Hatchery Highlights

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

April-June 2014

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 (source of our fry) along with other State and Federal agencies. Following observations from recent production years, we obtained older fry (7-8 old) from Private John Allen NFH. Bill Bouthillier brought back a total of 4,500 fry from Private John Allen NFH on May 9th, 2014. Fry were stocked in tank systems in the Holding House dedicated for alligator gar production.

Through June approximately 2,763 fish were on hand, averaging between 4.0 and 5.0 inches in length. While survival to date is 61.4 % it is lower than the 62.6 % seen this time last year, we are still well above the averages of previous years. Ten fish were transferred to Auburn University, June 20th for physiology studies involving alligator gar.

Keeping with the protocol used over the past several years, we continue to offer the fish a high quality commercial ration and live brine shrimp on first arrival. The gar quickly takes to the commercial ration and brine shrimp is discontinued after a few days. Gar exhibit uniform growth with little evidence of cannibalism. Once the fish are trained to take the commercial ration, scheduled feeding ensures they do not resort to picking at each other and setting up conditions favorable to disease outbreaks. Once the gar reaches larger sizes, they will be tagged with coded wire tags and distributed into tributaries of the Mississippi River in Tennessee at the Hatchie River.

Columbus State University student Alex Edwards worked extensively with our alligator gar program this year. Working alongside our staff, Alex is conducting a study related to gar production techniques.

Striped Bass Phase I Production

Warm Springs NFH distributed Gulf Coast Striped bass fingerlings in support of restoration objectives set for the species for several river basins in the Southeast. This year basins receiving striped bass included the ACF River basin in Georgia, Alabama and Florida, Black Warrior River and Tallapoosa River Basins in AL and the Ochlockonee River Basin of Georgia and Florida. Working in cooperation with State and Federal agencies, fry were received, stocked into ponds, reared, harvested and then distributed between April 11 and May 22nd, 2014. A combined total of 1,179,000 five day old fry were received from Welaka NFH and Florida's Blackwater SFH between April 11th and April 14th.

Twelve ponds totaling 6.7 surface acres were stocked at rates ranging from 150,000 to 200,000 fry per surface acre. Following 38 to 40 days of culture, all ponds were harvested and distributed. The average rate of return was 29.4%, equaling 51,756 fish per surface acre. Striped bass were not marked with OTC following guidelines set previously during the annual Morone meeting. 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 346,767 Gulf Coast striped bass, weighing 68 pounds (average 5,100 fish per pound) were distributed to the following sites:

Date	Distribution Site	River Basin	Number	Wt. (lbs.)
5/19/2014	West Point Reservoir, GA	(ACF Basin)	135,486 fish	28.9
5/20/2014	West Point Reservoir, GA	(ACF Basin)	104,014 fish	16.9
5/21/2014	Smith Lake, AL	(Black Warrior R. Basin)	15,620 fish	3.5
5/21/2014	Lake Martin, AL	(Tallapoosa R. Basin)	15,620 fish	3.5
5/21/2014	West Point Reservoir, GA	(ACF Basin)	39,815 fish	6.5
5/22/2014	Lake Talquin, FL	(Ochlockonee R. Basin)	36,212 fish	8.7
Totals			**346,767**	**68**

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 wide ranging tasks ranging from spawning, rearing and marking fish prior to distribution by scute removal, along with 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 and provided fry this year to Georgia Department of Natural Resources for distribution 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 during the week of May 4th – 9th, in order to spawn lake sturgeon and transport fertilized eggs back to Warm Springs. Bill Wayman, WS Fish Technology Center Director, also traveled with us to conduct some cryopreservation work and to provide assistance with our hectic spawning culture work. Others participating included Kathlina Alford with the Tennessee Aquarium and Christina Saidak, FWS student/employee in the Director's Fellowship Program. Jason Henegar and David Roddy (TWRA) met us in Shawano, WI and provided us assistance with this year spawning. Lake sturgeon broodfish were collected from the Wolf River in WI with assistance of WIDNR biologists. Six females were spawned on May 7th each with five different males. A total of 128,975 green eggs were collected for use at Warm Springs and an additional 74,425 eggs were collected for immediate transfer to GADNR 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 17th – 19th for continued culture. Warm Springs NFH retained approximately 4,500 fingerlings for Josh Simmons to continue culturing and distribute in October 2014. Participating hatcheries received a total of 50,700 fry for continued culture and eventual distribution into the TN River basin later this year. An additional 24,508 fingerling lake sturgeon were distributed to Georgia DNR for the Coosa River Restoration program.

