Sicklefin Redhorse Conservation Committee. Partners include fisheries programs at Warm Springs, the Eastern Band of Cherokee Indians, USFWS Ecological Services (ES) in Asheville, NC, Conservation Fisheries Inc. (CFI), and North Carolina Wildlife Resource Commission (NCWRC), Tennessee Valley Authority (TVA), University of North Carolina and others.



Sicklefin redhorse raised in captivity at WSNFH. Credit: J. Schmerfeld, USFWS

We are currently rearing a few 2014 and 2015 year class sub-adult sicklefin redhorse for evaluation of prospective formulated rations, telemetry and for tagging studies. A few of the larger fish are approaching 14 inches in length.

Aquatic Species Restoration Programs:

Alligator Gar Restoration Program

Warm Springs NFH participates in the Alligator gar restoration program covering the Mobile basin in Alabama and the Mississippi River basin in Tennessee. Alligator gar are among the largest freshwater fish species and are a top level predator within the systems they are found. Warm Springs NFH began involvement in regional conservation efforts for the species in 2005. We are currently working to achieve management objectives for this top level predator, in cooperation with Private John Allen NFH and other State and Federal agencies under American Fisheries Society (AFS) Alligator Gar Technical Committee guidance. While the most abundant populations of alligator gar occur in Texas and Louisiana, inland numbers are in decline. As of 2008, the species is considered as vulnerable in many reaches. Our stocking efforts are directed to the Hatchie River, a tributary of the Mississippi river in TN. The state of Tennessee lists alligator gar as critically imperiled.



Alligator gar in raceways ready for tagging and inventory. Credit: USFWS

Alligator gar were sampled, coded-wire tagged and then distributed July 13th ahead of scheduled demolition of the Holding House. On July 13th, a total of 2,642 gar averaging 6.01 in length and 16.80 grams in weight with a total of 97.8 lbs. were delivered by Chad Shirey to two locations on the Hatchie River, a TN tributary within Mississippi River Basin.



Chad Shirey, Trent Mitchell and CSU volunteer Cherish Jordan coded wire tagging alligator gar. Credit: USFWS

Gulf Coast Striped Bass Restoration

Production ponds utilized for striped bass were refilled and managed to prevent erosion, some ponds were second cropped as forage ponds, producing goldfish for other station programs.

Lake Sturgeon Restoration

Warm Springs NFH distributed the last of our 2017 year class lake sturgeon in September. Among the fish distributed this year, 30 lake sturgeon averaging 5.28” in length were transferred to the University of West Georgia on August 28th for an investigation of impacts of water chemistry on development of sturgeon in the hatchery vs. the river (ex. natural recruitment). Also, 100 smaller lake sturgeon were held back at Warm Springs for mussel host fish work next spring. Lake sturgeon stocked this year were marked by removal of the 1st and 2nd right lateral scutes.



Fish Health Lab, Tech Center personnel and volunteers provided assistance to hatchery staff with marking and tagging lake sturgeon. Credit: USFWS



Jaclyn Zelko (FTC) marking fish under the snout with coded wire. Credit: USFWS

Lake sturgeon were distributed and stocked this year at two locations along the Upper TN River: Watts Bar Reservoir and Seven Island Refuges during two outreach events. The Muir Festival in Kingston which marked the 150th year walk of the first naturalist John Muir that took him through the area known now as Kingston was held on September 9th. The hatchery stocked a total of 2,805 fish averaging 7.24” in length and 22.5 fish/lb. and a total of 134.34 lbs. at this event. The 2nd stocking occurred during Sturgeon Fest at Seven Island Refuges on September 23rd. The Tennessee Valley Authority (TVA) and the Tennessee Clean Water Network sponsored this environmental program. The festival featured outdoor educational exhibits along the shores of the French Broad River. Adults and kids had the opportunity to released live sturgeon provided by Warm Springs. The hatchery delivered a total of 2,939 fish averaging 7.0” in length and 23.8 fish/lb. and a total of 123.49 lbs.



Muir Festival at Kingston stocking site. Credit: J. Henegar, TWRA



**Carlos Echevarria tempers lake sturgeon before releasing fish in the river at Sturgeon Fest.
Credit: J. Monroe, Freshwater Illustrated**

An additional, 60 lake sturgeon were sent to the Warm Springs Fish Health Center for PCR testing and screening for herpes virus which was detected among adult lake sturgeon in the Wolf River, WI this year. The test is to evaluate if a vertical transfer of the virus from brood lake sturgeon through the eggs had occurred. WSNFH maintains standardized egg disinfection and quarantine protocols for other viruses which may be transferred in this manner. Two fish were preserved and frozen, then sent to Janine M. Ziermann, PhD, at Howard University College of Medicine, Washington, DC to study head, neck and heart muscle development and evolution in vertebrates, and its unique phylogenetic position. Staff began the long process of preparing to relocate culture equipment currently located in the lake sturgeon building into a new holding house whose construction is currently scheduled early in FY 2018.

Smallmouth Bass Restoration Program in Georgia

We are entering into our second year working in cooperation with Georgia and Tennessee to produce fish for Blue Ridge and Chatuge reservoirs. Blue Ridge is located at the border of Georgia and Tennessee, and Chatuge is located at the border with North Carolina. Native populations of smallmouth bass have been affected by introduced spotted bass though-out the region.



