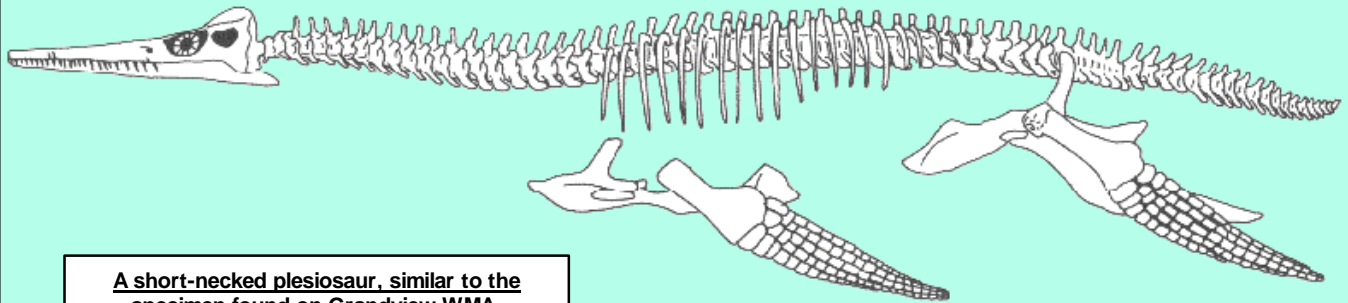


Life in the Rocks

The Hidden Lives of Grandview Prairie Revealed!

By Kelly Irwin



A short-necked plesiosaur, similar to the specimen found on Grandview WMA.

Image courtesy of Mike Everhart, *Oceans of Kansas Paleontology*: <http://www.oceansofkansas.com>, adapted from: Buchanan, R. C. (ed.), 1984. *Kansas geology: An introduction to landscapes, rocks, minerals and fossils*. University Press of Kansas. 208

About 70 million years ago, a shallow tropical sea covered what is now the rolling blackland prairie of western Hempstead County, Arkansas. This sea was inhabited by a diverse community of fishes, marine turtles and reptiles, as well as a variety of clams, oysters, and ammonites (extinct relatives of squids and octopuses). It was the Age of the Dinosaurs yet there were no dinosaurs present in this ocean, but many of the animals rivaled the dinosaurs in size. So exactly what kind of creatures inhabited this marine ecosystem: sharks, sawfish, bony fish, sea turtles, mosasaurs (giant

sea-lizards), and plesiosaurs (think of the Loch Ness monster). So some of you may be wondering, “What is the herpetologist doing writing about extinct creatures?” Well let’s back up a bit and I will fill in the gaps.

