



Warm Springs Fish Technology Center

September/October 2012 Activity Report

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Cosby Creek, Great Smoky Mountains National Park. 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.

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.

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 to become a registered user.



Chester talks to participants of the Steve Harvey Foundation Fishing Event. Credit: USFWS

Leadership in Science and Technology

Brook Trout Cryopreservation in the Great Smoky Mountains National Park

The FTC has collaborated on a new project with partners from Penn State, USGS, and the National Park Service for brook trout conservation in the Great Smoky Mountains National Park. Penn State graduate student Casey Weathers is testing the possibility of out-group depression occurrences of brook trout. Brook trout from three source creeks (Cosby, Greenbrier, and Indian Camp) were used in 1996 for restoration of two creeks (Leconte and Mannis Branch). Upon analysis in 2009 by Dr. Tim King (USGS), findings indicated that 84% of brook trout could be traced back to source creeks. This project tests two theories of either assortative mating or out-group depression. The FTC will be providing support for this research by cryopreserving sperm samples from brook trout collected from the 3 source creeks. The cryopreserved sperm will be used in later experiments. The frozen sperm will allow the researchers more mating options, as it is very difficult to collect sufficient quantities of fresh sperm in the field.



(L to R) National Park Service employees use backpack electrofishing units to collect brook trout. Fresh sperm is collected into tubes. Bill Wayman collects sperm. Credit USFWS

After several attempts at sperm collection techniques, a simple method has been found to be most effective. The FTC has also developed protocols for the storage and handling of fresh sperm that can be utilized by all field personnel. After some storage issues, it has determined that a critical step in the process is freezing sperm within a 2-hour post-collection window. Preliminary cryopreservation techniques have been developed and sperm have been cryopreserved from brook trout from all three source creeks. To date, the FTC holds cryopreserved samples from Cosby Creek (13 males, 65 straws), Greenbrier Creek (15 males, 36 straws), and Indian Camp Creek (28 males, 67 straws). Post-thaw motilities have been checked for some samples, and it seems that the cryopreservation process is working well but fertilization trials are needed to confirm this assumption.

News and Notes

Chinese Delegation Tour

An informational meeting between the USFWS and the 2012 Delegation of Chinese Scientists was held in September at the Warm Springs Regional Fisheries Center, Warm Springs, GA. The delegation was part of the Protocol on Cooperation and Exchanges in the Field of Conservation of Nature which is coordinated by the USFWS Division of International Affairs. Presentations on program activities were given by several staff. Tours were given by Project Leaders and each discussed their accomplishments with aquatic species conservation. Tom Sinclair, Deputy Assistant Regional Director for Fisheries, reported that the participants truly enjoyed the experience and the trip stimulated a variety of meaningful questions.

Partnerships and Accountability

Robust Redhorse Conservation Committee Annual Meeting

Jaci Zelko, Fish Biologist, and Greg Moyer, Regional Geneticist, attended the 18th annual meeting of the Robust Redhorse Conservation Committee in Albemarle, NC. Jaci gave presentations on the status of annual reports, updates to the robust redhorse website, and database management. She also served as the secretary for the meeting. Greg gave valuable input on genetic management of the Pee Dee River robust redhorse population during future conservation efforts. Participants also participated in a guided tour of the Tillery Dam, a hydroelectric facility operated by Duke Energy. Warm Springs has been an integral partner to the recovery of the robust redhorse since its rediscovery in 1991.



(L) Participants in the 2012 Robust Redhorse Meeting. (R) Looking downstream at the Pee Dee River at the Tillery Dam hydroelectric facility Credit: USFWS

Lake Sturgeon Management Plan Updated

Lake sturgeon is considered an endangered species in Tennessee and many populations have suffered from overfishing, construction of dams, destruction of habitats, and others. The Tennessee Lake Sturgeon Reintroduction Working Group (TLSRWG) has been working towards the goal of restoring lake sturgeon in the Tennessee River basin. In 2007 a management plan with a genetic component was developed for the reintroduction of lake sturgeon in the Upper Tennessee River. The management plan's goal is to create and maintain genetic diversity in the stocked population. Warm Springs CGL conducted an initial assessment this year of the genetic diversity of the broodstock being reintroduced into the river system. Based upon preliminary data, CGL determined that the genetic diversity available in the Wolf River lake sturgeon source population appears to have been successfully captured by TLSRWG's reintroduction program in the Upper Tennessee River. The working group met September 20, 2012 to update the management plan to include all work done thus far and the direction in which the group will go in the near future.

San Marcos Fish Technology Center Evaluation

William Wayman traveled to San Marcos, TX during the week of Oct 22nd to participate in the San Marcos Fish Technology Center Evaluation. The evaluation process is designed to ensure that activities at the center are aligned with the Fisheries Program's priorities. The process helps to identify areas that the Center is excelling at or needs to improve upon. It also can illustrate a need for additional resources for the Center. The evaluation team was composed of Service and non-Service scientists, Headquarters staff, Regional Office staff, and Office of the Science Advisor staff.

Partnerships and Accountability

Savannah Surrogate Workshop

William Wayman traveled to Savannah, GA on Oct 16th-18th to participate in a Surrogate Species Workshop for the South Atlantic LCC. The initial parts of the workshop centered around teaching participants about the 10 steps of the surrogate species process that will be incorporated into our Strategic Habitat Conservation framework. The rest of the workshop was devoted to ground truthing the species selection process that the South Atlantic LCC had developed at a previous Surrogate Species Workshop.



Public Use and Outreach

Steve Harvey Foundation Fishing Event

Warm Springs hosted a fishing event for the Steve & Marjorie Harvey Foundation Atlanta Chapter in September. The event was provided specifically for the Steve Harvey Mentoring Program for young men. Approximately 40 young men ages 13 to 18 years old and their mentors fished and enjoyed the event. In addition to learning how to fish, this event provided a chance for the participants to experience the hatchery and the outdoors. All participants were accompanied by a mentor from the Steve & Marjorie Harvey Foundation and a leader from U.S. Fish and Wildlife Service who assisted with the fishing activities. The participants learned how to tie knots, safely assemble a rod and reel, types of casts, fish handling techniques, and participated in an aquarium tour. After catching fish, they watched a fish cleaning demonstration and were provided the opportunity to taste a few fish that were cooked on site. The young men also learned about the Regional Fisheries Center's scientific activities. Fish Tech Center staff had demonstrations on the cryopreservation and genetics work that we do. It was a fun and educational experience for everyone involved.



(L) Participants in the fishing event. (R) Ashantye and Jaci are ready to get their science on!!! Credit: USFWS

Public Use and Outreach

Warm Springs Open House

The Fish Tech Center (FTC) participated in the annual Warm Springs Open House in October. 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 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, Chester Figiel, 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.



(L) Bill talks to attendees about conservation genetics. (R) Jaci gives a youngster a goldfish to hold! Credit: USFWS

Warm Springs Regional Fisheries Center

2013 Outreach Calendar



Backyard Bird Count – February 16-18

National Fishing Day – June 8



Open House – TBD in October

Candlelight Parade – November 17

