Hatchery Highlights

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

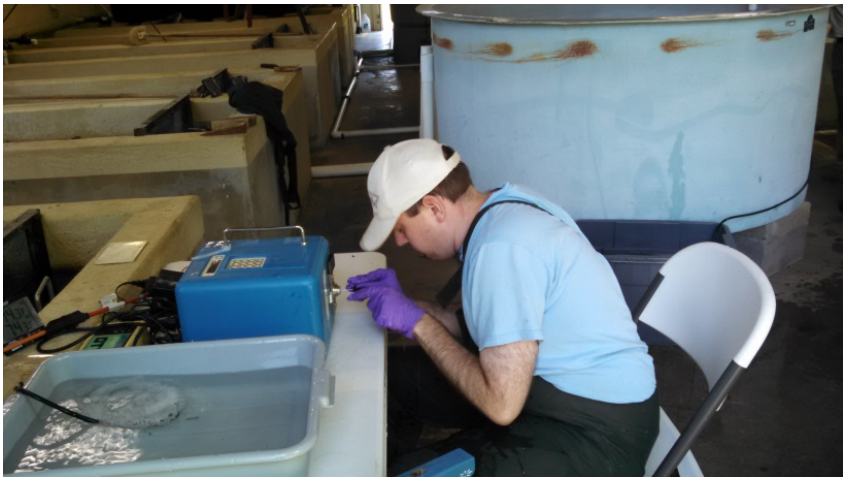
July - September 2014

Alligator Gar Program Updates

Warm Springs NFH is working to help restore and enhance alligator gar population in suitable waters within their historic range of the West Tennessee Mississippi River Basin by conducting research to improve culture techniques and to produce juvenile fish for distribution. Our work primarily focuses on the Mississippi River drainage; annually distributing coded wire tagged juvenile alligator gar to the Hatchie River in TN. Fish are also transferred to universities conducting research on the species. Alligator gar are a top level predator, capable of consuming non-native species such as Asian carp and is considered a valued sport fish.

In July numerous forage ponds were harvested to ensure alligator gar are acclimated to a natural diet and produce rapid growth during the final weeks of culture. Goldfish were harvested, graded and then used to supplement the commercial Silver Cup steelhead ration in use through June and July. On July 29th all fish were coded wire tagged and sampled at Warm Springs NFH. A total of 2,390 fish weighing 295.63 lbs were distributed at two locations on the Hatchie River, TN. The remaining 17 fish were transferred on August 8th to the University of Chicago for studies on prey capture strategies using high-speed videography. Contact for this project is **Justin Lemberg**, lemberg@uchicago.edu.

Columbus State University student and WSNFH volunteer Alex Edwards, working under direction of Dr. Clifton Ruehl, Dept. of Biology, CSU, is currently developing a report correlating gar survivorship and mortality due to cannibalism with culture methods in use at Warm Springs and other Service Hatcheries. Alex has obtained information from additional sources and hatcheries for his work.



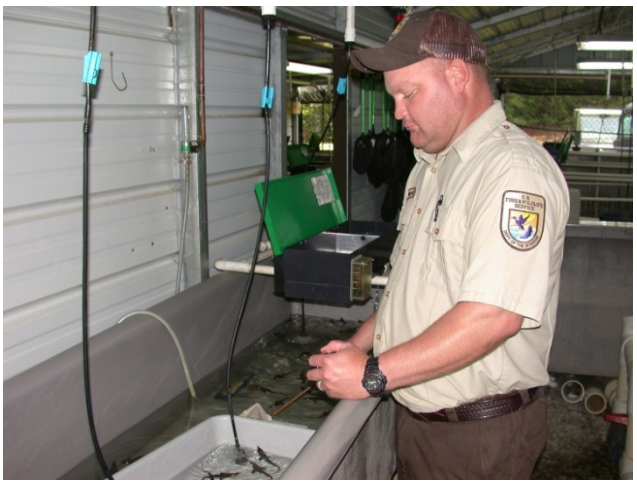
Alex learning to wire tag alligator gar

For further information on alligator gar, visit the website: http://www.sdafs.org/alligar/index.html

Lake Sturgeon Production News

Warm Springs NFH is one of many partners working to restore lake sturgeon in the Upper Tennessee and Cumberland Rivers of Tennessee, and the Coosa River in Georgia.

WSNFH is holding approximately 2,750 lake sturgeon ranging from 5" to 10" for distribution in October. The fish are fed multiple times daily with a combination of high energy soft moist commercial diet and natural feeds; frozen krill and midge larvae (bloodworms). The fish are also provided the soft moist commercial feed at night through use of belt feeders. The rearing tanks were provided with supplemental oxygen and water temperatures were optimized for rapid growth. The lake sturgeon fingerlings were also continually graded to reduce competition and maintain uniform growth.



