

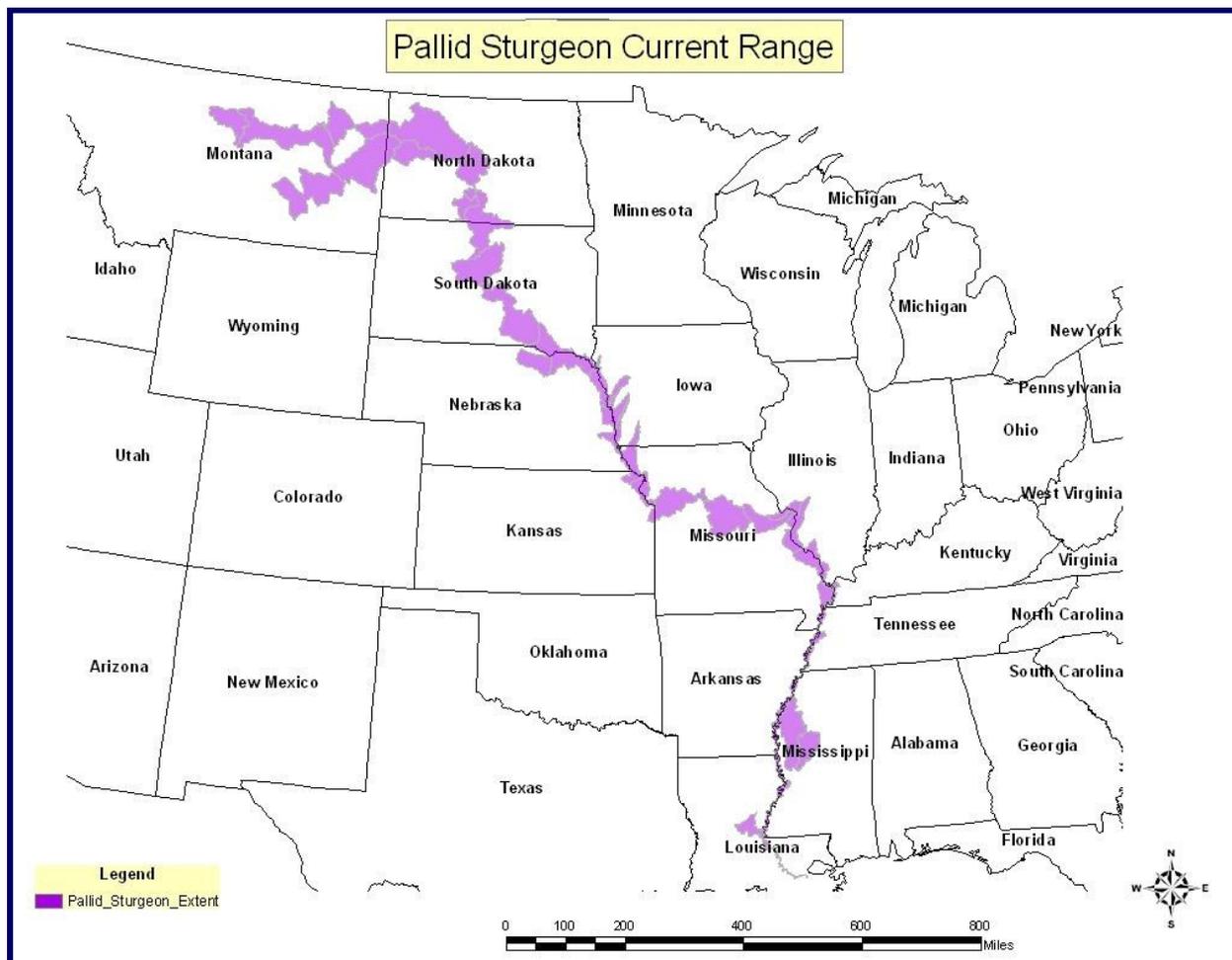


# Warm Springs Fish Technology Center

## July/August 2012 Activity Report

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What FTC Does .....2  
 Grass Carp Genetics .....3  
 Rainbow Trout Fertilization .....3  
 Scaphirhynchus Genetic ID .....4  
 Amphibian Monitoring .....4  
 Chytrid Surveys .....4



