

FLEUR DE LIS FISHERIES

US Fish and Wildlife Service



Newly Metamorphosed Louisiana Pearlshell Mussels

Photo by: Dr. Chris Barnhart

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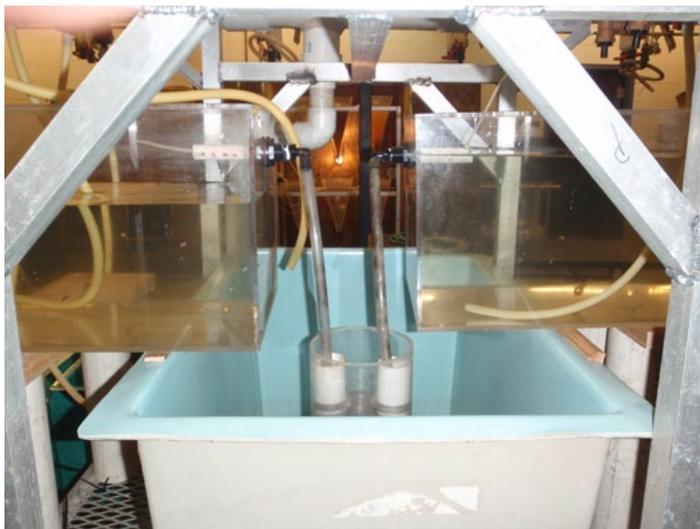
Host fish for the Federally Endangered Louisiana Pearlshell Discovered

By: Tony Brady

The life history of freshwater mussels is like that of butterflies, they produce a larval form called glochidia that must undergo a metamorphosis. Glochidia do their “cocooning” on the gills or fins of fish. Like a monarch butterfly who only lays their eggs on milkweed, certain mussels can only attach to certain fish. Once the glochidia have completed their metamorphosis, they break free of the fish and settle into the river bottom where they start their independent life. In the heart of Louisiana lives the federally threatened Louisiana Pearlshell Mussel (LPM). This medium-sized mussel lives in small, clear streams found in two Louisiana parishes. Very little data has ever been collected about the life history requirements for LPM. Beginning in October 2010, Natchitoches National Fish Hatchery (NNFH) conducted research to determine when the LPM females were gravid (with glochidia). It was discovered that the LPM produce glochidia during the month of March and had released all their glochidia by early April. Annual monitoring of several populations of LPM has confirmed the results seen in 2011. Host fish studies for the LPM have been conducted three times (2011, 2012 and 2013) at NNFH with no results to show for our efforts. They say the definition of insanity is “doing the same thing over and over again