Date	Location	Number	Length	Wt.(lbs.)
June 17th, 2014	Tennessee Aquarium	2,900	1.15"	0.881
June 18th, 2014	Mammoth Springs NFH	11,150	1.21"	3.240
June 18th, 2014	University of TN	7,200	1.21"	2.090
June 18th, 2014	Eastaboga SFH, AL	2,500	1.19"	0.738
June 18th, 2014	Marion SFH, AL	5,000	1.19"	1.476

June 19th, 2014	Orangeburg NFH	5,950	1.21”	1.890
June 19th, 2014	Edenton NFH	8,000	1.27”	2.750
June 19th, 2014	Private John Allen NFH	9,392	1.27”	3.230
June 20th, 2014	GADNR, Coosa River	24,508	1.21”	7.770
Totals:		75,208 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 Southeast Lake Sturgeon Working Group conducting habitat and fish assessments using standardized protocols.

A habitat monitoring project initiated by TWRA and supported by FWS titled: *Southeast Lake Sturgeon Recovery: Reintroduction, Monitoring Movement Patterns and Determining Habitat Usage* got underway this year.

We are also assisting Asheville ES Office with training two students/employees participating under the **Director's Resource Assistant Fellowship Program**. The USFWS provided over 40 Fellowships throughout the nation, most of which are in biological science/natural resource management or related fields. Training consist of a variety of lake sturgeon projects, which have included efforts ranging from spawning and culture techniques to active monitoring of lake sturgeon movement and the habitat they use. The objectives of this project includes: identify water quality characteristics of seasonally important habitats in TN River reservoirs; collect and analyze bottom sediments; and identify, map and assess potential spawning habitat in the Upper TN River basin. As information is gained on daily and seasonal movement of lake sturgeon from the ongoing trotline and telemetry work, additional efforts are now underway assessing water quality parameters of the habitat used by lake sturgeon. Evaluating seasonal habitat preferences as indicated by the presence of tagged lake sturgeon began in June 2014. Using Hydrolab 5SDX sondes supplied by Warm Springs NFH and the Peninsular Florida Fisheries Office, three remote water quality monitoring stations were setup June 3rd and 4th by Chad Shirey and Haile Macurdy from WSNFH, Mark Cantrell, Ashville ES and Fellow student Christina Saidak. Each sonde was deployed down a guide wire suspended between a can buoy and heavy weight. The three sites in the Tennessee River system are at Fort Loudoun near Georges Branch, Watts Bar near Paint Rock Refuge and Chickamauga Reservoir near Hiwassee Island, TN.

Christina, Fellow employee and UT student came to Warm Springs to learn a gastric lavage non-lethal technique developed in cooperation with the Fish Health Center to sample stomach content. Technique will be used in three classes of sturgeon released into the system to distinguish shifts in prey assembly.

For more information on the Director's Fellowship Program visit:
http://www.fws.gov/workforwildlife/dfp.html

Carlos is assisting with coordinating upcoming tasks associated with lake sturgeon habitat studies including: telemetry work, sex identification (laparoscopy) and gastric lavage methodologies scheduled to take place in the Upper Tennessee River basin again later in the year. Multiple partners for this endeavor in the past have included: Baton Rouge FWCO, Ashville ES, Pvt. John Allen NFH, Mammoth Springs NFH, Orangeburg NFH, TWRA, TN Aquarium, TVA and University of Tennessee, all contributing expertise, funding and resources required to successfully complete this project.

