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U.S. FISH & WILDLIFE SERVICE

Natchitoches News

Manager's Corner

By: Karen Kilpatrick

It's time to embrace! For most of my career I have used a very specific example to describe the interaction between the beauty of our agency being able to raise recreational species as well as restoration or recovery species. These work areas represent a separating line within our agency…two arms so to speak. The example is simple … how hard it is to fully embrace something without having two working arms. This simple example has been core to my management philosophy and has been extremely valuable to me as I have passionately taken care of our nations aquatic resources during the past 32+ years. And this month has made me more proud than ever of the Service's continuing legacy to "conserve, protect, and enhance the fish, wildlife, and plants and their habitats for the continuing benefits of the American people."

Natchitoches National Fish Hatchery staff had the privilege this month of formally documenting, through a scientific study, the reproductive life history of the Louisiana pearlshell mussel, a threatened species. Mussel Biologist Tony Brady has been painstakingly watching mussel beds since last fall. His goal? To determine some life history parameters

that have never been scientifically documented before in history! How cool is that? And this month we were able to accomplish just that! And while the cutting edge work with mussels was being conducted, the staff was also able to continue work to produce largemouth bass as part of our commitment to a formal Memorandum of Understanding with the State of Louisiana. These two events may seem small and insignificant to those that don't understand the full picture and value of warm water hatcheries, but for me to see the fulfillment of the full range of capabilities for the facility I manage come to fruition is a very satisfying thing. As you read through this month's newsletter, remember that the recreational fishing world needs the recovery and restoration world…and vice versa. They are equally important parts of a system that is bigger than we can comprehend and a system that we need to protect and nurture with every decision we make. So, as we celebrate here at the hatchery, we hope you will join us in championing both the recreational and recovery/restoration aspects of the Service's ongoing mission to the American people.

Research Answers Questions about Louisiana Pearlshell Mussel Reproduction

By: Tony Brady

Spring in Louisiana means that the azaleas and dogwoods are in bloom, largemouth bass are spawning, and now it means that the federally threatened Louisiana pearlshell mussels (LPM) are also in reproductive mode. Since September of 2010, biologists from Natchitoches National Fish Hatchery (NNFH), the U.S. Forest Service (USFS), the Lafayette Ecological Services Field Office, and Louisiana Wildlife and Fisheries, have been monitoring two LPM beds (Bayou Clear and Black Creek) every two weeks checking for signs of reproductive activity. For this research, reproductive activity is defined as the development of larval mussels known as glochidia in the gills of the female mussels. To begin this research, a total of 60 LPM from each of the two beds were tagged with numbered Hallprint tags glued to their shells. On each visit to the beds, all tagged mussels that could be located were gently opened and the gills examined for glochidia development. On 1 March, 4% of the LPM sampled from Bayou Clear showed a distinct change in gill appearance. A small sample was harvested from one of these females and after a microscopic examination, the female was found to be developing embryos in the gills. The next sampling took place on 17 March at Bayou Clear and 44% of the tagged mussels examined showed signs of the various stages of reproductive activity, while only 13% of the tagged mussels from Black Creek showed signs of reproductive activity on 18 March. One week later on 24 March, only 14% of tagged mussels from Bayou Clear showed signs of reproductive activity indicating that these mussels had released their glochidia and were returning to a non reproductive state. However, mussels in the general population of Bayou Clear were still found to be brooding glochidia in their gills. On 25 March, 32% of the tagged mussels in Black Creek were showing signs of reproductive activity indicating that they were developmentally behind the LPM in Bayou Clear. During this research we noticed a developmental change in the gills as the females went from developing embryos, to having fully viable glochidia ready to be released to infest a fish. This change is noted in the color of the gills starting with a cream color filling the gray gills as the gills are charged with developing embryos to the addition of a purple color to the gills made up of what we are calling fish attracting material. A sample of this purple material and glochidia was collected from a gel like matrix released from a female in Bayou Clear. We believe that the purple material is a visual attractant to lure potential host fish to the glochidia as the fish is in search of an easy meal. The next question that this research hopes to determine what fish species is used to transform the glochidia to baby mussels. Currently 12 fish species are being tested at NNFH to determine which ones might be a host for the Louisiana pearlshell mussel. We hope to have results in next month's issue so stay tuned.

Photo captions:

1: Non gravid Louisiana pearlshell mussel.

2: Louisiana pearlshell mussel charging gills with embryos, the arrow points to the change in gill color caused by the embryos.

3: As the glochidia develops, the female LPM starts to develop the purple fish attractant material in the gills. The arrow is pointing to the beginning stages of the fish attractant.

4: A fully gravid female LPM is seen here with the fish attractant material looking like spider viens in the gills of the female.

5: This female is post release with only a few spots of fish attractant left in the gills as pointed by the arrow.

6: Glochidia and fish attractant collected from a female LPM.

Photos of gill changes during Louisiana pearlshell reproductive activity.

