



# Warm Springs Fish Technology Center

## September/October 2011 Activity Report

Dr. William Wayman, Center Director

Dr. Chester Figiel Jr., Supervisory Fish Biologist

Dr. Gregory Moyer, Regional Geneticist

Jaclyn Zelko, Fish Biologist

Ashantyé S. Williams, Geneticist

Dr. Edgardo Diaz-Ferguson, postdoctoral researcher

Dr. John Robinson, postdoctoral researcher

What FTC Does .....	2
South Carolina Field Office .....	3
Atlantic Sturgeon Cryopreservation .....	3
FTC Director's Meeting.....	3
Environmental DNA Detects Invasives .....	3
Robust Redhorse Information Technology .....	3
Dr. Robinson Working with the SALCC.....	4
Chytrid Surveys .....	4
What to do with the Logperch?.....	5
News and Notes .....	5
Nothing But Net!!!.....	6
2011 Open House.....	7
Carnivorous Plant Display .....	7



Hatchery Manager Carlos Echevarría and Fish Tech Center Geneticist Ashantyé Williams enjoy a beautiful fall day during the 2011 Open House. Credit: USFWS

# Warm Springs Fish Technology Center

The Fish Technology Center (FTC) is a component of the Warm Springs Regional Fisheries Center (RFC) and was developed to improve and enhance fisheries management. We provide consolidated technical operational support to regional fisheries operations and technical assistance to the public. The Fish Technology Center is comprised of a cryopreservation laboratory, conservation genetics laboratory, and the National Fish Strain Registry at Warm Springs, Georgia, and a field station in Wadmalaw Island, South Carolina.

## Goals:

- Provide management support of interjurisdictional coastal and riverine fishes such as robust redhorse, shortnose sturgeon, Atlantic sturgeon, Gulf sturgeon, American shad, and Gulf striped bass.
- Provide conservation genetics support for regional fishery programs.
- Maintain the National Fish Strain Registry for dissemination of information and support of private, state and federal broodstocks.
- Develop cryopreservation techniques for imperiled fish, freshwater mussels, and amphibians.
- Develop hatchery product evaluation techniques.

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## Cryopreservation

Cryopreservation is a process in which a living cell is frozen, stored, and thawed and remains viable. Cryopreserved sperm assists reproductive efforts by allowing spawning to take place whenever females are ready, reduces the need to hold males, and can increase flexibility and genetic diversity in spawning protocols.

Currently, the Warm Springs FTC is working on numerous species of fish, including threatened or endangered species. The program has expanded to include other aquatic species such as freshwater mussels and amphibians for conservation efforts.



Jaci Zelko is preparing to look at a sperm sample from rainbow trout broodstock at Erwin NFH, TN. Credit: USFWS

## Conservation Genetics

The Conservation Genetics lab primarily works with biologists and managers of the region to design and implement genetic research on imperiled aquatic organisms.

Current Projects include estimating genetic diversity from: alligator gar, Gulf Coast striped bass, robust redhorse, freshwater mussels, and threatened and endangered species such as spotfin chub.

## National Fish Strain Registry

The National Fish Strain Registry (NFSR) is an internet-based program that assembles information on life history, genetics, reproduction, and behavior of wild populations and domestic fish strains throughout the United States. The NFSR database is available for use by public and private producers as well as resource managers of federal, state, and tribal governments through a registration process. Once registered, users are able to search, create new records, edit records, and request information. The NFSR's vision is to provide a broad collaborative program that provides access to data and information on our Nation's aquatic resources. You must be a registered user to access the NFSR website; please contact [chester\\_figiel@fws.gov](mailto:chester_figiel@fws.gov) to become a registered user.

# Aquatic Species Conservation & Management

## South Carolina Field Office

On October 5<sup>th</sup>, William Wayman, Brian Hickson (Warm Springs Fish Health Center), Haile Macurdy (Warm Springs National Fish Hatchery) and Vince Mudrak (Warm Springs Regional Fisheries Center) met with Jay Herrington and Amanda Hill from the Ecological Services South Carolina Field Office at the Bears Bluff National Fish Hatchery on Wadmalaw Island, SC. The meeting involved the possible development of a research program aimed at restoring sturgeon populations along the southeast Atlantic coast.

## Leadership in Science and Technology

### Cryopreservation of Atlantic Sturgeon Sperm

Jaci Zelko and William Wayman cryopreserved sperm from two Atlantic sturgeon. The sperm were collected at the Bears Bluff National Fish Hatchery on September 19<sup>th</sup> and shipped to the FTC. The cryopreserved sperm will be used to help alleviate issues when females are in spawning condition but sperm from males cannot be collected.

