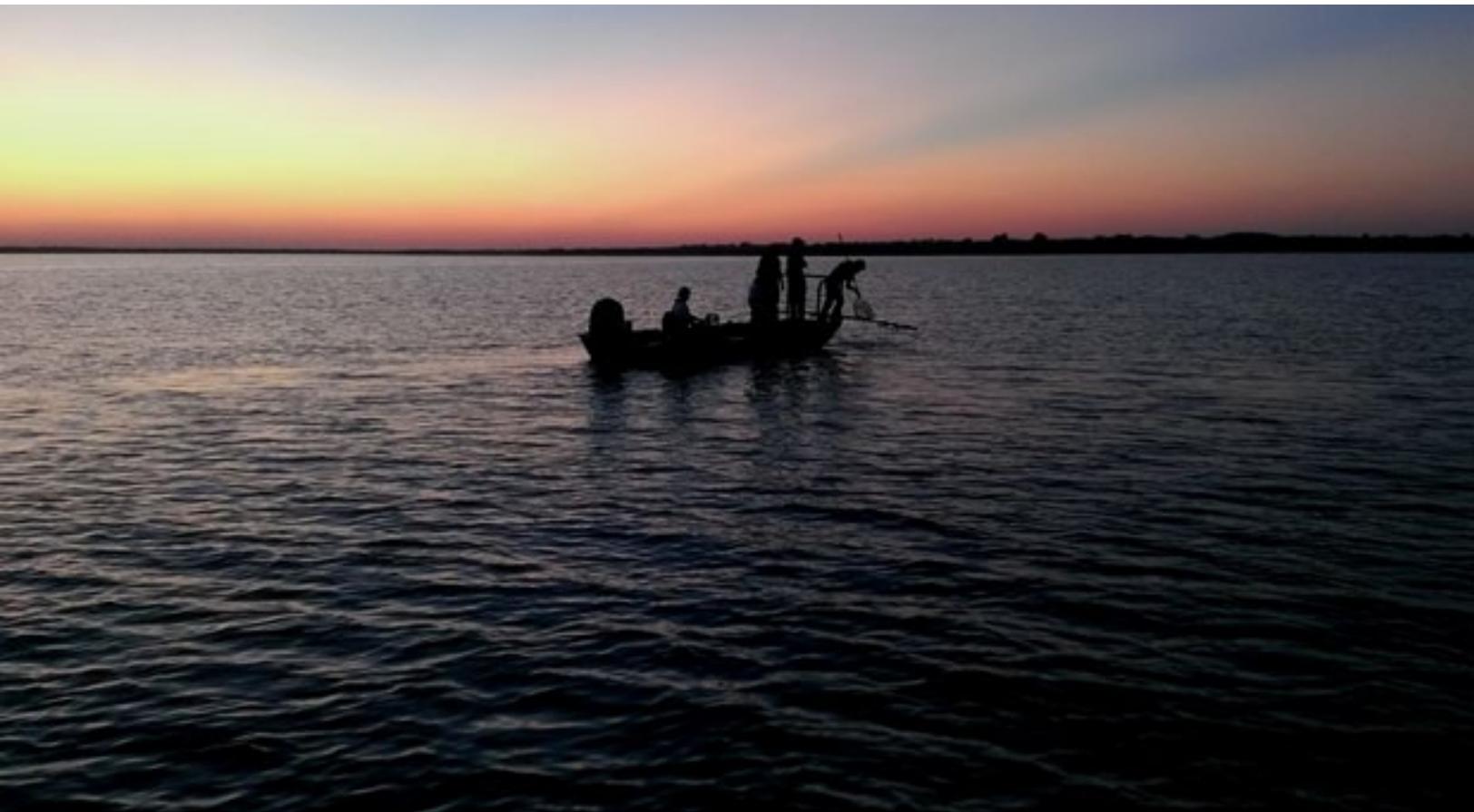


FLEUR DE LIS FISHERIES

US Fish and Wildlife Service



Evening electrofishing for Blue Catfish on the upper end of Harry S. Truman Reservoir near Clinton, Missouri.

Mussel Survey Conducted in the Little River Along Pond Creek National Wildlife Refuge

By: Tony Brady and Chris Davidson

The Little River located in Western Arkansas, about an hour north of Texarkana, marks the Pond Creek National Wildlife Refuge southern border. The Ouachita Rock Pocketbook, one of the most endangered species of freshwater mussels in the United States, inhabits the Little River, adding to the river's significance. Flowing southwesterly from Oklahoma into Arkansas before converging with the Red River, the Little River becomes influenced by the impoundment of Millwood Lake at the southeastern boundary of the refuge. While some mussel surveys have been conducted on the Little River between Millwood Lake and the Oklahoma/Arkansas border, no one has ever attempted to locate, delineate (measure length and width), and map all the mussel beds. With funds from the Inventoring and Monitoring Network, malacologists from the Arkansas Ecological Services Field Office, Chris Davidson, and Natchitoches National Fish Hatchery, Tony Brady, were

