Warm Springs Fish Technology Center

May 2009 Activity Report

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Preparing a female alligator gar, *Atractosteus spatula*, for egg collection.
Credit: USFWS Photo.

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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.

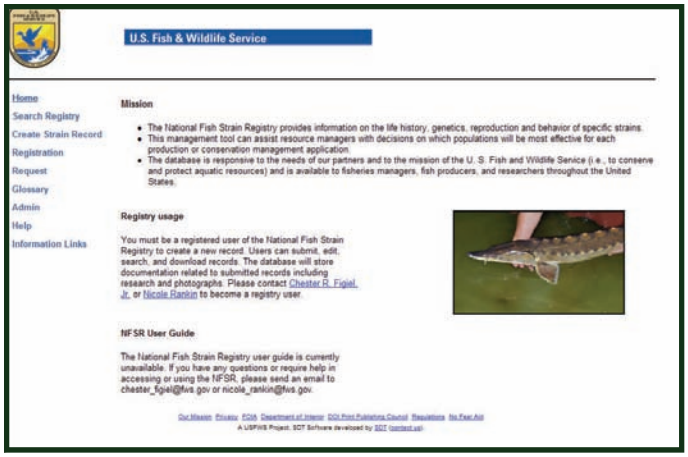
Goals:

- 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.



National Fish Strain Registry Home Page.
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 (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 nicole_rankin@fws.gov to become a registered user.

Partnerships and Accountability

Striped Bass Stocking in FL

Striped bass. Credit: USFWS Photo.

Chester Figiel, Jr. assisted the Warm Springs National Fish Hatchery (NFH) with stocking phase I striped bass, *Morone saxatilis*. Chester delivered over 30,000 striped bass (5-cm fish) that were harvested from hatchery ponds, marked with oxytetracycline, and stocked at Williams Landing, Lake Talquin, Florida.

Leadership in Science and Technology

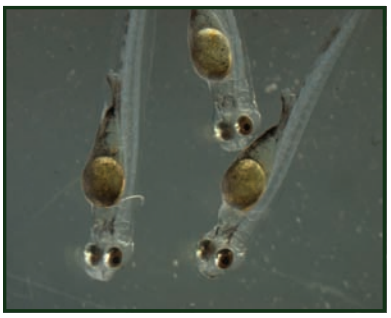
Chemical De-Adhesion of Alligator Gar Eggs

The FTC visited Private John Allen NFH to conduct a chemical de-adhesion experiment in an effort to improve hatch rates of alligator gar eggs. De-adhesion of eggs is an important step before eggs are incubated; this ensures eggs will roll properly, without sticking together, in hatching jars and results in improved hatching. The current de-adhesion technique was adopted from sturgeon egg processing where Fuller's earth (clay) is used in a slurry to prevent the eggs from sticking together. However, this technique does not always achieve full de-adhesion of alligator gar eggs. In this experiment, tannic acid was used as an alternative treatment to Fuller's earth. Alligator gar eggs were treated with either Fuller's Earth or tannic acid. After treatment, eggs treated with Fuller's earth remained clumped together and required high flow rates to roll in the jars. Fuller's earth treated eggs also had problems with fungus during the experiment. Alternatively, tannic acid treated eggs were completely de-adhesed after the 5 min treatment and had no fungus problems. Eggs treated with tannic acid had a slightly higher (32%) hatch rate than Fuller's earth treated eggs (27%). Advantages of using the tannic acid treatment include: 1) reduced treatment time (5 min vs. 30 min), 2) full de-adhesion of the eggs, and 3) equal or better hatch rates.

Collecting eggs from alligator gar for chemical de-adhesion experiment. Credit: USFWS Photo.

Tank-Spawned Striped Bass Harvested

The FTC tank-spawned domestic striped bass broodstock for three weeks in April and produced 2.25 million fry. In order to estimate survival to phase I, striped bass fry from two different spawns were stocked into two production ponds at the Warm Springs NFH. Unfortunately, there were unknown issues that caused mortalities during the acclimation process of the fry from the tank water to the pond water. In one batch of fry, mortality was estimated at 90%. After one month of culture, the production ponds were harvested. Survival rates to phase 1 were 17% and 23% in the two ponds based on mortality estimates after acclimation. The fish were also of a fairly good size, especially in one pond at 556 fish/lb.



Tank-spawned striped bass fry. Credit: USFWS Photo.