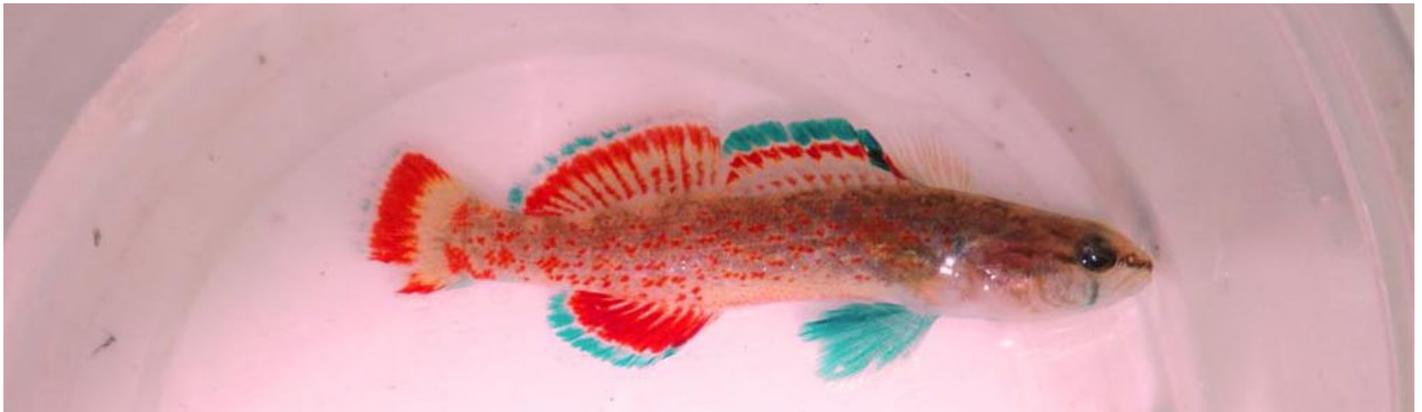


Louisiana Pearlshell Mussel releasing glochidia that were used to determine their required host fish.



The aquaria as they were set up at Booker Fowler Fish Hatchery.

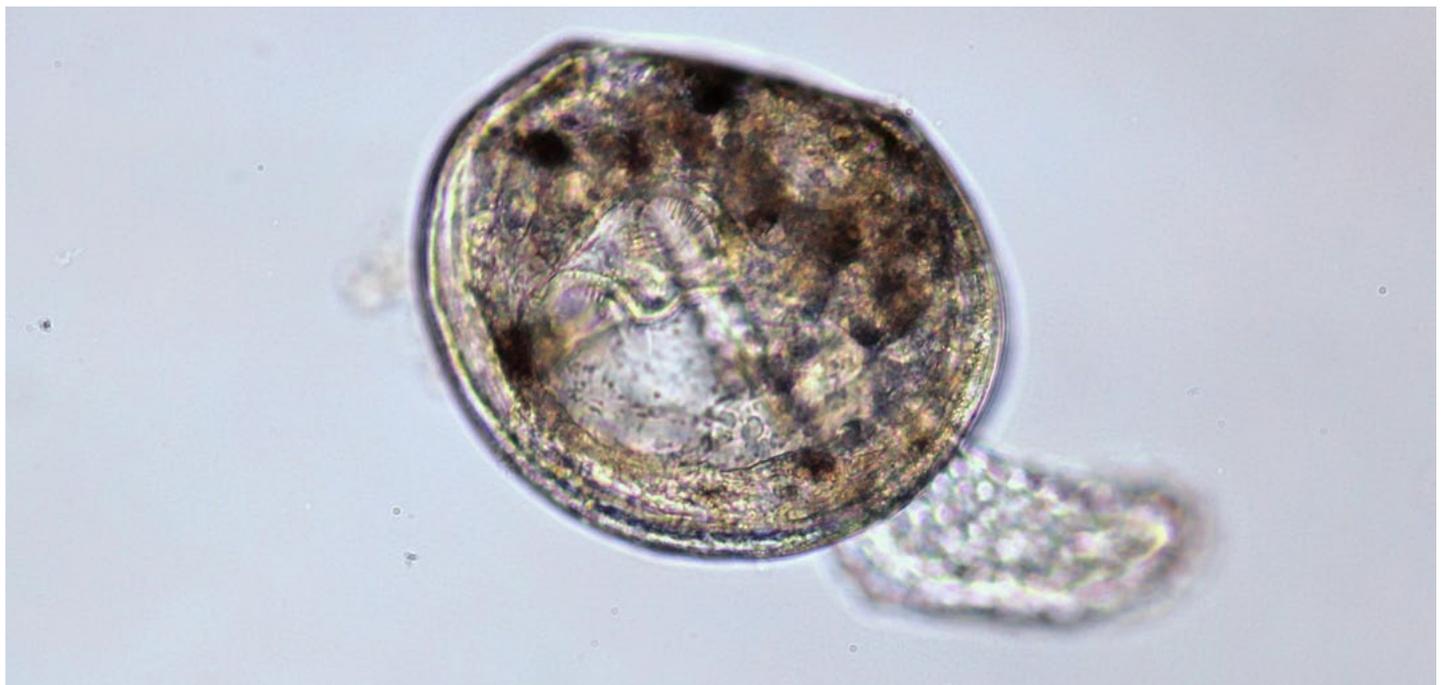
and expecting different results”. So to avoid insanity, we approached the Booker Fowler State Fish Hatchery (BFSFH) about conducting our 2014 host trial at their facility. The reason for this change in venues is that BFSFH is located within the watershed of the LPM. The LPM lives in streams with very low water hardness. Water hardness in the LPM streams and at BFSFH is no greater than 25 mg/L calcium. The water hardness at NNFH is well over 120 mg/L calcium. On 7 March and 10 March 2014, personnel from NNFH, University of New Orleans and the Louisiana Ecological Services Field Office (LESFO) collected potential host fish from Hospital Bayou that were then taken to BFSFH and held on surface supplied water from Indian Creek Reservoir. On 21 March, four gravid LPM females were collected and transported to BFSFH. These mussels were held in a plastic basin with Indian Creek Reservoir water that was changed out daily for a total of six days. During the night between the fifth and sixth day the mussels released viable glochidia so that on 27 March all potential host fish were exposed to LPM glochidia. The process for this exposure was to fill a 4 L bucket with 1 L of water. Next we put up to 20 fish, depending on their size, and about 3 ml of concentrated glochidia in the bucket for