### Fish Technology Centers Director's Meeting

During the week of October 17<sup>th</sup>, William Wayman traveled to Burlington, Vermont to participate in the annual Fish Technology Centers Director's Meeting. The meeting focused on updating current research priorities for each Center, examination of possible budgetary issues, and discussing collaborative ideas with Fish Health Centers. The meeting was also co-located with the Fisheries ARD meeting. The final day included a combined meeting, which focused on how the Service's science capacity supports Strategic Habitat Conservation and identifying areas of common priorities and emerging needs for which increased capacity is needed.

### Environmental DNA (eDNA) as a Detection Technique for Invasive Species



CGL is collaborating with Dr. Edgardo Diaz-Ferguson, UGA postdoctoral researcher, on the application of molecular techniques to detect rare and invasive species. For this project, we are currently testing new primers and developing new DNA extraction techniques for the detection of environmental DNA in Florida and Georgia ecosystems.

Dr. Edgardo Diaz-Ferguson Credit: USFWS

### RRCC Information Technology Working Group

Jaci Zelko attended the 2011 Robust Redhorse Conservation Committee (RRCC) Annual Meeting. The meeting was held at Mt. Morrow State Park near Albemarle, NC. The RRCC is a voluntary stakeholder partnership charged with the overall responsibility for directing the recovery of the robust redhorse (*Moxostoma robustum*). Jaci has been the Chair of the Information Technology Technical Working Group since 2003. She updated the participants on several topics including updates needed for the capture database, status of the annual meeting reports, and the robust redhorse website ([www.robustredhorse.com](http://www.robustredhorse.com)).

## Leadership in Science and Technology

### Making Strategic Habitat Conservation (SHC) and Landscape Conservation Cooperatives (LCC) a Priority

One of the primary missions of the U.S. Fish and Wildlife Service is to conserve our living natural resources and their habitats. CGL is currently restructuring its research program to better serve the Service's move to SHC and LCC designs. CGL's approach is to place more emphasis on aspects of the SHC model by primarily focusing efforts on the characterization of populations, designation of critical habitat for such units, and prediction of global climate change scenarios on these units and their habitat. CGL in collaboration with post-doc Dr. John Robinson developed a project seeking to meet these goals by helping to identify important areas for landscape protection, with genetic diversity in mind. Using previously published population genetic datasets, we are looking for patterns of genetic diversity and divergence across the South Atlantic Landscape Conservation Cooperative (SALCC) research area. These patterns will most likely be different for terrestrial species and those associated with aquatic environments. Therefore, we are considering datasets from these two habitat types separately. Areas with unusually high diversity or divergence would be good candidates for future conservation efforts. We will also be able to determine the extent to which these hotspots of diversity overlap with presently defined priority conservation areas. Currently, we are in the process of conducting literature reviews and compiling datasets from a variety of taxa with adequate sampling across the SALCC. In addition to identifying areas of conservation importance for terrestrial and aquatic taxa, this research will also help to uncover gaps in our knowledge of population structure across species in the southeastern United States.



(left) John is sampling Collins River. (right) John compiling datasets. Credit: USFWS

### *Batrachochytrium dendrobatidis* “Chytrid” Surveys

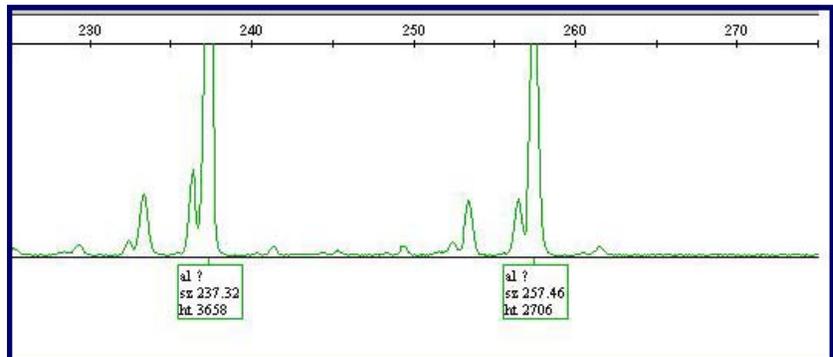
Chester R. Figiel, Jr., Brian Hickson and Betsie Rothermel (Archbald Field Station, Florida) surveyed multiple streams in the Southern Appalachians to compare chytrid prevalence in water and salamanders in low- and high-order streams. The researchers are assisted with this study by a small grant from the Regional Office's Aquatic Invasive Species Program.



Swabbing a frog. Credit: Amphibian Ark

## What to do with the Logperch?

Conservation Fisheries, Inc. (CFI), Tennessee Aquarium Conservation Institute, and USFWS-Athens have asked the CGL to assist in their efforts to monitor the genetic diversity of their breeding program for the Conasauga logperch. CFI sent samples of the broodstock and progeny to CGL to conduct parentage analysis. CGL's preliminary genetic analysis from the broodstock and progeny indicated that two of the broodstock were females, and all males contributed offspring, though in different proportions. The effective population size of the offspring was five and nearly identical to theoretical expectations. The partners have used these data to assist the next steps in potential augmentation efforts.



