Warm Springs Fish Technology Center

March/April 2010 Activity Report

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Injecting a female striped bass with hormones to induce spawning.
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.

Juvenile American Alligator. 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

Georgia Mollusk Meeting

Nicole Rankin attended the Georgia Mollusk Meeting held at Columbus State University in Columbus, GA on March 30 and 31, 2010. Jason Wisniewski, State Malacologist, led the meeting and provided updates on species listings, permitting issues, museum collections, and current research. Nicole presented updates on studies that the WSFTC is conducting on freshwater mussels in the Apalachicola, Chattahoochee, Flint river basin. Over 20 people from U.S. Fish and Wildlife Service, GA Department of Natural Resources, Columbus State University, University of Georgia, University of Alabama, The Nature Conservancy, and several environmental consulting firms attended the meeting and provided research updates.

Northeast and Southeast Diadromous Fish Workshop

Greg Moyer gave an invited presentation at the Northeast and Southeast Diadromous Fish Science and Research Workshop on March 31, 2010. The NOAA hosted workshop was intended to develop strategies for building diadromous fish science and research support for hydropower activities on the east coast. Individuals from a diversity of NOAA divisions and resource agencies were invited to broaden the range of experience and background participating in discussion. Greg's role in the workshop was to provide a summary and recommendations regarding genetic risks associated with managing or conserving small, isolated populations.

Larval Striped Bass Experiments

Corey Anderson, a graduate student from the University of Southern Mississippi Gulf Coast Research Laboratory, began experiments on larval Gulf striped bass at WSFTC during April. Larval striped bass from WSFTC, Welaka National Fish Hatchery, and Alabama Department of Conservation and Natural Resources Marion Fish Hatchery were experimentally challenged with high temperatures two days post hatch. Corey will model resistance to temperature shock induced mortality and estimate genetic heritability of this early life stage survival trait for Gulf striped bass. His research also includes utilizing molecular tags in mark/recapture studies to assess survival of phase I and II striped bass stocked in Mississippi coastal rivers.

Corey Anderson holding a female striped bass. Credit: USFWS Photo.

Leadership in Science and Technology

National Broodstock Meeting

Nicole Rankin attended the National Broodstock Meeting held in conjunction with Aquaculture 2010 conference in San Diego, CA on March 1, 2010. 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. Nicole provided an update of the National Fish Strain Registry and received valued feedback from meeting attendees.

Leadership in Science and Technology

Aquaculture 2010

Juvenile pallid sturgeon spawned using cryopreserved sperm. Credit: USFWS Photo.

Chester Figiel, Jr., Nicole Rankin, and William Wayman attended the Aquaculture 2010 conference in San Diego, CA on March 2 – 5, 2010. This triennial meeting combined the annual meetings of the National Shellfisheries Association, Fish Culture Section of the American Fisheries Society, and the World Aquaculture Society. Chester co-chaired the symposium *The Culture of Imperiled Species and the Role of Conservation Hatcheries.* Chester and Nicole gave an oral presentation entitled A Database for the Culture of Imperiled Species and William presented a talk on The Use of a Cryopreserved Sperm Repository for Recovery of Endangered Species in this symposium. The presentations highlighted the use of the National Fish Strain Registry as a tool and illustrated the benefits that cryopreserved sperm can offer to recovering endangered species, specifically the pallid sturgeon.

Rare Tennessee Fishes Meeting

Greg Moyer presented preliminary genetic findings for three federally listed fish species at the annual Rare Tennessee Fishes meeting held in Cookeville, TN on March 9, 2010. Yellowfin and smokey madtoms have been translocated from Citico Creek to Abrams Creek since the early 1980s. A key question that still remains unanswered is whether the reintroduction program has maintained similar levels of genetic diversity between source and recipient populations. Greg's findings, while tentative, indicate that the yellowfin and smokey madtoms inhabiting Citico and Abrams creeks house very little genetic diversity; however, this diversity appears similar between each population. His data also suggest that the reintroduction program for Abrams Creek appears to have been successful (in a genetics context), because the genetic diversity of the source populations has not been lost during the captive propagation phase of this reintroduction program.