Current range of the pallid sturgeon. Credit: US EPA

# 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.



Chytrid fungus. Credit: University of Alabama

## 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.

# Leadership in Science and Technology

## Preliminary Genetic Analysis of Grass Carp Broodstock

Grass carp (*Ctenopharyngodon idella*) which is native to Siberia and northern China, was introduced into the U.S. in the 1960s as an aquatic weed control. The species is known for reducing vegetation density, altering nutrient cycles, and reducing native plankton-eating species. This species is currently labeled an invasive species due to its ability to reproduce and establish wild populations potentially causing a reduction in food supply and shelter for native species. The Warm Springs Conservation Genetics Laboratory (CGL) has been asked to participate in collaboration with Region 3 and 4 grass carp producers to ask the question “can progeny from grass carp broodstock be assigned to their respective parents with a high degree of accuracy?” Greg and Ashantyé began a pilot study to investigate possible polymorphic microsatellites to answer this question. They started with 24 loci developed from grass carp and silver carp along with samples housed by Warm Springs Fish Health Center and the facility in Stuttgart, AR. A preliminary analysis indicated 17 microsatellites may answer this question with high accuracy. Findings will be presented at the December 2012 National Triploid Grass Carps Inspectors Meeting.



(L) Greg and Ashantyé collect fin clips for genetic analysis of grass carp. (R) A juvenile grass carp. Credit USFWS

## Rainbow Trout Cryopreservation Fertilization Trials At Erwin National Fish Hatchery, TN



William Wayman and Jaci Zelko traveled to Erwin National Fish Hatchery, TN to cryopreserve sperm from 2-year old rainbow trout broodstock. Sperm from 10 males were frozen for 24 hours and then used in a fertilization trial. This project will determine the optimum number of eggs that can be fertilized with one 0.5-ml straw of frozen sperm. The fertilized eggs are currently incubating at Erwin and it will be a few weeks before results are known.

Sperm that was frozen in 0.5 ml straws is thawed and placed on fresh eggs for this experiment. Credit USFWS

## Leadership in Science and Technology

### Mississippi River Lower Basin Scaphirhynchus Genetic Data Standardization Study

The pallid sturgeon (*Scaphirhynchus albus*) was described as a morphological variant of the shovelnose sturgeon (*S. platyrhynchus*) based on morphometric measurements, differing geographic distributions, and spawning habitat preferences. Pallid sturgeon prefer larger river channels with swift, turbid flows and rocky or sandy substrate, whereas shovelnose sturgeon prefer slower flows and shallow pools associated with sandbars and channel edges. Morphologically intermediate forms identified as putative hybrids are found in more than half of the pallid sturgeon's range and are based on morphologic intermediacy or the inconsistency of some characters. To determine the genetic origin of individual sturgeon that are morphologically intermediate to pallid and shovelnose sturgeon, scientists from the USFWS, St. Louis University, and Southern Illinois University Carbondale have come together to resolve this issue using microsatellites and mtDNA genetic markers. The Warm Springs CGL is a repository for sturgeon species within the southeastern US, and has become the housing facility for this multi-lab genetic standardization initiative. Recently, Ashantyé has compiled an extensive tissue database of over 250 samples collected along the lower basin of the Mississippi River. Approximately 130 samples have been sent to the university labs to start the multi-lab genetic standardization. The goal is to provide the scientific community with data explaining the genetic identification of pallid, shovelnose and/or intermediate sturgeon observed in the lower Mississippi River.

## Aquatic Species Conservation and Management

### Amphibian Inventory and Monitoring at Mountain Longleaf NWR

Chester R. Figiel, Jr. and Gregory Scull are inventorying and monitoring amphibians in springs and seeps on the Mountain Longleaf National Wildlife Refuge. This baseline survey involves screening amphibians for the invasive fungus *Batrachochytrium dendrobatidis* with Jacksonville State University in Jacksonville, AL. The USFWS Refuge Southeast Inventory and Monitoring Network provided funding for this yearlong study.



### *Batrachochytrium dendrobatidis* Chytrid Surveys in Southern Appalachian Headwater Streams

Chester R. Figiel, Jr. surveyed multiple streams in the Southern Appalachians to compare chytrid prevalence in water and salamanders in low- and high-order streams. This disease has been implicated in amphibian population declines throughout the world. This monitoring effort was funded through the Regional Office's Aquatic Invasive Species Program.