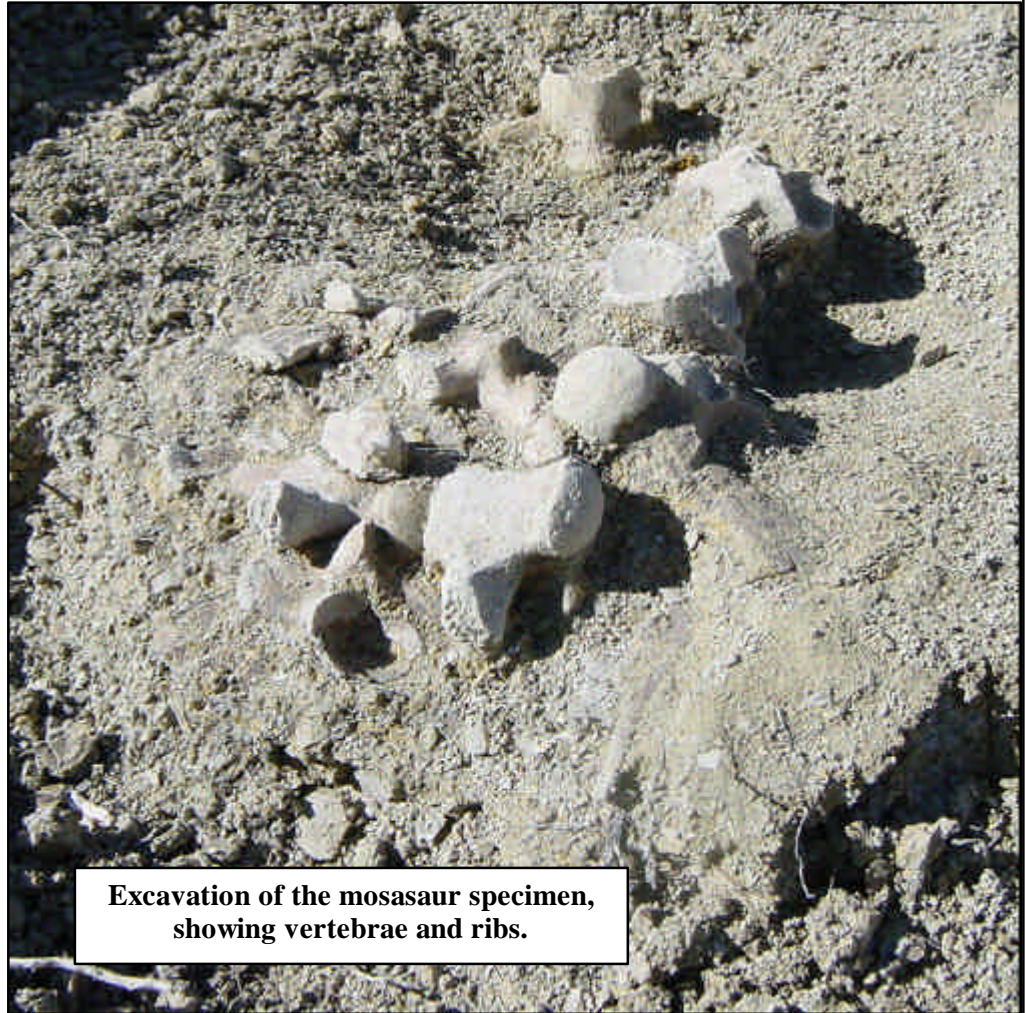
It all began in August of 2000, shortly after my arrival at Game and Fish, when John Lane, Region 5 Wildlife Management Biologist, contacted me regarding the identification of a turtle. I learned that the turtle in question had been captured on the Grandview Prairie WMA and that the area was known for producing fossils. This piqued my interest, since my hobby is vertebrate fossil collecting, but I had more pressing matters to attend to at the time, and I logged this information in the back of my mind for future reference.

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

Fast forward to April 2002, while attending a program on the archeological (the study of human artifacts) excavations of Grandview Prairie WMA I convinced Linda Goodner, Grandview Prairie Conservation Education Center Facility Manager, to entrust a collection of vertebrate fossil material to me. This collection was the result of either staff collecting or material that was confiscated from illegal collectors on AGFC property. I took this material home where it was cleaned, treated with hardening compound, and glued together.

My ultimate goal for taking the material was to get it identified so Linda and her staff could use it for the purpose of display and interpretation in educating the public. The most impressive and intriguing specimen amongst this collection was a limb bone with associated paddle elements, from what I thought to be a mosasaur. But this would prove not to be the case, as you will learn shortly.

In October 2002 I took some vacation time to attend the annual meeting of the Society of Vertebrate Paleontology in Norman, Oklahoma. I took the Grandview material to the meeting knowing that nationally recognized experts would be in attendance and I could get it identified with certainty. After making some



Excavation of the mosasaur specimen, showing vertebrae and ribs.

inquiries on the first day of the meeting I tracked down Gordon Bell, an expert on mosasaurs, who was kind enough to look over the collection, all of which was mosasaur material, except the limb and paddle elements. It was definitely not mosasaur, but some type of short-necked plesiosaur. He suggested I get Bruce Schumacher, (USFS paleontologist) to look at it. When I showed Bruce he confirmed that it was the right femur and paddle of a short-necked plesiosaur (see illustration). After close scrutiny and comparison with illustrations in his files, he concluded that it was most likely a new species representing the most recent (=youngest in geological time) specimen of its kind in North America! Needless to say, I was excited at this prospect and we planned then and there to coauthor the publication of this

specimen. However, before we could do that I needed to do some more fact gathering on where and when this specimen was collected, and in what strata. To do so meant that I would have to conduct the fieldwork. So, my wife Lisa and I spent several weekends in November and December 2002 gathering data on the collecting site and prospecting for additional fossil material on all the eroded exposures on Grandview.

As the AGFC herpetologist my primary responsibility is to work with the recent amphibians and reptiles of Arkansas, however, my personal interest in fossil vertebrates and serendipity has allowed me to combine the two while providing a service to the agency and ultimately, the public. I am still working with reptiles (marine turtles, mosasaurs, and plesiosaurs), they just happen to be extinct

ones. The results of our fieldwork to date has produced the remains of two mosasaurs, called *Plioplatecarpus primaevus*, the left hyoplastron (lower shell) of a Toxochelyid turtle (extinct marine turtle), and several teeth and vertebrae of sharks, sawfish, and bony fish. As we continue to clean, prepare, and identify the recovered fossil material it is hoped that this work will enable the staff of Grandview to paint a picture of the dynamic ancient sea life that once inhabited the Grandview Prairie WMA and Conservation Education Center.

