

Hatchery Highlights

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



April-June 2015

Alligator Gar Production

Warm Springs NFH participates in the Alligator gar restoration program covering the Mobile basin in Alabama and the Mississippi River basin in Tennessee. We are helping to achieve management objectives for this top level predator, working in cooperation with Private John Allen NFH along with other State and Federal agencies. We obtained fry this year from Marion State Fish Hatchery, who spawned broodfish out of the Mobile basin. Marion SFH supplied us with 4,650 fry on May 18, 2015. These fry were approximately seven to eight days old. Many of these fry were observed to have deformities and within several days many died (approximately 414). Fry were stocked in tank systems in the Holding House dedicated for alligator gar production.

Through June approximately 3,600 fish were on hand, averaging between 5.0 and 6.0 inches in length. Survival to date is 77.4 %, higher than the 61.4 % seen this time last year.

Keeping with the protocol used over the past several years, we continue to offer the fish a high quality commercial ration once they arrived to the station. The gar quickly took to the commercial ration Otohime distributed by Reed Mariculture, a marine weaning diet. Once fish reach two or three inches in size they are transition into Silver Cup steelhead diet. Alligator gar exhibited uniform growth with little evidence of cannibalism to this day. Once the fish are trained to take the commercial ration, scheduled feeding and 24 hour automatic feeders ensures they do not resort to picking at each other and setting up conditions favorable to disease outbreaks.

Once the gar reaches sizes ranging from 8.0 to 9.0 inches at the end of July, they will be mark with coded wire tags and distributed to locations within the Mobile basin.

Striped Bass Phase I Production

Warm Springs NFH distributed Gulf Coast Striped Bass fingerlings in support of restoration objectives set for the species within several river basins in the Southeast. This year all striped bass produced were distributed into the at West Point reservoir within the ACF River basin. Working in cooperation with our State and Federal partners, fry were received, stocked into ponds, reared, harvested and then distributed between April and May 2015. A combined total of 1.0 million four to seven day old fry were received from Welaka NFH, FL and Marion State Fish Hatchery, AL on April 10th and April 27th.

Twelve ponds totaling 6.7 surface acres were stocked at rates ranging from 130,000 to 173,000 fry per surface acre. Following 30 to 32 days of culture, all ponds were harvested and distributed. The average rate of return was 25%, equaling 37,969 fish per surface acre and 15.2 lbs. per acre. Striped bass are no longer marked with OTC for assessment purposes. However, genetic markers are now being used which eliminates handling stress and marking mortalities, as well as detection errors associated with the use of OTC. A total of 254,392 Gulf Coast striped bass, weighing 102.0 pounds (average 2,494 fish per pound) were distributed.

Date	Distribution Site	River Basin	Number	Wt. (lbs.)
5/13/2015	West Point Reservoir, GA	(ACF Basin)	84,348 fish	39.6
5/27/2015	West Point Reservoir, GA	(ACF Basin)	111,128 fish	40.0
5/28/2015	West Point Reservoir, GA	(ACF Basin)	58,916 fish	22.4
Totals			254,392 fish,	102 lbs.

Lake Sturgeon Production

Warm Springs NFH works collectively with numerous NGO's, universities, state and federal agencies to meet restoration goals for this species. Annually hatchery personnel undertake tasks ranging from spawning, rearing and marking fish prior to distribution by scute removal, to assisting in post stocking assessments and evaluation of habitat used by stocked lake sturgeon. Working at the southern end of their historical range, Warm Springs NFH produces lake sturgeon for distribution into headwaters of the Tennessee River, typically near the confluence of the Lower French Broad River and Holston River in Tennessee. Warm Springs NFH also transferred eggs to Georgia Department of Natural Resources for culture and future distribution of fingerlings into the Coosa River of Georgia. Propagation and care of lake sturgeon while at Warm Springs follows genetic management and quarantine protocols established for the species.

Carlos Echevarria and Chad Shirey traveled to Wisconsin between May 16th and 20th, in order to spawn lake sturgeon and transport fertilized eggs back to the hatchery. Bill Wayman, Fish Technology Center Director, also traveled with us to conduct some cryopreservation work and to provide assistance with our hectic spawning culture work. Lake sturgeon broodfish were collected from the Wolf River at Shawano Dam in WI with assistance of WIDNR biologists. They spawned five females and 25 males for the TN River in addition to two other females for the Coosa River on May 18th. A total of 125,512 green eggs were collected for use at Warm Springs. An additional 54,429 eggs were collected for immediate transfer to GADNR's Summerville Hatchery and Go Fish Center for the Coosa River program.