Shocking News From Natchitoches NFH

By: Jan Dean

Natchitoches NFH assistant manger Jan Dean served as an instructor for the FWS Principles and Techniques of Electrofishing course twice in February. The other instructor and course leader from the National Conservation Training Center in Shepherdstown, WV was Alan Temple. The first course was presented to over forty personnel of the Louisiana Department of Wildlife and Fisheries (LDWF). It was hosted by the LDWF Booker-Fowler Fish Hatchery in Woodworth, LA. Most of the LDWF fisheries crews use a prod pole for an anode so that they can effectively sample in lakes with a lot of trees and brush. That is a rare setup for electrofishing, and Louisiana may rely upon it more than any other state agency. A more typical electrofishing boat with booms and droppers for anodes, positive electrodes, could not navigate in such tight quarters. The other course was hosted by the Arthur R. Marshall Loxahatchee National Wildlife Refuge near Boynton Beach, FL. The refuge is a remnant of the northern Everglades. Over 30 participants attended the Florida course, and they represented several agencies such as the Fish and Wildlife Service (hatcheries and fisheries management), the National Park Service, the Environmental Protection Agency, the United States Geological Survey, the South Florida Water Conservation District, and others. Attendees came from Florida, South Carolina, Michigan, Washington state and from other places across the U.S. Some of the boats seen in the Florida course used metal spheres for anodes. Instructors Temple and Dean had seen several boats with spherical anodes in an electrofishing course they had taught in Arizona, but most electrofishing boats for the Southeast United States use cables for anodes because spheres are easily caught in the brush and vegetation commonly seen in the Southeast. In general, Dean focused on teaching electrical circuits, about electrical fields in water, the theory of electrical power transfer from water to fish, electrofisher resistance measurement, the use of electrical test equipment, and the effects of various electrical waveforms and power levels on fish response and capture. Temple concentrated more on electrofisher systems, equipment evaluation, safety aspects and policy, fish stress and injury, and sampling concepts such as capture probability and detecting trends in fish populations. The Louisiana course was tailored to the boats and electrofisher pulsators which are used here by the LDWF. In contrast, the Florida course included a wider range of boats and backpack electrofishers used by the various agencies represented in the class.

Electrofishing class demonstrating the current field of a boat mounted electrofisher

Natchitoches NFH Host Regional Mussel Meeting

By: Tony Brady

Natchitoches National Fish Hatchery (NNFH) hosted a regional Gulf Coastal Plain and Ozarks Landscape Conservation Cooperative (GCPO LCC) mollusk meeting with biologists from Alabama, Mississippi, Missouri, and Louisiana. Representatives from the Alabama Department of Conservation and Natural Resources, Missouri State University, Louisiana Wildlife and Fisheries, Northwestern State University U.S. Forest Service, and the U.S. Fish and Wildlife Service were in attendance. The goal of this meeting was to promote the exchange of information among folks working with threatened and endangered mussels and snails in the GCPO LCC. The research currently underway at NNFH on the federally threatened Louisiana pearlshell mussel (LPM) is being looked at as critical information that can be applied to the LPM's closest relative the Alabama pearlshell mussel which could be listed as federally endangered later this year. John Tirpak of the Lower Mississippi Valley Joint Venture Office shared with the group about the modeling exercise that is currently ongoing to help locate additional populations of LPMs or suitable habitat for potential reintroduction in the future should the need arise. Dr. Paul Johnson and Todd Fobin updated the attendees on the current success of the Alabama Aquatic Biodiversity Center and their work with endangered mussels and snails. To round out the meeting, Dr. Chris Barnhart from Missouri State University told the group about the culture techniques currently being used successfully by him and his students at the Kansas City Zoo. Day two of the meeting was a field trip to one of the best known LPM beds known. Many of the biologists had never been to a LPM bed.

Dr. Paul Johnson reminisces about his Ph D. days at LSU by crawling around hunting LPMs

On a rainy day, these folks were enjoying their trip to Black Creek to see a Louisiana pearlshell mussel bed.

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Saving the world one species at a time..

Underwater photo of a Louisiana pearlshell mussel.

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Natchitoches NFH and $$$$$$$$$$

By: Karen Kilpatrick

A lot of people don't know that the U.S. Fish and Wildlife Service originated in 1871 as the United States Commission on Fish and Fisheries. It was created by Congress with the purpose of studying and recommending solutions to a decline in food fish. Spencer Fullerton Baird was appointed its first commissioner. Because it has its origins in food fish it is not surprising that fishery conservation in the United States has always depended upon the contribution of recreational angler and commercial fishermen. It was true in 1871 and it is true in 2011. A recent study completed in 2010 by Dr. James Caudill and Dr. John Charbonneau, entitled, "An Assessment of Economic Contributions from Fisheries and Aquatic Resource Conservation" clearly shows that there are great annual economic benefits derived from the fourteen national fish hatcheries in the Southeast Region. The study shows that the fourteen hatcheries stock approximately 25 million fish annually with a total economic output of $332 million! And Natchitoches National Fish Hatchery's (NNFH) contribution is worth sharing! Statistics for NNFH from the report indicate:

- $1.2 million in retail expenditures
- 26 jobs generated
- $2.35 million in total economic output

This is a 3.6:1 return for dollars invested. And that return only measures the recreational input – not the other things we do with restoration and recovery species. It is very hard to measure the value of those restoration/recovery species because their value, like the Mastercard®™ commercials market to us every day, "is priceless." These facts underscore the message in the Manager's Corner – we need both recreation and restoration/recovery to work together for everyone.