One final note, it is illegal to collect fossils on any AGFC lands without official permission and all of the material referred to in this article will eventually be housed at the Grandview Prairie Conservation Education Center for public display and interpretation.



Preparation of the mosasaur specimen.

The Ouachita Rock Pocketbook

Arkansia wheeleri - Ortmann and Walker, 1912

Chapter 2

By Bill Posey

In the last issue of “Life in the Rocks”, I shared historical and recent information about the Ouachita Rock Pocketbook. As you might guess from my last article, this species is of particular interest to me, and since I live in the vicinity of its geographic range, it is relatively easy for me to search for new locations where it might exist. While I stated previously the future for this species remains in question, we have begun to answer some questions concerning the species’ existence in Arkansas and I am now even more optimistic for a favorable future than only a few months ago.

Knowledge that the species once occurred in the Little River and finding dead individuals fueled the desire to continue searching in the River and persistence has finally paid off. In October 2002 another malacologist and I were able to locate two live juvenile Ouachita Rock Pocketbook mussels from a mussel bed, the first to be seen by a malacologist in Arkansas in recent years.



Juvenile Rock Pocketbook mussels.

After completing our study of that site, we continued searching other habitats that might support more individuals. Rather than looking in the habitat where the species should occur, the outside of bendways, we did the opposite by searching on the inside of bendways and were rewarded with two female Ouachita Rock Pocketbook mussels within a few minutes, bringing the total for that day to four. We did not wish to disturb the mussel bed more than we had and determined the best course of action would be to return these individuals to the substrate and return in a few weeks to collect them to use in determining the host fish, a project that is ongoing at Arkansas State University.



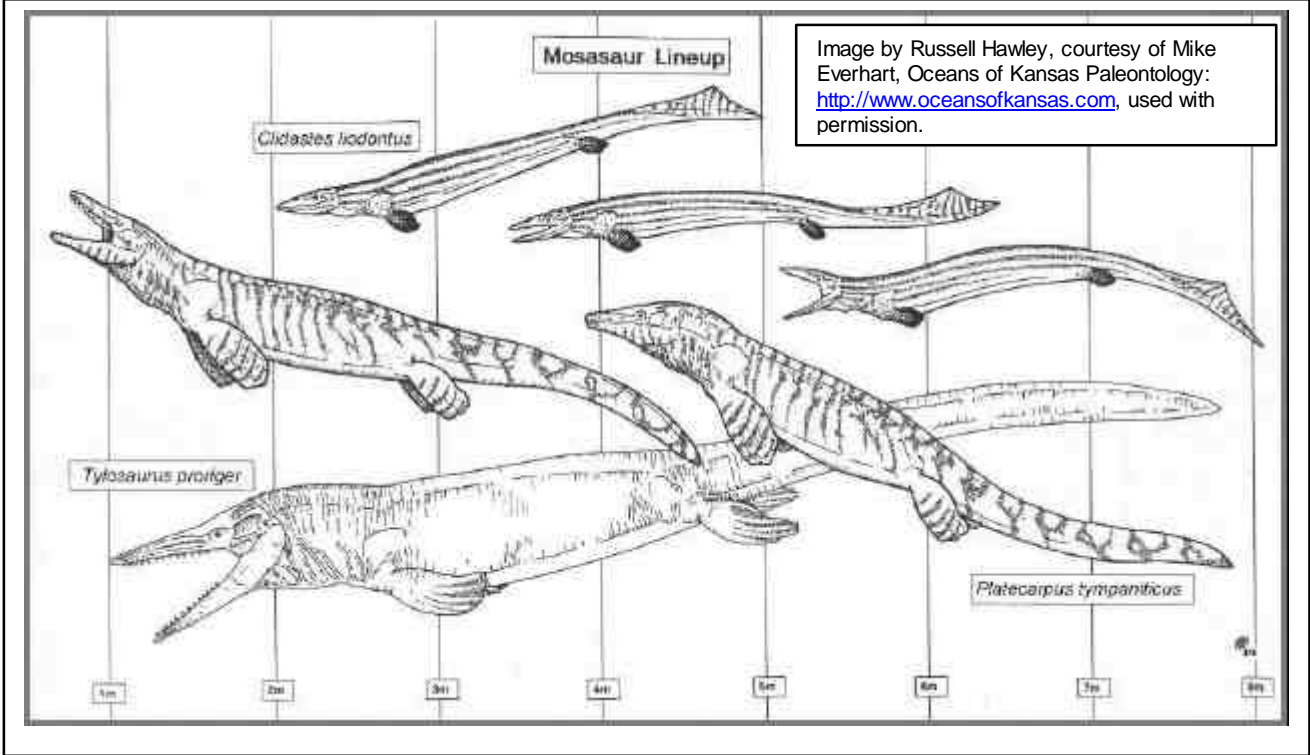
Ouachita Rock Pocketbook Mussels.