Aquatic Species Conservation and Management

Genetic Diversity of Striped Bass in the ACF

Ashantye' Williams removing sample plate from sequencer. Credit: USFWS Photo.

Ashantye' Williams and Greg Moyer of the Conservation Genetics Lab (CGL) are currently monitoring the genetic diversity of striped bass broodstock repository lakes bass in the Apalachicola-Chattahoochee-Flint (ACF) River Basin. The CGL is also providing long-term storage of all striped bass tissues collected. To be most effective at combating potential impacts of global climate change, these lakes should represent the genetic diversity of all three river systems so CGL is estimating and comparing levels of diversity among broodstock lakes.

The CGL is working with Florida Fish and Wildlife Conservation Commission; Alabama Department of Conservation and Natural Resources; and Georgia Department of Natural Resources in trying to monitor reproduction of striped bass in these river systems. The aim is a parentage analysis study to determine the origin of offspring based on its parents. Samples have been collected from West Point Lake and sent to CGL for analysis; this will aid in evaluating the stocking program to better prepare hatchery managers in restocking the river system.

Ashantye' Williams and Brian Hickson electrofishing for striped bass on West Point Lake. Credit: USFWS Photo.

Public Use

Junior Ranger Camp Partnership

Warm Springs RFC along with staff from the Franklin D. Roosevelt State Park and Roosevelt's Little White House Historic Site are offering three-day Junior Ranger Camps in July 2009. Historical, environmental, and recreational education and activities will be offered to the Junior Rangers. Rosla Plant and Nicole Rankin met with their partners on May 7, 2009 to discuss scheduling and special activities planned for the camp. The RFC will be offering Biologist in Training (BiT) activities for the children. Junior Rangers will learn about aquatic food webs and habitats, fish identification and body parts, and aquatic species conservation; participants will also get to take home a painted fish t-shirt. Junior Ranger Camps will be held on July 7 – 9 and July 21 – 23, 2009. All three facilities are participating in the Junior Ranger Camps, and participants will spend one day at each facility.

Public Use

Northern Rough-winged Swallow "Unusual" Habitat

Northern rough-winged swallow collected from mist net. Credit: USFWS Photo.

The USFWS mission is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The RFC provides habitat to a number of different species. Streams, ponds, wetland display ponds, purple martin houses, blue bird boxes, and wood duck boxes are available on site to provide shelter and nesting opportunities. Little did the RFC know that their work vehicles could provide habitat as well. Recently, staff noticed pine straw hanging out of the mufflers of several vehicles. After removing the straw several times, staff observed a pair of birds trying to build nests in the exhaust pipes of two vehicles. FTC biologists set up a mist net to catch the birds for identification and to prevent bird injury. The birds collected were Northern rough-winged swallows.

Quest Program Learns About Stream Ecology

RFC staff presented stream ecology and American alligator programs and gave a tour to twelve 4th-graders from the Quest Program Ecology Class, Meriwether County Schools on May 14, 2009. Greg Moyer led discussions about stream ecology and mechanics, water quality, and point and non-point source pollution. This was followed by an American alligator presentation by Chester Figiel, Jr. The group then got the chance to get wet by going in the stream and collecting frogs, salamanders, tadpoles, and fish. Allison Fritts-Penniman and Nicole Rankin helped collect and identify aquatic organisms for the group. Following the stream ecology program, Rosla Plant gave a tour of the aquarium and wetland boardwalk. RFC staff were impressed by the amount of ecology and pollution information known by the Quest class.

Greg Moyer teaching child how to net salamanders. Credit: USFWS Photo.

Chester Figiel, Jr. talking about American alligators. Credit: USFWS Photo.

FTC staff talking about water pollution. Credit: USFWS Photo.

Chester Figiel, Jr., Nicole Rankin, Ashantye' Williams, and Bill Wayman gave a tour of the FTC facilities and talked about current research programs to 14 students from Valdosta State University, GA on May 26, 2009.

Workforce Management

Chester Figiel, Jr. will be on detail in the Washington Office from June 1 - June 27, 2009. He will be assessing the vulnerability of federal hatcheries to climate change and climate-driven water shortages. He will write a brief addressing this vulnerability and present this information to Fisheries and Habitat Conservation leads.

Nicole Rankin attended the 2009 Regional GIS Training at Tennessee Technological University in Cookeville, Tennessee on May 19 - 21, 2009.