

# Life in the Rocks

## *Pearls, A Part of our History*

By Bill Posey

Pearls -small white beads of purity and perfection that have enchanted humans for thousands of years. But just what is it about this ancient gem that has so closely bonded it to our lives, our culture, and our bodies?

Appreciation for the natural miracle of pearls began more than 5,000 years ago, long before the discovery of diamonds. In ancient times, pearls were seen as a gift from the heavens; they were known as “the tears of angels.” Many believed that the wearer of pearls would achieve wealth and live a long, healthy life.

An appreciation for pearls has been a part of Arkansas’ history. Native Americans ate the meat of mussels and utilized the shells as ornaments and utensils and placed freshwater pearls in strands. However, the early European settlers found mussel meat tough and preferred to eat fish or game, leaving the mussels to those that preferred them. However, they did use mussel meat as bait to catch fish, which probably lead to the discovery of an occasional pearl. In 1857, a fisherman found a large pearl in a White River mussel and was paid \$1500 by a St. Louis jeweler. At about the same time, a New Jersey man found a large pearl in a mussel that was sold by Tiffany’s for \$2500. The industry of pearling was born.



**Fish carved from mussel shell. (On display at the Ka-Do-Ha Indian Village in Murfreesboro, Arkansas.)**

A pearl (gem) is described as a lustrous concretion produced by mollusks and valued as a gem. Pearls consist almost entirely of nacre, which is the substance forming most of the mollusk shell and is composed primarily of aragonite crystals. The pearl is an abnormal growth resulting from an irritant that is between the soft body of the mollusc and its protective shell. The irritant acts as nucleus, which becomes coated with many layers of mother-of-pearl. If the resulting shape happens to be a sphere, it is called a pearl; otherwise, it is

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## *Pearls... (continued)*

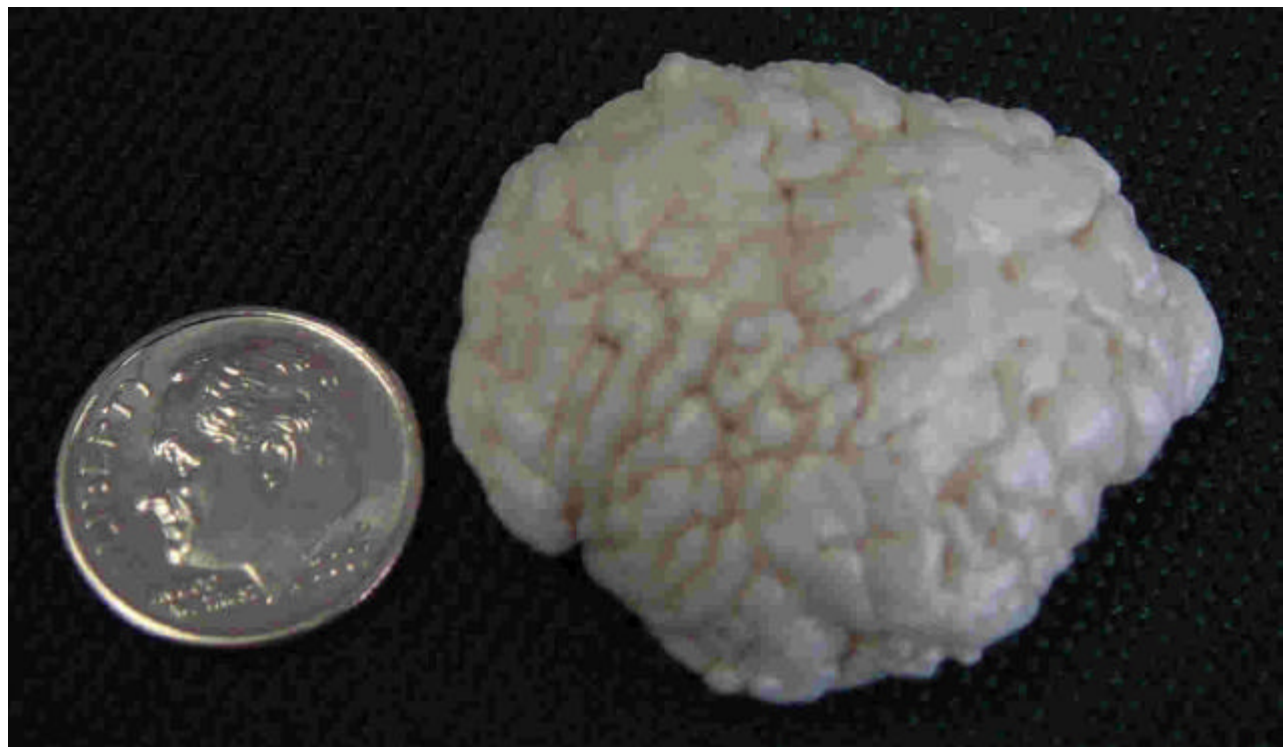
known as a slug. Slugs are further classified and given names, such as bullet, nugget, rosebud, or baroque.