The Redspot Darter was found to be a primary host for the Louisiana Pearlshell Mussel.

about 3 minutes. An air stone bubbling air was used to keep the glochidia in suspension. As the fish breathed naturally, the glochidia were able to attach to the fish's gills. The fish were then placed by species into 42 L aquaria where the overflow for each tank was filtered to collect any transformed LPM. On 14 April, just 18 days after they were inoculated, the first of six fish species were confirmed to transformed LPM glochidia into independent living mussels. Fish species such as the Striped Shiner, Creek Chubsucker, Longear Sunfish, Bluegill, and Redfin Shiner were marginal host

producing a small number of mussels, but the Redspot Darter proved to be the primary host species producing 64% of the mussels. A total of 151 transformed LPM were collected over a three week period. All individuals collected were preserved for either genetic testing or were used for photographic documentation. Now that a host fish has been discovered, NNFH and the LESFO will work together to write up a propagation plan so that the hatchery can begin attempting LPM culture in 2015.



The federally threatened Louisiana Pearlshell Mussel has never been seen at this early in their life stage. Photo by: Dr. Chris Barnhart

Annual Open House and Kids Fishing Derby is a Huge Success

By: Tony Brady

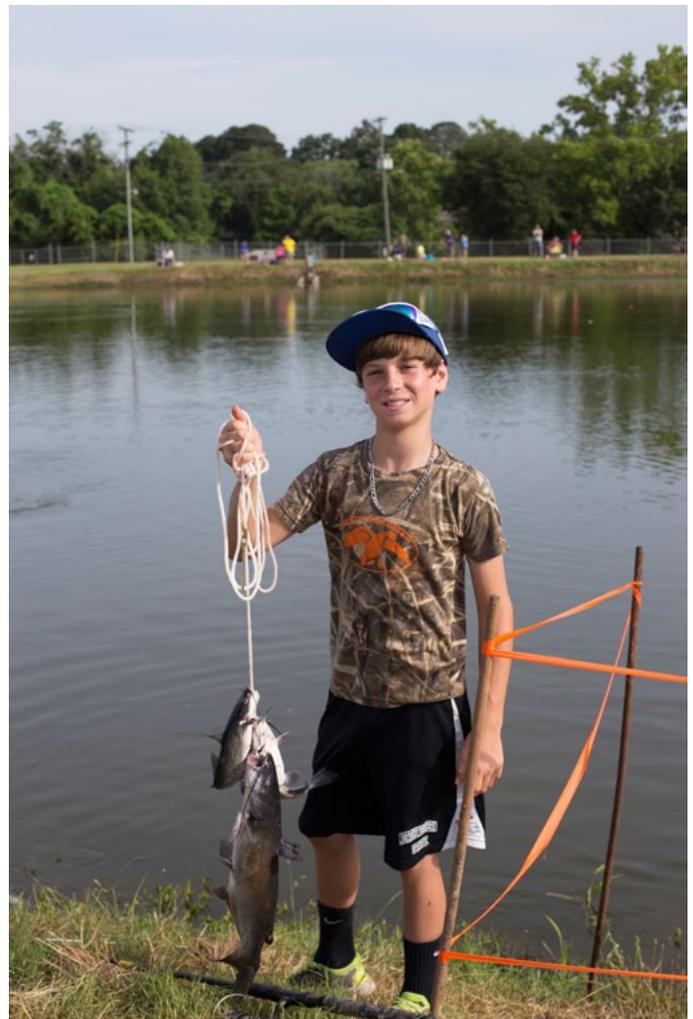
Natchitoches National Fish Hatchery (NNFH) and the Friends in Support of the Hatchery (FISH) welcomed June by hosting our annual Open House and Kid's Fishing Derby on June 7th. The Open House is always held on the first Saturday in June to coincide with the National Fishing and Boating Week. The Hatchery and FISH spent months planning and organizing the hatchery's largest outreach event. Through the course of the day, 300 people were connected with the outdoors by attending the Open House. Included in those were 130 kids who participated in the kid's