Josh Simmons grading lake sturgeon

Lake sturgeon swimming in tank

The Southeastern Lake Sturgeon Technical Committee has identified needed assessment tasks in the Management Plan for Restoration of the Upper Tennessee River Lake Sturgeon Population. This assessment work includes both habitat and population assessment components. In recent years, multiple year-classes of stocked lake sturgeon have been collected in the upper Tennessee River through standardized trot lines sampling efforts. Adding to fish initially tagged in 2013, work is again planned this October to collect and tag additional 20 lake sturgeon with Vemco acoustic tags (four with depth capabilities) within 5 miles of Hiawassee Island on Chickamauga Reservoir, TN River. These fish are then tracked to help identify habitat selection.

These tagged fish will also hopefully provide valuable information allowing continued refinement of trotline sampling protocols and lead to a better understanding of lake sturgeon distributions and seasonal patterns of habitat use. This work is part of the study plan developed at WSNFH that incorporates field techniques for sex identification and staging, diet as indicated by evaluation of stomach contents, and surgery techniques for placement of telemetry tags.

This year, habitat assessment work expanded through deployment of three Hydrolab DS5X water quality measuring sondes in June, 2014. The sondes were placed within the seasonal riverine habitat identified by trotline surveys, and acoustic pings collected from the Vemco radio tags and fishermen reports. We are working with Mark Cantrell Ashville, NC ES Office and Christina Saidak, Master's degree candidate at the University of Tennessee and FWS Directorate Fellowship Intern, providing training and assistance in maintaining the Hydrolab sondes. Haile Macurdy traveled on August 5th-7th to demonstrate maintenance, calibration, programing, data retrieval, and validation methods of the Hydrolabs.

Carlos attended a presentation on August 25th at the University of Tennessee by Christina Saidak entitled: "Characterization of Important Habitats for Lake Sturgeon Restoration in the Upper Tennessee River System Based on Differences in Water Quality". Carlos also met with Dr. Larry Wilson, Dr. Alford and Mark Cantrell to discuss ongoing and future cooperative projects with UT.

Christina also traveled to Warm Springs on September 24th and met with Brian Hickson, Fish Health biologist and Carlos Echevarria, WSNFH Hatchery Manager to discuss techniques for the upcoming work with lake sturgeon in the TN River. Christina also picked up a serviced Hydrolab DS5X sonde for use with ongoing lake sturgeon habitat assessment work.

Planning is underway for trotline assessment work that will commence again this year beginning in November on the Coosa and Tennessee River systems. Lake sturgeon have been stocked in the Coosa River in cooperation with Georgia Department of Natural Resources in recent years. Work includes gear preparation (boat, trotlines), team coordination and submitting an application for collection permits needed in AL waters from Alabama Department of Conservation and Natural Resources - Wildlife and Freshwater Fisheries Division (AWFF).

Sicklefin Redhorse Production

Our work with Sicklefin redhorse represents a cooperative effort by the fisheries program 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. Sickefin conservation efforts are important not only for the species but for their significant in preserving a part of Cherokee culture.

Work progressed on several projects for restoration of Sicklefin redhorse this Quarter that included fish distributions and radio tagging larger fish for assessment work.

The two lots of sicklefin produced this year increased in size from an average of 1.1 inches in July to over 2 inches in October. The fish are eating a commercial soft moist ration also utilized with the lake sturgeon culture program. Water hardness is being maintained around 100 ppm with an optimization of water temperatures and currents to produce rapid growth.

On September 11th distributions from this year class were made, leaving approximately 1,000 sicklefin fingerlings divided evenly among the Tuckasegee and Little Tennessee lots at Warm Springs for continued culture and future tagging operations. A total of 1,000 fish averaging 1.70 inches in length were stocked at Culllasaja River Hwy 64, a tributary of the Little TN River. Also, a total of 2,400 fish averaging 1.55 inches in length were stocked at two locations along the Oconaluftee River, a tributary of the Tuckasegee River.

The 2012 year class fish reached sizes large enough to tag with small radio tags. These four fish averaging 6.92” in length were radio tagged early July and distributed to the Oconaluftee River, a tributary of the Little Tennessee River on July 18th. Staff with the Cherokee Nation picked up these fish at Warm Springs.