During the 1850's, those lucky enough to have jobs might have been paid 50 cents for a long day's work. With the discovery of an expensive pearl, it is easy to understand why pearl fever spread throughout the State. Most pearls sold for less than a dollar, however those valued at \$100 were not uncommon. The pearls of the White River were highly rated and one was set into a crown of England. The largest pearl found in the White River was  $\frac{5}{6}$  of an inch and sold for about \$3,000. Many farmers depended

on harvesting pearls to purchase food in times of crop failure.

Although there was a wholesale slaughter of mussels for pearls, pearl-ers soon learned to differentiate between mussel species that might contain a pearl. Unfortunately, we will never know how many millions of mussels were killed for this passion in Arkansas. They discovered that pearls were more often found in sandy streams, rough shelled mussels were more likely to have a pearl than smooth shelled mussels, and that it takes several years for a large pearl to form and therefore, only the large and older shells should be opened

By 1910 or 1912, the pearl-fishing boom had run its course, simply because most of the pearl-bearing mussels had been harvested and the market had been flooded with pearls.



**Large baroque found in the Upper Mississippi River.**

## Ramblings of a Herpetologist

By Kelly Irwin

When introduced to folks as a herpetologist I receive mixed comments, ranging from jokes about a sexually transmitted disease to genuine curiosity about such a strange title. When I explain that a herpetologist studies amphibians and reptiles the real conversation begins. It seems that almost everyone I speak to has a story about a snake, turtle, or other creepy thing. They often ask if I have seen the most recent episode of the “Crocodile Hunter” on the Discovery Channel, at which point I tell them “No, we don’t have cable TV at my house, and no I am not related to Steve Irwin the Crocodile Hunter”. I generally go on to explain that the sensationalism developed on the Crocodile Hunter episodes are far from the reality of dealing with herps (collective term for amphibians and reptiles) in the real world. For example, personnel in the AGFC do not use the elaborate extremes the Crocodile Hunter goes to when capturing a saltwater crocodile with net traps and wrestling. We use snare poles or snagging to quickly and effectively capture nuisance alligators. Nor do we spend time enticing large alligators to charge out of the water so we can hurriedly jump out of harms way. When handling venomous snakes I do not free hand them by the tail as seen on television, I use a professionally manufactured snake hook and never touch the animal unless absolutely necessary. In fact I find it a disservice to the public when Steve Irwin free hands venomous snakes. This promotes improper handling of venomous snakes, which impressionable children may try to imitate resulting in a serious snakebite.

As the state herpetologist I get to travel throughout the state requiring me to work in a variety of habitats. I get to scuba dive in rivers of the Ozark Plateau; crawl through caves; scramble up steep, rocky hillsides in the Ouachita Mountains; canoe down clear water streams;

slog through cypress-tupelo gum swamps in the Delta; wade through rain flooded fields and pastures; road cruise county highways on rainy nights; or set turtle traps in black-water streams and swamps. All of these activities are carried out to survey or sample the great diversity (120 species) of herps in Arkansas. None of this is done in the glare of TV camera lights and no one is there to revel in my exploits as I wrangle a potentially dangerous creature. No, this is done as a part of my everyday fieldwork. Many would find it exciting, which it is when I find a particularly rare or unusual animal, but in the final analysis it is all in a days work, and work that I truly enjoy doing for the love of it. My job takes me to some beautifully scenic locations and at times, localities that most people would find less than appealing. Whether it is braving torrential rains and tornado activity to reach an amphibian breeding pond or sweating and swatting swarms of mosquitoes on a hot summer night in the lowlands, it is working in the diversity of habitats that adds to the allure of my job.