Pitch, Flip, and Cast contest. Additional volunteers from the Louisiana National Guard Youth Challenge Program and the Cane River Girls Home were greatly welcomed as they not only helped set up for the event the day before, but also remained to help break down after the event. A long list of small business from Natchitoches helped support the Open House, and without them, there would not have been the high level of enjoyment that folks have come to expect from our Open House.



A father teaches his son how to fish at the NNFH Open house and kid's fishing derby.
Photo by: Casie Deville

fishing derby. These kids created lifelong memories while catching 300 pounds of Channel catfish from the two stocked hatchery ponds. The success of such an event is always credited to the volunteers that help, and this Open House was no different. Members of FISH helped plan and organize while other groups such as Walter B. Jacobs Park, and the Alexandria Zoo provided additional entertainment by displaying different Birds of Prey or showing off animals housed at the zoo. Lunch was provided for everyone thanks to the volunteers from the Cane River Waterway Commission and the Coast Guard Auxiliary. The Provençal BASS Club did a great job as always hosting the



A nice stringer of fish caught from the hatchery pond.
Photo by: Casie Deville

Gar from Natchitoches NFH Stocked in Tennessee

By: Jan Dean

Tennessee saw the need to develop an alligator gar management plan years ago, and they have been stocking their waters for several years. We have been rearing gar here at Natchitoches National Fish Hatchery, from Pvt. John Allen NFH, for a few years now to aid the conservation effort in Western Tennessee. Some of this was reported in the April-May edition of this newsletter, and the first two sentences above are from that article.

recirculating water through the raceway. While being reared indoors, they were weighed at intervals and offered 10% of their body weight per day. However, they grow so fast that the 10% feeding rate is only true for the first day. By the end of a week, that same amount of feed may be less than a 5% feeding rate. During their time indoors, their weight gain was about 12% per day. Once they were moved outdoors into the raceway, the feeding rate was drastically decreased



Wade Scarbrough, in background, from Natchitoches National Fish Hatchery, and Dickie Barnes from the Red River National Wildlife Refuge harvested the alligator gar from the in-pond raceway and transported them to Humboldt Fish Hatchery in Western Tennessee.

The alligator gar were reared indoors on a recirculating water tank system from early May until 23 June when they were moved to an in-pond 8000 gallon raceway which uses a fish pond as a the sump for

because we only needed to produce fish large enough for implanting with coded wire tags. The desired minimum size was about eight inches total length and these fish more than met that size. The fish were fed

the same basic amount of feed per day from 23 June to harvest on 29 July. The growth rate decreased to approximately 6% per day over that period.

