Warm Springs Fish Technology Center

May/June 2010 Activity Report

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Inserting limestone into tower loader for the CycloBio system.
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.

Tagged *E. crassidens*. 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

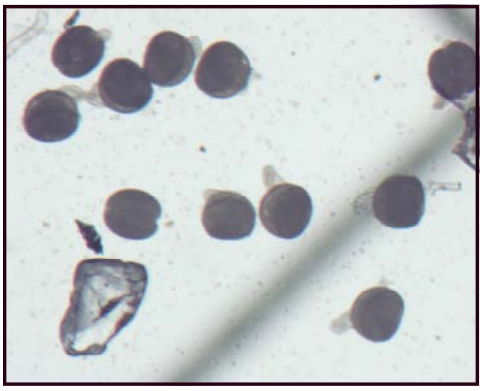
Partnering with Auburn University

Chester Figiel, Jr. is partnering with Jim Stoeckel and Brian Helms from the Department of Fisheries and Allied Aquacultures at Auburn University to research the growth, behavior, and population dynamics of the Piedmont Blue Burrower crayfish, *Cambarus harti*. This state endangered crayfish is a primary burrowing species that has a limited range and habitat specificity and is only found in the Piedmont region of the Chattahoochee and Flint River basins in Meriwether County, Georgia. The group has collected several crayfish and are currently studying burrowing habits of this species. They have developed a special burrowing chamber in order to document crayfish burrow characteristics.

Female Piedmont Blue Burrower in berry.
Credit: Chester Figiel, Jr., USFWS Photo.

Leadership in Science and Technology

Purple Bankclimber In-Vitro Transformation



Transformed purple bankclimber juveniles.
Credit: USFWS Photo.

The purple bankclimber (*Elliptoideus sloatianus*) is an endangered species of freshwater mussel for whom a host fish has yet to be determined. In an effort to develop propagation techniques for this species, Bill Wayman investigated the effectiveness of transforming the glochidia in a culture media, without the use of a host fish. Glochidia were collected from several mussels with help from Andy Hartzog, graduate student at Columbus State University, and used in a series of trials. The glochidia were rinsed with culture media to try to minimize any bacterial or fungal contamination. They were then placed in 6-well plates and incubated in a CO_2 incubator at 24^0 C for 17-19 days. Once cilia could be seen beating inside the glochidia, the glochidia were transferred to freshwater to complete the transformation process. Overall the process was very successful, and transformation rates averaged 53% and ranged from 0% to 82% per well.

Performing Water Quality Monitoring

This spring, the Warm Springs RFC staff has been working with the Southeast Region Engineering Division to build a new water treatment facility. In the past, the station's main water source was treated with agricultural lime using an older hopper system to increase the pH. In the new water treatment facility, three CycloBio Towers have been installed and use fluidized bed technology. The CycloBio Towers use the low pH water supply to dissolve calcium carbonate sand, which increases the pH, hardness and alkalinity of the water. This system is more efficient, is less hazardous, and will reduce the cost to treat the spring water on station. In June, Bill Bouthillier was tasked to conduct daily water quality testing on this new system, and so far, the water quality results are higher than expected.

Leadership in Science and Technology

ARKive

Chester Figiel, Jr. was recently asked to provide images of the Piedmont Blue Burrower (*Cambarus harti*) to ARKive, an online digital library of audio/visual records for the world's endangered species. The mission of ARKive is promoting the conservation of the world's threatened species, through the power of wildlife imagery. Chester submitted four photographs of *C. harti* to ARKive. To view these images, please visit http://www.arkive.org/piedmont-blue-burrower/cambarus-harti/.

Piedmont Blue Burrower.
Credit: Chester Figiel, Jr., USFWS Photo.

Collecting Tagged *E. crassidens* for Age Validation

Mussels sorted for identification.
Credit: USFWS Photo.

Greg Moyer and Nicole Rankin surveyed for freshwater mussels in the Flint River Basin on June 30, 2010. The purpose of this survey was to relocate or recapture *Elliptio crassidens* mussels tagged in July 2009. Last summer, 21 *E. crassidens* from Chickasawhatchee Creek and 52 *E. crassidens* from Ichawaynochaway Creek were collected, notched using a triangular file, tagged with numbered and passive integrated transponder tags, and replaced in respective creeks. The goal was to recover tagged mussels one-year from tagging to determine and validate age. Unfortunately, the high water levels in Ichawaynochaway Creek prevented the survey at this site. Greg and Nicole were more successful at the Chickasawhatchee Creek site and were able to relocate 13 tagged *E. crassidens*. Ten mussels were collected and will be sectioned for age determination and validation. They will return to Ichawaynochaway Creek to relocate and collect *E. crassidens* for age determination and validation and to compare growth to the mussels collected from the Chickasawhatchee site.

