

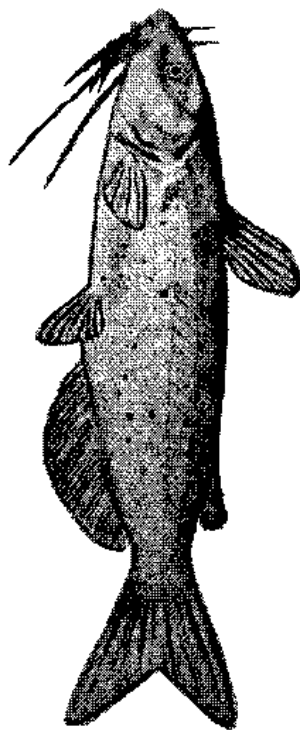
Life in the Rocks

Fish Whiskers: The Diversity of Catfish

By Brian Wagner

“I can catch catfish from dusk ‘til dawn...”

– *A Country Boy Can Survive* H. Williams Jr.



Whether they’re fried, grilled, broiled, or blackened, catfish are a favored food and part of the culture of the South. Farm raised catfish are a staple in the seafood section of grocery stores. Catfish are also the main target of Arkansas’ commercial fishermen, who pursue them with nets, traps, and trotlines. The use of catfish as food in Arkansas is primarily the channel catfish. Blue catfish and flathead catfish also are sold occasionally. The diversity of catfishes is much greater than this would lead one to believe.

The fishes that are called catfish belong to the scientific order *Siluriformes*. This order is

composed of 33 different families of catfish. Of these families, 15 are found only in Central and South America, 14 in Eurasia and Africa, one in Australia and the South Pacific, one worldwide in tropical oceans, one in North America, and one is extinct and known only from fossils.

North American catfishes belong to the family Ictaluridae, which ranges from southern Canada to Guatemala and includes 45 different species in seven genera. Four of these species (representing all members of 3 genera: *Prietella*, *Satan*, and *Trogloglanis*) are inhabitants of caves and artesian wells in Mexico and Texas. The remaining four genera are more widespread and include species found in Arkansas.

(Continued...page 2)

Taxonomy

This article mentions several levels of classification of fishes. Scientists break organisms into groups with similar characteristics, and then within each group organisms are further divided into subgroups. Groups at each level are further divided to create more levels until the groups are divided into single species. The primary levels of classification are Kingdom, Phylum, Class, Order, Family, Genus, and Species. In some cases additional levels are inserted between these levels. There is much disagreement about the higher levels of classification, but below order the groupings are mostly agreed upon. A species’ scientific name is comprised of its Genus and Species names. As an example, below is one classification for the channel catfish, *Ictalurus punctatus*.

- ? Kingdom *Animalia* (animals)
- ? Phylum *Chordata* (having a notochord)
- ? “Group” *Craniata* (having a skull)
- ? “Sub-Phylum” *Vertebrata* (having a backbone)
- ? “Super-Class” *Gnathostomata* (having jaws)
- ? Class *Actinopterygii* (ray-finned fishes)
- ? “Sub-Class” *Teleostei*
- ? Order *Siluriformes* (catfish)
- ? Family *Ictaluridae* (North American catfish)
- ? Genus *Ictalurus*
- ? Species *punctatus*

Brian Wagner, Nongame Aquatics Biologist - bkwagner@agfc.state.ar.us
 Bill Posey, Malacologist/Commercial Fish Biologist - brposey@agfc.state.ar.us
 Kelly Irwin, Herpetologist - kirwin@agfc.state.ar.us
 Arkansas Game & Fish Commission, 915 E. Sevier Street, Benton, AR 72015

Catfish (continued)

The genus *Pylodictis* contains a single species, the flathead catfish. An inhabitant of medium to large rivers, the flathead feeds primarily on live fish and is a frequent target of fishermen. They are the second largest of Arkansas' catfish, reaching a maximum size of over 90 pounds. The state record is nearly 70 pounds.

The genus *Ictalurus* contains eight species, including two that are found in Arkansas (channel catfish and blue catfish). These are the two most frequently caught catfish in the state. They are the basis of the catfish farming industry and the principle food fish. Blue catfish are the largest of North American catfish, reaching a maximum size over 100 pounds and a state record over 86 pounds.