The other side of the coin was the available fish tanks needed to haul the fish some ten hours to Humboldt Fish Hatchery in Northwest Tennessee above Jackson. Last year, the Louisiana Department of Wildlife and Fisheries supplied trucks, tanks and drivers to help haul the gar to the same hatchery in Tennessee. Since then, we had a new fish hauling tank built and mounted on a trailer, so that more than doubled our fish hauling capacity. We were able to use our fish tanks to haul all of the gar this year although one person and truck was away on assignment, so the Red River National Wildlife Refuge supplied a truck and driver to haul these fish. Many thanks to Red River NWR for coming to the rescue.

The 2076 gar weighed 747 lbs, for an average of 2.78 per pound. A sample of 50 fish upon delivery averaged 13.5 inches in total length with a range of 10.3 to 18.9 inches. They were tagged at Humboldt Fish Hatchery by personnel of the Tennessee Parks and Wildlife Department and were stocked into four water bodies of Western Tennessee -- Moss Island, Cold Creek, Chisholm Lake and Hatchie River. As always, the Natchitoches National Fish Hatchery was pleased to be a part of this conservation effort to restore alligator gar to their historical range.



Jason Henegar and Rob Colvin with Tennessee Wildlife Resources Agency are tagging the Alligator Gar cultured at NNHF.

Photo by: Tom Wood

University student and volunteer Kaily Williams was on hand to record weights as the alligator gar were harvested from the in-pond raceway and loaded onto the transport tanks. She was there for the six am start time and worked to the end. Her help was valuable to the efficient operation so that the men, and fish, could begin the long trip to Tennessee. Many thanks to Kaily.

Tour to Discuss Mussel Propagation Opportunities Completed for Region 4 Hatcheries

By: Tony Brady

One of the identified priorities of the US Fish and Wildlife Service is to protect and recover plants, animals and their habitats that are listed under the Endangered Species Act (ESA). Freshwater mussels are one of the largest faunal groups listed under the ESA, and the largest percentages of them are found in Region 4. Federal fish hatcheries have been asked to make endangered species a priority in their culture programs and Region 4 hatcheries are perfectly situated around the region to address culture needs for most of these endangered freshwater mussels. The transition from fish culture to mussel culture isn't a huge step, but one that will require coordination, hands-on training and supervision from an experienced mussel culturist. Earlier this year, I wrote about visiting Chattahoochee Forest NFH, Private John Allen NFH and Wolf Creek NHF to discuss the possibilities of starting freshwater mussel propagation programs at or near their facilities. In that article, I mentioned the plans to visit other hatcheries in Georgia, Florida, and South Carolina. In July, I had the op-



This Carolina Heelsplitter was found in Mountain Creek in the Savannah Basin of South Carolina.



One of the many ponds at the Welaka NFH where freshwater mussels could be raised.

portunity to visit with the staffs at Warm Springs NFH GA, Welaka NFH FL, Orangeburg NHF SC, and Bears Bluff NFH SC to determine how I could best assist each hatchery in their mussel culture endeavors. Warm Springs NFH has worked with mussels in the past and has a nice facility for conducting mussel work. Planned assistance for Warm Springs NFH would be coordinating projects and / or field assistance in the form of SCUBA diving for gravid female mussels. The Bears Bluff / Orangeburg complex has a building dedicated for mussel culture, and the staff needed some assistance on how to set up a functional culture space. After spending a day touring the facility and going over the equipment they have on hand, I provided them with several suggestions on how to set up their building. The Bears Bluff / Orangeburg staff and I met with the South Carolina Ecological Services Field Office and discussed and planned the start of a culture program for the Federally Endangered Carolina Heelsplitter. Whereas the Caro-



lina Heelsplitter can be found in both North and South Carolina, it has become the most endangered animal in the state of South Carolina. This culture program will begin in the spring of 2015. Welaka NFH wanted to know where on their station they would best be able to set up a mussel culture system. My answer for the Welaka staff was “ANYWHERE”. Having access to St. Johns River water on one side of the hatchery and a spring water source that supports a population of Florida Shiny Spikes, which can be used as a surrogate species for culture trials, just downstream of the Beecher Springs portion of the hatchery, makes Welaka NFH a great facility to work with endangered Florida mussels. Budgets willing and the creeks don't rise, I look forward to working closer with all the Region 4 hatcheries that are interested in conducting freshwater mussel recovery work.