Aquatic Species Conservation and Management

Pallid Sturgeon Sperm Cryopreservation

The FTC has assisted in pallid sturgeon recovery in the upper Missouri River for the last 11 years, and this year was no different. Sperm were shipped from Garrison Dam NFH (North Dakota) and Miles City SFH (Montana) to Warm Springs for cryopreservation. Sperm from 8 males were cryopreserved and placed in the repository. Additionally, sperm from 7 males were shipped to Warm Springs from Blind Pony SFH (Missouri). These fish were part of the middle basin recovery unit. These additions bring the repository to well over 100 different samples.

Mike Hassett cryopreserving pallid sturgeon sperm. Credit: USFWS Photo.

Public Use

Kids Fish for Fun Day

The Warm Springs RFC and Friends Group hosted the 2010 Kids Fish for Fun Day to teach children the enjoyment of fishing. Five FTC employees and one SCA intern helped staff this event held on June 12, 2010. This year, over 250 children participated and had the opportunity to catch and take home five catfish. The FTC also provided three touch tanks housed with American alligators, crayfish, small turtles, salamanders, and frogs. While children and parents waited to fish, they learned more about the aquatic wildlife found in local streams and ponds in Georgia. The Friends Group provided food, beverages, t-shirts, and prizes for this event. Volunteers also made balloon animals and painted faces, a creative addition to this year's event.

Mother holding catfish for her son. Credit: USFWS Photo.

Brother and sister showing catch. Credit: USFWS Photo.

Mike holding an American alligator. Credit: USFWS Photo.

Junior Ranger Camps in Warm Springs, GA

Nicole Rankin, Rosla Plant (RFC), Frida Powers (Friends Group), Kara Brown (SCA), and Gary Eddy (SCA) along with Ashley Aultman and David Burke from Roosevelt's Little White House Historic Site offered three-day Junior Ranger Camps on June 15 – 17 and June 22 – 24, 2010. Twenty-one children (fifteen children in the first session, six in the second session) participated in the camp sessions held in Warm Springs and Pine Mountain, GA. The children learned about Franklin D. Roosevelt and his hobbies at the Roosevelt's Little White House, aquatic biology at the Warm Springs RFC, and outdoor recreation at the FDR State Park. Junior Rangers learned about fish and bird identification, aquatic food webs, and stream and pond habitats while at the Warm Springs RFC. Other camp activities included a geology walk scavenger hunt, V-mail letter writing, stream aquatic life sampling, nature hikes, a black powder demonstration, bird house and feeder building, and sailboat racing. Junior rangers received patches and certificates during a ceremony held at the FDR State Park on the last day.

Junior Rangers help fill bird feeders at FDR Little White House. Credit: JRC Camp, USFWS.

Crayfish and aquatic insects are important parts of aquatic food webs. Credit: JRC Camp, USFWS.

Junior Rangers learn about the Civil War during a black powder demonstration. Credit: JRC Camp, USFWS.

Public Use

Junior Ranger Camp Week One Group. Credit: JRC Camp, USFWS.

Junior Ranger Camp Week Two Group. Credit: JRC Camp, USFWS.

Sailing boats. Credit: JRC Camp, USFWS.

Georgia On My Mind Day at West Point Visitor Center

Mike Hassett and Nicole Rankin participated in the 2010 Georgia On My Mind Day at the West Point Visitor Center, West Point, GA on June 18, 2010. This one-day event increases awareness of the importance of travel and tourism in the state of Georgia. Over twenty vendors set up displays focusing on travel destinations, ecotourism, and upcoming events. Nicole and Mike provided information and brochures on career and volunteer opportunities with the U.S. Fish and Wildlife Service. A touch tank with crayfish, salamanders, turtles, and an American alligator was available to highlight the importance of aquatic species conservation.

Tracy Quinton holds the juvenile American alligator. Credit: USFWS Photo.

Chester Figiel, Nicole Rankin, and Rosla Plant gave a tour of the aquarium to 16 children and parents from Cub Scout Pack 331 on May 15, 2010.

Nicole Rankin and Allison Palmer gave a brown-bag presentation to staff at the Warm Springs RFC on June 25, 2010. They discussed their roles and experiences serving during the Mississippi Canyon 252 oil spill. They emphasized the importance of the Natural Resource Damage Assessment and Restoration surveys and Wildlife Operations reconnaissance and recovery surveys. Allison and Nicole also gave advice and guidance to staff considering deployment.

Workforce Management

Ashantye' Williams attended the 2010 Regional GIS Training at Tennessee Technological University in Cookeville, Tennessee on May 25 – 27, 2010.

Nicole Rankin joined the USFWS effort to help minimize the impact of the Mississippi Canyon 252 oil spill to wildlife. She deployed to serve in the Mobile Sector in the Wildlife Operations Branch as a ground crew biologist for 14-days during May 25 – June 7, 2010.