Greg also presented preliminary genetic data on the bluemask darter inhabiting Caney Creek, TN. He showed that 37 individuals exhibited little genetic diversity. He is currently waiting for samples from other locations to assess population structure for this threatened fish species.

Climate Change and Conservation of Native Amphibians and Reptiles

Relict leopard frogs.
Credit: USFWS Photo.

Chester Figiel, Jr. attended the USFWS conference entitled "Climate Change and Conservation of Native Amphibians and Reptiles" held in Albuquerque, NM on March 16 – 18, 2010. He chaired a session entitled *Captive Husbandry for Recovery and Restoration* and presented a talk on Rearing Relict Leopard Frogs at a Federal Fish Hatchery. Chester helped organize this USFWS Southwest Region conference that had over 125 attendees from the USFWS, other federal agencies, state agencies, zoos, universities, and conservation agencies.

Leadership in Science and Technology

Gulf Coastal Plain and Ozarks LCC Workshop

William Wayman represented the Fisheries program as a member of the Gulf Coastal Plain and Ozarks Landscape Conservation Cooperative Workshop planning team. He assisted with the development and review in the planning for the breakout group activities. The workshop was held on March 16 – 18, 2010 in Pearl, MS and focused on developing an understanding of Strategic Habitat Conservation (SHC) and Landscape Conservation Cooperatives (LCCs) among the project leaders within the geographic area. William Wayman gave a presentation illustrating the perspective of Fisheries project leaders towards SHC and LCCs prior to the meeting, and showcased the capabilities of the Fisheries program within the geographic area.

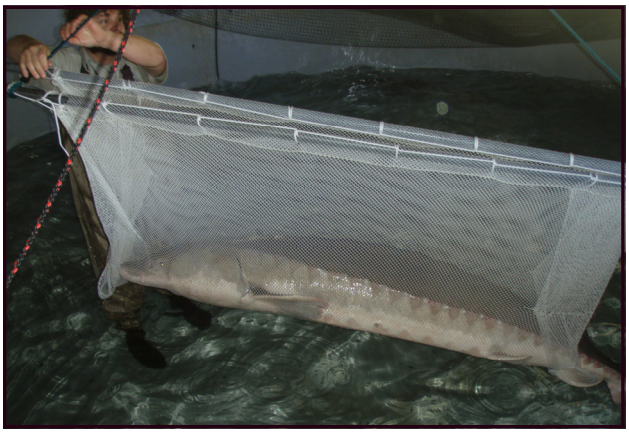
South Atlantic LCC Workshop

Greg Moyer attended the South Atlantic Landscape Conservation Cooperative (SALCC) workshop that was held on April 20 – 22, 2010 at the Francis Marion Hotel in Charleston, SC. Greg has been active in the SALCC planning process and serves as part of the FWS advisory group. He has worked across programs in an effort to draft Inventory and Monitoring Program recommendations, assist in funding requests, and develop fact sheets. The April meeting was another step forward in "standing up" the SALCC by providing background information about the Landscape Conservation Cooperative concept and Strategic Habitat Conservation for our conservation partners.

Aquatic Species Conservation and Management

American Shad and Atlantic Sturgeon

William Wayman and Bill Bouthillier traveled to the Bears Bluff National Fish Hatchery on March 30 – April 2, 2010 to conduct a research project on American shad sperm storage and to cryopreserve sperm from Atlantic sturgeon. The American shad research consisted of several compounds and concentrations to determine the control of sperm activation. Once determined, an extender can be developed that will enable refrigerated storage and cryopreservation of American shad sperm. Unfortunately, multiple attempts were made to collect sperm from 4 Atlantic sturgeon of unknown gender, but no sperm were able to be collected. These fish were either immature or not in spawning condition.



Male Atlantic sturgeon. Credit: USFWS Photo.

Tank Spawning Striped Bass

Striped bass were tank spawned throughout the month of April. Unfortunately, due to an incident during the treatment of the striped bass for a parasite, all females were below optimal spawning conditions. Several females successfully spawned, but the fry were very poor and died within 2 – 3 days of hatching.