Credit: USFWS

We distributed the last of our 2017 captive produced smallmouth bass this August and September. On August 2nd, we distributed 2,465 fish to Blue Ridge reservoir averaging 34 mm in length and 625 fish/lb. On September 14th, we distributed 2,653 fish averaging 45.0 mm in length and 884 fish/lb. These juvenile smallmouth bass were from a single spawn collected earlier this spring. As they grew through the summer, we moved them from 24-inch diameter tanks into three, larger 42 inch circular tanks and fed them a combination of freeze dried krill, CALA-fin (freeze dried marine copepods) and commercial rations, three to four times a day. According to GADNR biologists, Blue Ridge Lake is known as the last stronghold for smallmouth bass in Georgia.



**Josh Simmons weighs and measure smallmouth bass fingerling prior to distribution.
Credit: USFWS**

Our brood smallmouth bass used for production this year were sampled, coded wire and pit tagged on September 15th, and transferred to a screened holding pond stocked with forage goldfish until next year.



Carlos and Josh pit tagging smallmouth bass. Credit: USFWS



Carlos and Josh tagging smallmouth bass. Credit: USFWS

Carlos Echevarria traveled to Eagle Bend SFH, TN on September 18th to pick up an additional 19 brood smallmouth bass. They were pit tagged and are currently being held in isolation. We are also rearing 36 FY 2016 year class smallmouth bass as future broodfish. These fish are currently approximately 10.0 inches in length and are being fed forage goldfish.



Juvenile smallmouth bass being reared for future broodfish. Credit: USFWS

Aquatic Habitats:

Chad Shirey participated with other Southeast Region Aquatic habitat Restoration Team members July 22nd through Aug. 3rd with a culvert replacement project on Gills Creek (Lancaster County, South Carolina). The new culvert helps restore natural flows and provides access to stream reaches by native species of the basin.



View of old culverts removed with heavy equipment and the newly installed culverts at Gills Creek. Credit: USFWS

Aquatic Invasive Species:

Nothing to report.

Recreational Fishing and Public Use:

Nothing to report.

Educate and Engage Public & Partners:

Planning is underway for our approaching Annual Open House scheduled this year for October 14th. Notices were sent to newspapers in Columbus, LaGrange and Newnan, Manchester and other locations. Staff continue to spread the word through fliers, email contacts and social media sites.

Alex submitted E-Grits articles on our National Kids Fishing Day and work with gopher frogs up through July and his updating a station brochure as a handout for the aquarium building and welcome centers.

We had the opportunity to show on several occasions' station programs to visiting Regional Office staff and a few individuals interested in future careers with the USFWS. We facilitated visits by a number of

home school groups as time permitted and often provided catfish feed so the kids could offer some to the always hungry channel catfish held in two of our ponds.

Haile provided information to area teachers on resources available for lesson plans. These included information relevant to hydroponics and water chemistry scenarios encountered in intensive culture systems and pond production. We are also providing information about online resources related to watersheds, and water quality testing equipment.

Volunteers:

New volunteers Cherish Jordan and Garrett Mitchell joined in and greatly contributed to priority programs underway here. Each of them provided us with excellent assistance and enthusiasm through their work with mussels, alligator gar sampling and marking, lake sturgeon culture and marking just to name a few activities. Tye Bishop, a returning volunteer, continued his volunteer assistance here by feeding fish in our ponds this fall and helping with maintenance projects around the station.

Staff hosted a September 14th meeting with Friends of Warm Springs NFH members to talk about upcoming project opportunities and the scheduled Open House in October.

General Maintenance and Operations:

Following the devastation among southeastern coastal communities brought on by Hurricanes Harvey and Irma, Chad Shirey mobilized with other response team members for work at multiple FWS program sites and other critical staging areas from Mississippi to the Florida Keys. He helped with emergency electrical and mechanical repairs in order to get facilities up and running again. Chad deployed from September 8th – 27th.

Hurricane Irma's passing close to Warm Springs caused very little actual damage to our station. Power was restored after approximately 10 hours. The three fixed station generators worked without issues and one portable generator was used with our aquarium building until power was restored.

Following replacement and repairs to an access port on the side of our empty sodium hydroxide storage tower, we filled the tower with spring water to pressure test the tower for leaks. After several weeks a discharge pipe on the bottom of the tower failed releasing the water. The tower's use after repairs are made will be limited to filling it less than half full.

A concrete pad and metal legs supporting two other smaller chemical storage towers were sandblasted then covered with fiberglass in August to lessen corrosion of the concrete and metal.

Considerable effort continues with the project to construct a replacement Holding House this year at Warm Springs NFH. An onsite meeting delayed by hurricane Irma took place September 13th as the project moves on from 65% completion of the design phase. Carlos met with Region 4 Civil Engineer "Billy" Edwards and contractors who are involved in the design and construction of the holding house.

Staff worked on a variety of administrative projects, training classes, evaluations, budgeting and purchasing activities during the quarter. Carlos participated in several Project Leaders conference calls.

Carlos and Haile participated in an 8 hour supervisory training course at Atlanta, August 8th. Alex participated in a CDSO course at Natchitoches NFH August 21st – 25th.

Haile completed FIS accomplishments, distribution and volunteer service reports and submitted a third quarter report for review.

Chad participated in a Wage Grade employee's meeting at the Regional Office August 9th.

Staff are reviewing solar panel contract options with Georgia Power as the company discontinues the existing Green Energy Program contract options available to solar panel owners.



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