Water Quality Sonde

Hiwassee River, TN site of a deployed sonde with marker buoy

Fish Passage & Habitat Assessment

On March 2014, the Fisheries Program distributed the watershed approach document to the Southeast conservation agencies. The goal of the Fisheries Program in Atlanta is to implement, at a minimum one or two Aquatic Conservation Work Plans in FY-15. Every Project Leader and their field stations were tasked to complete one work plan by mid-April 2014. The submitted plans will be reviewed by a Fisheries Management Team (FMT) and a group of Project Leaders to discuss, review and to select plans for implementation in 2016. Plans will focus on the highest Service priority areas in the Southeast. The Warm Springs NFH submitted two draft watershed management plans developed by our staff in June for the Wheeler Basin in AL, HUC 06030002 and the Upper Flint River Basin in GA, HUC 03130005. Bill Bouthillier and Haile Macurdy expend enormous amount of hours (six weeks) getting the plans ready to go by the due date. Plans were reviewed by Hatchery Manager and submitted to the Fisheries office as requested.

The slackwater darter, a threatened species with a limited distribution only within the Wheeler HUC, was the focus of a culvert replacement project on an unnamed tributary to Swan creek. 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.

New Culvert on tributary of Swan Creek, AL

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), Ashville, NC, Conservation Fisheries Inc. (CFI), North Carolina Wildlife Resource Commission (NCWRC), 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.

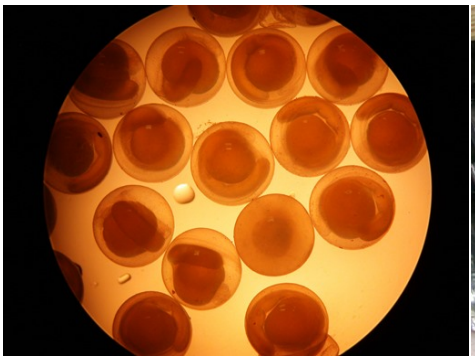
As of June 2014, the hatchery has sixteen 2012 year class fish spawned by CFI and transferred later to Warm Springs for continued culturing. These fish are scheduled for tagging and distribution in July 2014.

Program assistance with the Sicklefin expanded significantly this year with the hatchery taking an active role in broodstock spawning, egg incubation and fingerling culture. Working in cooperation with our partners, broodstock were collected and spawned from the Little Tennessee River fish near Franklin, NC, April 28th. CFI and Warm Springs split these fertilized eggs for hatch out and future distribution. A total of 10,159 eggs from three females were fertilized with fifteen males and transferred to Warm Springs. The Sicklefin had a successful hatch rate of 60.3% at Warm Springs.

On May 8th, Warm Springs, ES and NCWRC staff collected and spawned additional sicklefin broodfish from the Tuckasegee River Basin, returning all fertilized eggs to Warm Springs NFH. A total of 6 females were spawned individually with 19 males. Approximately 38,000 eggs were collected with a hatch rate of 57.1%. Culture techniques developed during years of work with Robust Redhorse were utilized for egg incubation and fry culture. All fish are now currently feeding on a commercial diet.

Distributions of young Sicklefin were made in accordance with a stocking plan developed by Mark Cantrell, Ashville, ES and Cherokee Nation fisheries biologists. A total of 16,296 - 2014 year class sicklefin weighing approximately 2.75 lbs. were distributed as listed below. An additional 5,200 fish averaging 1.1 inches in length remain at Warm Springs for continued culturing, future use and distributions.

Date	Lot	Distribution Site	Length	Number
May 23rd, 2014	2014-Little TN River	Burningtown Site, NC	18 mm	1,500
May 23rd, 2014	2014-Little TN River	Cartoogechaye River, NC	18 mm	1,400
May 23rd, 2014	2014-Little TN River	Cullasaja River, NC	18 mm	300
May 23rd, 2014	2014-Tuckasegee River	Oconaluftee River, NC	15 mm	2,400
May 28th, 2014	2014-Tuckasegee River	Caney Fork @Mossy C., NC	18 mm	1,700
May 28th, 2014	2014-Tuckasegee River	Oconaluftee River, NC	18 mm	1,290
June 3rd, 2014	2014-Tuckasegee River	Caney Fork @Mossy C., NC	20 mm	2,315
June 3rd, 2014	2014-Tuckasegee River	Oconaluftee River, NC	20 mm	2,940
June 23rd, 2014	2014-Tuckasegee River	Webster, NC	20 mm	1,200
June 23rd, 2014	2014-Tuckasegee River	Oconaluftee River	23 mm	1,251