Radio tagged juvenile sicklefin redhorse

On August 26th, working in coordination with the Eastern Band of Cherokee Indians (EBCI), North Carolina Wildlife Resources Commission and ES Ashville, Warm Springs assisted with capturing and radio tagging 10 adult sicklefin. Fish were released upstream of the Bryson Hydroelectric Dam on the Cherokee Indian Reservation in the Oconaluftee River. According to Mark Cantrell once they become acclimated, they are planning to study the movement ecology and habitat use of these wild, adult fish in a river reach that has been inaccessible since the dam was constructed in 1925. An earlier tagging study of juvenile Sicklefin Redhorse found that young fish drifted downstream, over the 36' dam, but are unable to return. This 1-1/2 year study will focus on adult survival and use of spawning habitat in the Spring.

Mike LaVoie, Fisheries Biologist for the Cherokee Nation developed a news release a part of which is included below. "This fish was historically important to the Cherokee as a food fish. And now it's been eliminated from tribal waters on the main Qualla Boundary. So our goal is to reestablish this fish with traditional Cherokee culture," "So this project is a joint restoration project focused on restoring both a rare and culturally significant fish to historic tribal waters,"

Carlos & Christina implanting radio tag in an adult sicklefin redhorse Aug. 26th, 2014. Photo by David Butler, Smoky Mountain Times Newspaper.

To read the complete article, see in the Smoky Mountain Times – Restoring Sicklefin Redhorse Population Bryson City, NC Thursday, Aug. 28, 2014, Volume 131, No.5 or visit:

http://www.wlos.com/news/features/top-stories/stories/saving-species-17531.shtml#.U_08V2N0HiN

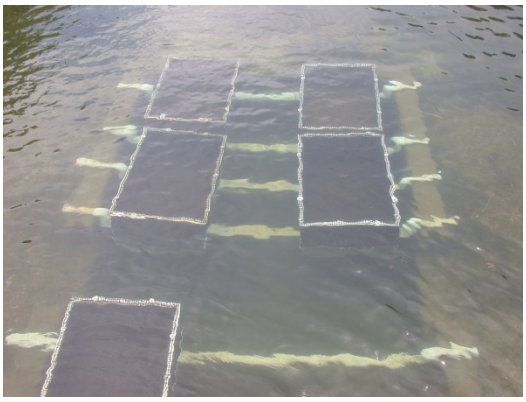
Freshwater Mussel Propagation and Research

Carlos Echevarria participated in the Freshwater Mussel Propagation for Restoration course at USFWS National Conservation Training Center, September 8th – 12th, 2014.

The mussel program continues holding mussels and host fish held from previous years for studies, these include eight mussel species from the ACF Basin and four from the Altamaha Basin. Some of these mussels have been in refugia for up to 12 years or more. Mussels are surviving and continue doing well. They are held in tanks using pond water treated via the Alkalinity Enhancement Building and are fed from algae cultures maintained on station and organics present in the pond. The hatchery is also holding several native small ACF riverine fish species in addition to largemouth bass and bluegill for host fish studies.

Bill Bouthillier made two mussel collection trips to obtain gravid surrogate species: Four mussel species were collected July 31st, 2014 from Sheffield Mill Creek, a tributary of Sawhatchee Creek and the Chattahoochee River. None of these surrogate species were gravid but are being held for future studies by WSRTC and WSNFH.

A second collection trip August 7th on Chewacla Creek, AL, resulted in obtaining six gravid *Villosa vibex*. Culture technique research was undertaken this Quarter using these *Villosa vibex*. Host fish (largemouth bass and bluegill) harvested from ponds at Warm Springs were inoculated August 13th and held in our AHAB larval mussel collection system. On September 3rd, approximately half the host fish and attached larval mussels were placed into culture cages in a pond for two weeks until the mussels transformed and dropped off into the cages. The other host fish were held in the AHAB system as controls to those placed in the cages in order to estimate the number of transforming mussels in the cages.



Infected host fish cages

Mussels collected on the Chattahoochee River

Maintenance and Operations

A variety of maintenance and construction projects were undertaken at Warm Springs this Quarter.

Work also includes maintaining water treatment equipment for the entire complex. The bulk limestone storage tower used to treat the water from Cold Springs was refilled with 25 tons of high calcium content limestone in July. Ten tons of calcium chloride and 3000 gallons of liquid sodium hydroxide used to treat North Springs water supplies were delivered in September. The liquid chemical storage tanks located at the wetlab were recharged periodically. Water transfer pumps and equipment was maintained on a regular schedule.

A phone line was added to the Aquarium Building in July, expanding the capacity of the facility for educational purposes and use by the Friends Group.

Chad provided assistance to the WSTC with the installation of a new culture system dedicated to research for small stream fishes in the Wetlab.

A boat used for lake sturgeon assessment work was serviced along with sampling gear was checked ahead of use later in the year.