The Lake sturgeon hatched in May at the hatchery were transferred after one month of quarantine to participating FWS hatcheries, State and University partners on June 1st – 3rd for continued culture and studies. Warm Springs NFH retained 7,452 fingerlings for continued culture and eventual distribution into the TN River basin later this year. Participating hatcheries received a total of 50,914 fry for the TN River basin. Researchers with the University of West Georgia at Carrollton, GA received fingerlings for a metabolic intake study involving lake sturgeon reared at different temperatures.

Date	Location	Number	Length	Wt.(lbs.)
April 20, 2015	Summerville SFH	44,100	Eggs	N/A
April 21, 2015	Go Fish Center	10,329	Eggs	N/A
June 3 rd , 2015	Univ. of West Georgia	646	1.35"	0.240
June 1 st , 2015	Eastaboga SFH, AL	10,100	1.23"	2.980
June 3 rd , 2015	Mammoth Springs NFH	9,721	1.23"	2.910
June 3 rd , 2015	Orangeburg NFH	9,049	1.16"	2.390
June 3 rd , 2015	Edenton NFH	9,841	1.31"	2.950
June 3 rd , 2015	Private John Allen NFH	9,721	1.31"	2.910
June 3 rd , 2015	TN Aquarium	2,482	1.22"	0.680
Totals:		51,560 fish		23.585 lbs.



Lake Sturgeon spawning in WI



Collecting eggs for fertilization



Carlos tending egg transport system

Warm Springs NFH continues to work with our resource partners and members of the Southeastern Lake Sturgeon Working Group conducting habitat and fish assessments using standardized protocols. The hatchery also continues to support the habitat monitoring project initiated by TWRA last year and supported by FWS titled: *Southeast Lake Sturgeon Recovery: Reintroduction, Monitoring Movement Patterns and Determining Habitat Usage*. Tasks associated with this project includes: telemetry work, sex identification (laparoscopy) and gastric lavage methodologies and habitat assessment. Multiple partners for this endeavor in the past have included: Baton Rouge FWCO, Asheville ES, Warm Springs FHC, Pvt. John Allen NFH, Mammoth Springs NFH, Orangeburg NFH, Edenton NFH, TWRA, TN Aquarium, TVA and University of Tennessee, all contributing expertise, funding and resources required to successfully complete this project.

Fish Passage & Habitat Assessment

The Carolina Heelsplitter is an endangered mussel species with a distribution limited to several watersheds in North and South Carolina. The population in Lancaster County South Carolina was the focus of a culvert replacement project on Langley Creek a tributary to the Lynches River. This removal of a barrier to fish movement is a prime example of SHC in action. Chad Shirey from WSNFH participated in providing assistance with heavy equipment operations.



Bottomless culvert being assembled



Culvert being installed in stream channel



Before bottom less culvert installed



After bottom less culvert installed

Monarch Butterflies Restoration Project

On April 9th, WSNFH staff put into action our pollinator and Monarch butterfly habitat project. An unused pond was disked and then planted with the seeds of several native butterfly weeds and other native plants species that are beneficial to pollinators.

Sicklefin Redhorse

Our work with Sicklefin redhorse represents a cooperative effort by fisheries programs at Warm Springs NFH, the Eastern Band of Cherokee Indians, USFWS Ecological Services (ES), Asheville, NC, Conservation Fisheries Inc. (CFI), North Carolina Wildlife Resource Commission (NCWRC), Tennessee Valley Authority (TVA), University of North Carolina and others to rear fingerling sicklefin redhorse in addressing tasks developed by members of the Sicklefin Redhorse Conservation Committee. The Sicklefin is a redhorse sucker in the *Moxostoma* genus, their status as a distinct species is currently under review and recommended for listing by the FWS.

Program assistance with the sicklefin continued for a second year with the hatchery taking an active role in broodstock spawning, egg incubation and fingerling culture. Gametes and tissue samples were collected for cryopreservation, research, genetic typing and health profiles in addition to producing fertilized eggs. Working in cooperation with our partners, broodstock were collected and spawned from fish collected below Potters Dam near Franklin, NC, May 8th on the Little Tennessee River and from the Tuckasegee River at Bakers Creek boat ramp, located between Dillsboro and Whittier on May 13th. An initial attempt to collect broodfish on the Little Tennessee River May 4th resulted in catching only males. Warm Springs staff and volunteers who participated at various times with this effort included Haile Macurdy, Jaci Zelko, Devin Chappell and Elena Macurdy.

CFI and Warm Springs NFH split the fertilized eggs from the Little TN site for hatch out and future distribution. Three females were fertilized with fifteen different males. Of the eggs transferred to Warm Springs, a total of 5,791 fry were produced at a hatch rate of 74.3%.

On May 13th, Warm Springs, Asheville ES Office, Cherokee Indian biologists and NCWRC staff collected and spawned two female sicklefin with nine males from the Tuckasegee, returning all fertilized eggs to Warm Springs NFH. A total of 13,100 fry were produced with hatch rate of 92.8%.