Aquatic Species Conservation and Management

Blind Pony Pallid Sperm Cryopreservation

Pallid sturgeon sperm were shipped from the Blind Pony State Fish Hatchery (Sweet Springs, MO) to the Warm Springs FTC on April 28, 2010. Sperm from 8 males were frozen and added to the pallid sturgeon sperm repository. This brings the number of males in the repository from the middle part of their range to twelve individuals.

Public Use

Invasion of Kindergarten Children

Bill Bouthillier holding an American alligator. Credit: USFWS Photo.

Bill Bouthillier and Gary Eddy, SCA intern with the Warm Springs Fish Health Center, directed a 4-hour tour for 120 four- and five-year old children from Pike County School on April 9, 2010. Five teachers and over 40 parents accompanied the school group, which came to the Warm Springs Regional Fisheries Center to learn about the fish and other aquatic animals on station. The kindergarteners had the opportunity to see fish, turtles and alligators. The highlight of the tour was feeding the fish and touching a juvenile American alligator.

Fort Benning Earth Day Festival

Biologists from the Warm Springs Fish Technology Center (WSFTC), the Fort Benning Ecological Services Office (FBESO), and the Friends of the Warm Springs National Fish Hatchery (Friends) participated in the 2010 Earth Day Festival at Faith Middle School on Fort Benning, GA on April 15, 2010. This event focused on promoting environmental stewardship and awareness of public resources to students from the six schools on Fort Benning. Chester Figiel, Jr. (WSFTC), Nicole Rankin (WSFTC), Sandy Spivey (FBESO), Sandy Abbott (FBESO), and Frida Powers (Friends) provided information on the U.S. Fish and Wildlife Service, aquatic species biology and conservation, and red-cockaded woodpecker recovery. More than 500 children and teachers filed through the display to receive educational materials, look at juvenile lake sturgeon in an aquarium, and touch crayfish, salamanders, and an American alligator.

Sandy and Nicole teach a school group about aquatic animal conservation. Credit: USFWS Photo.

Chester and Frida meet the Earth Day mascot. Credit: USFWS Photo.

Public Use

Earth Day at LaGrange College

Chester Figiel, Jr. and Nicole Rankin participated in the 2010 Earth Day Fair at LaGrange College in LaGrange, GA on April 22, 2010. Local private, federal, and state organizations were invited to participate in this event that promoted recycling, environmental stewardship, organic gardening, and eco-friendly alternatives. Over 200 students and staff at the college were provided information on the U.S. Fish and Wildlife Service and were able to look at juvenile lake sturgeon and touch crayfish, salamanders, and an American alligator. The staff also spoke to recent graduates about employment and internship opportunities with the Service.

Chester Figiel teaching students about American alligators. Credit: USFWS Photo.

Bill Bouthillier conducted an outreach event at Dimon Magnet Academy, an inner city school for gifted children in Columbus, GA, on March 12, 2010. Eighty-five second graders learned about streams and why it is important to keep them clean for aquatic animals. The students were introduced to crayfish and an American alligator.

Nicole Rankin represented the Warm Springs Regional Fisheries Center at "Agricultural Week" at the West Point Georgia Visitors Center on March 18, 2010. She provided information about the U.S. Fish and Wildlife Service, the Warm Springs Regional Fisheries Center, fish and fishing, monofilament recycling, and ways to improve your backyard habitat.

Workforce Management

Welcome Mike Hassett

Mike Hassett holding a brown trout.
Credit: Arizona Game and Fish Department Photo.

Mike Hassett joined the WSFTC as a Student Conservation Association (SCA) intern on April 19, 2010. Along with his daily duties of water quality analysis and feeding research animals, he will also be working in the Cryopreservation and Genetics Laboratories. Mike graduated from Michigan State University with a Bachelor of Science in Fisheries and Wildlife, and he hopes to start graduate school after completing his year-long internship at the WSFTC. Before coming to Warm Springs, he was accepted into a National Science Foundation summer research program at Fordham University in New York and completed a previous SCA internship working with endangered Apache trout populations in eastern Arizona.

Nicole Rankin attended the "Stream Habitat Measurement Techniques" course at the National Conservation Training Center on March 22 – 26, 2010.