Eggs ready to hatch

Newly hatched fry

Sicklefin redhorse & automatic feeder

Freshwater Mussels & Darters

Warm Springs NFH continues to hold 8 mussel species from the ACF – Lampsilis straminea (Southern fatmucket), Lampsilis floridensis (Florida sandshell) , Elliptio crassidens (Elephantear), 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 arcula (Altamaha arcmussel), Elliptio dariensis (Georgia elephantear), 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.

Bill Bouthillier and Andy Hartzog of the PC FWCO collected purple bankclimber mussels for use with a cage propagation study in May 15, 22, and 29. No gravid mussels found during the trips to Albany, GA so another mussel species will be used for this study.

Maintenance and Operations

Staff dedicated time for preventative maintenance of buildings and equipment. This includes the time required for setup, operation and maintenance of intensive culture systems required for high priority work with lake sturgeon, alligator gar, mussels and sicklefin redhorse. Additional assistance was provided to the Fish Technology Center setting up tank systems for pending studies. Work also included maintaining water treatment equipment and recharging chemical towers at the two spring water sources used at Warm Springs. A large check valve in a water supply line of the alkalinity treatment building was replaced. Ponds, roads and pond levees were also maintained.

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.

Heavy equipment was serviced during the Quarter by Chad Shirey. Chad also serviced our utility carts, fish and egg transport trailers and equipment. Improvements were made to the egg transport trailer used with the lake sturgeon program.

Administrative & Meetings

Considerable time was devoted to working in FBMS, taking required training, learning the program, 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.

Staff monitored the ongoing construction work conducted by the City of Warm Springs on their new radium removal treatment building that got underway this Quarter. This new system was required to meet EPA drinking water standards. The Construction is taking place within City and hatchery property. Existing water pumps owned by the City and housed in our Spring House were removed and replaced with new pumps, along with motor starters and electrical. Hatchery staff interacted as necessary to ensure that construction would not affect, or harm the hatchery main source of water, and safety will be guaranteed during construction for our employees, visitors and next door neighbors. The new self-contained filtration system is now connected to the City's raw waterline.

Safety reporting included review and updates to EMS plans and annual submittal of the current Disaster Action Plan in May.

Property inventory was assessed and submitted.

Volunteers:

Through the year we brought in a number of 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. Our thanks go out to Trent Mitchell, Jeremy Belt, Joe Otto, Nicole Plessinger, Bethany Dunn, Cameron McPherson and Alex Edwards for their onsite assistance this year.

Special thanks also go out to Lawrence Ford, retired from FWS... but still greatly assisting us with the ins and outs of FBMS. Thank you Lawrence!

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 7th this year during National Fish Week. This successful event depends heavily on volunteers to facilitate the public turn out. This year 290 kids under the age of 12 caught 1,190 catfish, learning how to fish with the assistance of their parents, our staff, volunteers and Friends Group members. 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 WenMarr Mgmt. 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 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.

Special thanks to Program Supervisor, Allan Brown and his wife Julia for attending and helping us with the event.

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

Apr 17 - West Georgia Home School Association - 47 kids/ 21 adults toured the hatchery.

Apr 24 – Mountain View Elementary School - 75 kids/ 10 adults toured the hatchery.

May 14 - LaGrange Montessori School - 17 kids/ 6 adults did Biologist in Training and toured the hatchery.

May 17 - Central Baptist Church of Phoenix City, AL - 35 kids/ 8 adults toured the hatchery.

Jun 17 - Easter Seals of Columbus, GA bought 17 special needs kids to tour the hatchery.

Jun 25 - Easter Seals of Columbus, GA bought 12 special needs kids to tour the hatchery.

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