The genus *Ameiurus* has at times been lumped into *Ictalurus*, but is currently considered to be distinct. These are the bullhead catfish – eaten occasionally, but reaching much smaller size than members of the previous two genera. There are seven species of bullheads, and four of them are found in Arkansas (black bullhead, brown bullhead, yellow bullhead, and white catfish).

The genus *Noturus* is the most diverse genus, with 25 species. Catfish in this genus are commonly called madtoms and are the smallest of our catfishes. The smallest species is the pygmy madtom, an endangered species found in the Clinch River of Tennessee, which reaches a maximum length of one and a half inches. Twelve species of madtoms are found in Arkansas.

I hope this has provided a different perspective towards catfish. In the store or restaurant, "catfish" means just one species, the channel catfish. As you can see there are a whole lot of catfish out there – a Family of 45 species in North America, and 32 other families around the world. I didn't realize it before researching this article, but when it comes to catfish it's a lot bigger world than I thought!



Ozark Hellbender

A Day in the Life of a Herpetologist

by Kelly Irwin

The sound of very loud banging and the roar of a diesel engine awakened me in the predawn darkness. I was disoriented, being aroused from a catatonic sleep. My first thoughts were, "What is this large truck doing in the driveway of my home?" As the fog in my head cleared an awareness of my surroundings came into focus. I was in a motel room and the sound that awoke me was a garbage truck emptying the restaurant dumpster next door. I had a rough time going to sleep the night before, I don't sleep well in motel rooms anymore, even after a long day that started at 5 AM and ended at midnight. I swung my feet over the side of the bed and sat there a moment; I glanced at the clock it was a little after 5 AM. My thoughts turned to coffee and hotcakes from McDonald's. I was famished. I was in Jonesboro, Arkansas and I was in quest of one of Arkansas's rarest amphibians, the Ozark Hellbender.

I had arrived the day before to rendezvous with Ben Wheeler, graduate student at Arkansas State University. Ben is currently working on his Ph.D.; his study subject is the Ozark Hellbender. Ben worked with Ozark Hellbenders in Missouri for his Masters degree at Southwest Missouri State University and was continuing his work on Arkansas' populations. I was there in my official capacity as research coordinator to participate in a distribution and population status survey of the Ozark Hellbender in Arkansas. This work is being funded by a grant awarded to the Arkansas Game and Fish Commission from the U.S. Geological Survey, Biological Resources Division. I would be working with Ben and his field assistant, Charles McDowell in conducting survey work on the Eleven Point River, one of only three rivers that are home to the Ozark Hellbender in Arkansas.

After getting dressed I drove down the main drag to the McDonalds and ate breakfast. Then stopped to fuel the truck arriving at the biology building on the ASU campus by 7:30 AM. We finished loading Ben's field equipment and headed north out of town on US Highway 63 for the upper reaches of the Eleven Point River. With a brief stop to pick up a canoe and drop off our shuttle vehicle we arrived at our put in point by 10:30 AM and were on the water by 11:00 AM. With scuba gear, coolers, lunches, and other field equipment loaded in our boats we began paddling downstream through a long deep pool with little current. High wispy cirrus clouds laced an azure blue sky above us but a gray and ominous mass of clouds loomed in the northwestern sky. We paddled along at a steady pace, knowing that we had 10 river miles to go and Ben and Charles were paddling a johnboat, an awkward venture at best when you leave the motor at home. Red-eared sliders and common map turtles basked on logs and a green heron fished on a submerged matt of aquatic plants. It was great to be out of the office for a change and I was in need of some quality time spent working with the resource I was hired to work on.

After paddling downstream for 15 or 20 minutes the sound of rushing water met our ears as we rounded a bend. Our first rapids, nothing exceptional looking to the average paddler, but to us it looked promising large, flat rocks on a clean gravel bed. We shot on through the rapids and tied up just downstream. We donned our masks and snorkels and proceeded to search for hellbenders. Ben found the first one, a large healthy adult. I was frustrated, having spent the day before without finding my first one. I continued to search under more rocks without any luck. Before long Ben found a second individual, another large adult. We continued to search the available habitat but failed to find anymore, just crayfish and sculpins. Crayfish are the primary food of hellbenders. After 45 minutes of searching we called it quits, it was time to process the animals. Each hellbender was carefully measured for total length and snout-vent length, weighed, and sexed, these data and notes on habitat conditions were carefully recorded. Then a small plastic bead containing a passive integrated transistor or PIT tag was injected into the fleshy upper portion of the tail. This serves to permanently mark the animal. The PIT tag is electronically scanned with a hand held scanner, just as items are scanned at your supermarket check out counter, each tag has a unique alphanumeric code so there is no chance for confusing individual animals on subsequent surveys. Once our animals were processed they were released near their point of capture.