A total of 18,891 fry were produced from the two river basins this year. All fry had hatched by May 20th. On June 15th 15,700 of these 2015 year class sicklefin were distributed to locations within their source basins as

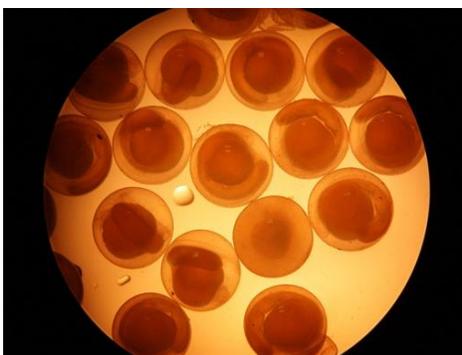
listed in the following table. Distributions of young Sicklefins were made in accordance with recommendations of ES Asheville staff, NCWRC and Cherokee fishery biologists. Also released on June 15th were a few 2014 one year old class sicklefin retained for future stocking, tagging and assessment plans.

An additional nine hundred 2015 year class fish were held back at Warm Springs for an evaluation of current and prospective formulated rations. A diet originally developed for use with razorback suckers is one of those under evaluation.

Date	Lot	Distribution Site	Length	Number
June 15 th , 2015	2014-Little TN River	Potters Dam, Franklin NC	3.15"	132
June 15 th , 2015	2015-Little TN River	Potters Dam, Franklin NC	0.77"	4,294
June 15 th , 2015	2015-Tuckasegee River	Oconaluftee River, NC	0.75"	5,842
June 15, 2015	2015-Tuckasegee River	Caney Fork, Tuckasegee R., NC	0.75"	2,821
June 15 th , 2015	2015-Tuckasegee River	Webster, Tuckasegee R., NC	0.75"	2,743



Collecting on the Tuckasegee River



Eggs ready to hatch



Young Sicklefin redhorse

Freshwater Mussels & Darters

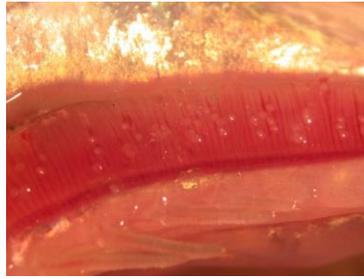
Warm Springs NFH continues to hold eight mussel species from the ACF: *Lampsilis straminea* (Southern fatmucket), *Lampsilis floridensis* (Florida sandshell), *Elliptio crassidens* (Elephant ear), *E. pullata* (Gulf spike), *Quadrula infucata* (Sculptured pigtoe), *Toxolasma paulum* (Iridescent lilliput), *Villosa lienosa* (Little spectaclecase), and *V. vibex* (Southern rainbow); and four mussel species from the Altamaha River Basin: *Alasmidonta arcuata* (Altamaha arc mussel), *Elliptio dariensis* (Georgia elephant ear), *E. icterina* (Variable spike), *Lampsilis splendid* (Rayed pink fatmucket). The hatchery is also holding several native small ACF riverine fish species: *Percina nigrofasciata* (Black banded darter), *Noturus leptacanthus* (Speckled madtom), largemouth bass and bluegill for future host fish studies. Some of these mussels have been in refugia for up to 12 years or more. Mussels are surviving and continue doing well.

Carlos Echevarria, Chad Shirey and Bill Bouthillier collected 11 purple bankclimber mussels and 5 washboard mussels for use with a propagation study on May 2, 2015. Most of the bankclimbers were found to be gravid and would be used for the upcoming study. On May 7th, 9th and 12th infection trials were conducted using a total of 39 largemouth bass. After several days the collection cups were examined to check for juvenile. No

juveniles were found during these trials, possibly due to low infection rates and swings in temperature. After 45 days infected fish were released into a hatchery pond.



Infecting fish with glochidia



Examining glochidia attachments



AHAB system

In May, Rachel Mair, Mussel Biologist at Harrison Lake NFH, VA came down to review our mussel program and made suggestions to improve our operations and techniques.

Maintenance and Operations

Staff dedicated time for preventative maintenance of buildings and equipment. This includes the time for setup, operation and maintenance of intensive culture systems required for high priority work with lake sturgeon, alligator gar, mussels and sicklefin redhorse. Work also included maintaining water treatment equipment and recharging chemical towers at the two spring water sources used at Warm Springs. Ponds, roads and pond levees were also maintained.

A 25 ton shipment of high calcium carbonate crushed limestone was purchased for use in our alkalinity treatment building. Calcium chloride was also obtained for use with the water treatment equipment at the wetlab.