asked to complete a detailed survey to locate the mussel beds in the afore-mentioned section of the Little River. Davidson and Brady, both active divers on the Region 4 Dive Team, have worked together before to conduct quantitative mussel surveys on the Saline River in southeast Arkansas. Additional assistance was provided by Felsenthal National Wildlife Refuge, the Region 2 and 4 Inventoring and Monitoring Networks, the Red River National Wildlife Refuge, and last but not least Pond Creek National Wildlife Refuge. Over 30 miles of river were assessed during the 10 day survey, resulting in several dozen mussel beds of various sizes being delineated. As the mussel beds were being delineated, Davidson and Brady collected mussel species to begin determining the species community inhabiting the Pond Creek NWR. Thirty-three (33) species of mussels were documented during this survey and to our delight, one was a live Ouachita Rock

Pocketbook. The shell of a relic Ouachita Rock Pocketbook was found at a second site. These two findings reaffirm the Ouachita Rock Pocketbook still lives above Millwood Lake in this reach of the Little River and indicate where to begin looking for additional live individuals. Two other federally protected mussels, the endangered Winged Mapleleaf and threatened Rabbitsfoot, were also collected during the survey. Should additional funding become available, the next step would be to return and conduct quantitative surveys on these mussel beds to better document the mussel community at each bed (for example, determine population estimates) and to search for additional Ouachita Rock Pocketbook mussels.



Davidson and Brady are taking genic samples from what is believed to be an endangered Winged Mapleleaf Mussel.

Catfish Shocking in Missouri

By: Jan Dean

Biologists and administrators with the Missouri Department of Conservation (MDC) have shown much interest in improving and standardizing their electrofishing operations over the years. In recent times, they have hosted an FWS Electrofishing course at Columbia in 2008, a few days of testing some boats at Theodosia in 2009 and a special workshop on Table Rock Lake at Cape Fair in June of 2012. Since then, they have been purchasing electrical test equipment including scopemeters, peak-reading digital multimeters and current clamps. Those instruments allow accurate measuring of peak voltage and peak current plus visualization of the electrical waveforms produced by electrofishers. They have been calculating resistance

search project for sampling catfish in Missouri waters. Whereas sampling for black bass and sunfish usually is done with pulsed direct current frequencies of 60 or 120 pulses per second (Hz), that for Blue Catfish and Flathead Catfish generally is done with much lower frequencies such as 15 Hz. Channel Catfish are closely related to Blue Catfish -- there are in the same genus -- yet some researchers consider 60 Hz to be a better waveform for Channel Catfish than is the 15 Hz normally used for Blue Catfish. That begs the question, "Why would similar species respond to such different frequencies of pulsed direct current?" Those and other questions surround the mystery that is electrofishing for catfish. The MDC research project aims to answer questions related to response and capture of catfish using electricity. The MDC has allowed Dr. Alan Temple of the FWS National Conservation Training Center (NCTC) and me to offer input into the catfish research project. They also asked for us to come teach the typical FWS Electrofishing course to several of their biologists in September. The course was taught in Warsaw MO September 23-27, and a few FWS biologists from Arkansas, Missouri and Michigan also attended the class. The field trip and boat testing was done at nearby Harry S. Truman Reservoir.



MDC biologists measuring peak current of a Smith-Root LR-20 backpack electrofisher at Truman Reservoir near Warsaw, Missouri.

of their total electrofishing systems and the resistances of boat hulls and anode arrays. All of that is useful for determining total power demand for electrofishers and power allocation to the anodes. The goal is more successful and more standardized electrofishing to collect the desired types and sizes of fish for research or for use in informing management recommendations. Some MDC biologists have been developing a re-

search project for sampling catfish in Missouri waters. Whereas sampling for black bass and sunfish usually is done with pulsed direct current frequencies of 60 or 120 pulses per second (Hz), that for Blue Catfish and Flathead Catfish generally is done with much lower frequencies such as 15 Hz. Channel Catfish are closely related to Blue Catfish -- there are in the same genus -- yet some researchers consider 60 Hz to be a better waveform for Channel Catfish than is the 15 Hz normally used for Blue Catfish. That begs the question, "Why would similar species respond to such different frequencies of pulsed direct current?" Those and other questions surround the mystery that is electrofishing for catfish. The MDC research project aims to answer questions related to response and capture of catfish using electricity. The MDC has allowed Dr. Alan Temple of the FWS National Conservation Training Center (NCTC) and me to offer input into the catfish research project. They also asked for us to come teach the typical FWS Electrofishing course to several of their biologists in September. The course was taught in Warsaw MO September 23-27, and a few FWS biologists from Arkansas, Missouri and Michigan also attended the class. The field trip and boat testing was done at nearby Harry S. Truman Reservoir. Alan and I went to Missouri a day earlier than normal because we had been invited up to the Midwest Lake Electrofishing Systems (MLES) factory in Polo MO by owner Shawn Banks. It was a rare occasion to get a behind-the-scenes look at production of electrofishers. MLES has been making a boat electrofisher called the Infinity pulsator for a few years, has recently marketed a push barge electrofisher using the Infinity pulsator, and has been

developing a new hybrid backpack electrofisher which can quickly be switched from battery to engine power. MLES also outfits entire boat electrofishing systems or just components such as v