By now it was after 1:30 PM and the dark clouds to the west had come close enough for us to hear the occasional long low rumble of distant thunder. The sun was now obscured by a depthless mass of gray clouds but we paddled on. More sliders and map turtles were seen perched on logs, hoping I think, for a ray of sunlight to warm their bodies. I eased the canoe on down another rapid past a logjam and there, draped across a log was an adult midland water snake. It was a very large animal and I judged it to be a gravid (pregnant) female based on its length and girth. Male water snakes are generally much smaller than females. I slipped on down past a back eddy of fast current and heard the distinctive grunting croak of a great blue heron, I looked downstream just in time to see it take flight. I had obviously interrupted its afternoon fishing. The occasional sound of murmured conversation between Ben and Charles in the jon-boat, carried across the water from behind me. I knew they were wishing for some faster water to aid them on their way downstream. We continued paddling through several more pools and rapids keeping an eye out for likely looking habitat. I was painfully aware of the rutted stream banks where cattle had trod to waters edge to drink. Their dung spotted the dusty slopes and the grass and stream bank vegetation was trampled. This is one of the reasons that the Eleven Point River no longer flows as clear as it had in former years. Homes and fields lined the stream in some sections of the river and human activity had changed the complexion of the river, with increased turbidity and algae blooms. The dark blue-black clouds were getting closer in the western sky, the rumble of thunder becoming more frequent, a storm driven inflow wind rippled the waters surface, we pressed on.

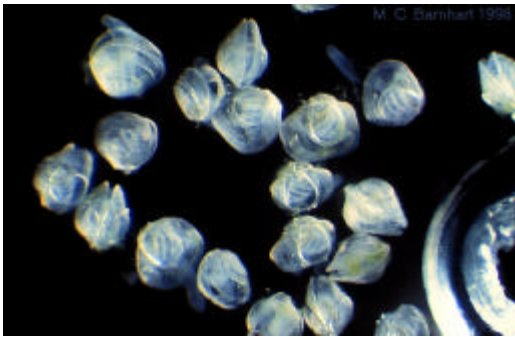
Pulling through another pool of slow water the distant rumble of thunder had changed, so I thought, no that was the rumble of another sort, a bulldozer. I shot through another rapid and around a bend, another long pool lay before me and gazing downstream saw the canopy of a giant sycamore come crashing to the ground at waters edge. The bulldozer was knocking down the riparian forest, probably to make room for more cattle grazing pasture. We paddled past the site of destruction and pulled around a sharp rocky bend with deep water and good current, the habitat looked good. We tied our boats off, donned our scuba gear and eased into the water at the bottom end of the rocky pool. I descended slowly, five feet, six feet, seven, eight, nine, ten feet to the bottom. The current was moderate but not so fast that I had to work at staying in place. The bottom and slope of the streambed was littered with large, flat rocks, prime hellbender habitat. A four or five pound walleye eased up alongside me, obviously curious as to the presence of this never before seen intruder into his watery realm. I lifted a rock, nothing but two or three crayfish. I lifted another rock, nothing. A good-sized rock, with ever the slightest aperture on the downstream side, loomed into view. I felt around the edges of the rock for a good handhold and eased it back, letting the current clear the silt from my field of vision. There, lying motionless on the bottom, my first Ozark Hellbender! Its wrinkled camouflaged brown flesh, heavily pigmented with black blotches, blended perfectly with the surrounding rock and gravel bottom. I eased my hand in under the 20-inch long animal cradling it gently so as not to excite it then slipped it into a nylon-mesh collecting bag. Moving upstream against the current I proceeded to turn more rocks and eventually found a total of six animals. By the time Ben, Charles and I were done working through the area we had collected 14 hellbenders! A new record for the most individuals found at a single locality since Ben began his survey work. By the time we had processed and released all the animals it was well past 3 PM and we still had more than five miles of river to survey before reaching our take out point.

