



Warm Springs Fish Technology Center

August 2008 Activity Report



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Southern rainbow mussel displaying. Credit: USFWS Photo.

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, Gulf sturgeon, 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 and mussels.
- Develop hatchery product evaluation techniques.

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. In the near future, the FTC will expand cryopreservation research to include other aquatic species (e.g., freshwater mussels, amphibians) for conservation efforts.



Shortnose sturgeon. Credit: USFWS Photo.

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 is an internet-based program that assembles performance information on over 1100 strains of wild populations and domestic broodstock. These strains are managed by state and federal agencies and cultured by private growers. The database enables fishery leaders and producers to make sound decisions regarding management and culture of species. The goals of the NFSR are: 1) to protect the nation's aquatic resources through information management, 2) to promote responsible use of fish strains for recreational opportunities, 3) to advance scientific knowledge, and 4) to be accountable, functionally integrated, and result-oriented.

Partnerships and Accountability

National Triploid Grass Carp Inspection and Certification Program Workshop

The National Triploid Grass Carp Inspection and Certification Program is a quality assurance program that helps state resource agencies ensure effective aquatic resource management. The grass carp is considered an attractive method for control of submersed aquatic plants because of its low costs compared to other control techniques. However, the potential of the diploid grass carp to naturally reproduce in non-native waters has led to the production of sterile triploid grass carp.

This August in St. Louis MO, a workshop brought together the three components of the program (grass carp producers, the USFWS, and state resource agencies) to discuss the program and look for ways to improve. The USFWS inspects fish prior to shipment and certifies the lot as containing 100% triploid grass carp for states regulating the transport and sale of diploid grass carp. Discussion focused on improving methods for law enforcement to screen incoming shipments of fish. However, state law enforcement agents need a quick, reliable way to determine a fish's ploidy level during a spot inspection. At the workshop, the FTC volunteered to develop a method that allows enforcement agents to rapidly screen a few fish to determine if a shipment may contain diploids and provide justification for further investigation.



Presentations were made by state biologists, enforcement agents, triploid grass carp producers and inspectors from TX, LA, SC, FL, WA, GA, IA, AR, KY, OR, and IL. Credit: USFWS Photo.



The workshop was well-received and participants represented a full cross-section of the United States coming from as far as Hawaii. Credit: USFWS Photo.

Conservation Genetics Community of Practice Meeting



Conservation Genetics Community of Practice Continuing Education Workshop Participants
Credit: USFWS Photo.

Greg Moyer participated in the USFWS Conservation Genetics Community of Practice Continuing Education Workshop recently held in Ashland, Oregon. The Community of Practice is an interactive forum that facilitates exchange of information and technologies to strengthen the use and understanding of conservation genetics within the Service. Greg led several presentations regarding use of genetic data in conservation biology and participated in discussions of Endangered Species Act (ESA) policy with Ecological Service staff. These interactions strengthened his understanding of Ecological Service issues and application of genetics data to recovery planning for ESA listed species. His participation in this meeting has not only strengthened relationships at an individual level but also at a divisional level between Fisheries and Ecological Services.

Aquatic Species Conservation and Management

Genetic Evaluation of an Implementation Program for Sicklefin Redhorse

The Conservation Genetics Lab finished the final report on genetic evaluation of a conservation hatchery implementation program for reintroduction of sicklefin redhorse (*Moxostoma sp.*) in the Tuckasegee River, NC. Results indicate that the genetic diversity of the wild population remains relatively high particularly for an organism in such a confined system with a lack of migration among populations. This observation appears to be the result of the long-lived and iteroparous nature of sicklefin redhorse. In contrast, the genetic diversity (number of alleles) of the introduced population is significantly less than that of the wild.



The distinct dorsal fin of the sicklefin redhorse.
Credit: USFWS Photo.

USFWS Recovery Efforts for Shortnose Sturgeon

The Fish Technology Center completed and sent an annual report to the National Oceanic and Atmospheric Administration describing activities completed by USFWS Southeast Region personnel working on the endangered shortnose sturgeon, *Acipenser brevirostrum*. This included activities to aid in recovery efforts for this species conducted at the Bear's Bluff National Fish Hatchery, the Orangeburg National Fish Hatchery and the Fish Technology Center.

Leadership in Science and Technology

Three Funding Opportunities Awarded to the Conservation Genetics Lab

The Conservation Genetics Lab was awarded three separate grants in August pertaining to conservation genetics of freshwater mussels and fish. These grants are:

Alabama Shad (Alosa alabamae) restoration for the Apalachicola-Chattahoochee-Flint River Basin awarded by the National Oceanic and Atmospheric Administration. (partners: Georgia Department of Natural Resources and Clemson University; award amount \$457,679),

Molecular marker development for estimating genetic diversity within and among populations of eastern Gulf Slope threatened and endangered freshwater mussels awarded by FWS Quick Response program (partners: U.S. Geological Survey and USFWS Panama City Field Office; award amount \$24,420), and

Delineating and prioritizing conservation units for freshwater mussel conservation hatchery implementation programs in the ACF awarded by FWS deferred allocation funds (partners: USFWS Panama City and Columbus Field Offices; award amount \$75,000).

Leadership in Science and Technology

Using Cryopreservation to Recover Endangered Freshwater Mussels



FTC staff extracting sperm from a mussel.
Credit: USFWS Photo.

Fish Technology Center staff is working on new techniques to help in the recovery efforts of freshwater mussels. One potential method for the preservation and recovery of such unionid species is the collection, cryopreservation, and storage of sperm and glochidia. This would allow preservation of genetic stocks, transfer of genes from wild populations to hatchery stocks, and transfer of genetic material between wild populations. Staff evaluated the toxicity of several cryoprotectants at three concentrations on glochidia to determine survival percentages for cryopreservation experiments. With the success of these trials, the staff is looking forward to expanding their studies in the near future.

Public Use

Outreach Opportunities

On August 11th, FTC staff gave an in-depth tour of the Conservation Genetics lab, NFSR office, and Cryopreservation lab spaces to Mike Harris and Jason Wisniewski, Georgia DNR, and Robert Bringolf, University of Georgia.

Bill Bouthillier participated in a Georgia Ducks Unlimited Greenwing event on August 8th. He led a nature walk in a restored wetland in Walton County, Georgia and told children about what animals use wetlands and the importance of wetlands conservation. Over 365 people were in attendance, of which 263 were children.

Workforce Management

Safety

Jeff Pitts (USFWS Southeast Region, Office of Safety) completed a physical security survey for the Warm Springs Fish Technology Center and the Regional Fisheries Center on August 21st and 22nd. The purpose of this mission was to establish appropriate physical security measures necessary to protect personnel, real, and personal property.

Training

Bill Bouthillier and Nicole M. Rankin attended Introduction to Global Positioning System and Solo Forest training conducted by Landmark Systems in Warner Robins, GA on August 12th.

Nicole M. Rankin attended Internet Website Development for Fish and Wildlife Information training held at NCTC in August.