MDC and FWS biologists measuring voltage gradients (V/cm) at distances from a boat electrofisher anode array.

arious electrode arrays. Shawn has a complete metal working shop and taught himself the requisite skills to operate those machines. In addition to the typical FWS Electrofishing course content, Alan and I worked extra with this motivated class to take careful measurements of boat electrofisher voltage gradients. The object was to combine those measurements with the threshold power levels for successful fishing to inform and improve a model that we have developed to link those two aspects of electrofishing. We also generally include in the class a demonstration of fish response to various waveforms and power levels. For this class, we were permitted to use the facilities at the large, modern Lost Valley Hatchery near Warsaw. Biologists interested in the catfish research project went out earlier in the week to capture Blue Catfish, Flathead Catfish and a few other species for the class demonstration. Personnel at Lost Valley Hatchery allowed us to use a few Channel Catfish for comparison. For the demonstration, we used plate electrodes in each end of a long aquarium to briefly (4 seconds) shock the fish at low power levels to monitor their response. We used 15 Hz for the three types of catfish and 60 Hz for one Channel Catfish and for White Bass, White Crap-

pie and Largemouth Bass. Because larger fish tanks were available there at the hatchery, we also shocked a few larger catfish in one of those tanks as part of the demonstration. Voltage gradients were measured and related to fish response. Lastly, we also went to the upper end of Truman Reservoir that evening to shock Blue Catfish. They came up in a ring around the electrofishing boat, as expected. We attempted to measure the associated voltage gradients where the catfish were surfacing, but the voltage at that distance from the boat was too low to measure with the equipment we had available at the time. We could detect and measure the voltage closer to the boat, but the fish were surfacing at approximately 35 yards from the boat.

All in all, it was a busy time for the instructors and the class participants. A full day of class was often followed by an evening of testing boats. Fortunately, we had for the first time an assistant for the class, Casey Johnson from the FWS National Conservation Training Center. He helped facilitate the class, and we appreciate his effort. Class participants were exposed to a lot of electrofishing information and were involved in testing of boats and electrofishers. We especially appreciate the fish collection and other help



Midwest Lake Electrofishing Systems President Shawn Banks demonstrating attachment of an anode array boom holder he built for electrofishing boats.

provided by those interested in the catfish project, by course organizer Rich Meade and by the staff at Lost Valley Hatchery. All of those combined to produce another successful class and a learning experience for all.

September Outreach Events Give Natchitoches National Fish Hatchery an Opportunity to Connect People with Nature.

By: Tony Brady

Natchitoches National Fish Hatchery was able to participate in two Saturday outreach events in September. The first, held on 21 September, was at Felsenthal National Wildlife Refuge located in Southeast Arkansas. A table with several species of freshwater mussel shells and pictured yard signs was set up for visitors. At the table, I would begin by explaining the interesting reproductive biology of freshwater mussels to visitors before challenging them to pick out the federally listed species by just their common names as this is all that they would have from their state fishing regulation handbook. The newest species to be added to the Endangered Species Act, the Rabbitsfoot mussel, was the easiest for most folks to identify. After several more guesses, I would point out the Winged Mapleleaf and the Pink Mucket, then show similar-looking species and then stress the point that it takes a trained eye to correctly identify freshwater mussels and that having the wrong mussel in your possession would be a bad

thing. With over 1000 visitors at the event, the staff at Felsenthal thought it was a huge success.

The second event, the Woodworth National Hunting and Fishing Day, held a week later on 28 September in Woodworth, Louisiana drew over 2500 people in attendance. This event was sponsored by the Louisiana Department of Wildlife and Fisheries and several local businesses. Woodworth is located to the south and east of Kisatchie National Forest where there are several streams that are home to the threatened Louisiana pearlshell mussel. Since the Natchitoches NFH is currently working on understanding the reproductive biology of the Louisiana pearlshell mussel, we were asked to set up a display and tell folks about this unique creature that only lives in two Louisiana parishes. A lot of people in the area have heard about the Louisiana pearlshell mussel but have no clue to what they are. Similar to the Felsenthal NWR event, a table was set up with the pictured yard signs and mussel shells, this time including several Louisiana Pearlshell Mussel shells and shells from similar looking species.

Visitors at the table marveled at how some mussels were very distinctive looking and others they couldn't tell apart. This allowed me to stress how it is best to leave mussels and their shells in the streams and rivers because you may not know which ones are common, threatened or endangered.



The display table is set with mussel shells and pictured yard signs to help inform the public about these unique animals.