We paddled and floated a series of pools and riffles continuing to look for suitable habitat. We lucked out too; the seemingly eminent threat of the thunderstorm had skirted us to the west and had rumbled on to the south. The sun came out and warmed the air. I was elated with the day's catch and was reveling in the pure pleasure of floating downstream and taking in the scenery. I was also thinking of what actions I could take to help landowners protect this watershed to preserve the character and wildlife of this unique stream. We found one more site that produced two large adult hellbenders; both were processed and released. The rest of the run downstream was mostly riffles with short pools in-between, but no more hellbenders were found for the day. By the time we reached the take out point it was after 7:30 PM. We unloaded the boats and left Charles to watch the gear while I ferried Ben back to his truck with the boat trailer. We got Ben's truck and returned to load boats and gear. Then delivered the borrowed canoe to the owner under cover of darkness and hit the road back to Jonesboro. By the time I checked into the hotel it was 11 PM. It had been a great day in the life of a herpetologist!

Juvenile Mussels Released in Mississippi County

by: Bill Posey

On July 3, 2001, approximately 4,400 juvenile *Potamilus capax* (fat pocketbook) mussels were released into the Middle Ditch of the Big Lake National Wildlife Refuge near Manilla, Arkansas. This effort was a cooperative effort with the U.S. Fish and Wildlife Service, Ecological Services and Refuge branches, and the Arkansas Game and Fish Commission.



Juvenile mussels. The object in the right corner is a staple.

The U.S. Fish and Wildlife Service listed the fat pocketbook mussel as endangered in 1976. It was once found in eight states but has only been found in five states since 1970. The best populations occur in Arkansas, specifically in the St. Francis River Basin where it occurs in many man-made ditches that flow into the St. Francis River. No other populations appear to be doing as well as those found in Arkansas. The reason for the decline is uncertain since the fat pocketbook seems to thrive in habitat altered by channelization for irrigation and flood control in Arkansas and is often found below dams built for navigation.



Fat pocketbook mussel

This story actually begins in State Line Ditch in Mississippi County which has been scheduled for clean out by the U.S. Army Corps of Engineers. During a preliminary survey, several female fat pocketbook mussels were encountered and Dr. Chris Barnhart, from Southwest Missouri State University, took two to his lab. There, he removed the larval mussels (glochidia) from the females and placed them on their native fish host, the freshwater drum. About two weeks later, the juvenile mussels began leaving the host fish to begin life as a juvenile mussel. They were collected from the aquaria holding the fish and the juveniles were sent to Arkansas to be placed in their native habitat.

Upon arrival in Arkansas, the juvenile mussels were approximately 1/3 of a millimeter (300 microns) in length and invisible to the naked eye. Because of their size and to improve the odds of survival 2,400 were placed into 24 mesh baskets with each containing 100 juveniles. These baskets were filled with sand and gravel to give the young mussels a place to "hold on" when the water velocity increases. The other 2,000 were released into the water column to drift into suitable habitat, much like what would occur in nature. It will take 2-3 years to determine if any of these survive but the habitat was suitable as evidenced from other juvenile mussel species that occurred at the release location.



Baskets into which juvenile mussels were placed before being lowered to the bottom of the ditch.

It is hoped that through efforts like this, that the fat pocketbook mussel can be removed from the list of endangered species some day. If it is, another success story can be written of another species saved from extinction.

Pebbles...