When in the office I receive many telephone calls and email inquiries from the public and other agencies with questions on snake identification, getting rid of turtles in a pond, alligators in the flowerbed, keeping box turtles, what are the regulations on keeping herps, etc. that require answering. I also find myself writing proposals, articles (such as this), reports, and attendant paperwork of a bureaucratic position. However, these sometimes, tedious tasks are counterbalanced by the pleasures of working in my outdoor office. It is that aspect of my position that keeps me going some days, knowing that I will be heading out that door on my way to another great experience in the Natural State.

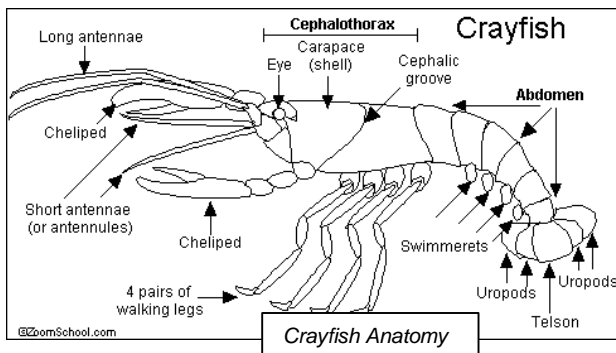


## The Life and Times of Crayfish

By Brian Wagner

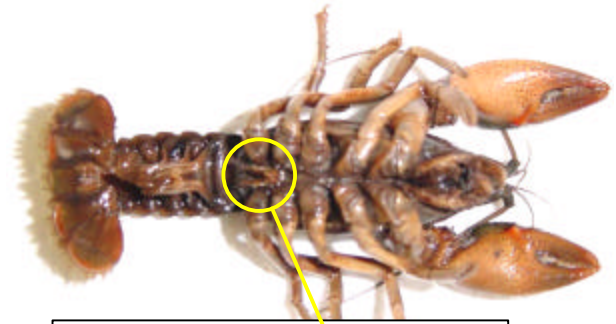
We sit on the verge of autumn – school resumes for our children, the sweltering heat begins to abate, soon trees will start to shed their leaves in anticipation of the winter to come. It seems as if the year is winding toward its end, yet for the secretive crayfish it is the beginning.

Most North American crayfish are unique among freshwater crustaceans (the group which includes crayfish, shrimp, and crabs) in that the males are dimorphic. These guys have two distinct anatomical forms – the reproductive form (Form I) and the non-reproductive form (Form II). Crayfish (and other invertebrates like insects) must shed their exoskeleton, or “skin,” in order to grow larger. This shedding is called “molting.” Male crayfish can shift between their two forms by molting. Typically, our crayfish molt into Form I in the fall and back into Form II in the late spring.

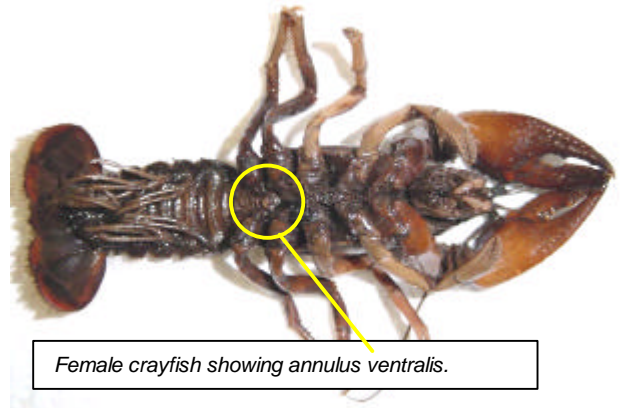


In male crayfish, the first set of swimmerets (or pleopods) is modified to be elongated and project forward along the bottom of the cephalothorax between the walking legs. These elongated swimmerets are called “gonopods.” In females the first swimmerets are not elongated, so it is true – to tell the gender of a crayfish, look between its legs!