Above is Beecher Springs that feeds Welaka NFH.

Below are some of the Florida Shiny Spikes that are found in the stream created by Beecher Springs as it leaves the hatchery.



Mussels of the Pearl River: Three Years after a Major Chemical Spill

By: Tony Brady

The Pearl River flows south out of Jackson, Mississippi on its way to the Gulf of Mexico. Before the Pearl River spills its contents into the Gulf, it becomes the southernmost border between Mississippi and Louisiana. This river is home to several threatened and endangered fish and mussels, including the Gulf sturgeon and the Inflated Heelsplitter. In the summer of 2011, a major chemical spill occurred around Bogalusa, Louisiana killing a large number



Fragile Papershell mussels were hard hit due to the chemical spill, but three years later we are starting to find some young animals of this species.



After the mussels are collected, they are sorted by species and counted.

of both fish and mussels. As a quick response to the spill, the U.S. Fish and Wildlife Service sent biologists from Natchitoches National Fish Hatchery and the Baton Rouge Fish and Wildlife Conservation Office to assist the Louisiana Department of Wildlife and Fisheries assess the chemical's impact on the fish and mussel communities of the Pearl River. In July 2014, the Louisiana Department of Wildlife and Fisheries, as well as Region 4 SCUBA divers from Natchitoches National Fish Hatchery and the Alabama Ecological Services' Northern Gulf Coastal Program, with assistance from the Baton Rouge FWCO, conducted the final follow-up survey of the mussels in the Pearl. Seven preselected sites were sampled to obtain data on the mussels communities of the Pearl River. Due to the sensitive nature and legal restriction associated with the chemical spill, the collected data cannot be presented here, but the data collected will be used by state and federal agencies to compare pre-and post-spill surveys to determine the current health of the Pearl River mussels.

Refuges and Fisheries Join Forces to Host 2nd Annual Hunting and Fishing Camp for Kids

By: Tony Brady

Black Bayou Lake National Wildlife Refuge (BBLN-WR) held their 2nd annual Hunting and Fishing Camp on June 9th and 10th from 8:30 am till noon. The goal of the camp was to introduce children to ethical hunting and fishing practices expected on the refuge as well as other recreational opportunities available on the refuge. Refuge Manager Brett Hortman coordinated the camp as well as taught some of the sections. Day one was the Fishing portion of the camp, and the kids got to learn things like knot-tying, fish identification and different types of baits. To cap off the first day, the kids got to fish in the back pond. Day two of the camp was damped by overnight rains so the activities were modified. The kids learned about tree stand safety and had archery practice. By now, you must be wondering where Fisheries comes into play in this camp since there was no mention of them in the fishing portion of the camp. Since deer hunting on the refuge is restricted to archery hunting only, Hortman wanted the kids to get a feel for shooting a bow and arrow, so he contacted Natchitoches National Fish Hatchery and asked if their archery instructor would be willing to assist by setting up an archery range and introducing the sport of archery to



Helping the kids make paracord armguards.

the campers. During the course of 45 minutes, the kids were taught basic archery safety and 11 simple steps to help make them a successful archer. After shooting a few rounds of arrows, the kids were then taken inside to do an archery related craft. The kids were taught how to make a paracord armguard. Armguards are used to prevent the bowstring from slapping the shooter's arm when they fire the arrow. The response Hortman received afterwards was that the camp was a huge success with archery being one of the favorite activities, according to the campers.



One of the first things we do in archery is to determine eye dominance.



After some instruction, these archers take aim at the target.