An electric forklift required for loading limestone dosing towers at the Alkalinity Enhancement building required extensive repairs, involving replacement of the five plus year old battery and several electric drive motors.

Heavy equipment, carts and service vehicles were all serviced. Buildings and grounds were also maintained by staff. Staff conduced grounds maintenance; tree limb removal, mowing, trimming and spraying to control vegetation at the hatchery along with general site cleanup. Other tasks included pressure washing and disinfection of equipment and buildings. Ponds 15 and 16 were harvested and refilled to accommodate a bank stabilization project described below.

A deferred maintenance project involving rehabbing existing pond drains and stabilizing 450 feet of a nearly vertical retaining berm along ponds 15, 16 and 17 began Aug. 25th and was completed September 5th. The outer bank was sloped and a 18 inch aluminum culvert was added along the length of the open ditch, tying into three pond discharges. The culvert was then covered with an overlay of riprap to filter storm water runoff along the outer berm. Road surfaces along the length of the project were covered with crush and run. A total of 460 tons of clay, 362 tons of type 3 Rip Rap and 203 tons of crush and run gravel were utilized in this project.

Heavy equipment operations were undertaken with assistance of Chad Shirey, WSNFH, Richard Johnson, Eufaula NWR and Allan Walker, Welaka NFH during the project. Our many thanks to Eufaula NWR for use of their track hoe, Richard and Allan for helping! The rest of the crew at WSNFH also worked daily on the project in order to complete it in a timely manner.

The project stabilizes the berm, improves drainage from the ponds and removes a falling safety hazard that existed prior to rehabilitation

Richard Johnson, Eufaula NWR

Re-sloped and stabilized outer berm

Resurfaced levee

Chad Shirey traveled to Eufaula NWR in Alabama, September 29th through October 2nd, to help install a new aluminum flashboard and 36 feet of pipe through a levee at the Refuge.

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 scheduled events that demonstration our accomplishments and communicate our goals to the general public. In addition to facilitating onsite professional tours, staff also volunteered time for occasional off-site programs.

Jeff Terhune, an Associate Professor of fish health with Auburn University's Department of Fisheries & Allied Aquaculture, brought a number of undergraduate students in a Fisheries Introductory class for a tour of the hatchery on July 23rd. Staff provided an overview of facilities, equipment and protocols used with priority species at Warm Springs.

Dr. Jennifer Newberry, Columbus State University, brought 12 students in a Vertebrate Diversity class for a station tour on September 12th.

Columbus Easter Seals, a non-profit organization, made 6 tours onsite between July 6th and September 11th bringing 65 Special needs kids and 16 adults to tour the hatchery and to feed fish.

In 2013, the Warm Springs NFH and the Benning Bass Club in Columbus, Georgia signed a partnership agreement to work together, and to support environmental and conservation issues. The club membership is open to all military personnel, retirees, honorably discharged service members, DOD civilians and family members of those groups. The club brings together bass fisherman and their families to improve angling knowledge and skills. The club provides the hatchery with volunteering support each year during National Fishing Day. In addition, the club members volunteer at the hatchery once a year to accomplish an environmental project. Saturday September 20th, 2014, the club and hatchery staff worked together to renovate overgrown embankments adjacent to the boardwalk and pavilion. The volunteers and some of our staff participating are pictured below.

2014 Benning Bass Club volunteers & staff

View of alligator enclosure and boardwalk

The public aquarium, picnic area, display pools, boardwalk, pavilion and alligator enclosure are popular with visitors. The hatchery also has lots of watchable wildlife opportunities for our visitors as they walk around the ponds.

Planning got underway for our annual Open House October 11th.

Administrative & Meetings

Annual input within the Fisheries Information System (FIS) such as FY 2014 accomplishment reporting and the Volunteer Services Report were completed prior to the August 8th. Work began of input of performance targets and distribution data. Work continued through the quarter on year-end purchasing, budget planning, annual updates to EMS and safety plans for FY14. Carlos dedicated considerable time working with the budget in FBMS as the 2014 Fiscal Year ended. Other data calls addressed included the Information Technology Spending plan for FY 2015, the annual Telecommunications Services Inventory and Real Property Reporting for Fiscal Year 2014 were completed. The Third Quarter Report was completed. The staff provided updates to the FBMS budgeting and accounting process that included information on accomplishment projects and monthly utility bills.

Staff participated in conference calls dealing with budget projections, allocations, watershed prioritization and the draft fisheries strategic plan in July and August.

Staff began work on striped bass, alligator gar, and sicklefin program reports.

U.S. Fish & Wildlife Service
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