During mating, the male crayfish uses the gonopods to transfer a sperm packet to a depression (called the annulus ventralis) on the underside of the female. The female stores this sperm packet and later uses it to fertilize her eggs.



Male crayfish showing gonopods.



Female crayfish showing annulus ventralis.

When in Form I, the male crayfish’s gonopods exhibit one or more hardened projections on the front end. The arrangement of these projections is used as the means of identifying most of our crayfish species. This makes research difficult, since accurate identification requires a male specimen and it must be in Form I. Researchers have found some success in keeping male crayfish in captivity until they molt into Form II.



*Cambarus ludovicianus*,  
a common burrowing  
crayfish.

## Pebbles...

- ?? Brian helped Fisheries Division Office Manager Donna Beckham and Division Chief Mike Gibson in conducting interviews for a permanent, full-time receptionist/secretary for the Benton Fisheries Office. Shawna Bonner, a highly qualified applicant, was selected to fill this position. Shawna started work August 20<sup>th</sup>, and will also be assisting with work in the Little Rock Fisheries Division office. Welcome Shawna!
- ?? Bill assisted the Black Bass Biologist, Chris Horton, with planting aquatic vegetation in Lake Greeson.
- ?? Brian was featured in a cover story in the Arkansas Game & Fish Commission's internal newsletter, The Wild Life Newsletter.
- ?? Kelly continued to work on the distribution and status survey of the Ozark Hellbender in collaboration with ASU graduate student Ben Wheeler. They conducted field work on the Spring River on 5-6 July and scouted prospective survey locations on the Norfork and White Rivers on 16-17 July.
- ?? Bill conducted a WET & WILD workshop for teachers from the Wickes School District.
- ?? Brian participated in a Karst Conservation Planning Workshop hosted by The Nature Conservancy. This workshop initiated the site conservation planning process for Cave Springs Cave and Logan Cave, two critical locations for imperiled aquatic cave critters.
- ?? Bill attended a meeting to discuss Corps project that occur in Missouri and Arkansas and ways to prevent or minimize impacts to mussels.
- ?? Kelly hosted Jim Knight, Curator of Natural History, South Carolina State Museum on July 19. Mr. Knight was conducting fieldwork on the paleoherpetofauna of the late Eocene Crow Creek Local Fauna near Madison, Arkansas.
- ?? Brian collected several crayfish from the Saline River to experiment with holding them in captivity.
- ?? Bill assisted a graduate student in surveying for the endangered speckled pocketbook mussel.
- ?? Brian completed two required classes in AGFC's new safety program – Defensive Driving and Office Ergonomics.
- ?? Kelly attended the Society for the Study of Amphibians and Reptiles/The Herpetologists' League joint annual meeting from July 26 – August 1 in Indianapolis, Indiana. This is the largest annual professional herpetological conference in the United States. Many important contacts were made at this meeting and Kelly was able to inform other attendees of the new herpetological program in Arkansas.
- ?? Brian has been carefully reviewing the fish distribution database to identify data entry errors needing correction. He will be working with Dr. Henry Robison of Southern Arkansas University to correct these errors and initiate development of a similar database for Arkansas crayfish.
- ?? AGFC's Fisheries Division recently had a 2-day meeting with Director Hugh Durham to discuss activities of Division staff and obstacles to getting our jobs done. The meeting included presentations by all 32 budget managers in the Division. Brian was tasked with coordination of all the presentations into a large computer presentation. This could not have been accomplished without the help of Bill Posey in scanning slides, Chris Horton making phone calls, and the patience and cooperation of all the participating budget managers. Thanks, folks!
- ?? Kelly gave a presentation to the AGFC Commissioners on the current state of the Alligator Management Program on August 23.
- ?? Brian worked with biologists from the Ouachita National Forest and US Fish & Wildlife Service to conduct annual status monitoring for the threatened leopard darter.
- ?? Bill attended a Neosho mucket Recovery Team meeting to discuss and prioritize recovery efforts by each of four states.
- ?? On August 28 Kelly traveled to Sherrill, Arkansas to tag a very large Alligator Snapping Turtle at Cook's Fish Market. This turtle has been on public display at the fish market for over 40 years and weighs over 100 lbs.



**A female Northern Studfish.**



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