The three power backup generators onsite were inspected and utilized during several power outages. These are all working without problems and help ensure critical infrastructure and culture systems continue to operate during outages.

Staff also replaced several water pumps prior to use this year and serviced several chillers and heat pumps.

Chad also serviced our utility carts, fish and egg transport trailers and equipment. Staff also maintained the grounds, mowing on frequent occasions and maintaining public use areas through the Quarter.

Administration & Meetings

Considerable time was devoted to working in FBMS, taking required training, inputting data, running reports and updating budgets. Monthly fuel and energy reporting as required was conducted. Several teleconferences devoted to updates in FBMS, ECOS were participated in along with Project Leader conference calls through the Quarter.

On June 11th, the city of Warm Springs held an open house as they put their new radium removal treatment building online. This new system is required to meet EPA drinking water standards. The new self-contained filtration system is now connected to the City's raw water supply line. Carlos Echevarria participated in the event representing FWS.

Following a 5 year safety audit, an assessment of safety findings was submitted on April 23rd. Our annual review and submittal of the current Disaster Action Plan was completed on June 3rd.

An updated Section 7 permit was attached to all Pesticide Use Proposals for the station.

Property inventory was assessed and submitted on April 1st. The 2nd Quarter report was submitted for review on April 6th and the station fact sheet in FIS was updated in June. Staff reviewed watershed impact information submitted in prior years and submitted FY 2014 Recovery Expenditures on June 4th.

Volunteers

During the spring and summer months, we usually have a few high school and college students who helped out in a range of projects such as care of lake sturgeon, alligator gar, sicklefin redhorse, monitoring water quality, pond management and maintenance tasks. This spring Trent Mitchell a returning volunteer joined us for the summer. Trent is attending Columbus State University in pursuit of his biology degree. For his research project he is comparing sicklefin redhorse diets.



Volunteer Trent Mitchell

We also have an onsite research project being conducted by a Dr. Janet Genz, professor and Caryn West, a student both from University of West Georgia examining growth rates and metabolic uptakes at different temperatures in lake sturgeon.

We facilitated an overnight survey for bats by members of the Georgia Bat Working Group in mid-May. Working in conjunction with LaGrange College, members of the working group set up mist nets onsite for a night, collecting information and releasing any captured bats back onsite.

Outreach

Warm Springs NFH is a valued asset and venue to demonstrate the Service's commitment to environmental leadership. To that end the station provides facilities, kiosks, public access and some scheduled events that allow demonstration and communication of our goals and accomplishments.

Our annual fishing rodeo for kids was held on June 6th this year during National Fish Week. This successful event depends heavily on volunteers to facilitate the public turn out. This year 281 kids under the age of 12 caught 1,183 catfish, learning how to fish with the assistance of their parents, our staff, volunteers and Friends Group members. Of the kids participating, 37 enjoyed this as their first ever fishing trip. We have a dedicated group of bass fisherman (Benning Bass Club) who volunteer for the event each year and provide guidance to

young people just learning about fishing. Our thanks go out to Wen Marr Management Corporation, (Wendy's), LaGrange, GA who provided food for all participants and families again for this year event. Door prizes included fishing poles donated by Zebco Brands and Callaway Blue in Pine Mountain provided bottled water.



Our Friends of Warm Springs National Fish Hatchery group continued to participate in outreach activities during the year. The group is reorganizing this year and looks to include an increased focus on providing outreach and environmental educational opportunities to youth. WSNFH staff provided information to our Friends Group on grant opportunities such as the Recreational Paddling Grant.

Hatchery staff assisted with Multicultural Day celebrations at the Regional Office in Atlanta on April 21st. Haile and Bill Bouthillier along with staff from the Tech Center and Fish Health Program participated in this event.

During the Quarter the following groups had scheduled visits to the station in addition to many unscheduled tours.

- Apr 28th - Mountain View Elementary School – 90 kids /8 adults toured the hatchery.
- May 8th – George Washington Elementary School - Career Day - talked with 120 children about careers as a Fish Biologist with the Service.
- May 14th - Easter Seals of Columbus, GA bought 15 special needs adults to tour the hatchery.
- May 19th - Peachtree Academy - 30 kids/ 7 adults toured the hatchery.
- May 26th - Easter Seals of Columbus, GA bought 15 special needs adults to tour the hatchery.
- Jun 6th - Kids Fishing Day.
- Jun 11th - Auburn University - Dr. Terhune's Fisheries class - 10 college students toured the hatchery.
- Jun 17th – Visited with a veteran participating in a wounded warrior tour and ES staff from Fort Benning.
- Jun 23th - E Star Science Camp – 40kids/ 6 adults toured the hatchery.
- Jun 30th – Harris County Science Camp – 30 kids/ 9 adults toured the hatchery.



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