- ? On May 30 Kelly and Stephen O'Neal, Regional Stream Team Coordinator, joined Steve "Wildman" Wilson at the "Talkin' Outdoors Café" for an AETN program on alligators and other amphibious and reptilian creatures.
- ? Brian worked with staff from the US Forest Service and US Fish & Wildlife Service on a fish distribution database. We located 405 new collection locations on computerized maps. The database now contains approximately 4,500 fish collections. Similar databases are in development for mussels and beginning soon for crayfish.
- ? Bill, in cooperation with the Fish and Wildlife Service, conducted a mussel survey on the Arkansas portion of Lee Creek in Western Arkansas.
- ? After attending several classes Kelly completed his open water test on May 20 and received his certification for SCUBA. This will allow him to conduct surveys for the imperiled Ozark Hellbender in the Eleven Point, Spring, and White Rivers of northern Arkansas.
- ? Brian represented AGFC at a workshop in Frankfort, Kentucky regarding State Conservation Agreements (SCA's). The rationale behind SCA's is to take formal conservation actions for species before they are ever considered as candidates for protection under the Endangered Species Act. Questions persist as to funding sources and motivation for stakeholders to enter into such agreements. This was one of several regional workshops were held across the country, the discussions from which will be compiled into a proposed framework for the International Association of Fish and Wildlife Agencies.
- ? Bill assisted in teaching a mussel ID course to the U.S. Army Corps of Engineers in Jonesboro.
- ? Kelly gave a presentation on the AGFC herpetological program to assembled U.S. Forest Service and AGFC personnel at the annual coop meeting in Heber Springs on May 15.
- ? Brian and Bill attended the North American Benthological Society conference in Lacrosse, Wisconsin. This year's conference included special workshops and symposia on crayfish and on mussels. We were pleasantly surprised with the number of Arkansans we saw at the conference.
- ? Kelly and Clifton Jackson, District 11 Fisheries Biologist investigated the effects of a 5000-gallon diesel oil spill on Fish Creek on June 1. There were many dead or dying fish, amphibians, and reptiles in the backwaters of the creek, but an environmental clean up crew was mopping up the remainder of the spill.
- ? Bill conducted a survey for the federal listed threatened Magazine Mountain Shagreen snail on Magazine Mountain in cooperation with the U.S. Fish and Wildlife Service and U.S. Forest Service.
- ? On June 12 Kelly gave a presentation on venomous snake identification and safety to the U.S. Forest Service, Caddo District Office in Glenwood. Prior to the afternoon presentation Kelly and Betty Crump, USFS Wildlife Biologist, visited the site of Betty's radio-telemetry study on a resident population of the uncommon Western Diamondback Rattlesnake.
- ? Brian completed the Inter-Agency Training Program courses on The Human Element and Grievance Prevention and Handling.
- ? Kelly worked with Arlene Green, AGFC Webmaster, to get new and updated images of the snakes of Arkansas on the NatureCam link of the AGFC homepage. The new images are the work of noted wildlife photographer Suzanne L. Collins.
- ? Bill assisted the Black Bass Biologist, Chris Horton, with planting aquatic vegetation in Lake Greeson.
- ? Kelly conducted fieldwork on the beautiful King's River and Withrow Springs State Park in Madison County on June 14 – 16. Many Ozark Plateau species were observed and it afforded Kelly an opportunity to become acquainted with this previously unvisited region of the state.
- ? Brian continues to lead planning for the 2002 Southern Division American Fisheries Society Mid-Year meeting, which will be held in Little Rock next February. Through the efforts of several members of the Arkansas Chapter (some of whom have even volunteered to take the lead on certain aspects of the meeting), plans are progressing well.
- ? On June 21 – 22 Kelly met with all the district Nuisance Alligator Coordinators at the Monticello regional office for a workshop on alligator capture techniques and equipment and a review of nuisance alligator protocol and procedures documents. Attempts to practice capture and handling on the night of the 21st was thwarted by heavy thunderstorms. Another workshop is being planned in the near future.
- ? Bill conducted a mussel class for students attending the Arkansas Association of Conservation Districts Camp on a riverbank of the Buffalo River. This was his fourth time to teach this class.
- ? From June 26 – 29 Kelly was able to use his SCUBA training while conducting Ozark Hellbender surveys on the Eleven Point River with Ben Wheeler, ASU graduate student. Four new localities were found and evidence of recent reproduction was found in the form of a recently metamorphosed juvenile. Providing hope that this imperiled species can be sustained in Arkansas.
- ? Bill attended a meeting of the Arkansas Freshwater Mollusk Council in Jonesboro, Arkansas, a state-level organization that deals with issues concerning freshwater mollusks in the Natural State.





Arkansas Game & Fish Commission
Nongame Aquatics Program
915 E. Sevier Street
Benton, AR 72015