Conasauga logperch Credit: Conservation Fisheries Inc.; Conasauga logperch marker Credit: USFWS

## News & Notes

### Environmental Management System and Safety

Several documents were submitted in October for inclusion in the Warm Springs Regional Fisheries Center Environmental Management Plan (EMP) as part of the annual review. These documents are updated and annually submitted to the Regional Office. These documents include Employee Safety Training Records, Hazardous Chemical Inventories, and FY2011 Recycling Log. Nora David, RO Engineering, visited on Nov 12<sup>th</sup> to conduct the EMP annual review and a Safety Inspection. Jaci Zelko demonstrated and explained the documentation, safety measures and standard protocols that are in place in the FTC area.

### National Fish Strain Registry—ECOS

The transfer of the National Fish Strain Registry to the Environmental Conservation Online System (ECOS) has been completed. ECOS is a gateway web site that provides access to applications that manage data regarding threatened and endangered species, fisheries, and habitat conservation. Special thanks to Jon French ASRC Management Services and Eric Rank from ECOS for making this occur. Chester is currently working with ECOS for the deployment of a public access site of the Registry.

## Partnerships & Accountability

### Nothing But Net!!!

Since the Deepwater Horizon oil platform and BP's Macondo well exploded last year, the USFWS Baton Rouge Fish and Wildlife Conservation Office (BRFWCO), as part of the Natural Resource Damage Assessment and Restoration Program (NRDAR), has dedicated its efforts to protecting the Gulf Coast ecosystem. To aid in this effort, William Wayman and Chad Shirey (Warm Springs National Fish Hatchery) (1 week in September) and Ashantyé Williams (3 weeks in October) traveled to Covington, LA and assisted with Gulf sturgeon sampling on the Pearl River. The objective was to place gill nets along the portions of the Pearl River where sturgeon have been known to congregate. Morphometric data and blood samples were collected from any captured sturgeon to check for impacts from the oil spill. Unfortunately despite numerous attempts, only two Gulf sturgeon were captured during the four week effort. Ashantyé' did capture an alligator gar, paddlefish, trout, and even a sheepshead. Although unsuccessful with capturing many sturgeon, we were able to work with some great people like Cedric Doolittle (BRFWCO), Kayla Dibenedetto Kimmel (BRFWCO) and Alan Brown (Welaka National Fish Hatchery). It is always a rewarding experience when we can step outside our labs and be of assistance to other offices.



Ashantyé is checking the net for sturgeon (*left*) and with an alligator gar (*right*) Credit: USFWS



Chad Shirey, William Wayman, Cedric Doolittle, and Kayla Dibenedetto Kimmel displaying one of the Gulf sturgeon collected during the sampling effort. Credit: USFWS

## 2011 Open House

The Tech Center participated in the annual Warm Springs Open House on September 24, 2011. This event focused on promoting the USFWS mission, fisheries conservation efforts, improving communication with the local community, and encouraging people to become environmental stewards in their community. FTC staff set up displays and computers to highlight cryopreservation, conservation genetics, and freshwater mussel research efforts. A 50-gallon touch tank with crayfish, salamanders, and turtles was the most popular attraction. William Wayman, Greg Moyer, Chester Figiel, Ashantye' Williams, and Jaci Zelko talked to over 250 people about the importance of conservation genetics and cryopreservation. The FTC was just one station that attendees could visit. Stations were also set-up for the Regional Fisheries Center, Fish Health Center, National Fish Hatchery, and Friends of the Warm Springs National Fish Hatchery. Once visitors got a stamp in their fish passport book from each station, they were eligible for door prize drawings.



(from left to right) Bill and Ashantye explain how the stamp booklet works, Greg talks about what you can see when you look through the microscope, Jaci and Chester show the kids how hold a turtle. Credit: USFWS

## Carnivorous Plant Display

Jaci Zelko and Chester Figiel assisted Fish Health Center employee Allison Hernandez and Regional Fisheries Center employee Rosla Plant with the carnivorous plant display annual maintenance. The display was overrun by invasive plants since the last time it was cared for a year ago. The plants were dug up and divided by species. New peat moss and sand were added to each section of the boat and mixed in a one to one ration. Landscape cloth was added and the carnivorous plants were replanted. Great care was taken to remove as many invasive plants, roots, runners, and leaves as possible. An additional layer of sand was added to help hold down the cloth. Even though it was a long and dirty day, the group hopes the changes will minimize the growth of invasive plants for a long time, so that the public can view and appreciate the native carnivorous plant display.



(from left to right) the boat before the invasives are removed, Jaci and Allison mix new soil, the boat after the carnivorous plants are replanted. Credit: USFWS