



Warm Springs Fish Technology Center

March/April 2012 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

Gregory Scull, Biologist

Dr. Edgardo Diaz-Ferguson, postdoctoral researcher

Dr. John Robinson, postdoctoral researcher

What FTC Does 2

Robust Redhorse Cryopreservation 3

Environmental DNA (eDNA) 3

New SCA Intern..... 3

National Broodstock Meeting 4

Outreach Activities 4



Edgardo Diaz-Ferguson, Tom Sinclair and Andy Jackson electro-fishing at the Loxahatchee National Wildlife Refuge. 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.



Density experiments for the African jewel fish. 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 or gregory_scully@fws.gov to become a registered user.

Leadership in Science and Technology

Robust Redhorse Cryopreservation

Jaci Zelko traveled to Augusta, GA in April to assist South Carolina DNR personnel in the spawning of Savannah River robust redhorse. Jaci went over to collect sperm samples for cryopreservation. The sperm were cryopreserved and added to the repository at our lab. This effort focused on freezing sperm to preserve genetic material and for future spawning efforts if needed. Sperm were frozen from 11 males.



Biologists collecting sperm from the robust redhorse. Credit USFWS

Environmental DNA (eDNA) Protocol Enhancements



qPCR amplification plot of African jewel fish tissue samples. Credit USFWS

The eDNA project began phase II in March and April by conducting the first qPCR experiments for optimization of our designed primers and probes using tissue and water samples. We also collected 30 African jewel fish (*Heterochromis letourneuxi*) in the canals adjacent to the Loxahatchee National Wildlife Refuge in order to start our density controlled experiments. Through this controlled experiment we will compare different densities of fish using 1 to 6 fish per treatment and then processing water for eDNA from the tanks. Our goal is to determine the minimum amount or threshold level of DNA required for detection in natural freshwater systems.

Workforce Management

New SCA Intern for the Warm Springs FTC

The Cryopreservation Lab has recently added a new intern to their team to assist with sperm cryopreservation for the summer. Having graduated from Texas A&M University–Corpus Christi in December 2011, Ashley Zrubek received a Bachelor of Science degree in Biology and is pursuing her career in wildlife biology. Much of her upper level coursework in college centered around field work and sampling techniques (salt marsh sampling, seining, gillnetting, electrofishing, trawling, and tagging) often used in the typical duties of a wildlife biologist. She volunteered in a laboratory with her ecology professor a few times during her senior year to collect mud and stone crab, performed water quality work for the environmental microbiology laboratory at Texas A&M University–Corpus Christi, and is currently a member of the Texas Marine Mammal Stranding Network in Corpus Christi, Texas.



Ashley Zrubek Credit: USFWS

Ashley's prior experience before coming into the program was working in fisheries and conducting fisheries-based research. Ashley's primary goal is to serve as a constituent for natural resource conservation, whether as a researcher or laboratory analyst. By serving as an intern, she hopes to get her foot in the door and gain access to a myriad of opportunities in biology and learn more about the progressions in her field. We believe that her background and strengths will benefit our goals and help fulfill our vision for fisheries management.

Partnerships and Accountability

National Broodstock Meeting

Chester Figiel attended the USFWS National Broodstock Meeting held at the White Sulphurs Springs NFH April 24 to April 27, 2012. This annual meeting is conducted to discuss broodstock egg requests, fish health and nutrition matters and database concerns for each region. Each station gave an update on fish strains being raised for egg requests to production hatcheries. Chester provided an update of the National Fish Strain Registry and received valued feedback from meeting attendees.

Outreach Activities

Jaci Zelko assisted Rosla Plant, Warm Springs RFC Park Ranger, with a school group tour on March 9, 2012. The 40 3rd graders from Cain Danforth Elementary School in Macon, GA were divided up into two groups and given a tour of the public aquarium, boardwalk, and public use areas. Rosla and Jaci highlighted the various ways that the Regional Fisheries Center works with native species.



Greg Scull and Bill Bouthillier conducted a BiT (Biologist in Training) class on March 15, 2012 for 11 students from Crossroads Christian School in Fayetteville, GA. The students were given a tour of the Aquarium, completed classroom assignments from the BiT book, and then completed a stream assessment of a stream on site. The students checked pH, D.O. and water temperatures and then conducted surveys for aquatic invertebrates to assess the stream. All the students, their teacher and three parents enjoyed themselves in the stream looking through leaf packs and turning over rocks.

A group of 25 senior adults from Cottdale Baptist Church, Cottdale, FL were given a tour of the Aquarium and public use area on March 27, 2012 by FWS staff Rosla Plant and Greg Scull.