Two more attempts to locate this species have been met with success and the total number of live Ouachita Rock Pocketbook mussels now stands at eight. While the number may seem modest compared to other common species, this is the greatest number to be seen in Arkansas since the early 1900’s.

Finding these individuals coupled with the work on their life history helps to further my resolve that the species can be saved. These surveys and studies of the species’ life history, lead me to believe that the species could be removed from the Endangered Species List. However, there is still a long road ahead before that day will arrive.

Pebbles...

- Kelly co-authored an invited paper that was presented by his co-author, John Wooding, at the 16th Working Meeting of the Crocodile Specialist Group in Gainesville, Florida on October 9. The paper presented information on the current status and management of the American Alligator in Arkansas.
- Brian and staff from USFWS and ASWCC met with the mayor of Gentry to discuss plans for expansion of the city's water system.
- Bill worked the AGFC Booth at the State Fair.
- Brian, Bill, AGFC biologists Jeff Quinn, Steve Filipek, Clifton Jackson, and Allyson Neely, and staff of the Arkansas Audubon Society sampled the fish populations at several locations along Fourche Creeks in and around Little Rock.
- Kelly took some vacation time to attend the Society of Vertebrate Paleontology annual meeting in Norman, Oklahoma on October 9–12. He took fossil specimens from the Grandview Prairie WMA to the meeting for identification, and one of them appears to be a new species.
- Bill presented a general mussel presentation to two classes at the University of Central Arkansas.
- Brian made a presentation of Dr. Henry Robison's work to develop an Arkansas Crayfish Database at AGFC's Annual Research Symposium.
- Kelly and his wife Lisa spent three weekends in November and December on the Grandview Prairie WMA and Conservation Education Center collecting data and vertebrate fossil specimens for eventual use in public education and display by the Conservation Education Center staff.
- Bill conducted a mussel survey of the White River above Batesville with the help of Jeff Quinn, Mark Oliver and Ken Shirley.
- Brian attended the Southeastern Association of Fish and Wildlife Agencies conference in Baltimore.
- On November 15 Kelly met Stan Trauth and Ben Wheeler, Arkansas State University (ASU), at the Spring River Fish Hatchery to hunt for Ozark Hellbenders below the dam. This produced three individuals, two of which had been previously tagged. These were the first hellbenders observed below the dam in four years.
- Bill attended a Commercial Subcommittee meeting of the Freshwater Mollusk Conservation Society to discuss the replacement costs for mussels damaged by spills.
- Brian worked with district biologists Mark Oliver and Kern Shirley to sample fish in several Black River oxbow lakes. Brian and Mark also trapped
- Kelly presented the results of the 2002 alligator population survey at the November 19 AGFC Commission meeting in Harrison.
- Brian and Mark Oliver trapped crayfish in Crooked Creek, learning that some types of crayfish traps work and others don't!
- Bill, with the help of Drew Wilson and Jeff Quinn, captured fish in the Little River for host fish determination experiments for the Endangered Ouachita Rock Pocketbook.
- Brian, district biologists Mark Oliver and Kern Shirley, and USFWS cave biologist David Kampwerth surveyed life in a cave near Calico Rock.
- On December 3 Kelly met with his Supervisor, Steve Filipek, along with personnel from the USDA, Natural Resources Conservation Service (NRCS), AGFC, USFWS, and ASU in Piggott, Arkansas to discuss the conservation needs of the Illinois Chorus Frog and the potential for placing land in NRCS programs to help conserve the species. The Illinois Chorus Frog is found only in Clay County and is considered a species of special concern by the AGFC Nongame Program.
- Brian attended technical committee meetings of the KaRST Initiative regarding cave science, cave management, and GIS.



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

